Scudder Pond Habitat Survey

Bellingham, Washington

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EXECUTIVE SUMMARY

Scudder Pond is a 2.7-acre surface water feature on the western perimeter of Lake Whatcom in Bellingham, Washington (Section 21, Township 38 N, Range 3 E, W.M.). Scudder Pond is currently a ponded natural feature, but historic documents show the area has experienced changes in land use, vegetation, and hydrology over the past 150 years. The City of Bellingham manages Scudder Pond as a natural area. This Scudder Pond Habitat Survey documents existing habitat conditions at Scudder Pond for the purpose of documenting site changes, assessing potential trends, and informing management decisions. The survey included a bathymetric survey, wetland characterization, vegetation mapping, and wildlife assessment.

Bathymetric survey

Due to equipment constraints, the survey effort produced reliable surface water elevations; however, bathymetry measurements were less reliable and incomplete. At the time of the 2019 survey, surface water elevations ranged from 317.5 to 316.3 feet above sea level (NAVD88). The highest elevation, 317.5 feet, was along the northern pond perimeter near the mouth of Sylvan Creek. Based on the few bathymetric measurements, depths appeared to range between 2 and 5 feet. However, due to the highly variable topography and difficulty in maintaining position on the specified transect, the survey crew did not have confidence that their measurements were reproducible. Instead, they recommended the City contract with a consultant specializing in bathymetry to complete the survey.

Wetland Characterization

Scudder Pond is identified in the City's GIS database as a 2.7-acre surface water feature. However, biologically, this water feature is a palustrine depressional flow-through wetland encompassing all of the 2.7-acre mapped GIS Scudder Pond and extending into the non-ponded vegetated perimeter. Estimating wetland extent from a 2016 aerial photograph, the Scudder Pond wetland is estimated at 3.7 acres in size, 1.0 acre larger than the Scudder Pond surface water feature.

Based on site investigations and using the Cowardin classification system (Cowardin et al., 1979), the Scudder Pond is a palustrine wetland with unconsolidated bottom (UB), aquatic bed (AB), emergent (EM), and scrub-shrub (SS) modifiers. The wetland also has permanently flooded, seasonally flooded, and seasonally saturated water regimes. Using the Washington State Wetland Rating System for Western Washington, 2014 (Rating System) (Hruby, 2014), Scudder Pond qualifies as a Category II wetland based on functions (Appendix E). Overall, the wetland has moderate functional performance for all three functional categories: improving water quality, hydrologic, and habitat. Of particular note are:

- High "value" water quality function due to downstream water quality impairments in Lake Whatcom Basin 0 (water listed on the State's 303(d) list of impaired waters) and associated Total Maximum Daily Load (TMDL) for dissolved oxygen.

- High “landscape potential” to support hydrologic function due to stormwater inputs and a highly urbanized contributing basin.
- High “site potential” to provide habitat function due to the presence of diverse vegetation communities, hydroperiods, downed wood, snags, amphibian breeding habitat, and limited invasive plant species cover.
- High “value” habitat function due to mapped presence of cutthroat trout (*Oncorhynchus clarki*) and kokanee salmon (*O. nerka*), two state Priority Species. In addition, the wetland is determined to be important to the City as demonstrated by the City’s purchase in 2014, designation as a nature/wildlife preserve, and recognition by NCAS as a unique avian habitat.

Vegetation Survey

Scudder Pond contains three vegetation communities: aquatic bed, emergent, and scrub-shrub (Cowardin et al., 1979). The plant communities are intermixed and generally follow a concentric circular pattern similar to the hydrologic patterns. The pond is surrounded by a forested plant community. The northern forest community abuts the Lakeview Condominium complex and lawn and, at the time of the site visits, contained a higher percentage of noxious weeds (80% cover of English ivy and 10% cover of English holly), yard waste dumping, and trash. The majority of this northern edge is outside the City-owned portion of Scudder Pond as is part of the Lakeview Condominium properties.

No invasive cattail were observed during the vegetation survey. While investigating scientists could not determine from this vegetation assessment whether cattail is increasing in proportion to other aquatic species, the overall plant cover appears relatively stable since 2008. The pond also contains a water fern in the genus *Azolla* that turns red in winter. A sample sent to the King County Environmental Laboratory confirmed the sample did not contain toxins. In fact, the water fern is known to help treat pollution, protects the water with its covering, and can decrease mosquito populations.

No rare, state or federally listed species were observed during the site visit. In addition, the Washington Department of Natural Resources (WDNR) Natural Heritage Program (NHP) does not map any rare species or species of high conservation value within the vicinity of Scudder Pond (WNHP, 2020).

Investigating scientists also analyzed historical aerial photography for trends in vegetation changes. Aerial photographs show vegetation patterns within Scudder Pond changing dramatically in the late 1900’s but remaining relatively stable from early 2000s through present. Photographs from 2002, 2008, 2013, and 2016 document vegetation patterns similar to present conditions. The average vegetative cover within this time period is 1.97 acres (72% of the 2.7-acre mapped GIS Scudder Pond feature).

Wildlife Assessment

Scudder Pond and surrounding area contain high quality habitat with a variety of habitat types including open water, vegetated wetland, and upland forest. These habitat types have

relatively simple interspersion on the Pond exterior, but high interspersion of open water, aquatic bed, and emergent vegetation communities in the interior of the Pond.

These Scudder Pond habitat types are within and part of a larger high-quality habitat corridor consisting of Lake Whatcom and lake fringe wetland surrounding Lake Whatcom Basin 0 to the east and Whatcom Creek and upland forest in Whatcom Falls Park to the west. This corridor is mapped as a Biodiversity Corridor by Washington State Department of Fish and Wildlife's (WDFW's) Priority Habitats and Species (PHS) program (WDFW, 2020b) and is associated with Forest Block 60 in the City's Habitat Restoration Technical Assessment (ESA et al., 2015). Forest Block 60's high habitat quality is due in large part to its relatively large size, connectivity, and diversity. As a result, the corridor provides excellent wildlife dispersal, nesting, and roosting habitat and its many wetlands support baseflow and moderate peak flows in downstream Whatcom Creek. Although Scudder Pond contains a variety of habitat types, has high habitat interspersion, and is part of a high-quality habitat corridor with diverse habitat types; the review area is within an urban setting that limits its overall suitability for many species.

Investigating scientists observed indicators that the area has use by the following Washington State Priority species: cutthroat trout, kokanee, Great Blue Heron (*Ardea herodias*), Bufflehead (*Bucephala albeola*), Wood Duck (*Aix sponsa*), and Pileated Woodpecker (*Dryocopus pileatus*). The WDFW PHS Web Interactive Map (WDFW, 2020b) does not map state or federal Endangered, Threatened, or Candidate species or state Priority species within Scudder Pond. Mapped Priority species within Lake Whatcom Basin 0 are: cutthroat trout, resident coastal cutthroat trout and kokanee salmon. WDFW does not identify any fish passage barriers between Scudder Pond and Basin 0. The WDNR Natural Heritage Program does not map any rare species or species of high conservation value within the vicinity of Scudder Pond (WNHP, 2020). The WDNR interactive map also does not identify any Wetlands of High Conservation Value within the vicinity of Scudder Pond.

Management Recommendations

The City of Bellingham manages Scudder Pond as a natural open space in keeping with Armitage's intention that the area be "protected as a wildlife preserve." Based on the results described in this report, the following are management recommendations to protect and improve habitat conditions:

1. Coordinate with NCAS to develop Scudder Pond management goals and objectives (e.g. maximizing habitat features for State Priority bird species or maximizing species richness).
2. Continue to eradicate yellow flag iris (*Iris pseudacorus*), reed canarygrass (*Phalaris arundinacea*), and bitter nightshade (*Solanum dulcamara*) following management guidance from the Whatcom County Noxious Weed Control Program.
3. Replace noxious weeds with native species. Native plants should be selected to increase species richness, provide amphibian breeding habitat, provide wildlife foraging opportunities, and/or provide wildlife nesting opportunities.

4. Coordinate with the Lakeview Condominium management to eliminate yard waste dumping, eradicate English ivy and English holly on northern perimeter of the Scudder Pond forested buffer, and encourage expansion of a native forested buffer to the north.
5. Maintain beaver fencing in working condition to prevent fish impacts from rusted protruding metal wire.
6. Replace fading, stained, and outdated interpretive signs with new prints.
7. Maintain the existing dog waste station.
8. Compare aerial photography at 5-year intervals (2024, 2029, etc.) to determine any reduction in habitat interspersion.
9. Contract a baseline bathymetric survey along same two transects and repeat at 5-year intervals (2025, 2030, etc.) to determine trends in pond depth.
10. Repeat high-resolution imagery analysis as additional imagery becomes available to identify changes in open water and vegetation coverage.
11. Continue to retrofit stormwater infrastructure to include enhanced treatment within the Scudder Pond catchment area.
12. Consider outreach efforts to encourage homeowners to reduce non-point source pollution within the Scudder Pond catchment area.

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1.0 INTRODUCTION

1.1 Introduction and Purpose

Scudder Pond is a 2.7-acre surface water feature on the western perimeter of Lake Whatcom in Bellingham, Washington (Section 21, Township 38 N, Range 3 E, W.M.) (Appendix A, Figure 1). The City of Bellingham manages Scudder Pond as a natural area. This Scudder Pond Habitat Survey documents existing habitat conditions at Scudder Pond for the purpose of documenting site changes, assessing potential trends, and informing management decisions.

1.2 Scope of Work

This habitat survey included a bathymetric survey, wetland characterization, vegetation mapping, and wildlife assessment for Scudder Pond.

1.3 Site History

Scudder Pond is currently a ponded natural feature, but historic documents show the area has experienced changes in land use, vegetation, and hydrology over the past 150 years. Cadastral surveys from 1860 and 1874 depict the boundaries of Lake Whatcom and Whatcom Creek but do not document Scudder Pond or land holdings in its vicinity (Appendix B). Non-native human settlement and land alteration likely began in earnest after 1887, when land patents increased in frequency (Peterson, 2008). By 1899, historical records suggest the entire perimeter of Lake Whatcom was in private ownership, likely including the land currently known as Scudder Pond.

The town of Silver Beach was dedicated in the late 1800's and was located on the western perimeter of Lake Whatcom, immediately north of the modern Scudder Pond. The electric railway separating the Scudder Pond site from Lake Whatcom was constructed in 1892 and provided service between downtown and the Silver Beach Hotel at the White City amusement park. By the early 1900's Silver Beach became a hub of transportation for the region and characterized by a dense population (Peterson, 2008).

Historical aerial photographs from 1943, 1950, and 1963 do not show a pond or other surface water in the location of today's Scudder Pond (Appendix B). Instead, these early photographs document the area as a fully vegetated deciduous shrub or young tree community separated from Lake Whatcom by a railroad, and distinctive from the surrounding mixed forest and grass communities. Vegetation becomes more distinctive with potential emergent vegetation or unvegetated areas in the 1966 and 1976 photographs. This change in vegetation may be the result of surface ponding. The 1988 photograph shows a dramatic change with the area dominated by open water. Anecdotal information suggests this ponding may have been the result of a blocked culvert under the railroad grade (NCAS, 2019) (Appendix C). The blockage eventually led to an agreement between the City, the property owner, and neighbors to leave the culverts open and an acceptable water elevation. The ponded area is dominated by emergent and aquatic vegetation in all available aerial photographs after 1988.

Vita Armitage deeded Scudder Pond to the North Cascades Audubon Society (NCAS) in 1987. As described by the NCAS, she deeded the property in honor of her father, O.C. Scudder, and requested the property be "protected as a wildlife preserve" (NCAS, 2019) (Appendix C). The NCAS sold Scudder Pond to the City of Bellingham in 2014 for $19,426.00. Since 2014, the City has managed the property as a natural area within the larger Whatcom Falls Park. Shortly after acquiring ownership, beaver (*Castor canadensis*) activity blocked outflow from Scudder Pond causing water to repeatedly flood the City trail located on the railroad grade along the Pond's eastern perimeter. As a result, the City installed beaver cages on four primary culverts near the center of the Pond. With the exception of installing beaver cages and occasional trail maintenance, the City does not actively manage Scudder Pond. Since 2015, there has been no active beaver management within the Scudder Pond area and management has been limited to standard trail maintenance including trail surface maintenance and trail-side mowing.

2.0 BATHYMETRIC SURVEY

The survey included a bathymetric survey and a survey of surface water elevations as described below.

2.1 Methods

The survey included surface water and bathymetric measurements for the 2.7-acre water feature known as Scudder Pond, as mapped by the City of Bellingham in its GIS database. The survey was conducted along two transects: a 531 foot transect spanning the pond length and a 256 foot transect spanning the pond width. A survey professional surveyed the two transects and surface water elevations by boat using a Topcon GR3 survey grade GPS unit receiving corrections from the Washington State Reference Network (WSRN). The bathymetric soundings were completed along the two transects with a sounding line composed of a 4-ounce fishing weight attached to a Kevlar measuring tape and dropped from a height of 12 inches above water surface.

2.2 Results

Eddie Saunders, City of Bellingham Senior Surveyor, attempted to conduct the bathymetric survey on January 18 and 31, 2019. Survey results are shown in Appendix D. Due to equipment constraints, the survey effort produced reliable surface water elevations; however, bathymetry measurements were less reliable and incomplete.

At the time of the survey, surface water elevations ranged from 317.5 to 316.3 feet above sea level (NAVD88). The highest elevation, 317.5 feet, was along the northern pond perimeter near the mouth of Sylvan Creek. The remainder of the pond was approximately 0.5 foot lower. Based on the few bathymetric measurements, depths appeared to range between 2 and 5 feet. However, due to the highly variable topography and difficulty in maintaining position on the specified transect, the survey crew did not have confidence that their measurements were reproducible. Instead, they recommended the City contract with a consultant specializing in bathymetry to complete the survey.

3.0 WETLAND CHARACTERIZATION

Scudder Pond is identified in the City's GIS database as a 2.7-acre surface water feature. However, biologically, this water feature is more accurately described as a wetland, and the wetland boundaries extend beyond the mapped GIS surface water feature. This task identified and characterized the wetland habitats associated with Scudder Pond, regardless of the mapped GIS pond boundaries. The wetland characterization is described below.

3.1 Methods

The wetland characterization included a wetland reconnaissance, wetland classification, and wetland categorization. All aspects were completed by professional scientists. The wetland determination was consistent with the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Corps, 2010) and the Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987), WDOE's requirements established in 2011 (WAC 173-22-035), and the City of Bellingham (CAO) (Bellingham Municipal Code [BMC] 16.55). The purpose of the determination was to determine what, if any, portion of the pond qualifies as a wetland. The investigating scientists reviewed available documentation, completed informal sample plots throughout the study area, and one formal sample plot. Wetland was determined present in areas where one positive wetland indicator was found for each of the three required parameters (vegetation, soils, and hydrology).

The professional scientists did not complete a formal delineation to mark the exact wetland boundaries. Instead, after completing the wetland determination, they estimated the extent of wetland by visual observation of changes in soils, vegetation, and/or hydrology. These changes were compared with a 2016 aerial photograph to estimate wetland boundaries and acreage. The investigating scientists classified and categorized the on-site wetland(s) using the Washington State Wetland Rating System for Western Washington, 2014 (Rating System) (Hruby, 2014). This methodology assesses various functions operating within a wetland, the landscape's potential to sustain these functions, and the societal value of the functions. Using this system, a wetland is given a score for each type of function. The total score is used to categorize the wetland as Category I through Category IV, with I being the most sensitive, rare, highest functioning, and most challenging to replace.

3.2 Results

Analiese Burns, City of Bellingham Habitat and Restoration Manager and Professional Wetland Scientist (PWS) and Sara Brooke Benjamin, City of Bellingham Environmental Coordinator, conducted a site visit on April 30, 2018 to conduct the wetland characterization and again on February 20, 2019 to confirm wetland hydrology. Analiese Burns completed a final site visit on January 2, 2020 to collect additional wetland sample plots and confirm the wetland rating. The following description is based on observations from the site visits and information gathered during the document review. Photographs taken at the time of the site visit are included in Appendix I. The Scudder Pond wetland is shown in Figure 2, Appendix A.

3.2.1 Wetland Description

The Scudder Pond wetland is bound on the west by condominiums and apartments, to the north by private open space associated with the Lakeview Condominium complex, to the west by a City park trail built on the historic electric railroad grade, and to the south by upland forest.

Based on the document review, site investigations, and the limited bathymetric soundings (Section 2.0, above), Scudder Pond qualifies as a wetland. The wetland is a palustrine depressional flow-through wetland encompassing all of the 2.7-acre mapped GIS Scudder Pond and extending into the non-ponded vegetated perimeter (Figure 2, Appendix A). The Scudder Pond wetland is separated from the adjacent Lake Whatcom lake fringe wetland associated with Lake Whatcom Basin 0 to the east by the park trail. The two wetlands are separate wetlands as determined by having distinct hydrologic regimes (Hruby, 2014), see Hydrology description below. Estimating wetland extent from a 2016 aerial photograph, the Scudder Pond wetland is estimated at 3.7 acres in size, 1.0 acre larger than the Scudder Pond surface water feature.

Scudder Pond is identified in US Fish and Wildlife Service's (USFWS's) National Wetlands Inventory as a palustrine wetland with both persistent emergent and scrub-shrub vegetation and semi-permanent flooding (USFWS, 2019). Based on the site investigation, the wetland has additional vegetation and hydrologic characteristics and, using the Cowardin classification system (Cowardin et al., 1979), is more accurately described as a palustrine wetland with unconsolidated bottom (UB), aquatic bed (AB), emergent (EM), and scrub-shrub (SS) modifiers (Figure 3, Appendix A). The wetland also has permanently flooded, seasonally flooded, and seasonally saturated water regimes (Figure 4, Appendix A).

The data sheet for Sample Plot 2 documents representative conditions for the scrub-shrub wetland community and Sample Plot 3 documents representative conditions for the emergent wetland community (Figure 2, Appendix A and Appendix D). Sample Plot 1 is outside the boundaries of Scudder Pond, and within the boundaries of the adjacent Lake Whatcom lake fringe wetland. The WDOE wetland classification is summarized in Table 1 and more detailed descriptions of wetland vegetation, hydrology, and habitat characteristics are provided below.

Table 1. Wetland Classification Summary

Wetland	Hydrogeomorphic Class	Cowardin Classification	Estimated Acreage
Scudder Pond Wetland	Depressional	PUB/PAB/PSS/PEM	3.7

(PUB: Palustrine Unconsolidated Bed, PAB: Palustrine Aquatic Bed, PEM: Palustrine Emergent, PSS: Palustrine Scrub-shrub, PFO: Palustrine Forested)

Vegetation

As described above, Scudder Pond is a palustrine wetland with open water/unconsolidated bottom (UB) and aquatic bed (AB), emergent (EM), and scrub-shrub (SS) vegetation communities. The plant communities are intermixed and generally follow a concentric circular pattern similar to the hydrologic patterns described below. Plant species are described in detail under Vegetation Assessment, below. Except along the public trail and the outer perimeter of the forested community adjacent to the Lakeview Condominium lawn, the vegetation communities had less than 25% cover of species listed on the Whatcom County Noxious Weed List (NWCB, 2019; Hruby, 2014 pp. 97-98).

Soils

The Natural Resources Conservation Service's (NRCS's) Web Soil Survey maps Scudder Pond as dominated by ponded histosols (Map Unit 72) with a perimeter of Squalicum gravelly loam 5-15% slopes (Map Unit 156) (Figure 10, Appendix A) (USDA, NRCS, 2019). The investigating scientist documented representative soil samples of Scudder Pond at Sample Plot 2 and 3 (Figure 2, Appendix A and Appendix E). These samples do not appear consistent with the NRCS mapped soil unit.

Sample Plot 2 is located along the northern portion of the wetland on the west side of the trail, approximately 30 feet northeast of the Sylvan Creek outlet. The topsoil was black (10YR 2/1) silt loam that extended from the soil surface to 10 inches below ground surface. This upper soil layer was uniform in color and texture and did not contain redoximorphic features. The sub-soil was also black (10YR 2/1) but was a coarser loam with small cobble and contained 7% very dark grayish brown (10YR 3/1) depletions and 10% dark reddish brown (5Y 3/4) concentrations. Soil in Sample Plot 2 meets NRCS hydric soil indicators F6 (Redox Dark Surface) (USDA, NRCS, 2018).

Sample Plot 3 is located in the southern-most extent of the wetland, in close proximity to the mouth of the unnamed stream and within the emergent portion of the wetland (shown in Figures 2 and 3, Attachment A) . The topsoil was uniform black (10YR 2/1) silt loam that extended from the soil surface to the bottom of the soil pit (15 inches below ground surface). The investigating scientist was not able to extract soil below 15 inches due to the flooded hydrologic condition. Although the subsoil was not visible, the upper horizon of Sample Plot 3 was consistent with Sample Plots 1 and 2. It is likely Sample Plot 3 may meet NRCS hydric soil indicator A11 (Depleted Below Dark Surface) (USDA, NRCS, 2018).

Hydrology

The contributing basin for Scudder Pond is approximately 110 acres in size and extends north to Barkley Boulevard (City of Bellingham, 2019) (Figure 9, Appendix A). The catchment area is dominated by stormwater infrastructure and includes four notable surface waters: Sylvan

Creek, Sylvan Pond, an unnamed pond, and an unnamed stream. Sylvan Creek is highly altered, originating at Sylvan Pond in Klipsun Park north of Scudder Pond and flowing south 0.52 miles in an underground pipe before discharging to the Scudder Pond wetland at the wetland's northern boundary. The pipe ranges from 15-inches in diameter at the northern extent to 21-inches at the southern (downstream) extent.

Sylvan Pond appears to be the remnant of a natural surface water pond visible in the 1943 aerial photograph (Appendix G). The Pond is located in Klipsun Park, northwest of Big Rock Garden Park. Now managed as a stormwater feature, Sylvan Pond is mapped in the City's stormwater utility GIS layer as Big Rock Pond and described as a "combined wetpond." In addition to Sylvan Pond (Big Rock Pond), the catchment area also includes an unnamed pond in the Sylvan Pond Estates Open Space. This surface water feature also appears natural and is visible in a newly cleared area in the 1963 aerial photograph. An unnamed seasonal stream drains a minor stormwater system in the southern portion of the catchment area. The stream drains north through forest to the southern perimeter of Scudder Pond.

Six culverts drain Scudder Pond east under the public trail and into the Lake Whatcom Wetland, Basin 0 of Lake Whatcom (Figure 4, Attachment A). Basin 0 is the westernmost basin of Lake Whatcom and drains to Whatcom Creek through the City-operated control dam approximately 600 feet south of Scudder Pond. Whatcom Creek flows west through downtown Bellingham, entering Bellingham Bay approximately 2.7 miles downstream of Basin 0.

The Scudder Pond wetland is primarily permanently flooded, with a fringe of seasonal flooding and a small area of seasonal saturation (Figure 4, Appendix A). Aquatic vegetation shifts seasonally, and at the time of the 2018 site visit the wetland appeared consistent with 2016 aerial photography depicting the wetland as containing six small patches of open water/unconsolidated bottom in the center of the wetland (Figure 3, Appendix A).

During all site visits, the northern four culverts that drain Scudder Pond had rusted remnants of beaver fencing located at both inlets and outlets to deter beaver activity. The fencing was in disrepair and the culvert outlets contained several inches of water at the downstream end. Based on drift line observations and measurements from the bathymetric survey (Section 2.0, above) the depth of permanent ponding ranges between 2 and 5 feet. The maximum depth measured during the bathymetric survey was approximately 5 feet, near the estimated low point of Scudder Pond (Appendix D and Figure 4, Appendix A).

Scudder Pond was determined to be a separate wetland from the lake fringe wetland associated with Basin 0 of Lake Whatcom on the east side of the public trail due to a measurable hydrologic break (Hruby, 2014). This hydrologic break was observed during the April 30, 2018, February 20, 2019, and January 2, 2020 site visits. During the February 20, 2019 and January 2, 2020 site visits the surface water elevation in Scudder Pond was estimated at >2 feet higher than the lake fringe wetland.

3.2.2 Wetland Categorization and Functions

The wetland is not identified by the WDNR Natural Heritage Program as a Wetland of High Conservation Value, meaning it is not documented by the state as containing a rare species or a rare/high-quality ecosystem type (WNHP, 2020; Figure 7, Attachment A).

The wetland contains several habitat features including snags, downed logs, streams and is in close proximity to riparian areas (along unnamed stream to the south) and Lake Whatcom's Basin 0.

Using the 2014 WDOE Rating System, Scudder Pond qualifies as a Category II wetland based on functions (Appendix E). Overall, the wetland has **moderate** functional performance for all three functional categories: improving water quality, hydrologic, and habitat. Of particular note are:

- High "value" water quality function due to downstream water quality impairments in Lake Whatcom Basin 0 (water listed on the State's 303(d) list of impaired waters) and associated Total Maximum Daily Load (TMDL) for dissolved oxygen.
- High "landscape potential" to support hydrologic function due to stormwater inputs and a highly urbanized contributing basin.
- High "site potential" to provide habitat function due to the presence of diverse vegetation communities, hydroperiods, downed wood, snags, amphibian breeding habitat, and limited invasive plant species cover.
- High "value" habitat function due to mapped presence of cutthroat trout (*Oncorhynchus clarki*) and kokanee salmon (*O. nerka*), two state Priority Species. In addition, the wetland is determined to be important to the City as demonstrated by the City's purchase in 2014, designation as a nature/wildlife preserve, and recognition by NCAS as a unique avian habitat.

4.0 VEGETATION ASSESSMENT

The survey included a vegetation assessment as described below.

4.1 Methods

The investigating scientists conducted a vegetation survey to characterize vegetation communities consistent with Cowardin et al. (1979). The investigating scientists determined vegetation communities by ground observations and characterized all plant species in accordance with The National Wetland Plant List (Corps, 2016). Vegetation community boundaries were estimated from 2016 aerial photographs. Existing vegetation conditions were then compared with historical aerial photographs to determine changes and potential trends.

4.2 Results

4.2.1 Current Vegetation Conditions

Analiese Burns, City of Bellingham Habitat and Restoration Manager and Professional Wetland Scientist (PWS) and Sara Brooke Benjamin, City of Bellingham Environmental Coordinator, conducted a site visit on April 30, 2018 to complete the vegetation assessment. As described above under Wetland Characterization, Scudder Pond contains three vegetation communities: aquatic bed, emergent, and scrub-shrub. No rare, state or federally listed species were observed during the site visit. In addition, the Washington Department of Natural Resources (WDNR) Natural Heritage Program (NHP) does not map any rare species or species of high conservation value within the vicinity of Scudder Pond (WNHP, 2020).

The plant communities are intermixed and generally follow a concentric circular pattern similar to the hydrologic patterns (Figure 3, Appendix A). A forested plant community encircles the scrub-shrub community but only overlaps the wetland boundary within the Lake Whatcom fringe wetland. The rest of the forest community is upland buffer. The northern forest community abutted the Lakeview Condominium complex and lawn. This northern edge contained a higher percentage of noxious weeds (80% cover of English ivy and 10% cover of English holly), yard waste dumping, and trash. The majority of this northern edge is outside the City-owned portion of Scudder Pond as is part of the Lakeview Condominium properties. The invasive species infestation is typical of the larger forest block that extends south into Whatcom Falls Park (ESA et al., 2015). Species observed within the vegetation communities are listed in Table 2.

Table 2. Plant Observations

Vegetation Community*	Common Name	Scientific Name	Noxious Weed**
Aquatic Bed / Emergent			
	common cattail	*Typha latifolia*	
	yellow pond lily	*Nuphar luteum*	
	American-brooklime	*Veronica americana*	
	black twinberry	*Lonicera involucrata*	
	reed canarygrass	*Phalaris arundinacea*	X
	bitter nightshade	*Solanum dulcamara*	
	yellow flag iris	*Iris pseudacorus*	
Scrub-Shrub (60% bare ground)			
	red osier dogwood	*Cornus alba*	
	Oregon crabapple	*Malus fusca*	
	snowberry	*Symphoricarpos albus*	
	black twinberry	*Lonicera involucrata*	
	hardhack	*Spiraea douglasii*	
	Ladyfern	*Athyrium cyclosorum*	
	Himalayan blackberry (along trail)	*Rubus armeniacus*	X
Forest (80% bare ground)			
	black cottonwood	*Populus balsamifera*	
	red alder	*Alnus rubra*	
	paper birch	*Betula papyrifera*	
	bitter cherry	*Prunus emerginata*	
	Pacific ninebark	*Physocarpus capitatus*	
	Nootka rose	*Rosa nutkana*	
	salmonberry	*Rubus spectabilis*	
	black twinberry	*Lonicera involucrate*	
	red osier dogwood	*Cornus alba*	
	English ivy (N edge along lawn)	*Hedera helix*	X
	English holly (N edge along lawn)	*Ilex aquifolium*	X

*Cowardin et al. (1979)

**Noxious weed listed on the 2019 Whatcom County Noxious Weed List (NWCB, 2019)

Cattails

Citizens recently expressed concern about the cattail population in Scudder Pond. Based on visual observations at the time of the site visit, the cattail is the native common cattail (*Typha latifolia*). No invasive cattail were observed during the vegetation survey. While investigating scientists could not determine from this vegetation assessment whether cattail is increasing in proportion to other aquatic species, the overall plant cover appears relatively stable since 2008, see Historic Comparison discussion below. Vegetation coverage is estimated at 3.03 acres: 82% of the wetland and 74% of the "pond" (as delineated by City of Bellingham GIS water feature, Appendix H), see Historic Comparison discussion below. At the time of the April 2018 site visit, cattail was estimated to have 90% cover over the emergent plant community portion of the wetland in Figure 3 (Appendix A). Photographs showing density and cover are included in Appendix B, H, and I. This vegetation assessment can be used as a baseline for future vegetation surveys to determine changes in cattail cover.

Azolla

In January 2019 citizens and staff observed a red plant covering a portion of the surface of Scudder Pond. This plant was believed to be new to Scudder Pond and caused public concern due to its unusual color. Due to this concern, the Whatcom County Health Department, Western Washington University's Institute for Watershed Studies, and the City of Bellingham Public Works Natural Resources Division identified the plant and posted informational signs. The plant was identified as a water fern in the genus *Azolla.* A sample sent to the King County Environmental Laboratory confirmed the sample did not contain toxins. In fact, the water fern is known to help treat pollution, protects the water with its covering, and can decrease mosquito populations.

4.2.2 Historic Comparison - Changes and Potential Trends

Aerial photographs show vegetation patterns within Scudder Pond changing dramatically in the late 1900's but remaining relatively stable from early 2000s through present (Appendix B). As described in the Introduction above, aerial photographs from 1943, 1950, and 1963 document the vegetation within the vicinity of the present-day pond as uniform and dominated by shrub or young deciduous vegetation. By the 1966 and 1976 photographs, the vegetation within Scudder Pond was more distinctive from the surrounding forest with potential emergent vegetation or unvegetated areas.

The 1988 photograph shows a substantial change. Instead of a vegetated feature, the 1988 photograph is the earliest aerial photograph that shows Scudder Pond resembling a "pond" dominated by open water. Aquatic vegetation covered slightly less than half the pond, concentrated in the center. This change coincides with change in surrounding development; the surrounding shrubs and trees had been mostly cleared and replaced by residential development, resulting in conditions similar to present day. By the 1997 photograph, pond

vegetation had shifted with aquatic vegetation expanding to cover the majority of the pond and open water remaining along the pond perimeter and center.

Vegetation patterns appear to have stabilized by 2002. Photographs from 2002, 2008, 2013, and 2016 document vegetation patterns similar to present conditions (Appendix H). A comparison of vegetation visible in 2002, 2008, 2013, and 2016 aerial photographs is shown in Table 3. The average vegetative cover within this time period (2002-2016) is 1.97 acres (72% of the 2.7-acre mapped GIS Scudder Pond feature). Some of the variation may be due to the time of year when the photographs were taken and the corresponding seasonal vegetative growth. The recent stabilized condition (2002-2016) includes a narrow perimeter of shrubs and forest surrounding a ponded area dominated by aquatic vegetation with six open water areas. The six open water areas are visible in all photographs and are delineated in Figure 3 (Appendix A).

Table 3. Vegetation and Open Water Coverage (Appendix H)

Date	Open Water	Vegetation
2002	0.83 acre (31% of Pond)	1.90 acres (69% of Pond)
2008	0.66 acre (24% of Pond)	2.07 acres (76% of Pond)
2013	0.85 acre (31% of Pond)	1.89 acres (69% of Pond)
2016	0.70 acre (26% of Pond)	2.03 acres (74% of Pond)
AVERAGE	0.76 acre (28% of Pond)	1.97 acres (72% of Pond)

5.0 WILDLIFE ASSESSMENT

The survey included a wildlife assessment as described below.

5.1 Methods

The wildlife assessment included documentation of species observed during the site investigation. The investigating scientists documented species by sight and sound and noted observations of track and sign. The scientists also reviewed the site for general wildlife habitat conditions and habitat connectivity. Avian observations recorded during the site visit on April 30, 2018 were augmented by interviewing North Cascades Audubon Society (NCAS) members.

In addition to the site investigation, scientists reviewed existing government databases for documentation of state Priority species or federal Threatened, Endangered, or Candidate species protected under the Endangered Species Act (ESA). Data sources included the Washington State Department of Fish and Wildlife (WDFW) SalmonScape interactive map, WDFW Priority Habitats and Species (PHS) interactive map, the WDNR NHP Data, WDNR NHP Wetlands of High Conservation Value interactive map, and Bellingham's Habitat Restoration Technical Assessment.

5.2 Results

Analiese Burns, City of Bellingham Habitat and Restoration Manager and Professional Wetland Scientist (PWS) and Sara Brooke Benjamin, City of Bellingham Environmental Coordinator, conducted a site visit on April 30, 2018 to complete the wildlife assessment. They also reviewed available documentation as described above to supplement and confirm their observations. All results are described below.

5.2.1 Habitat Types and Connectivity

Scudder Pond is managed by the City of Bellingham as a natural area within Whatcom Falls Park. The Pond and surrounding area contain high quality habitat with a variety of habitat types including open water, vegetated wetland, and upland forest. These habitat types have relatively simple interspersion on the Pond exterior, but high interspersion of open water, aquatic bed, and emergent vegetation communities in the interior of the Pond. Scudder Pond also has permanent ponding, relatively stable water levels, some shoreline vegetation, and lacks motorized watercraft, thereby increasing its habitat suitability. Scientists documented the following habitat features within Scudder Pond and its surrounding upland buffer: (1) downed wood more than six inches in diameter in the emergent and forested areas and (2) snags in the forested area.

These Scudder Pond habitat types are within and part of a larger high-quality habitat corridor consisting of Lake Whatcom and lake fringe wetland surrounding Lake Whatcom Basin 0 to the east and Whatcom Creek and upland forest in Whatcom Falls Park to the west (Figure 6, Appendix A). This corridor is mapped as a Biodiversity Corridor by WDFW's PHS program (WDFW, 2020b) and is associated with Forest Block 60 in the City's Habitat Restoration Technical Assessment (ESA et al., 2015). Forest Block 60's high habitat quality is due in large part to its relatively large size, connectivity, and diversity. As a result, the corridor provides excellent wildlife dispersal, nesting, and roosting habitat and its many wetlands support baseflow and moderate peak flows in downstream Whatcom Creek.

Although Scudder Pond contains a variety of habitat types, has high habitat interspersion, and is part of a high-quality habitat corridor with diverse habitat types; the review area is within an urban setting that limits its overall suitability for many species. Scudder Pond is in close proximity to roads, high intensity residential development, and trails. Habitat connectivity between Scudder Pond and other habitats are interrupted by heavily used public trails. Invasive plant species are also present along edges. Wildlife species that are expected to occupy these areas include those that can tolerate urban environments and disrupted migratory corridors and which are associated with mixed forest, riparian, pond and wetland habitats, such as: beaver (*Castor canadensis*), deer (*Odocoileus hemionus columbianus*), coyote (*Canis latrans*), raptors, passerines, water birds and small mammals.

5.2.2 Federal ESA and State Priority Species

The investigating scientists did not observe any federal Threatened, Endangered, or Candidate species within the review area. Nor did they observe any state Priority plant or wildlife species

or associated habitats within the review area. However, observations were limited to one site visit and scientists observed indicators that the area has use by the following Priority species: cutthroat trout, kokanee, Great Blue Heron (*Ardea herodias*), Bufflehead (*Bucephala albeola*), Wood Duck (*Aix sponsa*), and Pileated Woodpecker (*Dryocopus pileatus*). See Birds and Fish, below, for more information.

The WDFW PHS Web Interactive Map (WDFW, 2020b) maps Scudder Pond as an emergent wetland within and adjacent to larger wetland polygons associated with Lake Whatcom Basin 0 and a larger Biodiversity Corridor and Area polygon (Figure 6, Appendix A). No Priority species are mapped within Scudder Pond, but mapped Priority species within Lake Whatcom Basin 0 are: cutthroat trout, resident coastal cutthroat trout and kokanee salmon. As described under Fish, below, WDFW does not identify any fish passage barriers between Scudder Pond and Basin 0. Cutthroat trout, resident coastal cutthroat trout and kokanee salmon are not state or federal Endangered, Threatened, or Candidate species but are state Priority species (WDFW, 2020b).

The WDNR NHP does not map any rare species or species of high conservation value within the vicinity of Scudder Pond (WNHP, 2020; Figure 7, Attachment A). The WDNR interactive map also does not identify any Wetlands of High Conservation Value within the vicinity of Scudder Pond.

5.2.3 Mammals

The investigating scientists did not observe individual mammals during their site visit. However, in the emergent vegetation community they observed branches cut by beavers in past seasons. They did not observe any recent beaver cuttings. Since 2014, the Bellingham Parks and Recreation Department observed flooding over the trail on the east side of Scudder Pond. The flooding was believed to be due to increased beaver activity and associated water impoundment. After repeated trail flooding, the Parks and Recreation staff installed beaver cages on four primary culverts near the center of the Pond. No additional beaver management measures have been employed at Scudder Pond since 2015 and old deceivers/fences are not currently functional.

5.2.4 Birds

The investigating scientists documented avian species observed during the April 30, 2018 site visit. The scientists documented a total of 18 avian species listed in (Table 4).

Table 4. Bird List – April 30, 2018 Site Visit

Common Name	Scientific Name	State Priority Species
Bewick's Wren	*Thryomanes bewickii*	
Black-capped Chickadee	*Peocile articapillus*	
Brown Creeper	*Certhia americana*	
Bushtit	*Psaltriparus minimus*	
Canada Goose	*Branta canadensis*	
Cowbird	*Molothrus ater*	
Downy Woodpecker	*Dryobates pubescens*	
Great Blue Heron	*Ardea herodias*	X
Mallard	*Anas platyrhynchos*	
Northern Flicker	*Colaptes auratus*	
Orange-crowned Warbler	*Leiothlypis celata*	
Pine Siskin	*Spinus pinus*	
Red-tailed Hawk	*Buteo jamaicensis*	
Red-winged Blackbird	*Agelaius phoeniceus*	
Rufous Hummingbird	*Selasphorus rufus*	
Song Sparrow	*Melospiza melodia*	
Spotted Towhee	*Pipilo maculatus*	
Steller's Jay	*Cyanocitta stelleri*	

Although the NCAS does not formally maintain a species list for Scudder Pond, a comprehensive list of avian species observed at Scudder Pond in recent years (since 2016) is included in Appendix G courtesy of NCAS members Doug Brown and Joe Meche.

One of the two NCAS interpretive signs posted at the site describes Scudder Pond as a designated Important Bird Area (IBA) by the USFWS and the National Audubon Society. However, the current National Audubon Society's IBA interactive web map does not include Scudder Pond (National Audubon Society, 2020).

5.2.5 Amphibians

No amphibians or amphibian egg masses were observed during the site visit; however, the scientists did not conduct a comprehensive survey. Scudder Pond contains stable water with low to no flow that exceeds six inches in depth in areas vegetated with rigid vegetation. Therefore, the pond contains habitat suitable for amphibian breeding. Volunteers for the Whatcom Amphibian Monitoring Program completed two amphibian egg mass surveys of Scudder Pond in 2013 (Whatcom Amphibian Monitoring Program, 2019). The March 17, 2014 survey encompassed less than 50% of the pond and resulted in 12 observed egg masses of

Northern Red-legged Frog (*Rana aurora*). The April 14, 2013 survey resulted in 26 observed egg masses for Northwestern Salamander (*Ambystoma gracile*). In addition to these observations, the non-native American Bullfrog (*Lithobates catesbeianus*) is also known to inhabit the pond (Jackson, pers. comm., 2018).

5.2.6 Fish

The WDFW SalmonScape mapping system (WDFW, 2020a) does not document the presence of fish within Scudder Pond; however, it maps the presence of kokanee salmon within the adjacent Lake Whatcom Basin 0. In addition, the WDFW PHS database documents cutthroat trout within Basin 0. State Fishing & Shellfishing web guides indicate Lake Whatcom also contains brown bullhead, largemouth bass, peamouth, pumpkinseed sunfish, smallmouth bass, and yellow perch (WDFW, 2019b).

No fish species were observed during the site visit. However, scientists did not conduct formal sampling. Site conditions and access are suitable for a variety of native and non-native freshwater fish and there is no known total fish passage barrier between documented fish presence in Basin 0 and Scudder Pond. The WDFW does not identify any fish passage barriers between Scudder Pond and Basin 0 (WDFW, 2020a). During their site visits, the investigating scientists observed several of the culverts connecting Basin 0 with Scudder Pond as partially or fully submerged. The beaver screen surrounding the culverts contained openings sufficiently large to allow access by fish species, including cutthroat trout and kokanee. Scudder Pond is not expected to contain anadromous fish species due to a documented total natural fish passage barrier (WDFW ID No. 892759) in Whatcom Creek downstream of the review area. Therefore, fish occupying Lake Whatcom including cutthroat trout, kokanee salmon, brown bullhead, largemouth bass, peamouth, pumpkinseed sunfish, smallmouth bass, yellow perch, are expected to have access to and presence in Scudder Pond (WDFW, 2019b and WDFW, 2020a).

5.2.7 Shoreline Master Program

The pond is within the 200-foot buffer and Shoreline jurisdiction for Lake Whatcom Basin 0. Basin 0 is designated under the City of Bellingham Shoreline Master Program as part of Lake Whatcom Reach 1, a Natural shoreline environment (Bellingham Municipal Code Title 22).

6.0 MANAGEMENT RECOMMENDATIONS

The City of Bellingham manages Scudder Pond as a natural open space in keeping with Armitage's intention that the area be "protected as a wildlife preserve." Based on the historical review and site assessment results described in this report, the following are management recommendations to protect and improve habitat conditions:

1. Coordinate with NCAS to develop Scudder Pond management goals and objectives (e.g. maximizing habitat features for State Priority bird species or maximizing species richness).

2. Continue to eradicate yellow flag iris, reed canarygrass, and bitter nightshade following management guidance from the Whatcom County Noxious Weed Control Program.
3. Replace noxious weeds with native species. Native plants should be selected to increase species richness, provide amphibian breeding habitat, provide wildlife foraging opportunities, and/or provide wildlife nesting opportunities.
4. Coordinate with the Lakeview Condominium management to eliminate yard waste dumping, eradicate English ivy and English holly on northern perimeter of the Scudder Pond forested buffer, and encourage expansion of a native forested buffer to the north.
5. Maintain beaver fencing in working condition to prevent fish impacts from rusted protruding metal wire.
6. Replace fading, stained, and outdated interpretive signs with new prints.
7. Maintain the existing dog waste station.
8. Compare aerial photography at 5-year intervals (2024, 2029, etc.) to determine any reduction in habitat interspersion.
9. Contract a baseline bathymetric survey along same two transects and repeat at 5-year intervals (2025, 2030, etc.) to determine trends in pond depth.
10. Repeat high-resolution imagery analysis as additional imagery becomes available to identify changes in open water and vegetation coverage.
11. Continue to retrofit stormwater infrastructure to include enhanced treatment within the Scudder Pond catchment area.
12. Consider outreach efforts to encourage homeowners to reduce non-point source pollution within the Scudder Pond catchment area.

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Appendix A: Figures

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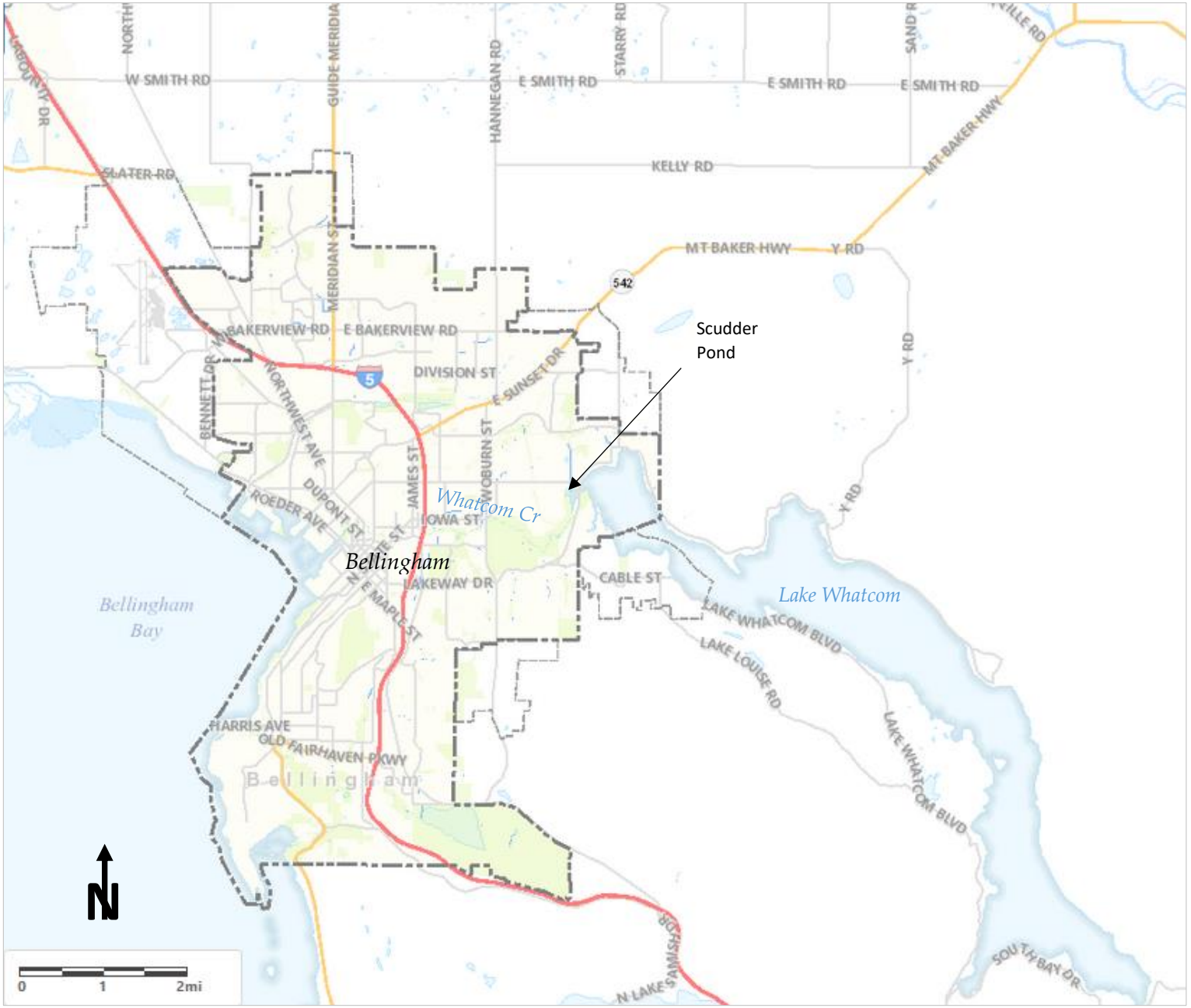


Figure 1. Vicinity Map

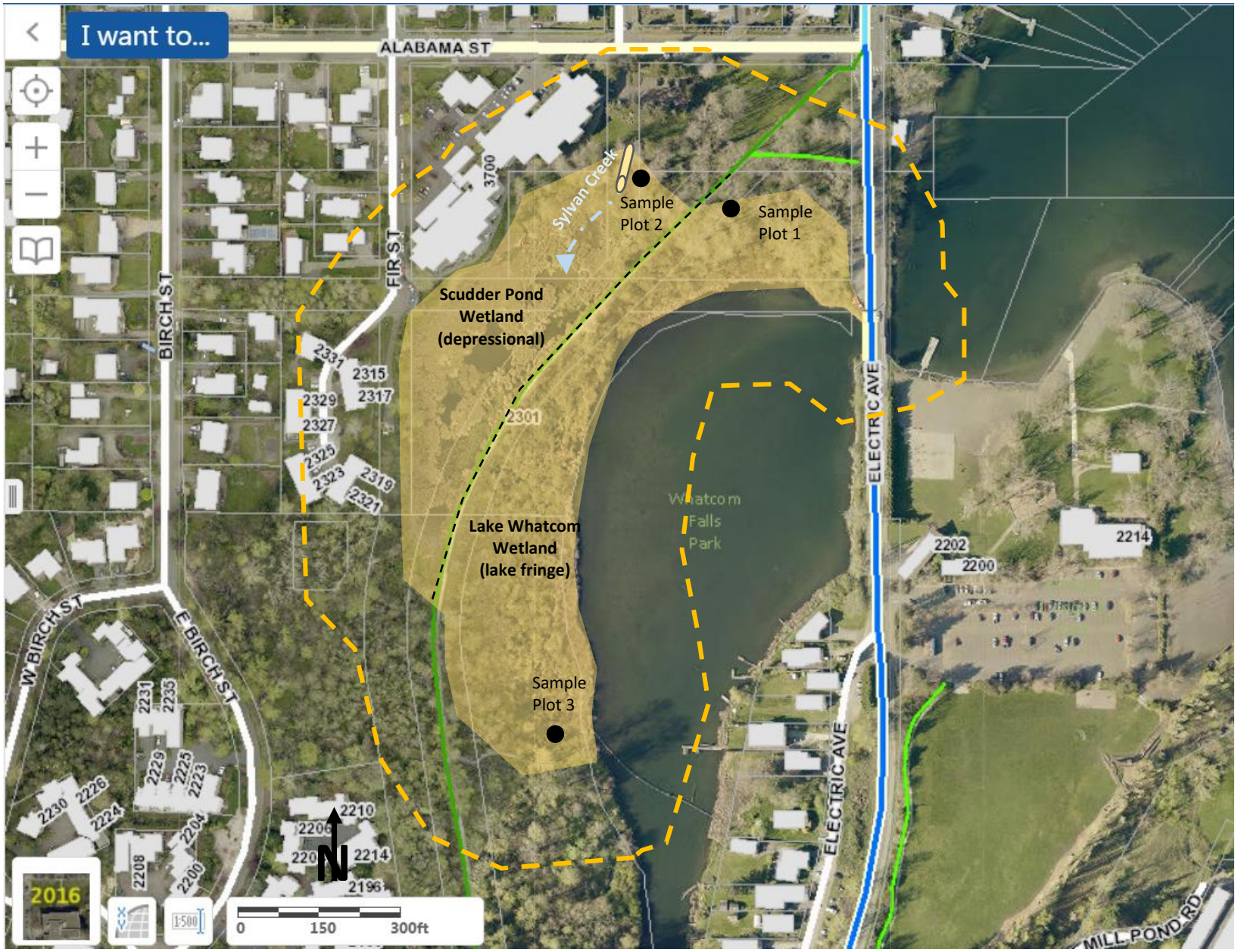


Figure 2. Scudder Pond Wetland Boundary (2016 photo)

LEGEND

Depressional wetland unit break from lake fringe wetland

Wetland (approx. boundary)

Trail

150-foot boundary

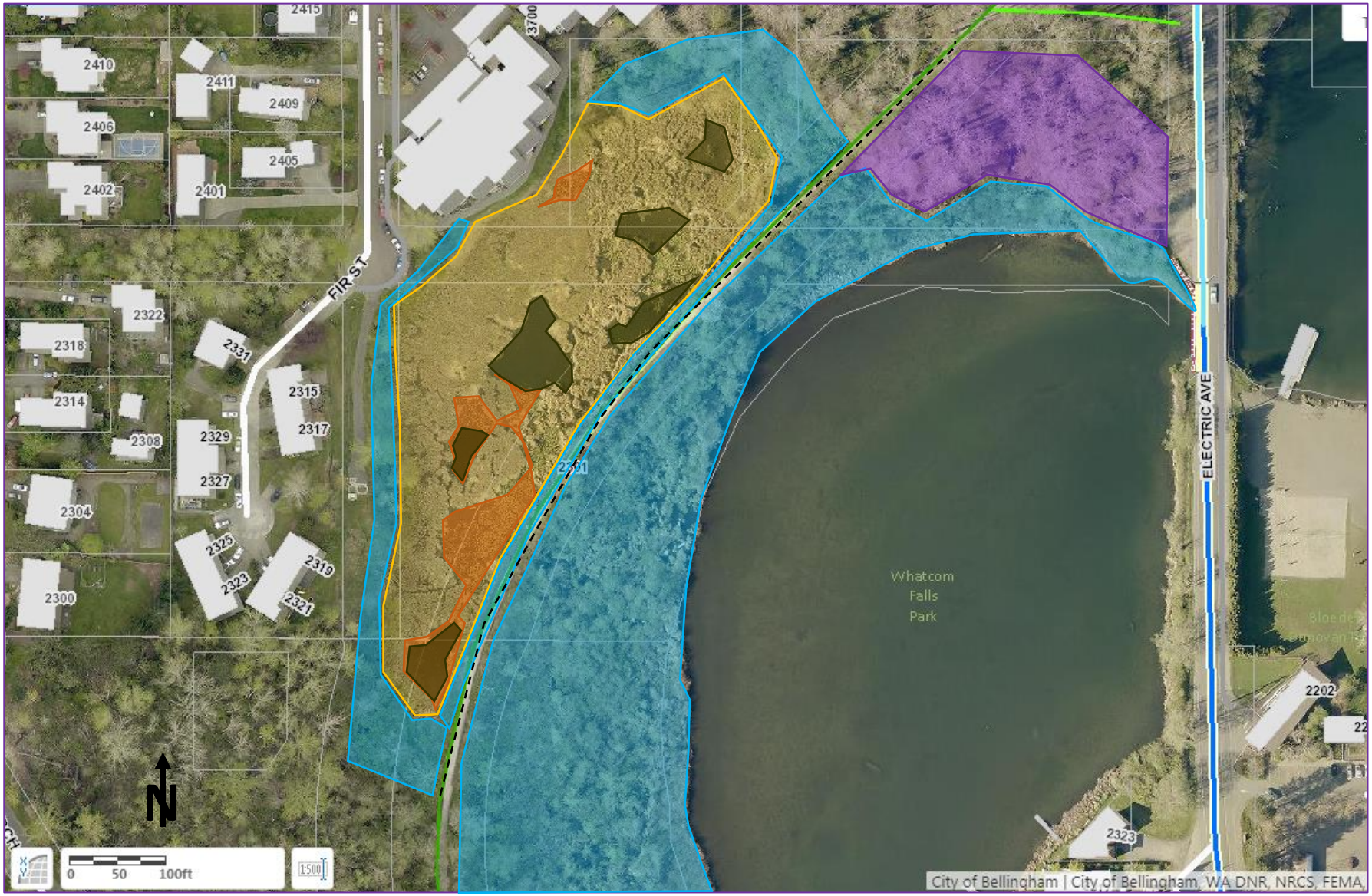


Figure 3. Scudder Pond Wetland Rating, Vegetation (2016 photo)

LEGEND

Unit break between depressional wetland and lake fringe wetland

Unconsolidated bottom

Aquatic bed

Emergent

Scrub-shrub

Forest

Trail

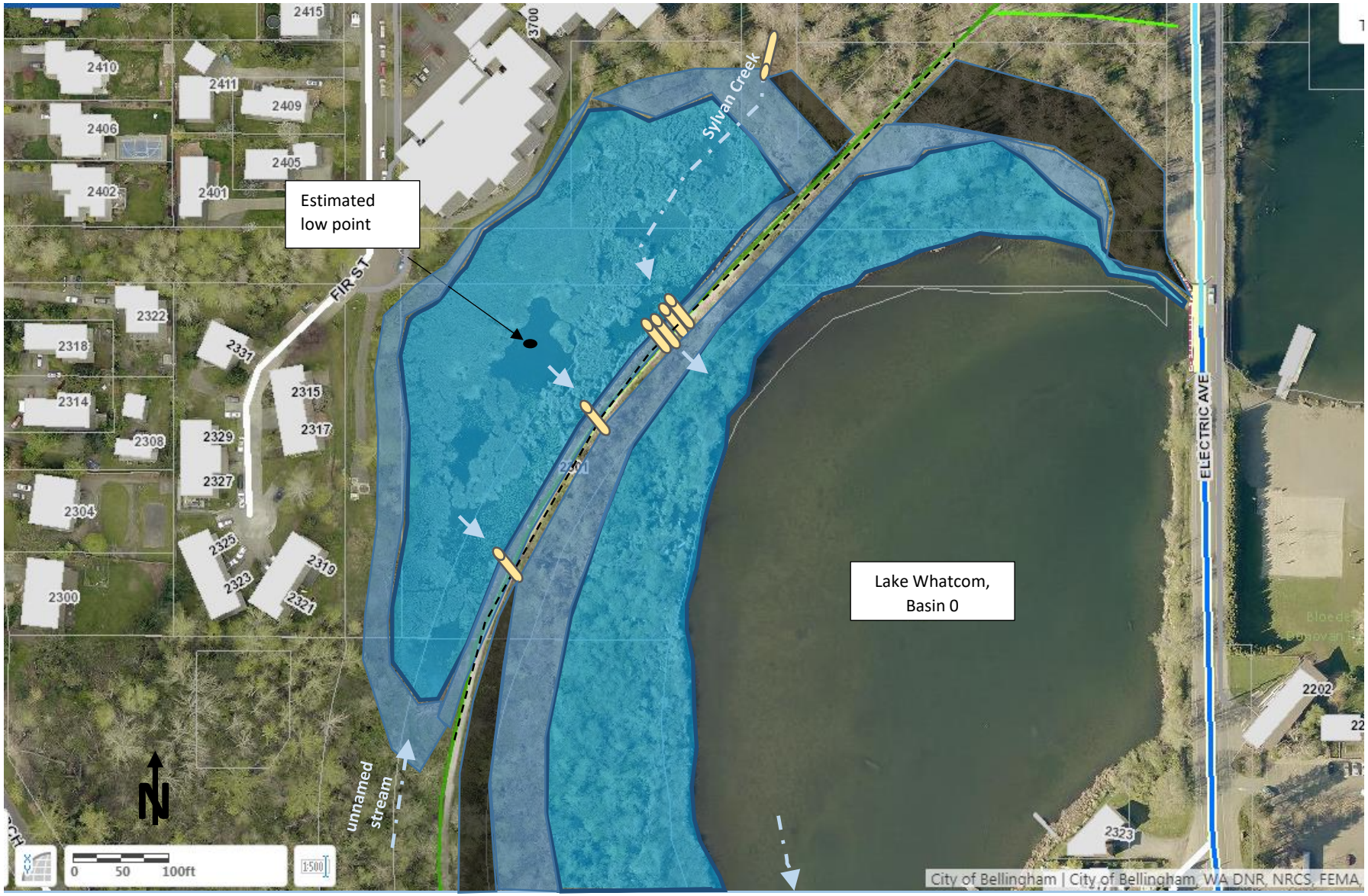


Figure 4. Scudder Pond Wetland Rating, Hydroperiods (2016 photo)

LEGEND

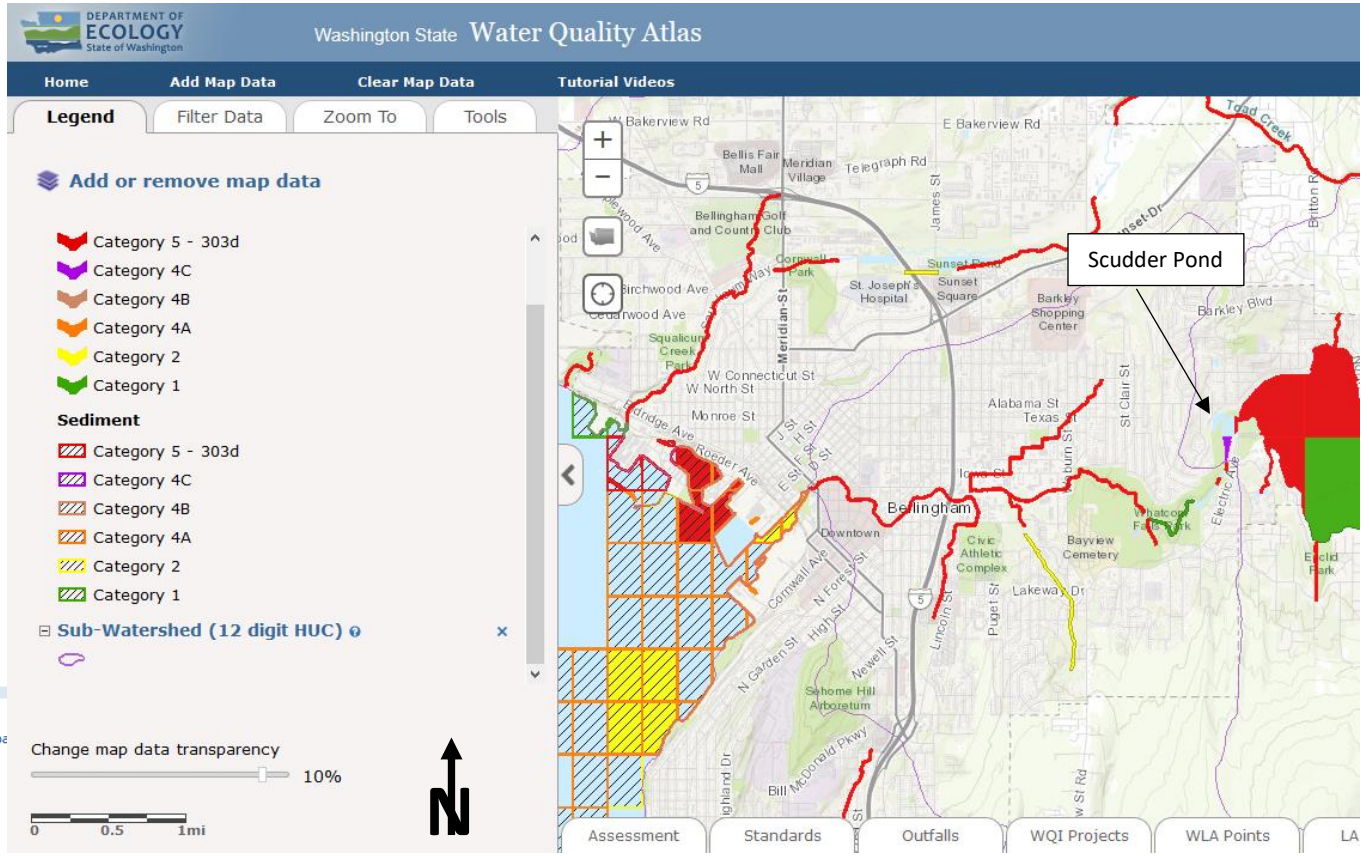
Permanently flooded

Seasonally flooded

Seasonally saturated

Culvert

Flow path/stream



DEPARTMENT OF ECOLOGY State of Washington **Whatcom County**

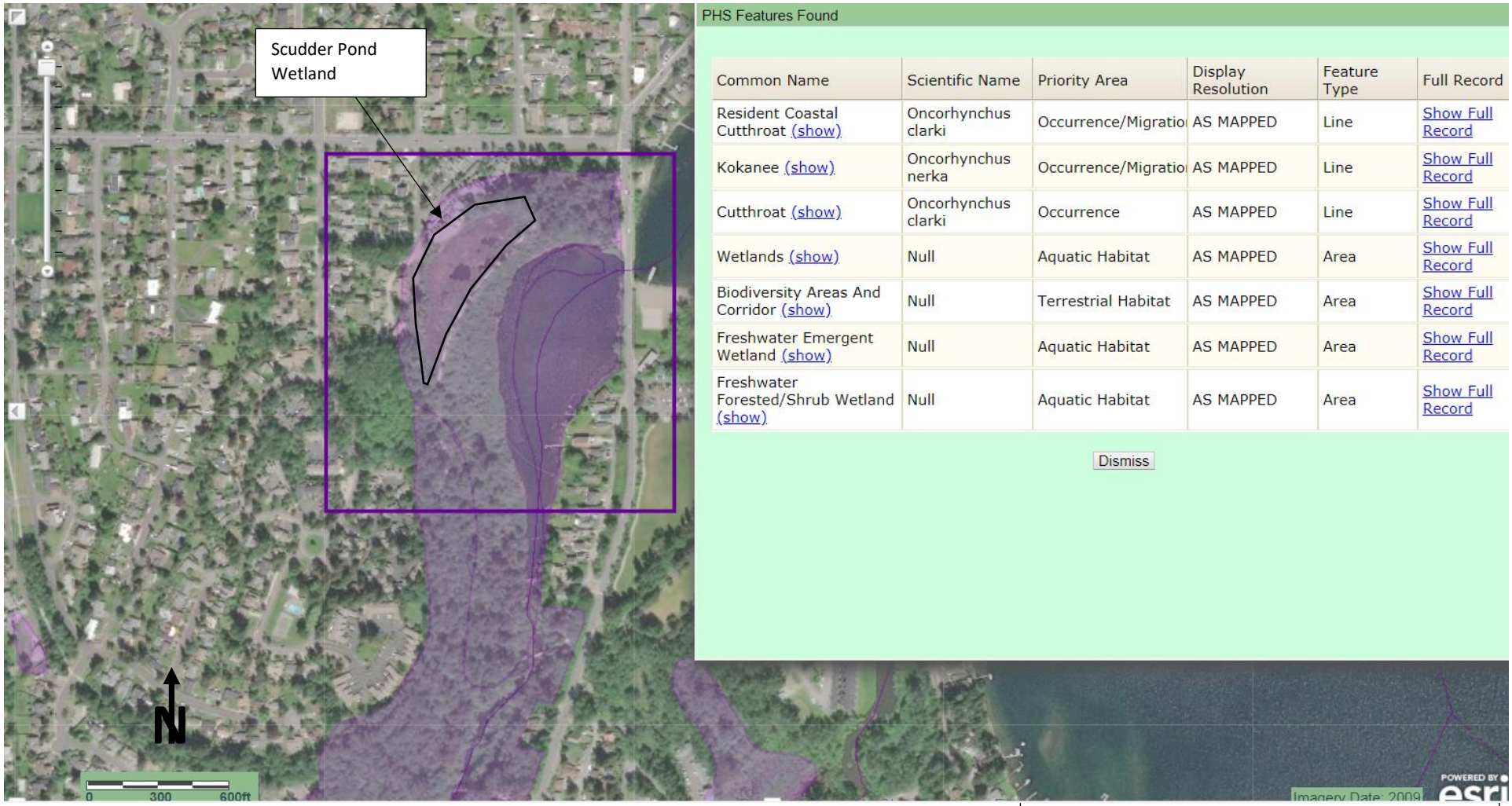
Ecology homepage > Water & Shorelines > Water improvement > Total Maximum Daily Loa

Water quality improvement projects

Select the waterbody or pollutant name to find more information about the specific project.

Waterbody Name(s)	Pollutant(s)	Status	Project Lead(s)
Bellingham Bay	Toxics	EPA approved and Has an implementation plan	Steve Hood 360-255-4396
Johnson Creek	Dissolved Oxygen Fecal Coliform	EPA approved and Has an implementation plan	Steve Hood 360-255-4396
Lake Whatcom	Multi-parameter	EPA approved and Has an implementation plan	Steve Hood 360-255-4396
Nooksack River	Fecal Coliform	EPA approved and Has an implementation plan	Steve Hood 360-255-4396
Sumas River	Ammonia-N BOD Chlorine	EPA approved	Steve Hood 360-255-4396
Whatcom Creek	Fecal Coliform	In development	Steve Hood 360-255-4396
Whatcom, Squalicum and Padden Creeks	Temperature	EPA approved and Has an implementation plan	Steve Hood 360-255-4396

Figure 5. 303(d) Impaired Waters and TMDLs



PHS Features Found

Common Name	Scientific Name	Priority Area	Display Resolution	Feature Type	Full Record
Resident Coastal Cutthroat (show)	Oncorhynchus clarki	Occurrence/Migratio	AS MAPPED	Line	Show Full Record
Kokanee (show)	Oncorhynchus nerka	Occurrence/Migratio	AS MAPPED	Line	Show Full Record
Cutthroat (show)	Oncorhynchus clarki	Occurrence	AS MAPPED	Line	Show Full Record
Wetlands (show)	Null	Aquatic Habitat	AS MAPPED	Area	Show Full Record
Biodiversity Areas And Corridor (show)	Null	Terrestrial Habitat	AS MAPPED	Area	Show Full Record
Freshwater Emergent Wetland (show)	Null	Aquatic Habitat	AS MAPPED	Area	Show Full Record
Freshwater Forested/Shrub Wetland (show)	Null	Aquatic Habitat	AS MAPPED	Area	Show Full Record

Dismiss

LEGEND
PHS Polygon

Figure 6. WDFW Priority Species and Habitats

Web-based, interactive map for citizens, landowners, cities and counties, tribal governments, other agencies, developers, conservation groups, and interested parties to find basic information about the known location of Priority Habitats and Species (PHS) in Washington State.

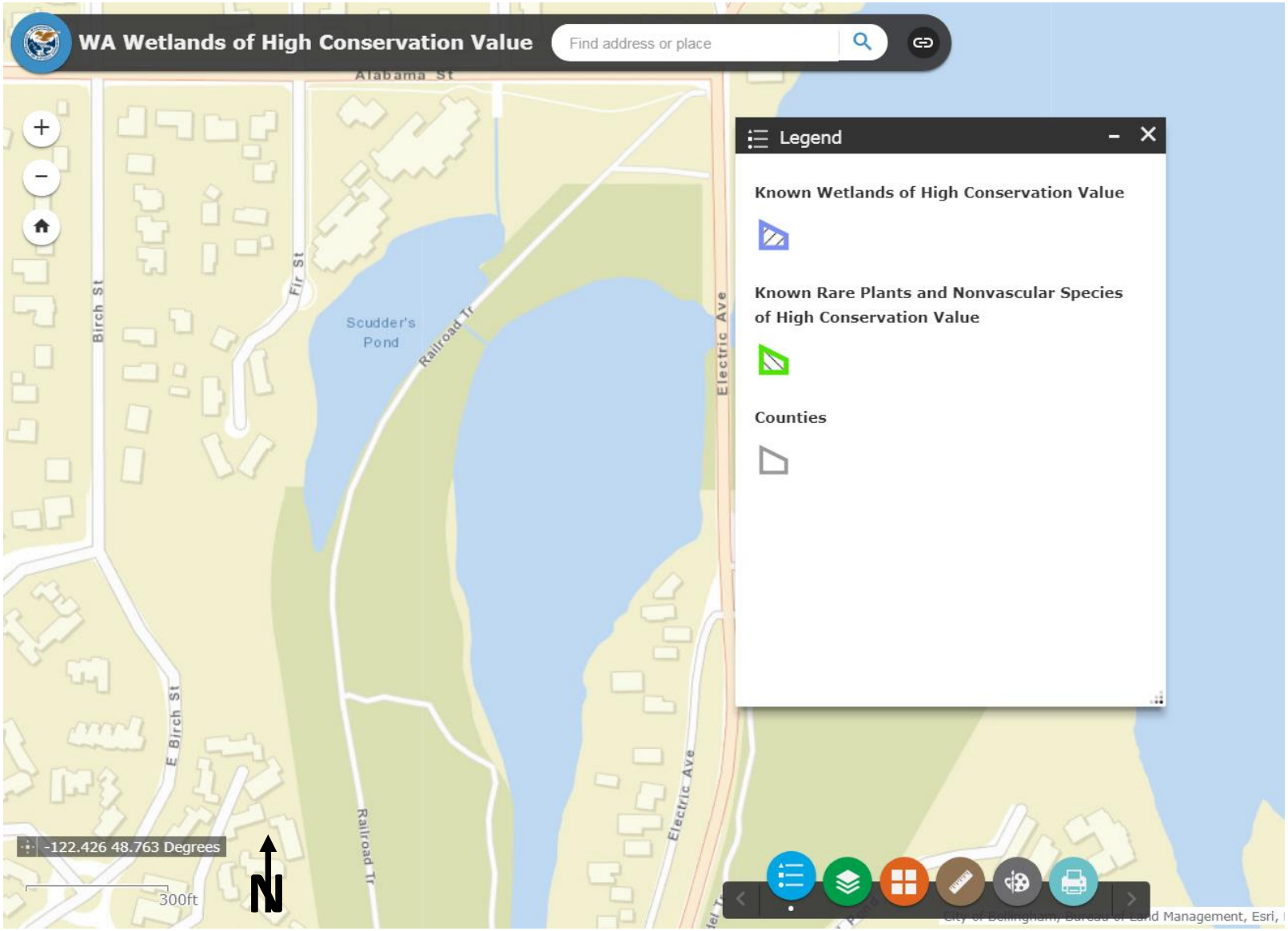


Figure 7. WDNR Wetlands of High Conservation Value

This map viewer depicts the known locations of wetland and riparian plant communities, rare plants, and rare nonvascular species tracked by the Washington Natural Heritage Program (WNHP). None are mapped within the vicinity of Scudder Pond.

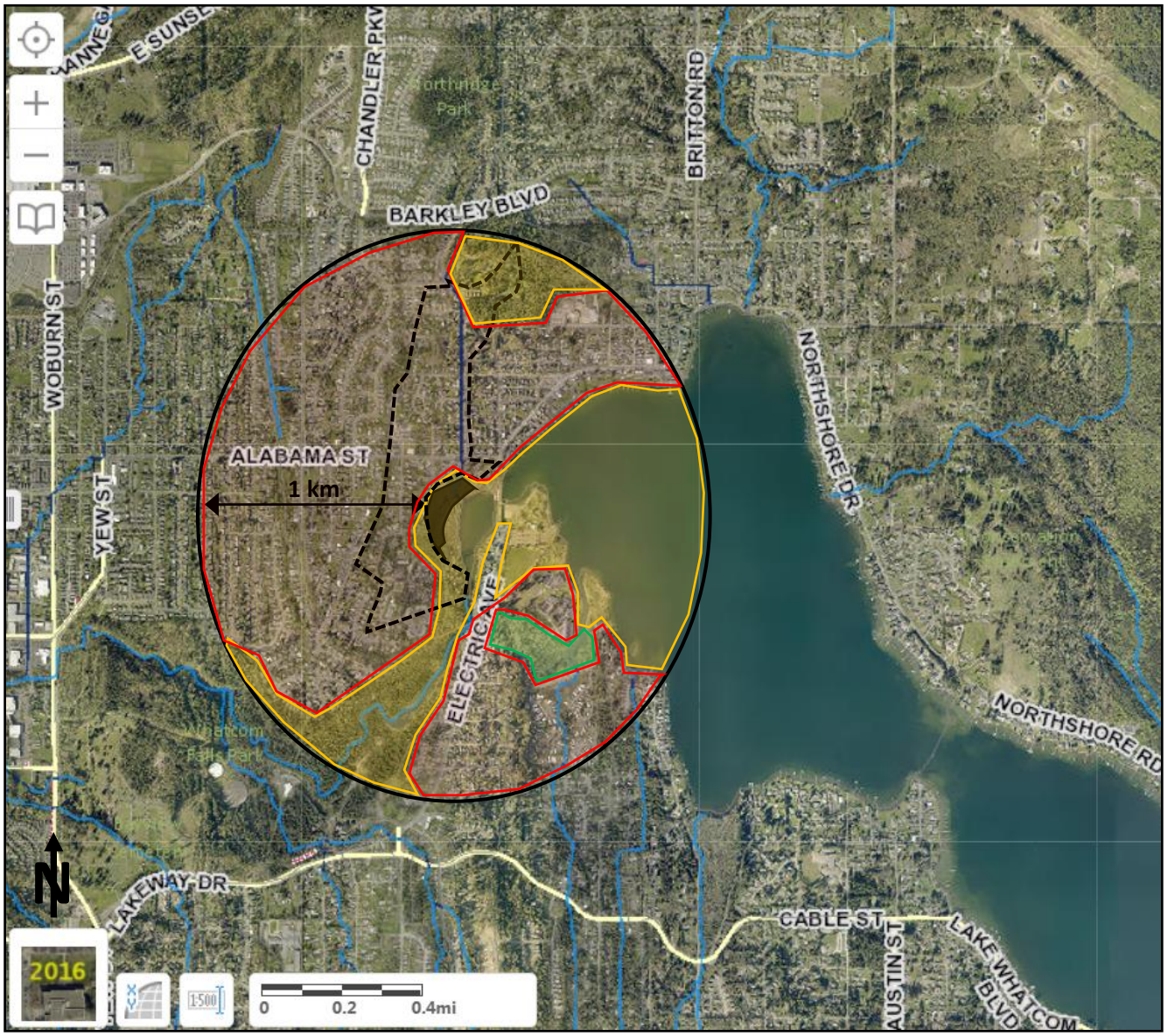


Figure 8. Surrounding Land Use (2016 photo)

LEGEND

Scudder Pond		Stream	
Relatively Undisturbed		Contributing Basin (Scudder Pond Wetland)	
Moderate/Low Intensity			
High Intensity			

Definitions from Ecology Publication No. 14-06-029

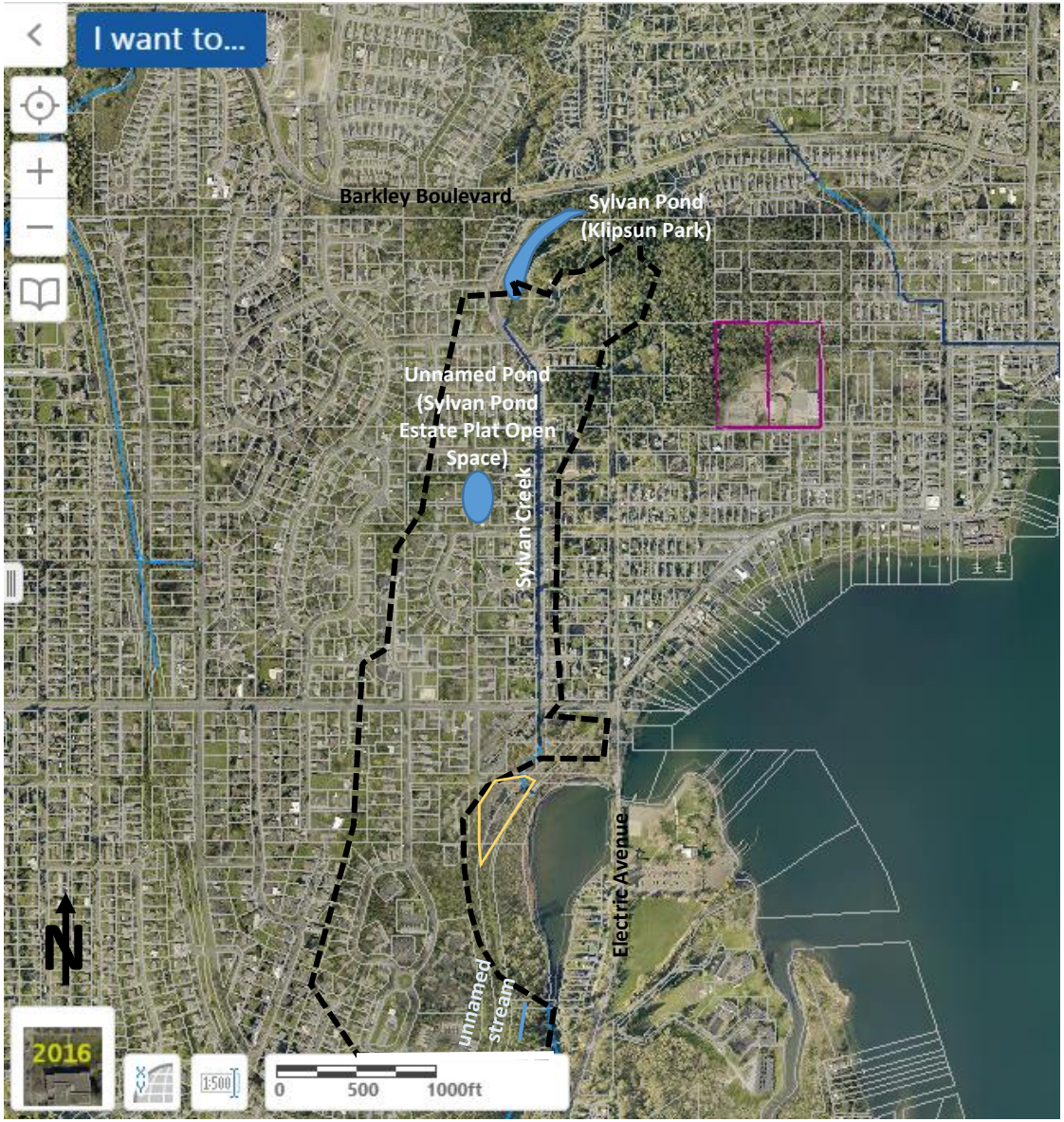


Figure 9. Catchment Area (2016 photo)

LEGEND

Pond

Scudder Pond

Stream

Contributing Basin

(Scudder Pond Wetland)

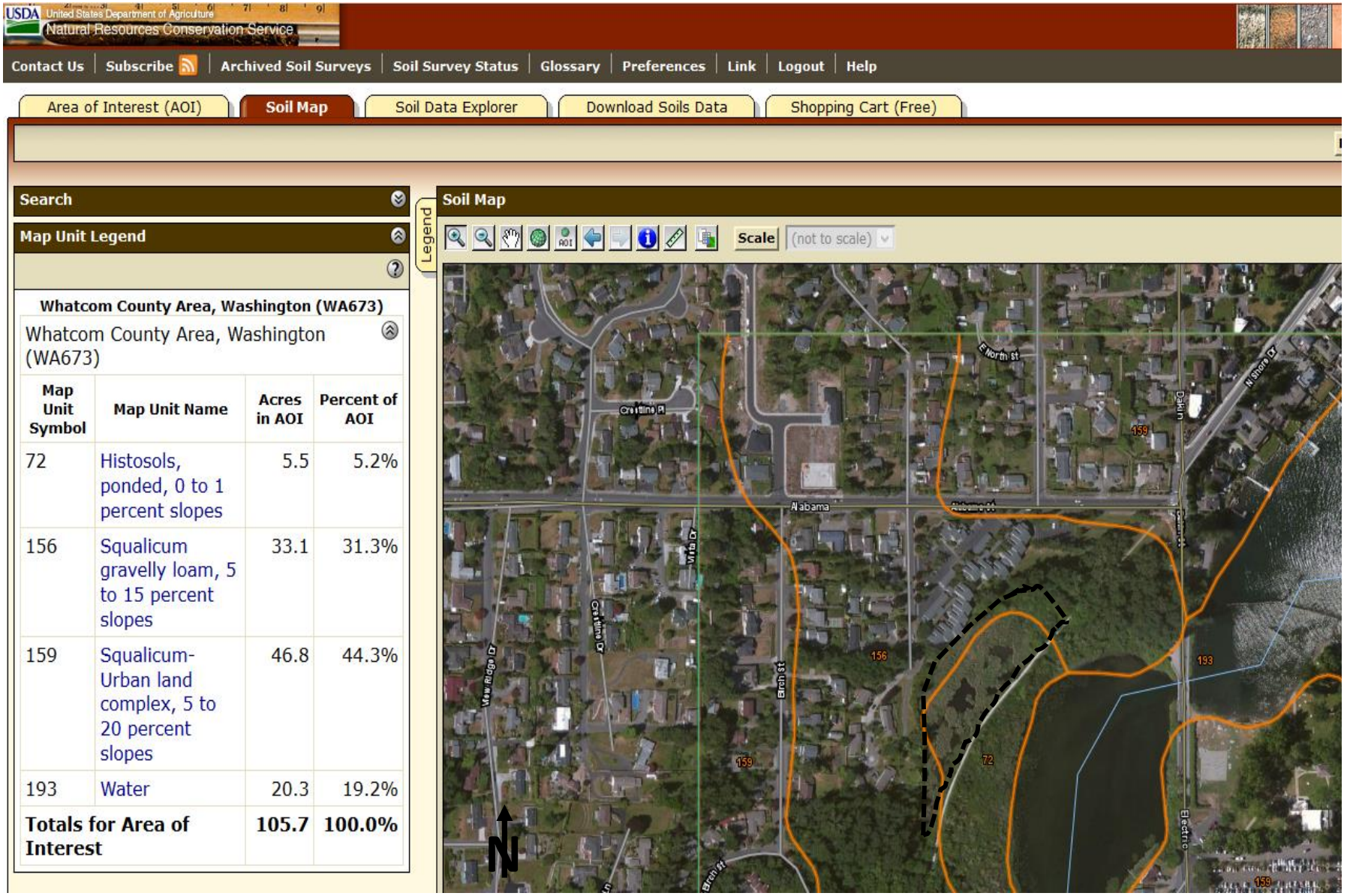


Figure 10. USDA NRCS Web Soil Survey

LEGEND

Soil Unit Boundary

Scudder Pond

Appendix B: Cadastral Surveys and Aerial Photography

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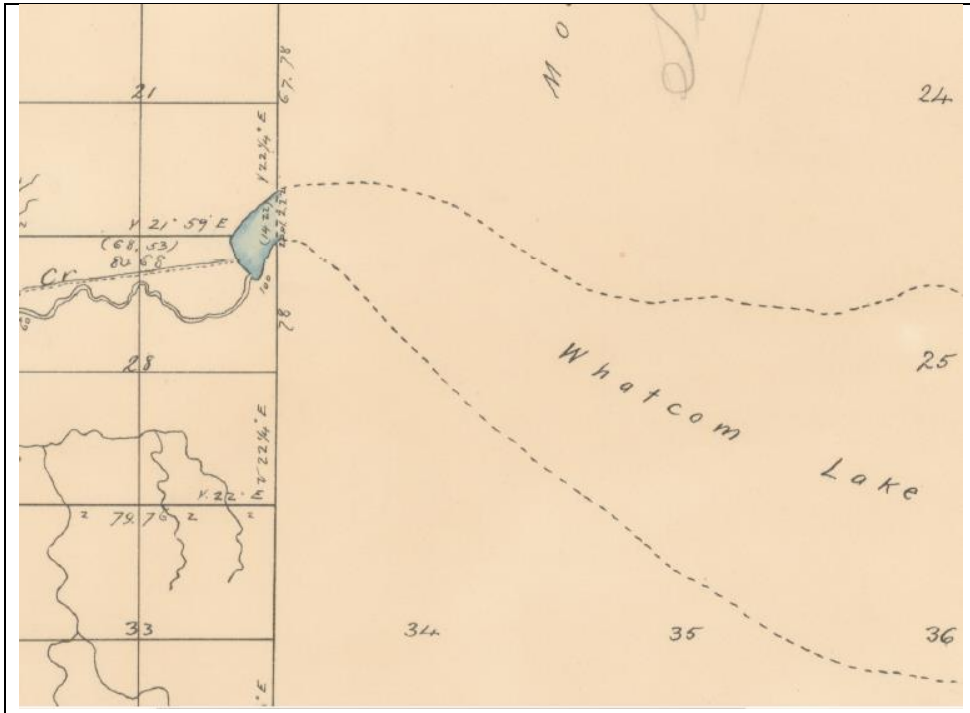
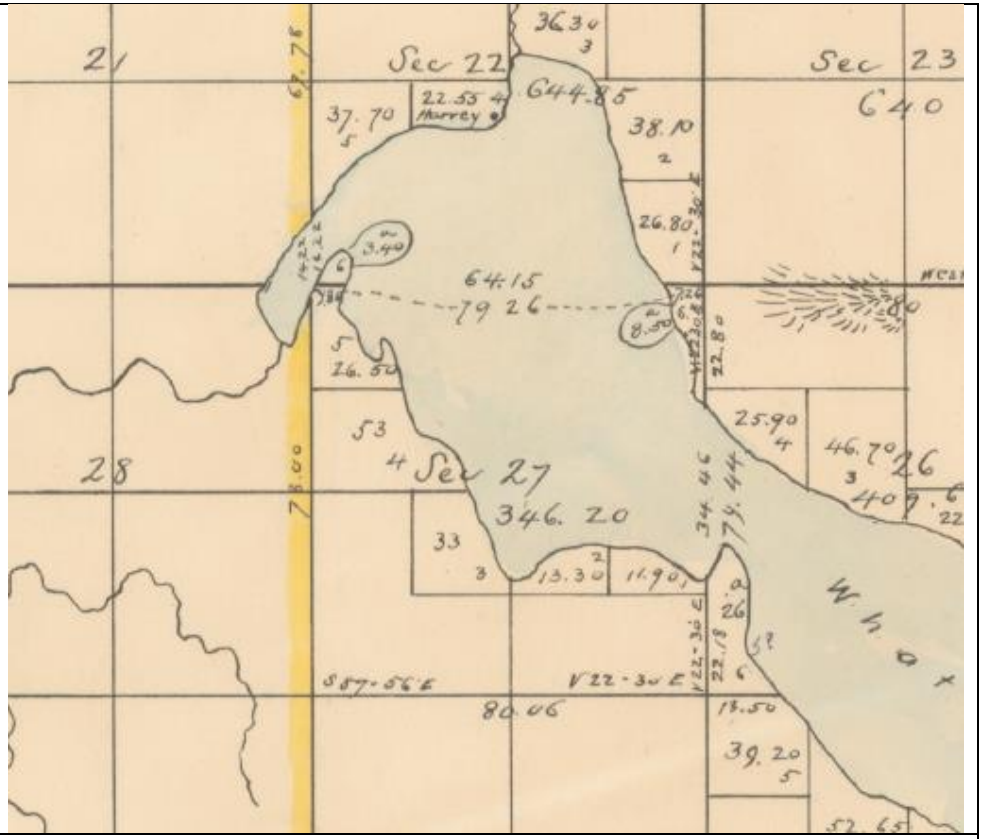


Cadastral Survey 1860

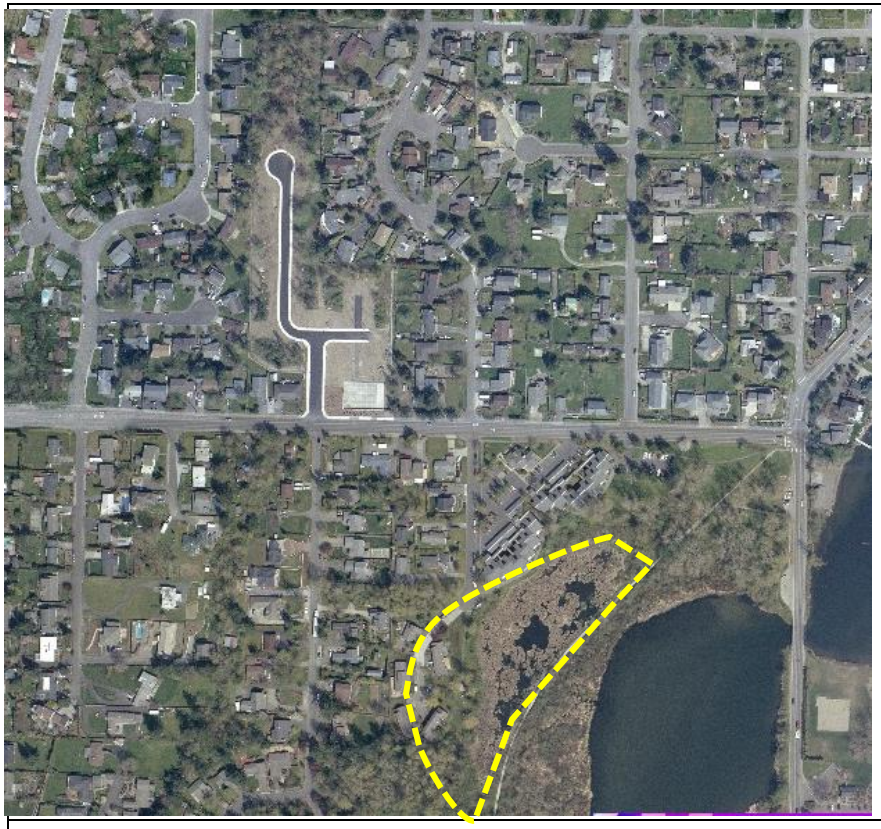
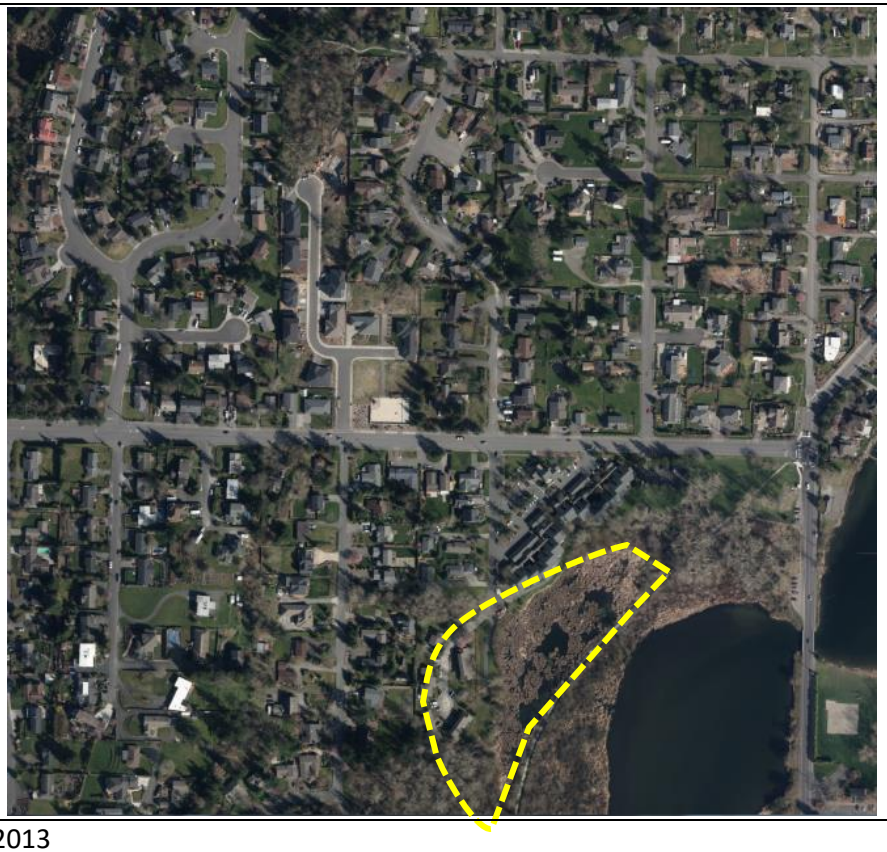


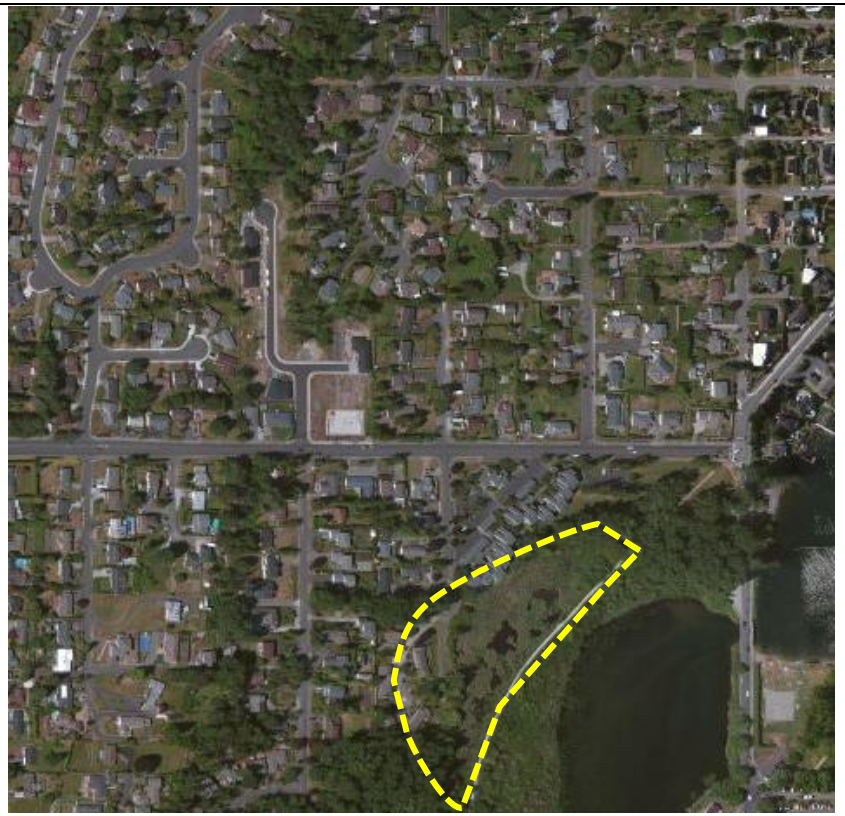
Cadastral Survey 1874

1950

1963

	
1988	1997

	
2008	2013

	
2016	2019 (Bing.com)

Appendix C: North Cascades Audubon Society

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History

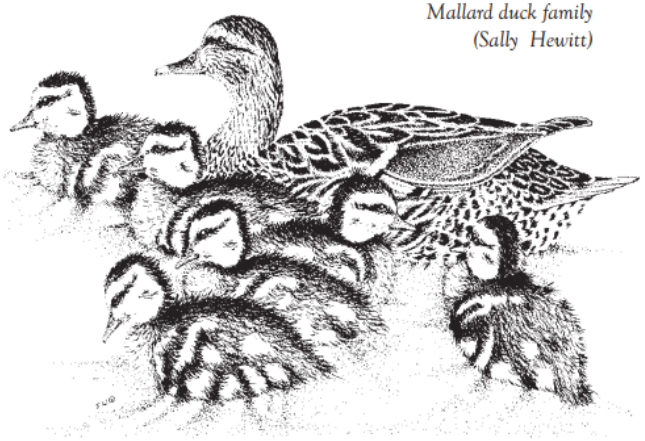
In honor of her father, O.C. Scudder, Vita Armitage deeded the Scudder Pond property to North Cascades Audubon Society (NCAS) in 1987. She requested these 2.8 acres be "protected as a wildlife preserve."

The pond is believed to have formed sometime before 1975, probably due to a plugged culvert located under the abandoned railroad causeway. This caused the pond to be separated from the Lake Whatcom lagoon.

Here, in the heart of Bellingham, this marsh called Scudder Pond is home to a diversity of migratory and breeding birds, mammals and other wildlife. This wetland earned a nomination as a National Audubon Important Bird Area and is a stop on the Washington Birding Trail.

Please show your respect and appreciation for Scudder Pond Nature Preserve and its wildlife by:

- ✓ Keeping your dog on a leash and out of the pond
- ✓ Observing wildlife quietly
- ✓ Not fishing



Mallard duck family (Sally Hewitt)

Stewardship Program

An important element of the management of Scudder Pond is its stewardship program. North Cascades Audubon has initiated a volunteer effort in which stewards visit the pond to record wildlife activity, human use & impact, and general changes. Data collected enables NCAS to determine appropriate management of the area.

We invite you to become a Scudder Pond Steward! Activities include bird box building and monitoring, bald eagle surveys, amphibian surveys, and plant inventories. We'll provide you with all the training and background information needed.

Contact Joe Meche at 738-0641 or Paul Woodcock at 380.3356.

Functions and Values

Scudder Pond and its surrounding area are designated a **Category II wetland** by the City of Bellingham. (Rating are from I to IV with I having the highest valued year-round attributes.)

Water entering Scudder Pond is a combination of surface runoff from the Alabama Hill neighborhood and the city storm drainage system. The pond is vitally important for aquifer recharge and floodwater retention in the lake basin.

Non-point water sources transport fertilizers, herbicides, pesticides, oils and other pollutants into the pond. The filtration process that takes place in the marsh is vital to improving the water quality in Whatcom Creek.

Cattails (*Typa latifolia*) and other acquatic plants including lady's thumb (*Polygonum amphibian*) and sedge (*Carex*) improve water quality by lowering pH, removing metals and large amounts of nitrogen, phosphorus and potassium. These plants also provide a natural sediment filtration system.

beaver

Wildlife Habitat

This wetland is valuable habitat for many bird speices, providing food, shelter and nesting cover. Nesting among the cattails you might find:

Marsh wrens
Mallard ducks
Virginia rails
Red-winged blackbirds
Canada geese
Wood ducks
Buffleheads
Great blue herons

Other animals also find this marsh a suitable home. Beaver and muskrat eat cattail roots. Insects and amphibians lay their eggs amoung the aquatic plants.

All of these plants and animal species are dependent upon the wetland ecosystem.

Red-winged blackbird

Join Audubon!

North Cascades Audubon Society is dedicated to the protection of our local natural environment. It is one of more than 500 chapters in the U.S. that make up the National Audubon Society.

Members benefit from national, regional and state representation on a variety of conservation issues. Additionally, the chapter fosters stewardship of local areas, including Scudder Pond; hosts informative monthly meetings; and leads birding field trips.Visit our website at www.northcascadesaudubon.org.

Yes, I would like a one year membership to North Cascades Audubon Society at the following level:

___$20 American Kestrel ___ $35 Merlin
___$50 Prairie Falcon ___ $75 Peregrine
___ $100 Gyrfalcon

Make check payable to North Cascades Audubon Society

Name _____

Address _____

City/Zip _____

Phone _____

Email _____

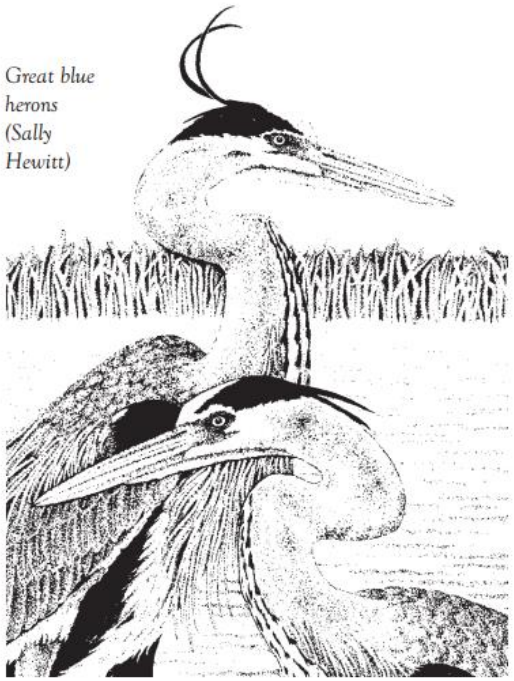
Send all payments to:

North Cascades Audubon Society,
P.O. Box 5805, Bellingham, WA 98227-5805

Scudder Pond Nature Preserve

An urban gem maintained and enhanced by volunteers from the North Cascades Audubon Society

Great blue herons (Sally Hewitt)



Quick Facts

- Managed by North Cascades Audubon Society since 1987
- Classified a Category II wetland
- Habitat for numerous bird and animal species
- A stop on the Great Washington Birding Trail

Appendix D: Bathymetric Survey

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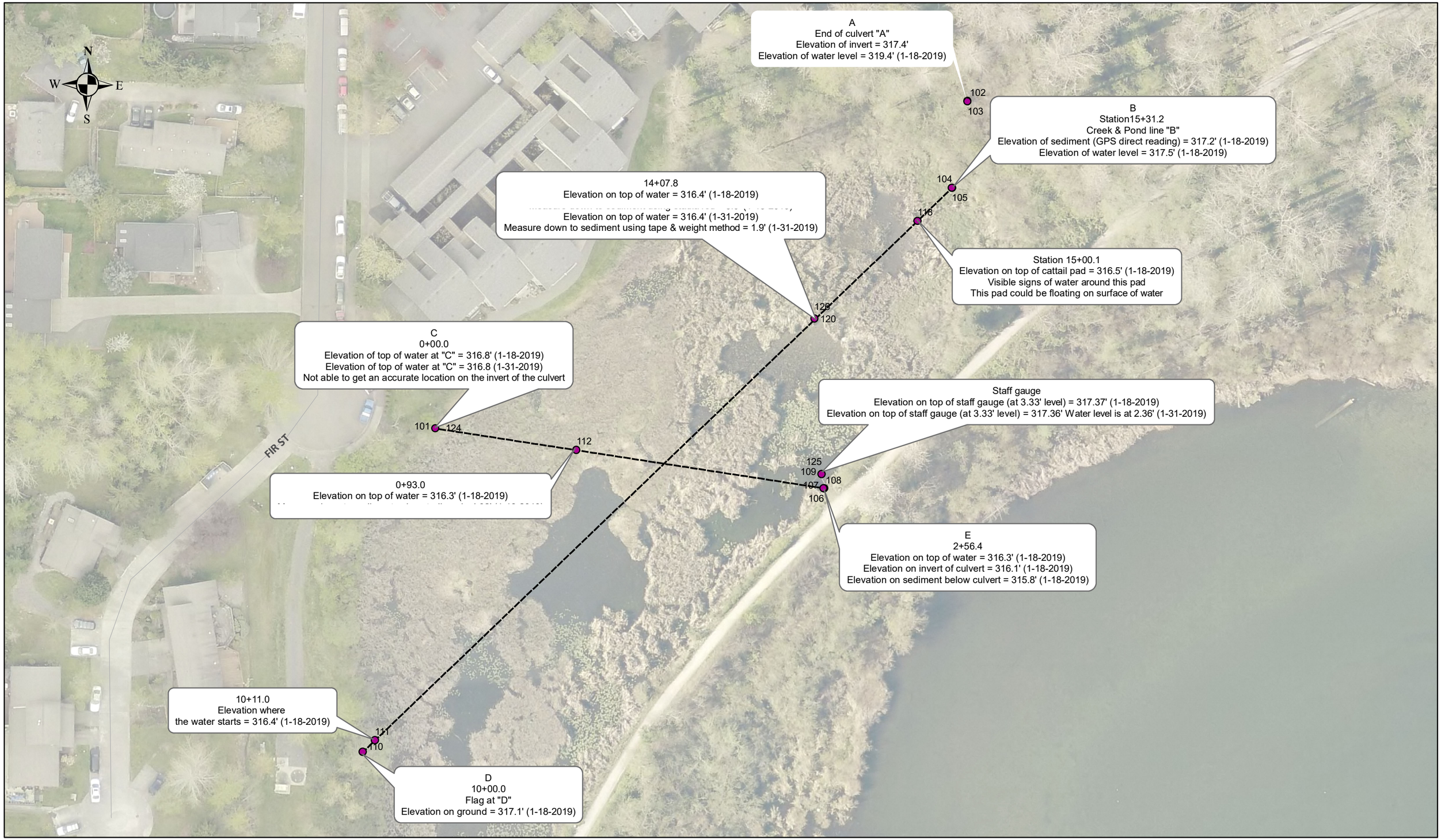
Scudder Pond Transect Elevations

Map made on 6-10-2019
Elevations shown are in NAVD88



Appendix E: Data Sheets

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WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Lake Whatcom Basin 0 Wetland (adjacent to Scudder Pond) City/County: Bellingham, Whatcom Co Sampling Date: 4/30/18

Applicant/Owner: City of Bellingham State: WA Sampling Point: 1

Investigator(s): A. Burns, S. Benjamin Section, Township, Range: S21 T38N 03E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): A Lat: 48.76166 Long: -122.42352 Datum:

Soil Map Unit Name: Unit 156 Squalicum Gr Loam 5-15% NWI classification: PFOC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** **Yes X No**
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:
Sample Plot on east side of public trail, north of open water

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30" diam)	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula papyrifera	60	X	FAC
2. Populus balsamifera	40	X	FAC
3. Alnus rubra	10		FAC
4.			
	110 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15" diam)			
1. Lonicera involucrata	20	X	FAC
2. Rosa nutkana	<5		FAC
3. Rubus spectabilis	<5		FAC
4. Ribes divericatum	<5		FAC
5.			
	35 = Total Cover		
Herb Stratum (Plot size: 5' diam)			
1. Lysichiton americanum	5	X	OBL
2. Athyrium filix-femina	<5		FAC
3. Equisetum arvense	<5		FAC
4. Lonicera involucrata	10	X	FAC
5. Rubus vitifolius	<5		FAC
6. (moss)	(20)		
7.			
8.			
9.			
10.			
11.			
	18 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 60%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
1-10	10YR 2/1	100					muck	
10-20+	10YR 5/1	93	10YR 5/6	7	C	M	lo sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- (X) Histic Epipedon (A2)
- (X) Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No x Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 3.5" BGS

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 0"

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Scudder Pond City/County: Bellingham, Whatcom Co Sampling Date: 1/2/20

Applicant/Owner: City of Bellingham State: WA Sampling Point: 2

Investigator(s): A. Burns Section, Township, Range: S21 T38N 03E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): A Lat: 48.762 Long: -122.422 Datum:

Soil Map Unit Name: Unit 156 Squalicum Gr Loam 5-15% NWI classification: PFOC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** **Yes X No**
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

Sample Plot on west side of public trail, on northern perimeter of wetland in scrub-shrub portion of wetland ~30' NE of outlet for Sylvan Cr

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30" diam)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15" diam)			
1. Cornus alba	90	X	FACW
2. Spiraea douglasii	5		FACW
3. Betula papyrifera	5		FAC
4.			
5.			
	100 = Total Cover		
Herb Stratum (Plot size: 5' diam)			
1. Athyrium cyclosorum(filix-femina)	5	X	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: 15' diam)			
1. Rubus armeniacus	<5		
2.			
	N/A = Total Cover		

% Bare Ground in Herb Stratum 99%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
1-10	10YR 2/1	100					si loam	
10-20+	10YR 2/1	83	10YR 3/1	7	C	M	si loam	
			5YR 3/4	10	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- _X_ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _X_ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- _X_ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- _X_ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- _X_ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No _x_ Depth (inches): _____

Water Table Present? Yes _X_ No _____ Depth (inches): _5" BGS_

Saturation Present? (includes capillary fringe) Yes _X_ No _____ Depth (inches): _4"_

Wetland Hydrology Present? Yes _X_ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Scudder Pond City/County: Bellingham, Whatcom Co Sampling Date: 1/2/20

Applicant/Owner: City of Bellingham State: WA Sampling Point: 3

Investigator(s): A. Burns Section, Township, Range: S21 T38N 03E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): A Lat: 48.760 Long: -122.424 Datum:

Soil Map Unit Name: Unit 156 Squalicum Gr Loam 5-15% NWI classification: PFOC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** **Yes X No**
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

Sample Plot on west side of public trail, very southern end of wetland in emergent portion of wetland near outlet of unnamed stream

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30" diam)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15" diam)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5' diam)			
1. Typha latifolia	30	X	OBL
2. Phalaris arundinacea	60	X	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 15' diam)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 99%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
1-15+	10YR 2/1	100					si loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- (X) Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Surface soil too wet to dig deeper than 15," based on SP 1 and SP 2, likely contains redox concentrations in lower in soil column and likely contains depleted subsoil. NRSC hydric soil indicators developed for wetland margins and not interior of wetlands such as SP3 location.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 1-3"

Water Table Present? Yes X No _____ Depth (inches): 0"

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix F: WDOE Wetland Rating Forms

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Wetland name or number Scudder Pond

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Scudder Pond Date of site visit: 1/2/2020

Rated by A. Burns Trained by Ecology? X Yes ___ No Date of training 9/30/14

HGM Class used for rating depressional Wetland has multiple HGM classes? ___ Y X N

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map _____

OVERALL WETLAND CATEGORY II (based on functions X or special characteristics ___)

1. Category of wetland based on FUNCTIONS

___ **Category I** – Total score = 23 - 27

X **Category II** – Total score = 20 - 22

___ **Category III** – Total score = 16 - 19

___ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	H (M) L	H (M) L	
Landscape Potential	H (M) L	(H) M L	H (M) L	
Value	(H) M L	H (M) L	(H) M L	TOTAL
Score Based on Ratings	7	7	7	21

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	X

Wetland name or number ____

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	3
Hydroperiods	D 1.4, H 1.2	4
Location of outlet *(can be added to map of hydroperiods)*	D 1.1, D 4.1	4
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	2
Map of the contributing basin	D 4.3, D 5.3	9 + 8
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	8
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	5

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	3
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	3
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	2
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	8
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	5

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants *(can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number _____

HGM Classification of Wetlands in Western Washington

> For questions 1-7, the criteria described must apply to the entire unit being rated.
>
> If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

   NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

   1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

   NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is an* ***Estuarine*** *wetland and is not scored. This method* ***cannot*** *be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a Flats wetland, use the form for ***Depressional*** *wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size; not on water side of Lake Whatcom & LW
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).
   Note: Lk Whatcom wetland separate unit due to surface water 76" difference. + Scudder Pond <20ac (is ~2.8 ac)
   NO – go to 4 **YES** – The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded.**

   NO – go to 5 **YES** – The wetland class is **Slope**

   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number _____

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have ***more than 2 HGM classes*** *within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number _____

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = (2) Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*. Yes = 4 No = 0	4
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	3
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	0
Total for D 1 Add the points in the boxes above	9

Rating of Site Potential If score is: ___ **12-16 = H** X **6-11 = M** ___ **0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___ **3 or 4 = H** X **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	2
Total for D 3 Add the points in the boxes above	4

Rating of Value If score is: X **2-4 = H** ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number _____

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	3
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	3
Total for D 4 — Add the points in the boxes above	8

Rating of Site Potential If score is: ___ **12-16 = H** X **6-11 = M** ___ **0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 — Add the points in the boxes above	3

Rating of Landscape Potential If score is: X **3 = H** ___ **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0 There are no problems with flooding downstream of the wetland. points = 0	1
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 — Add the points in the boxes above	1

Rating of Value If score is: ___ **2-4 = H** X **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number _____

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

_X_ Aquatic bed	4 structures or more: points = 4
_X_ Emergent	3 structures: points = 2
_X_ Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
____ Forested (areas where trees have > 30% cover)	1 structure: points = 0

If the unit has a Forested class, check if:

____ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

2

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

_X_ Permanently flooded or inundated	4 or more types present: points = 3
_X_ Seasonally flooded or inundated	3 types present: points = 2
____ Occasionally flooded or inundated	2 types present: points = 1
_X_ Saturated only	1 type present: points = 0
____ Permanently flowing stream or river in, or adjacent to, the wetland	
_X_ Seasonally flowing stream in, or adjacent to, the wetland	
____ **Lake Fringe wetland**	**2 points**
____ **Freshwater tidal wetland**	**2 points**

3

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

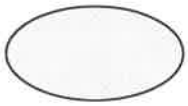
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

If you counted: > 19 species	points = 2
5 - 19 species	points = 1
< 5 species	points = 0

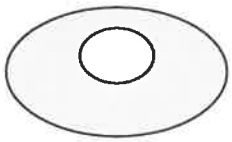
2

H 1.4. Interspersion of habitats

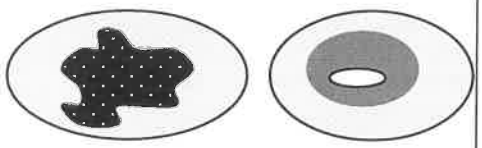
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points

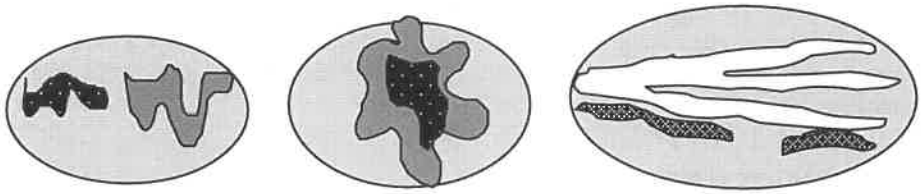


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points



2

Wetland name or number _____

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* X Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* X At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* X Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	3
Total for H 1 Add the points in the boxes above	12

Rating of Site Potential If score is: ___ **15-18 = H** X **7-14 = M** ___ **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] 15 = 15 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 5 + [(% moderate and low intensity land uses)/2] 15 = 20 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	2
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	1

Rating of Landscape Potential If score is: ___ **4-6 = H** X **1-3 = M** ___ **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) X It is mapped as a location for an individual WDFW priority species Cutthroat/Kokanee — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources X It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan – nature preserve/wildlife preserve Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	2

Rating of Value If score is: X **2 = H** ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number _____

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

X **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*). mapped by PHS

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. associated with Southern unnamed channel

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*). Stream in culvert until discharges to Sudden Pond wetland, little to no channel after outlet

X **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. However, unnamed stream at southern end of wetland in open channel

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

X **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** (No = **Not an estuarine wetland**)	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? (Yes – Go to **SC 2.2**) No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** (No = **Not a WHCV**) SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 2.4** No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? potentially 7/6" (Yes – Go to **SC 3.3**) No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** (No – Go to **SC 3.4**) **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** (No = **Is not a bog**)	**Cat. I**

Wetland name or number _____

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** (No) = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** (No) = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** (No) = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	N/A

Appendix G: Avian Species Lists

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2018 Scudder Pond Avian Species Observations

Observers: Doug Brown + Sara Brooke Benjamin

Common Name	***Scientific Name***
Anna's Hummingbird	*Calypte anna*
American Goldfinch	*Regulus calendula*
Barn Swallow	*Hirundo rustica*
Barred Owl	*Strix varia*
Bewick's Wren	*Thryomanes bewickii*
Black-capped Chickadee	*Peocile articapillus*
Black-headed Grosbeak	*Pheucticus melanocephalus*
Blue-winged Teal	*Spatula discors*
Brown Creeper	*Certhia americana*
Bufflehead	*Bucephala albeola*
Bushtit	*Psaltriparus minimus*
Canada Goose	*Branta canadensis*
Cedar Waxwing	*Bombycilla cedrorum*
Chestnut-backed Chickadee	*Poecile rufescens*
Cinnamon Teal	*Spatula cyanoptera*
Cowbird	*Molothrus ater*
Downy Woodpecker	*Dryobates pubescens*
Fox Sparrow	*Passerella iliaca*
Great Blue Heron	*Ardea herodias*
Hairy Woodpecker	*Dryobates villosus*
Hooded Mergansers	*Lophodytes cucullatus*
Mallard	*Anas platyrhynchos*
Marsh Wren	*Cistothorus palustris*
Merlin	*Falco columbarius*
Northern Flicker	*Colaptes auratus*
Northwest Crow	*Corvus caurinus*
Orange-crowned Warbler	*Leiothlypis celata*
Pine Siskin	*Spinus pinus*
Red-eyed Vireo	*Vireo olivaceus*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoeniceus*
Rock Pigeon	*Columba livia*
Ruby-crowned Kinglet	*Regulus satrapa*
Rufous Hummingbird	*Selasphorus rufus*
Song Sparrow	*Melospiza melodia*
Sora	*Porzana carolina*
Spotted Towhee	*Pipilo maculatus*
Steller's Jay	*Cyanocitta stelleri*
Tree Swallow	*Tachycineta bicolor*
Violet-green Swallow	*Tachycineta thalassina*
Virginia Rail	*Rallus limicola*
Warbling Vireo	*Vireo gilvus*
Wood Ducks	*Aix sponsa*
Yellow Warbler	*Setophaga petechia*
Yellow-rumped Warbler	*Setophaga coronata*

Appendix H: High Resolution Imagery Comparison

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2002
82,685 sq. ft of vegetation

2008 90,135 sq. ft of vegetation

2013 82,156 sq. ft of vegetation


2016
88,338 sq. ft of vegetation

Appendix I: Site Photographs

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Sylvan Creek culvert outlet as seen facing Scudder Pond (4/30/2018)

Scudder Pond and open water area as seen facing SE from the condominium complex (4/30/2018)

Scudder Pond as seen facing SE from the stormdrain outlet on the Pond's SW edge (4/30/2018)

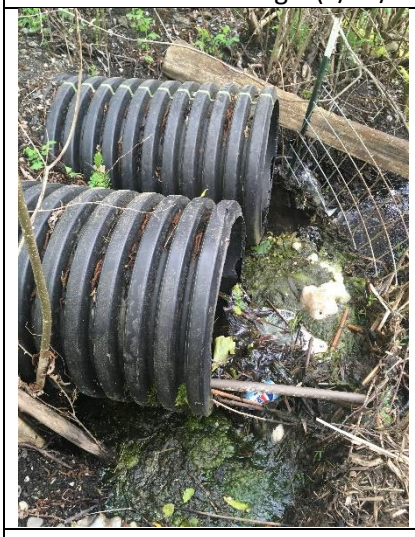
Scudder Pond and condominium complex as seen facing W from the public trail (4/30/2018)

Upland buffer adjacent to condominium complex as seen facing S (4/30/2018)

Forested buffer with ivy and holly on northern perimeter as seen facing E (4/30/2018)

Yard waste dumping in northern forested portion of wetland as seen facing S (4/30/2018)

Beaver cages on west ends of pipes under public trail in center of Scudder Pond (4/30/2018)



Beaver cage on east end of pipes under public trail in center of Scudder Pond (4/30/2018)

Full view of the east ends of the four pipes under public trail in center of Scudder Pond (4/30/2018)

One of two interpretive signs along public trail (4/30/2018)

Soil pit at Sample Plot 1 (4/30/2018)