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CRITICAL AREAS REPORT AND CONCEPTUAL MITIGATION PLAN FOR ASKO DEVELOPMENT SITE

Prepared for
CITY OF WOODINVILLE

July 2, 2013

Submitted by:

SHOCKEY
PLANNING GROUP, Inc.

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Critical Areas Report and Conceptual Mitigation Plan

for

ASKO DEVELOPMENT SITE
Woodinville, Washington

Prepared for

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INTRODUCTION

ASKO Processing, Inc. (ASKO) owns property in Woodinville, Washington that they propose to sell for commercial development. This property is currently vacant but could be developed for commercial uses if critical areas were mitigated. The Shockey Planning Group, Inc. conducted a critical area study on this property to determine what portion of the site could be developed. One wetland was delineated but no other critical areas were identified on the property. This *Critical Areas Report* summarizes the results of the wetland delineation and proposes conceptual mitigation for development of the site.

Approval of this conceptual mitigation plan will require compliance with the City of Woodinville (2013a) Critical Areas Code Requirements [Woodinville Municipal Code [WMC] Chapter 21.24.130]. This document will present the information necessary for agencies, affected tribes and members of the public to comment on the effects of the proposed development relative to a reasonable use permit for the subject property (Chapter 21.24.080[2])... This report is the result of site-specific field investigations and analysis of impacts that could occur as a result of the proposed development.

PROJECT LOCATION

The ASKO property consists of two parcels (Tax Parcel Nos. 152605-9094 and 152605-9095) located at 15801 and 15701 Woodinville-Redmond Road in Woodinville, King County, Washington (see Figures 1 and 2). These rectangular parcels are each approximately 3.44 acres in size for a total area of 6.88 acres. The property is located in the NW quarter of Section 15, Township 26 North, Range 5 East. The property is bordered by Woodinville-Redmond Road on the east, a Burlington Northern-Santa Fe Railroad easement on the west, and commercial properties on both the north and south sides. The City of Woodinville zoning classification for this area is industrial (Woodinville 2013b).

PROPOSED ACTION

Commercial development of the ASKO property has never occurred because a wetland and its associated buffer area bisects most of the site and limits where development can be located. The wetland and its buffer cover the northwest and southeast quarters of the property, and steep slopes in the southwest quarter also prevent development. Therefore, the northeast quarter of the property is the only reasonable location for development. In order to provide a financial incentive for commercial development a much larger portion of the property is needed.

A conceptual layout of a commercial building was prepared based on the assumption that this would increase the property value and receive tentative regulatory approval by the City of Woodinville and other parties. This assumes that an 80,000 ft^2 two-story building and parking area can be designed on a portion of the site with access to Woodinville-Redmond Road. This development would also require storm water detention and treatment facilities based on assumptions about surface area and pollutant sources.

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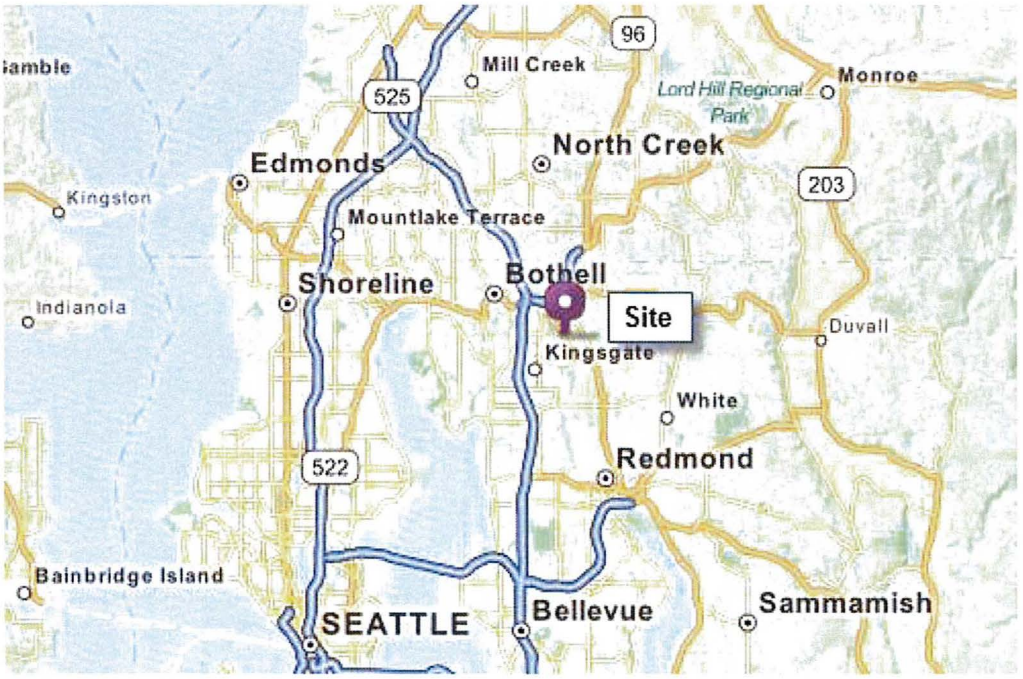

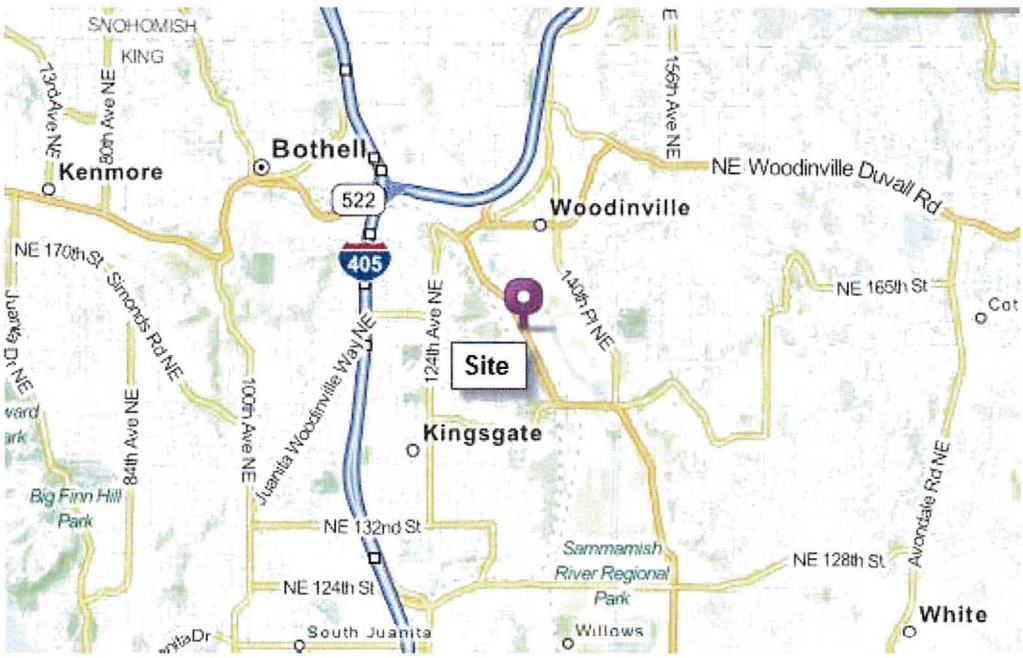

Figure 1 – Vicinity Map of ASKO Development Site

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Figure 2 – Aerial Photograph of ASKO Development Site

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CRITICAL AREA EVALUATION METHODS

The methods used to evaluate critical areas on the ASKO property include a literature review, a wetland delineation, and functional assessment which are described below. The literature review of critical areas both on the ASKO property and within 300 feet of its boundaries was conducted prior to the site visit.

REVIEW OF EXISTING INFORMATION

In addition to the references listed at the end of this report, some of the information sources and documents reviewed for the preparation of this report included:

- King County Sensitive Areas Map
- National Wetland Inventory Map
- Soil Conservation Service Soil Map

WETLAND DELINEATION METHOD

A wetland delineation of the ASKO property was conducted by Doug Gresham on May 31, 2012. Mr. Gresham is certified as a professional wetland scientist by the Society of Wetland Scientists and has 22 years of experience in critical area studies.

The wetland delineation followed the Routine Methodology as specified in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Corps of Engineers, 2010). This delineation is also consistent with the *Washington State Wetlands Identification and Delineation Manual* (Washington State Department of Ecology, 1997). Both Manuals define wetlands as follows:

> *"Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."*

In determining whether an area meets this definition both methodologies require examination of three parameters: vegetation, soils, and hydrology. For an area to be classified as a wetland, hydrophytic vegetation, hydric soils, and wetland hydrology must be exhibited. Following routine methodology, data on vegetation, soils, and hydrology were collected in areas that appeared to have wetland characteristics. This delineation was conducted during the growing season.

During the site visit, several transects were walked through the property to gain an overview of site conditions. Following routine methodology, data on vegetation, soils, and hydrology were collected in areas that appeared to have wetland characteristics. Data for wetland and upland plots were recorded on Corps of Engineers field data sheets. Additional data plots were informally evaluated to determine the location of the wetland edges. Data plots and points along

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the wetland edges were marked with sequentially numbered pink flagging. These wetland flags were mapped by Harmsen & Associates and were added to a survey map.

Vegetation

Hydrophytic vegetation consists of those plant species that readily grow in water, soil or other substrates, which at least periodically lack oxygen in the root zone due to saturation or inundation. The hydrophytic vegetation criterion is met when more than 50 percent of the dominant species are hydrophytic, based on the wetland plant species indicator status from the Region 9 section of the National List of Plant Species Occurring in Wetlands (USCOE 2012). The plant list separates vascular plants into five basic groups by their wetland indicator status (WIS), which is based on the frequency of occurrence of each species in a wetland. The indicator status rating system is summarized in Table 1.

Table 1 - Wetland Plant Indicator Status

Indicator Status	Definition
Obligate Wetland Plants (OBL)	Plants that almost always occur in wetlands under natural conditions - estimated probability of species occurring in wetlands is greater than 99% under natural conditions.
Facultative Wetland Plants (FACW)	Plants that usually occur in wetlands - estimated probability 67%-99%.
Facultative Plants (FAC)	Plants that are equally likely to occur in wetlands or non-wetlands: estimated probability of 34% – 66% to be found in wetlands.
Facultative Upland Plants (FACU)	Plants that usually occur in non-wetlands: estimated probability of 1% - 33% to be found in wetlands.
Obligate Upland (UPL)	Plants that almost always occur in non-wetlands - estimated probability of occurring in wetlands is <1%.

Plant species were identified using several standard taxonomic references (Cooke, 1997; Guard, 1995; Hitchcock & Cronquist, 1990; Pojar & MacKinnon, 1994). Dominant plant species were determined by the 50/20 rule as defined in the *Washington State Wetlands Identification and Delineation Manual* (Washington State Department of Ecology, 1997):

> "*Dominant plants species are those species in each stratum [tree, shrub, vine, herb] that when ranked in descending order of abundance [percent aerial coverage] and cumulatively totaled, immediately exceed 50 percent of the total dominance measure for that stratum, plus any additional plant species comprising 20 percent or more of the total dominance measure for that stratum.*"

Other indicators of hydrophytic vegetation include (in decreasing order of reliability): visual observation of plant species growing in areas of prolonged inundation and/or soil saturation; morphological adaptations to wetland conditions; technical literature references; and physiological and reproductive adaptations to wetland conditions (Washington State Department of Ecology, 1997).

Plants live in relatively homogeneous and predictable species assemblages called communities. Plant communities on the site were identified according to a classification system developed by the U.S. Fish and Wildlife Service (Cowardin, et al., 1979). The Cowardin Community Classification System is based on vegetation, hydrology, and substrate (soil) characteristics.

For each data plot, plant species were recorded and their percent aerial coverage was estimated, then the percent aerial coverage was used to determine the dominant species. Vegetation was also sampled at regular intervals along, within, and outside the wetland boundaries for delineation purposes.

Soils

The presence of hydric soils is the second parameter required for wetland determination. Hydric soil is defined as *"... a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part"* (Washington State Department of Ecology, 1997). The anaerobic conditions that result from biotic activity in soils saturated for longer than two weeks (generally) cause specific, recognizable changes to the soil. Prolonged anaerobic conditions result in a chemical environment where some soil components, such as iron and manganese, become reduced. Reduction of these minerals results in field indicators in the soil such as redoximorphic features and gleying.

Redoximorphic features are spots or blotches of color occurring within the soil matrix of a contrasting color. Redoximorphic features usually result from alternating anaerobic and aerobic soil conditions. Biotic activity in the saturated soils causes the iron and manganese to become reduced; drying of the soils creates aerobic conditions which lead to the oxidation of the minerals. Movement of the reduced minerals into concentrated zones in the matrix causes the accumulation of colors (redox features) and leaches the surrounding soils of the trace minerals, causing zones of depletion, where the soils are depleted of color. Gleying occurs under long term anaerobic conditions; it is the result of leaching of the reduced iron from the soils leaving the matrix completely depleted of color. Gleyed soils are predominantly neutral gray in color, although they are sometimes greenish- or blue-gray.

Soil colors (hue, value, and chroma) were determined using Munsell Soil Color Charts (Gretag Macbeth, 2000). Munsell colors are recorded as hue value/chroma (*e.g.* 10YR 4/1). Hydric soil indicators include: organic soils, gleyed soils; soils with redoximorphic features and a matrix chroma of 2 or less; and soils with a matrix chroma of 1 (Washington State Department of Ecology, 1997).

Soils were sampled in each data plot to a depth of 16 to 20 inches. Test holes were also dug at regular intervals along, within, and outside the wetland boundaries for delineation purposes. The soil was characterized and examined for hydric indicators immediately below the A-horizon or at ten inches, which ever was shallower (Washington State Department of Ecology, 1997). Soil colors (hue, value and chroma) were determined using a Munsell color chart (Gretag Macbeth, 2000). Soil characteristics were compared to Natural Resource Conservation Service (NRCS) descriptions of mapped soils to either confirm the mapping unit or determine if an inclusion of another soil type was present.

Hydrology

Wetland hydrology, or the presence of water, is the third parameter required for wetland determination (Washington State Department of Ecology, 1997). Although direct observations of hydrology are often limited during the dry season, indicators may be present throughout the year. Indicators for wetland hydrology include recorded data, and field observations such as: visual observation of inundation or saturation; watermarks; drift lines; sediment deposits; and drainage patterns. Guidelines for duration of inundation and/or soil saturation are based on the growing season.

Growing season is defined as: "*the portion of the year when soil temperatures at 19.7 inches below the soil surface are higher than biologic zero (5 (C). For ease of determination this period can be approximated by the number of frost-free days.*" For the Pacific Northwest, inundation or saturation to the surface for at least 12.5% of the growing season is the criteria used to establish wetland hydrology, although areas with shorter periods of surface saturation may also qualify as wetland. Based on the typical growing season for the lowlands of Puget Sound, the project area should have at least 21 days of continuous inundation or saturation within 12 inches of the surface during the growing season to satisfy the criteria for wetland hydrology.

Observations of hydrology indicators were made in and around the soil pit of each plot. The level of inundation above the soil surface, or the depth to saturation below the soil surface was recorded. Other visual indicators of hydrology such as sediment deposits, water-stained leaves, oxidized root channels (rhizospheres), were noted. Hydrology indicators were also examined at regular intervals along, within, and outside the wetland boundaries for delineation purposes. Our observations were conducted during the growing season.

WETLAND FUNCTIONS ASSESSMENT

Wetlands perform various functions such as purifying water, minimizing shoreline erosion, controlling flood and storm water, exchanging groundwater, providing wildlife and plant habitat, providing food chain support and nutrient cycling, and offering opportunities for education and recreation (Hruby et al., 1999).

The wetland and buffer functions were assessed using the methodology and rating form from the *Washington State Wetland Rating System for Western Washington* (Hruby, 2004). This methodology is based on *Methods for Assessing Wetlands Functions. Volume I: Riverine and Depressional Wetlands in the Lowlands of Western Washington, Parts 1 and 2* (Hruby et al., 1999).

The methodology relies on indicators of functions to assess potential performance and the opportunity to perform the function, rather than direct measurements of functions. Indicators are characteristics of the wetland or its surrounding area that can be correlated to a specific function. The rating system assesses both the potential and opportunity to perform three general categories of functions: Water Quality, Hydrology, and Habitat. Using guidance from Washington State Department of Ecology (2008), numeric values from the rating forms were assigned qualitative function values of high, moderate, and low.

Water Quality Functions

Sediment Removal: Wetlands can improve water quality by filtering out sediments. This can occur by adhesion of the sediment to vegetation, and by settling which happens when water velocity is decreased. The potential of a wetland to remove sediment is based on a number of factors, including the residence time of the water, and the type and density of vegetation.

Nutrient and Toxicant Removal: Wetlands can also improve water quality by filtering out excess nutrients and toxic chemicals. This can occur through adhesion to clay particles and organic soil components, as well as by uptake and filtration by the vegetation. The capacity of a wetland to purify water is based on a number of factors, including the residence time of the water, presence of clay or organic soils, and the type and density of vegetation.

The opportunity for water quality improvement is based on sediment or pollutants entering the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. Sources for sediment and pollutants include untreated storm water, grazing, agricultural activities, development, etc.

Hydrologic Functions

Flood Flow Alteration: Wetlands can play an important role in flood reduction because of their ability to slow and store flood waters. During high rainfall events, water can be stored in wetlands and released slowly over time, thereby reducing the volume of water downstream during the time of peak flooding. This function is especially important in urbanizing areas. The ability of a particular wetland to reduce flooding is dependent on a number of factors, including the wetland's position in the watershed, its size, shape, outlet configuration, and association with other aquatic systems.

Erosion Control and Shoreline Stabilization: Vegetation in wetlands serves to anchor soil and filter out sediments that are suspended by water. Riparian or lakeshore wetlands where there is water flow or wave action sufficient to suspend and transport sediments are important in stabilizing banks and preventing erosion. The ability of a wetland to reduce erosion is primarily dependent on the characteristics of the vegetation, with dense woody vegetation being the most effective. This function is not significant in low flow areas such as depressional wetlands.

The opportunity for a wetland to perform these functions is dependent on many factors including: position in the landscape, whether the wetland drains to a river or stream that has flooding problems, and whether there are human structures and activities or natural resources located downstream that can be damaged by flooding.

Habitat Functions

Habitat Functions Assessment: Takes into consideration the potential for the wetland to provide different habitat niches by assessing: different water regimes required by different species (amphibians, macroinvertebrates, etc.); plant species richness; the degree of interspersion of habitats; special habitat features such as large woody debris, snags, undercut banks for denning, thin-stemmed vegetation for amphibian eggs, etc.; existing condition of buffers; connectivity of the wetland to other wetlands and priority habitats such as mature forests, urban natural open spaces, estuaries, etc.; and position in the watershed.

AFFECTED ENVIRONMENT

SITE DESCRIPTION

The ASKO property is located approximately 1,000 feet west of the Sammamish River (Water Resource Inventory Area 08-0450) within the Lake Washington drainage basin. The property is bordered by Woodinville-Redmond Road on the east and a Burlington Northern-Santa Fe Railroad (BNSF) easement on the west. There are other industrial properties to both the north and south sides of the property.

TOPOGRAPHY

The ASKO property slopes to the southeast from a high point of 70 feet at the northwest corner to a low point of 35 feet in the southeast corner. The western third of the property is relatively steep, while the eastern two-thirds is flatter. The property and the surrounding area associated with the Sammamish River is identified as a critical area for seismic hazards (King County 2012 and City of Woodinville 2013b).

The adjacent area on the west side of the BNSF easement consists of a steep unstable slope with numerous groundwater seeps (King County 2012). This off-site area to the west contains critical areas such as, steep slopes (>40%), erosion and landslide hazards, streams, and wetlands. There are numerous ravines on this slope where streams and groundwater seeps flow west toward the Sammamish River. This surface water is intercepted by the earthen berm created for the BNSF railroad tracks and collects in ditches that eventually flow to culverts underneath the fill prism (see Figure 3). Although the King County map identifies a stream that flows east along the southern boundary of the ASKO property, we assume this runoff flows through a pipe underneath the parking lot of the adjacent warehouse.

SOILS

The *Soil Survey of King County Area, Washington* (NRCS, 2012) has mapped soils on the ASKO property as Indianola loamy fine sand on 4-15% slopes. This soil type formed of glacial drift on terraces is somewhat excessively drained. The available water capacity is low and restrictive layers are more than 80 inches below the surface. Indianola loamy fine sand is not classified as a hydric soil.

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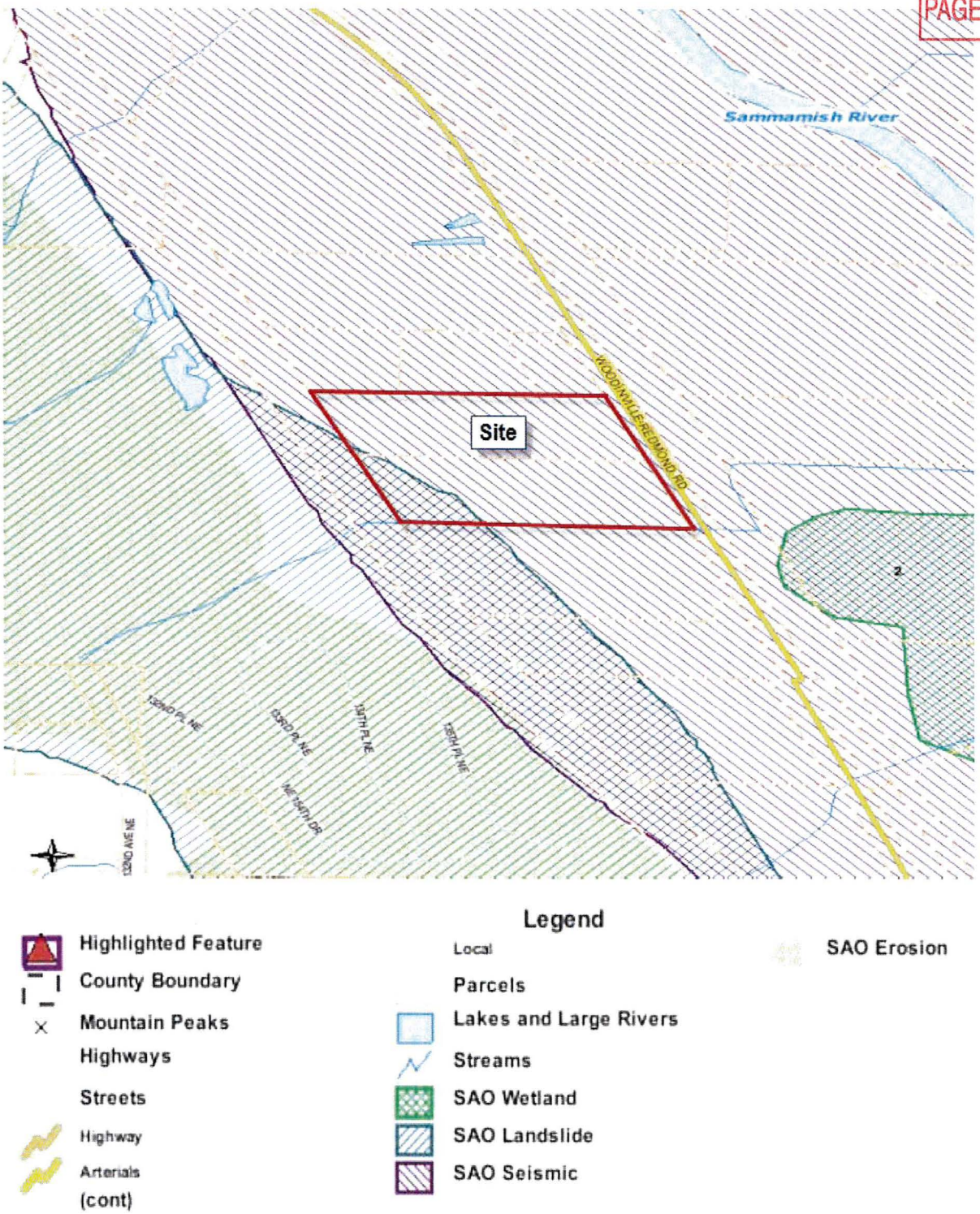

Figure 3 – King County critical area map of ASKO development site.

HISTORIC LAND USES

Aerial photographs of the ASKO property and surrounding area were examined to determine past land uses and hydrology (University of Washington 2012). This included photographs taken in 1936, 1944, 1954, 1970, 1978, 1995, and 2009. Since at least 1936, a ditch running north to south has bisected the ASKO property and the surrounding area between the BNSF railroad tracks and Woodinville-Redmond Road. This ditch originated at a farm located north of the property and this ditch finally curves east toward the Sammamish River south of the property. Another small ditch oriented perpendicular to this main ditch is located in the eastern half of the ASKO property. The area was originally covered in hay pastures but sometime between 1983 and 1995 the warehouses on both the north and south sides of the property appear to have been built.

UPLAND VEGETATION

Vegetation on the ASKO property is a mixture of upland and wetland species that includes both native and invasive plants. The plants identified on the property are listed in Table 2 below. Upland vegetation on the property in the tree, shrub, vine, and herbaceous strata is described below. Photographs of vegetation on the property are provided in Appendix A.

In the southwest corner of the site there is a forested area that contains a tree layer of red alder (*Alnus rubra*), bitter cherry (*Prunus emarginata*) and apple (*Prunus* sp.), with a shrub layer of beaked hazelnut (*Corylus cornuta*), black hawthorn (*Crataegus douglasii*), Indian plum (*Oemleria cerasiformis*), red elderberry (*Sambucus racemosa*), thimbleberry (*Rubus parviflorus*), and salmonberry (*Rubus spectabilis*). Invasive species include Himalayan blackberry (*Rubus armeniacus*), evergreen blackberry (*Rubus laciniatus*), and Scot's broom (*Cytisus scoparius*). The herbaceous strata in this forested area consists of orchardgrass (*Dactylis glomerata*), fescue (*Festuca* sp.), thistle (*Cirsium arvense*), stinging nettle (*Urtica dioica*), piggyback-plant (*Tolmiea menziesii*), sword fern (*Polystichum munitum*), and Herb Robert (*Geranium robertianum*).

The southern edge of the property contains scattered black cottonwood trees (*Populus balsamifera*), Scot's broom, and Himalayan blackberry thickets. The northwest corner along the BNSF railroad tracks and adjacent industrial property is dominated by Himalayan blackberry thickets. The remaining upland portions of the property are dominated by herbaceous species that include reed canarygrass (*Phalaris arundinacea*), orchardgrass, fescue, thistle, and vetch (*Vicia sativa*).

Table 2 – Plant Species Observed on the ASKO Property.

Stratum	Scientific Name[1]	Common Name[1]	Wetland Indicator Status[2]
TREE	*Alnus rubra*	Red alder	FAC
	Populus balsamifera	Black cottonwood	FAC
	Prunus emarginata	Bitter cherry	FACU
	Prunus sp.	Apple	NI
SHRUB	*Corylus cornuta*	Beaked hazelnut	FACU
	Crataegus douglasii	Black hawthorn	FAC
	Cytisus scoparius	Scot's broom	UPL
	Oemleria cerasiformis	Indian plum	FACU
	Rubus parviflorus	Thimbleberry	FACU
	Rubus spectabilis	Salmonberry	FAC
	Salix sitchensis	Sitka willow	FACW
	Sambucus racemosa	Red elderberry	FACU
	Spiraea douglasii	Hardhack	FACW
VINE	*Rubus armeniacus*	Himalayan blackberry	FACU
	Rubus laciniatus	Evergreen blackberry	FACU
	Rubus ursinus	Trailing blackberry	FACU
HERB	*Agrostis capillarius*	Colonial bentgrass	FAC
	Cirsium arvense	Thistle	FAC
	Dactylis glomerata	Orchardgrass	FACU
	Equisetum arvense	Common horsetail	FAC
	Festuca arundinacea	Fescue	FAC
	Galium trifidum	Three-petal bedstraw	FACW
	Geranium robertianum	Herb Robert	UPL
	Geum macrophyllum	Large-leaved avens	FAC
	Holcus lanatus	Common velvetgrass	FAC
	Juncus effusus	Soft rush	FACW
	Phalaris arundinacea	Reed Canary Grass	FACW
	Polystichum munitum	Sword fern	FACU
	Ranunculus acris	Tall buttercup	FAC
	Tolmiea menziesii	Piggyback-plant	FAC
	Urtica dioica	Stinging nettle	FAC
	Vicia sativa	Vetch	FACU

1 – Scientific and common names following Cooke (1997).
2 – Wetland Indicator Status where: OBL=obligate, FACW=facultative wetland, FAC=facultative, FACU=facultative upland, UPL=upland.

CRITICAL AREA STUDY RESULTS

One wetland (Wetland A) was identified on the ASKO property. The property is also identified as containing seismic hazard areas according to King County (2012a) and the City of Woodinville (2013b). The survey map showing Wetland A on the ASKO property is provided as Figure 1 in Appendix B. Data for wetland and upland plots were recorded on Corps of Engineers data sheets and copies are included in Appendix B.

WETLAND A

Wetland A originates from a groundwater seep in the northwest corner of the property near the BNSF railroad tracks. This groundwater flows east in a broad swale to the center of the property where it is intercepted by a manmade ditch that was formed prior to 1936. Surface water in this ditch flows south for approximately 200 feet before spilling over the banks and again flowing east in a broad swale. The surface water eventually flows into a drainage ditch paralleling the Woodinville-Redmond Road at the southeast corner of the property. The total area of Wetland A is approximately 43,584 square feet (1.0-acre).

Vegetation

The plant community within Wetland A contains a clump of native shrubs and invasive vines at the headwaters of the seep and herbaceous species in the remaining portion of the linear swale. The shrubs at the headwaters area include Sitka willow (*Salix sitchensis*) and hardhack (*Spiraea douglasii*) that are surrounded by thickets of Himalayan blackberry.

The western portion of the swale and central ditch on the property includes a diverse assemblage of herbaceous species that include soft rush (*Juncus effusus*), common velvetgrass (*Holcus lanatus*), tall buttercup (*Ranunculus acris*), reed canarygrass, colonial bentgrass (*Agrostis capillarius*), common horsetail (*Equisetum arvense*), large-leaved avens (*Geum macrophyllum*), and three-petal bedstraw (*Galium trifidum*).

The eastern portion of the swale below the central ditch is dominated by reed canarygrass. The wetland indicator status (WIS) of the dominant plant species ranges from obligate to facultative, and thus satisfies the criterion for hydrophytic vegetation.

Hydrology

Wetland A mainly receives its hydrology from groundwater seeps discharging along the western property line, with lesser amounts contributed by storm water runoff in the immediate area. It appears that standing water is impounded on the west side of the BNSF railroad tracks and this groundwater discharges on the eastern side of the fill prism. These groundwater seeps discharge at the toe of the fill material and saturate the soils in a wide area where the wetland shrubs are located.

Due to a relatively steeper slope near the western property line, the surface water flows in a narrow channel underneath the Himalayan blackberry thicket. As the slope becomes relatively flatter, the surface water spreads out in a broad swale as it flows down to the central ditch. There

is a narrow channel of surface water in the central ditch that is confined by steep banks. At the southern end of this ditch the banks are lower so surface water sheet flows into another broad swale that flows east. Although historically, this central ditch continued off-site onto the adjacent property to the south, it appears that the ditch banks were lowered to direct surface water to the east.

Soils

Five soil pits (SP-1 through SP-5) were examined in Wetland A to determine the boundary. Soil pits SP-1 and SP-2 are located in the western portion of the swale, while SP-3 through SP-5 is located in the eastern portion of the swale.

- Soils observed in SP-1 at the bottom of the swale consisted of a very dark (10YR 2/2) silty sand with a redoximorphic features (10YR 3/4) that satisfies the sandy redox criteria for hydric soils.
- Soil pit SP-2 was located on a terrace above the swale within a blackberry thicket. The soils in SP-2 were also a dark brown (10YR 3/2) silty sand with a redoximorphic features (10YR 3/4) that satisfies the sandy redox criteria for hydric soils.
- Soil pit SP-3 is located at the bottom of a linear swale in the eastern portion of the property. The soils in SP-3 contained a very dark (10YR 2/1) surface layer and reduced matrix (2.5Y 4/1) lower layer of silty sand that meets the hydric criteria for sandy redox.
- The soils in both SP-4 and SP-5 satisfy the sandy redox criteria for hydric soil, although they are located outside the wetland on slightly higher ground. Soil pit SP-4 was located above the swale and the soils were dark brown (10YR 2/2) silty sand with a redoximorphic features (10YR 3/4). Soil pit SP-5 is a grayish brown (2.5Y 5/2) silty sand with redoximorphic features (10YR 4/6).

Wetland Functional Assessment

Results of the functional assessment for Wetland A on the ASKO property are discussed below. This was based on the hydrogeomorphic class of a slope wetland that has an outlet. Table 3 summarizes the qualitative values for the functions that were assessed in Wetland A.

Table 3 - Functional Assessment Rating for Wetland A on the ASKO Property

Wetland	Categories of Assessed Functions					
	Water Quality		Hydrology		Habitat	
	Potential	Opportunity	Potential	Opportunity	Potential	Opportunity
A	Moderate	No	Moderate	No	Low	Moderate

Water Quality Functions
Wetland A has a moderate potential to improve water quality because it has a moderate slope and dense vegetation. However, because there are no sources of pollutants entering Wetland A from adjacent properties, there is no opportunity to perform water quality functions.

Hydrology Functions
Wetland A has a moderate potential for hydrologic functions because it contains dense vegetation and small surface depressions that store flood flows. However, there is no

opportunity for hydrologic functions because the area downstream of the site does not have flooding problems.

Habitat Functions

Wetland A has a low potential to provide habitat functions because it has limited structural diversity, moderate species diversity, low interspersion of habitats, and few habitat features. The opportunity to provide habitat is rated moderate because Wetland A has vegetated buffers and has disturbed connections to other wetlands.

Wetland Classification

Wetland A is classified as a palustrine emergent (PEM) wetland according to Cowardin et al. (1979). Based on the hydrogeomorphic classification system (Brinson, 1993), Wetland A is a slope wetland. Wetland A was rated using the criteria defined in the Department of Ecology's *Washington State Wetland Rating System for Western Washington* (Hruby, 2004) as Category IV. Appendix C contains the Ecology rating forms completed for Wetland A. Table 4 summarizes this information on wetland categories

Table 4 - Wetland Classification Summary for ASKO Property

Wetland	Estimated Area (ft^2)	Cowardin Class[1]	HGM Class[2]	Ecology Category[3]	Woodinville Class[4]	Buffer Width (ft)[4]
A	43,584	PEM	Slope	IV	3	50

1 –Where PEM is palustrine emergent according to Cowardin et al. (1979).
2 –Hydrogeomorphic classes according to Brinson (1993).
3 –Wetland rating according to Washington Department of Ecology (Hruby, 2004)
4 –Wetland rating and buffer width according to City of Woodinville (2013a)

REGULATORY CONSIDERATIONS

Several Federal, State, and City regulations apply to development in or near critical areas on the ASKO property.

FEDERAL REGULATIONS

At the federal level, several sections of the Clean Water Act (CWA) would apply with regard to pollution of surface water including water quality certification (Section 401), compliance with the National Pollutant Discharge Elimination System (NPDES), and discharge of dredge or fill material into waters of the U.S. (wetland and streams). The State of Washington Department of Ecology has local regulatory authority over Section 401 and Section 402 of the CWA as granted by the U.S. Environmental Protection Agency.

There are no species listed as threatened or endangered under the federal Endangered Species Act (ESA) on or near the property. Thus, compliance with ESA should not be an issue.

STATE REGULATIONS

State regulations that may apply to development in or near critical areas include:

- State Environmental Policy Act (SEPA). Potential impacts on critical areas resulting from property development would be evaluated by the City of Woodinville under SEPA. SEPA evaluations link up with other State regulations.
- CWA Section 401 water quality certification, administered by the State as described under federal regulations.
- CWA Section 402 stormwater discharge permits (NPDES), administered by the State as described under federal regulations.
- Coastal Zone Management would not apply given the distal location of the subject property to the coastal environment.
- Floodplain Development Permit would likely not apply since there are no FEMA mapped flood prone areas.

CITY OF WOODINVILLE REGULATIONS

The City of Woodinville addresses wetlands and other critical areas in the Woodinville Municipal Code (WMC) under 21.24-Critical Areas. Specifically, the purpose of their critical area regulations is to identify critical areas and to supplement the development requirements contained in the code by providing for additional controls as required by the Washington State Growth Management Act and other laws. The critical area regulations also protect the functions and values of environmentally critical features for the public benefit, while providing property owners with reasonable use of their property (WMC 21.24.080[2]). According to the Woodinville Municipal Code (WMC 21.24.320), Wetland A is classified as Class 3 with a 50-foot buffer (WMC 21.24.330). The buffer width of Class 3 wetlands can be reduced to 25 feet with enhancement (WMC 21.24.330.1.c).

WETLAND IMPACTS

Commercial development of the ASKO property has never occurred because the wetland and associated buffer area bisects most of the site and limits where development can be located. Although approximately 25% of the property (northeast corner) could be developed, the remaining 75% is off limits due to land use regulations and steep slopes. In order to provide a financial incentive for commercial development a much larger portion of the property is needed.

This area is zoned industrial with a tourist district overlay so one of the intended uses of the property is for winery or brewery facilities. This type of industrial use requires large warehouses with parking for employees and tourists. Because development is restricted to the northeast quarter of the property, this effectively denies reasonable use of the property. The zoning does not allow commercial, retail, or residential land uses, so there is no other reasonable use of the property.

A conceptual layout of a commercial building was prepared based on the assumption that this would increase the property value and receive tentative regulatory approval by the City of Woodinville and other parties. The architectural design of this commercial building was prepared by Cutler Anderson Architects and Shockey Planning Group. This assumes that an 80,000 ft^2 two-story building and parking area can be designed on a portion of the site with access to Woodinville-Redmond Road. This development would also require storm water detention and treatment facilities based on assumptions about surface area and pollutant sources prepared by Harmsen & Associates.

The proposed footprint of this commercial development requires permanent impacts to approximately 24,064 ft^2 of Wetland A (see Figure 2 in Appendix A). This development will require filling the eastern swale and central ditch of Wetland A. By developing the least valuable portion of Wetland A, this design minimizes the impact in accordance with Woodinville Municipal Code (WMC 21.24.350). This design does not pose an unreasonable threat to public health, safety or welfare either on- or off-site. In addition, the design is consistent with the general purposes of the Critical Area regulations (WMC 21.24) and the public interest.

MITIGATION MEASURES

A mitigation sequence was followed to avoid, minimize, rectify, reduce, and compensate for wetland and buffer impacts on this property from the proposed action in accordance with Woodinville Municipal Code (WMC 21.24.350). A summary of these mitigating measures is listed below (see Figure 3 in Appendix A).

- Efforts to avoid impacts involved locating a portion of the building in the northeast corner of the property where there is no wetland.
- Efforts to minimize impacts involved only filling the central ditch and eastern swale that has the lowest species diversity and habitat functions, in order to protect the western half of Wetland A that provides relatively more valuable functions.
- Efforts to rectify the wetland impacts involve enhancing the western half of Wetland A by invasive species removal, retaining hydrology, and planting native species. In

addition, buffer impacts will be rectified by enhancement actions such as invasive species removal and planting native species.

- Efforts to reduce buffer impacts over time involve preserving and maintaining a buffer surrounding the western half of Wetland A that functions better than existing conditions.
- Efforts to compensate for wetland impacts involve wetland creation, which is described below.

WETLAND CREATION

In order to replace the lost functions and values of Wetland A, the proposed development would compensate for the 24,064 ft^2 of permanent impacts by creating 35,140 ft^2 of new wetland area at roughly a 1.5:1 ratio as required for Class 3 wetlands by the Woodinville Municipal Code (WMC 21.24.350). This new wetland area would surround Wetland A in the northwest property corner.

This wetland creation area would receive its hydrology from a level spreader installed where the groundwater discharges along the western property boundary. A trench would be excavated at the toe of the BNSF railroad berm and backfilled with washed gravel and a perforated pipe. A level concrete weir would be installed in this trench so the groundwater sheet flows evenly over the weir at the uphill edge of Wetland A and the wetland creation area.

The wetland creation area would be excavated to the same topography as the northwest portion of Wetland A, to provide hydrology via overland flow from the level spreader. Low berms consisting of coir logs would be staked perpendicular to the slope in order to temporarily detain water and saturate the soils. Although these coir logs will eventually decompose, the organic material and sediment that they trap will maintain their functions for a longer period.

The wetland creation area would be planted with a mixture of native woody and herbaceous species appropriate to the specific conditions of the site. This includes woody species such as Oregon ash (*Fraxinus latifolia*), Pacific willow (*Salix lucida*), red-osier dogwood (*Cornus sericea*), black twinberry (*Lonicera involucrata*), salmonberry (*Rubus spectabilis*), and Sitka willow.

WETLAND ENHANCEMENT

The remaining 19,520 ft^2 portion of Wetland A in the northwest corner of the property would be enhanced by selective removal of invasive species and supplemental planting of native species. This involves removing Himalayan blackberry thickets from the western end of the wetland. Supplement planting of woody and herbaceous species would occur to add species diversity and structural complexity. This includes woody species such as red alder, Oregon ash, black cottonwood, Pacific ninebark (*Physocarpus capitatus*), Nootka rose (*Rosa nutkana*), salmonberry, and Sitka willow. The coir logs proposed for the wetland creation area would extend through the wetland enhancement area in order to detain water and organic material.

BUFFER ENHANCEMENT

According to the Woodinville Municipal Code (WMC 21.24.330), a 50-foot buffer is required around a Class 3 wetland but a 25-foot buffer reduction is allowed when enhancement occurs.

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The proposed buffers around the mitigation site (wetland creation and existing wetland area) will vary from 25 to 75 feet wide. A 25-foot buffer will be used along two portions of the mitigation site, while wider buffer areas will occur in all four corners of the mitigation site. Buffer reduction is allowed when the existing buffer is significantly degraded and enhancement will improve functions and values in accordance with the Woodinville Municipal Code (WMC 21.24.330 [d]).

Buffer enhancement in this 32,003 ft^2 area involves selective removal of invasive species (Himalayan blackberry thickets), soil amendments, and supplemental planting of native species. This involves clearing and grubbing out the roots of Himalayan blackberry throughout the buffer area. The soil would be amended by covering the ground with overlapping layers of cardboard and coarse wood chips.

Supplement planting of woody and herbaceous species will include tree, shrub, and herbaceous species that improve the functions and values of the buffer. This includes bigleaf maple (*Acer macrophyllum*), red alder, shore pine (*Pinus contorta var. contorta*), Douglas fir (*Pseudotsuga menziesii*), cascara (*Rhamnus purshiana*), western hemlock (*Tsuga heterophylla*), vine maple (Acer *circinatum*), oceanspray (*Holodiscus discolor*), red-flowering currant (*Ribes sanguineum*), wood rose (*Rosa gymnocarpa*), thimbleberry (*Rubus parviflorus*), snowberry (*Symphoricarpos albus*), evergreen huckleberry (*Vaccinium ovatum*), and sword fern (*Polystichum munitum*).

GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

The overall goals and objectives for this mitigation project are to compensate for loss of wetland and buffer area by commercial development of the ASKO property.

Goal 1: Compensate for 24,064 ft^2 of permanent impacts to Wetland A by creating 35,140 ft^2 of new wetland area in the northwest corner of the ASKO property.

Objective 1: Perform clearing and grading in a 35,140 ft^2 area surrounding Wetland A to remove invasive species, lower ground elevations, and amend the soil.

Performance Standard:

1. Invasive and non-native species will have 10% or less aerial coverage within the wetland creation area in all five years of monitoring. These plants include Himalayan blackberry, evergreen blackberry, and reed canarygrass.

   Evaluation Method: Quadrat sampling.

Objective 2: Create 35,140 ft^2 of wetland habitat by planting native trees and shrubs.

Performance Standards:

1. Survival of planted trees and shrubs within the wetland creation area will be a minimum of: 100% after one year, 85% after three years, and 80% after five years.

   Evaluation Method: Transect sampling and visual inspection.

2. Tree and shrub canopy cover percentages (including beneficial native volunteers) during the monitoring period will be:
   - 10% or greater at the end of Year 1
   - 20% or greater at the end of Year 3
   - 40% or greater at the end of Year 5

   Evaluation Method: Quadrat sampling.

Goal 2: Compensate for 24,064 ft^2 of permanent impacts to Wetland A by providing 19,520 ft^2 of wetland enhancement in the northwest corner of the ASKO property.

Objective 1: Remove invasive and non-native species from 19,520 ft^2 of the wetland enhancement area.

Performance Standard:

1. Invasive and non-native species will have 10% or less aerial coverage within the wetland enhancement area in all five years of monitoring. These plants include Himalayan blackberry, evergreen blackberry, and reed canarygrass.

   Evaluation Method: Quadrat sampling.

Objective 2: Enhance 19,520 ft^2 of wetland habitat by planting native trees and shrubs.

Performance Standards:

1. Survival of planted trees and shrubs within the wetland enhancement area will be a minimum of: 100% after one year, 85% after three years, and 80% after five years.

   Evaluation Method: Transect sampling and visual inspection.

2. Tree and shrub canopy cover percentages (including beneficial native volunteers) during the monitoring period will be:
   - 10% or greater at the end of Year 1
   - 20% or greater at the end of Year 3
   - 40% or greater at the end of Year 5

   Evaluation Method: Quadrat sampling.

Objective 3: Increase the species richness and abundance in the wetland enhancement area

Performance Standard:

1. A minimum of two native tree species and three native shrub species will be established within the wetland enhancement area at Year 5.

   Evaluation Method: Transect sampling, quadrat sampling, and visual inspection.

Goal 3: Enhance a 32,003 ft^2 buffer area surrounding the wetland creation and enhancement areas in the northwest corner of the ASKO property.

Objective 1: Remove invasive and non-native species from 32,003 ft^2 of the buffer enhancement area.

Performance Standard:

1. Invasive and non-native species will have 10% or less aerial coverage within the buffer enhancement area in all five years of monitoring. These plants include Himalayan blackberry, evergreen blackberry, and reed canarygrass.

Evaluation Method: Quadrat sampling.

Objective 2: Enhance 32,003 ft^2 of buffer habitat by planting native tree, shrub, and herbaceous species.

Performance Standards:

1. Survival of planted trees and shrubs within the buffer enhancement area will be a minimum of: 100% after one year, 85% after three years, and 80% after five years.

   Evaluation Method: Transect sampling and visual inspection.

2. Tree and shrub canopy cover percentages (including beneficial native volunteers) during the monitoring period will be:
   - 10% or greater at the end of Year 1
   - 20% or greater at the end of Year 3
   - 40% or greater at the end of Year 5

   Evaluation Method: Quadrat sampling.

Objective 3: Increase the species richness and abundance in the buffer enhancement area

Performance Standard:

1. A minimum of two native tree species and three native shrub species will be established within the buffer enhancement area at Year 5.

   Evaluation Method: Transect sampling, quadrat sampling, and visual inspection.

SUMMARY OF MITIGATION SITE CONSTRUCTION

Wetland mitigation on the ASKO property will require a sequential order of construction activities in the wetland creation, wetland enhancement, and buffer enhancement areas. A summary of the mitigation site construction is listed below.

Site Preparation

The following site preparation tasks are necessary prior to any clearing and grading activities. This includes staking the clearing limits, staking the wetland boundary, and installing temporary erosion and sediment control (TESC) features. These TESCs include silt fences, straw bales in ditches, and a construction entrance.

Clearing and Grubbing

Invasive species (Himalayan and evergreen blackberry) need to be removed from the wetland creation, wetland enhancement, and buffer enhancement areas. This involves cutting the above-ground canes and grubbing out the rootballs of Himalayan and evergreen blackberry. The plant material generated by this clearing should be hauled away for off-site disposal. No motorized equipment can be used for removing blackberries within the wetland enhancement area so only hand labor is allowed.

Grading

Minor grading will occur in the wetland creation area and at the uphill edge of the mitigation site. The soil excavated from this grading should be hauled away for off-site disposal.

The ground surface in the wetland creation area needs to be lowered to match elevations in Wetland A. This will require removing 1-2' of topsoil, spreading a 6" layer of organic compost over this excavated area, mixing the soil and compost together, and leveling the area to match grades in the adjacent wetland.

At the uphill edge of the wetland creation and wetland enhancement, a level spreader needs to be installed that intercepts the groundwater seeps at the toe of the BNSF railroad berm. A trench should be excavated perpendicular to the slope along the property line. This trench should be backfilled with washed gravel and a perforated pipe. A concrete weir should be installed along the downhill edge of the trench so groundwater sheet flows evenly over the weir into the mitigation site.

Soil Amendments

The buffer enhancement and wetland creation areas need soil amendments after clearing and grading activities are completed. This involves covering the entire area with overlapping layers of clean cardboard sheets and an 8" layer of coarse wood chips. The cardboard and wood chips will protect the soil from erosion, prevent regrowth of blackberry, and improve soil quality. Then coir logs should be staked perpendicular to the slope in lines spaced every 15' that traverse both the wetland creation and wetland enhancement areas in order to detain water.

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Planting

The planting plan for the mitigation site involves installing native tree, shrub, and herbaceous species. The plant community proposed for the wetland creation area (see Table 5), wetland enhancement area (see Table 6), and buffer enhancement area (see Table 7) are listed below.

Table 5 - Native plants installed in wetland creation area.

Strata	Scientific Name	Common Name	Size	Quantity
Tree	*Fraxinus latifolia*	Oregon ash	5 gallon	50
	Salix lucida	Pacific willow	5 gallon	50
Shrub	*Cornus sericea*	Red-osier dogwood	1 gallon	100
	Lonicera involucrata	Black twinberry	1 gallon	100
	Rubus spectabilis	Salmonberry	1 gallon	100
	Salix sitchensis	Sitka willow	1 gallon	100

Table 6 - Native plants installed in wetland enhancement area.

Strata	Scientific Name	Common Name	Size	Quantity
Tree	*Alnus rubra*	Red alder	5 gallon	20
	Fraxinus latifolia	Oregon ash	5 gallon	20
	Populus balsamifera	Black cottonwood	5 gallon	20
Shrub	*Physocarpus capitatus*	Pacific ninebark	1 gallon	30
	Rosa nutkana	Nootka rose	1 gallon	30
	Rubus spectabilis	Salmonberry	1 gallon	30
	Salix sitchensis	Sitka willow	1 gallon	30

Table 7 - Native plants installed in buffer enhancement area.

Strata	Scientific Name	Common Name	Size	Quantity
Tree	*Acer macrophyllum*	Bigleaf maple	5 gallon	35
	Alnus rubra	Red alder	5 gallon	35
	Pinus contorta var. contorta	Shore pine	5 gallon	35
	Pseudotsuga menziesii	Douglas fir	5 gallon	35
	Rhamnus purshiana	Cascara	5 gallon	35
	Tsuga heterophylla	Western hemlock	5 gallon	35
Shrub	*Acer circinatum*	Vine maple	1 gallon	50
	Holodiscus discolor	Oceanspray	1 gallon	50
	Ribes sanguineum	Red-flowering currant	1 gallon	50
	Rosa gymnocarpa	Wood rose	1 gallon	50
	Rubus parviflorus	Thimbleberry	1 gallon	50
	Symphoricarpos albus	Snowberry	1 gallon	50
	Vaccinium ovatum	Evergreen huckleberry	1 gallon	50
Herb	*Polystichum munitum*	Sword fern	1 gallon	100

A temporary irrigation system equipped with an automatic timer needs to be installed within the mitigation area to provide water during the first two summers. A split rail fence should be installed along the perimeter of the mitigation area to prevent access, and critical area signs should be posted on the fence every 100 feet.

DISCLAIMER

Shockey Planning Group, Inc. has prepared this Critical Areas Report and Conceptual Mitigation Plan for the City of Woodinville. The information contained herein is, to our knowledge, correct and accurate. It should be recognized that the establishment of wetland boundaries is an inexact science. Wetlands are by definition, transition areas, and wetland boundaries often change with time. The presence of wetland indicators may also vary depending on the time of year. Additionally, individual professionals may disagree on the precise location of wetland boundaries or the functions and values of a wetland. All wetland boundaries, classifications, and buffer widths should be considered subject to change until reviewed and approved by the appropriate regulatory agencies with jurisdiction. Shockey Planning Group, Inc. recommends obtaining jurisdictional approval before completing final site plans and/or beginning construction activities. This report is not intended for use in the application for State and/or federal permits unless otherwise noted. We are not responsible for the accuracy of information provided by others.

Within the limitations of schedule, budget and scope-of-work, Shockey Planning Group, Inc. warrants that this study was conducted in accordance with generally accepted environmental science practices, including the technical guidelines and criteria in effect at the time of this study. The results and conclusions of this report represent the authors' best professional judgment based upon information provided by the project proponent and information obtained during the course of this study. No other warranty, expressed or implied, is made.

In the event of any changes in the nature, design or locations of the project site features, the conclusion and recommendations in this report would not be valid unless the changes are reviewed and the conclusions of this report are verified in writing with Shockey Planning Group, Inc. Shockey Planning Group, Inc. is not responsible for any claims, damages or liabilities associated with the interpretation of these findings or reuse of the analysis without the express written authorization of Shockey Planning Group, Inc.

Shockey Planning Group, Inc. and project staff are not attorneys, and this report should not be construed to be a legal representation or interpretation of environmental laws, rules or regulations.

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APPENDIX A
PHOTOGRAPHS

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Photo 1—Wetland A swale looking east from near headwaters.

Photo 2—Wetland A at uphill side of central ditch looking northeast.

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Photo 3—Wetland A in central ditch looking north.

Photo 4—Wetland A downstream of central ditch looking east.

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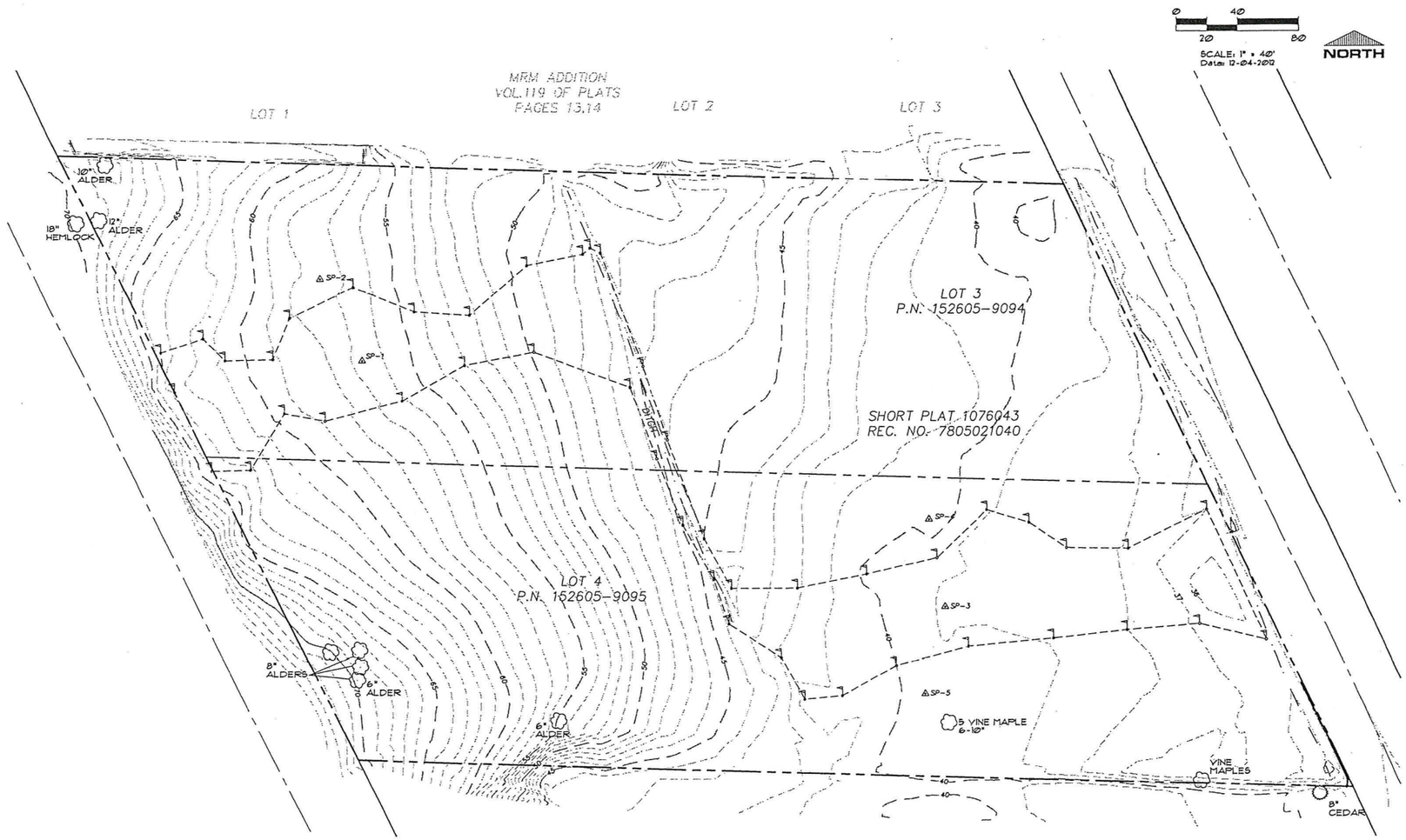
APPENDIX B
FIGURES

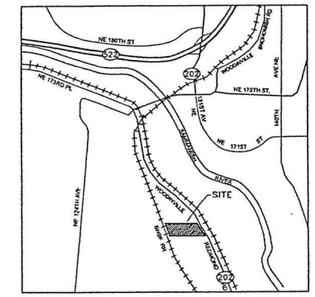
NW 1/4, SECTION 15, TOWNSHIP 26 N., RANGE 5 E., W.M.



LEGEND

- INDEX CONTOUR
- MINOR CONTOUR
- DITCH
- SP-2 SOIL TEST PIT
- WETLAND FLAG

VICINITY MAP
(NOT TO SCALE)



PROJECT INFO

OWNER: ASKO PROCESSING GROUP
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PHONE: 206.634.2080
E-MAIL: mikek@askogroup.com

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WOODINVILLE, WA 98072

CONTACT: CAMIE ANDERSON
SHOCKEY PLANNING GROUP
2716 COLBY AVE.
EVERETT, WA 98201
PHONE: 425.258.9308
E-MAIL: canderson@shockeyplanning.com

LEGAL DESCRIPTION

LOTS 3 AND 4 OF KING COUNTY SHORT PLAT NO. 1076043 RECORDED UNDER RECORDING NO. 7805021040, RECORDS OF KING COUNTY, WASHINGTON.

SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON.

ZONING

INDUSTRIAL WITH TOURIST OVERLAY

WETLAND NOTE

WETLANDS WERE FLAGGED BY:
SHOCKEY PLANNING GROUP
2716 COLBY AVE.
EVERETT, WA 98201
425.258.9308

AREA SUMMARY

TOTAL LOT AREA:	266,537 SQ. FT.	(6.118 AC.)
LOT 3:	133,269 SQ. FT.	(3.059 AC.)
LOT 4:	133,268 SQ. FT.	(3.059 AC.)
TOTAL WETLAND AREA:	43,585 SQ. FT	(1.001 AC.)

EXHIBIT 8
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PROJECT FILE NUMBER:

ISSUE DATE: 12-2012 | DY: ALK

REVISIONS	DATE

SHOCKEY PLANNING GROUP, Inc.
Land Use
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Permitting
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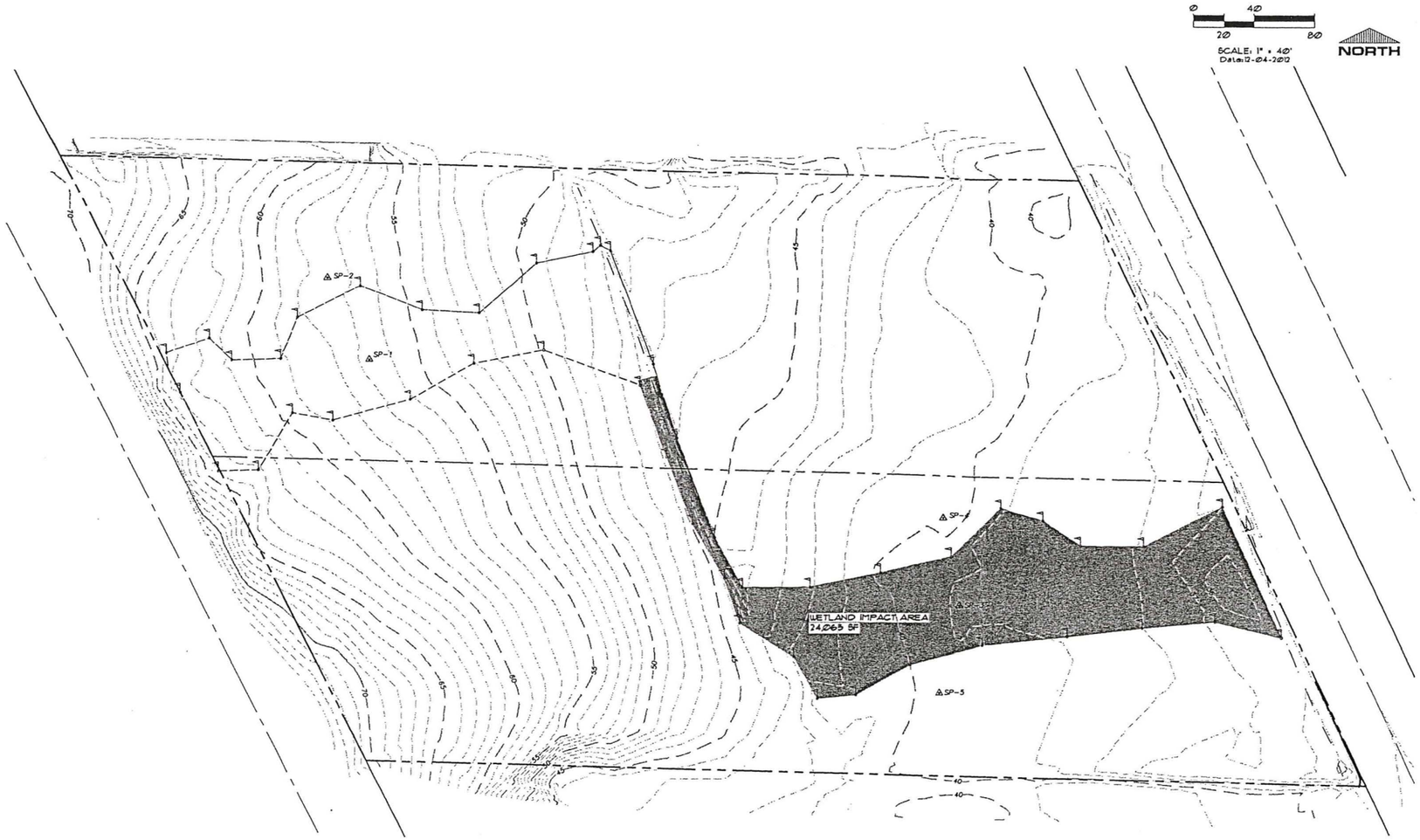
ASKO PROCESSING, INC.
WETLANDS - EXISTING CONDITIONS
KING COUNTY, WA

Fig. 1

PROJECT: ASKO 12112

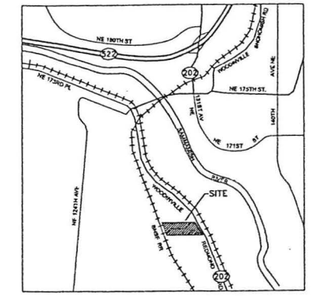
NW 1/4, SECTION 15, TOWNSHIP 26 N., RANGE 5 E., W.M.



LEGEND

- INDEX CONTOUR
- MINOR CONTOUR
- DITCH
- SP-2 SOIL TEST PIT
- WETLAND FLAG
- WETLAND IMPACT

VICINITY MAP
(NOT TO SCALE)



PROJECT INFO

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LEGAL DESCRIPTION

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SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON.

ZONING

INDUSTRIAL WITH TOURIST OVERLAY

BUILDING SETBACKS

MINIMUM STREET SETBACK IS 25'

NO MINIMUM INTERIOR SETBACK REQUIRED PER W.M.C 21.12.040

WETLAND NOTE

WETLANDS WERE FLAGGED BY:
SHOCKEY PLANNING GROUP
2716 COLBY AVE.
EVERETT, WA 98201
425.258.9308

THE FLAGS WERE LOCATED BY HARMSEN AND ASSOCIATES ON JUNE 1, 2012.

AREA SUMMARY

TOTAL AREA: 266,537 SQ. FT. (6.119 AC.)
LOT 3: 133,269 SQ. FT. (3.059 AC.)
LOT 4: 133,268 SQ. FT. (3.059 AC.)

TOTAL WETLAND REMAINING: 19,520 SQ. FT (0.45 AC.)

EXHIBIT 8
PAGE 36 OF 65

PROJECT FILE NUMBER:

ISSUE DATE: 12-2012
DY: ALK

REVISIONS	DATE

SHOCKEY PLANNING GROUP, Inc.
2716 Colby Avenue
Everett, WA 98201
p 425.258.9308
f 425.258.9309
www.shockeyplanning.com
Land Use
Environmental Analysis
Permitting
Public Policy

ASKO PROCESSING, INC.
WETLAND IMPACT
KING COUNTY, WA

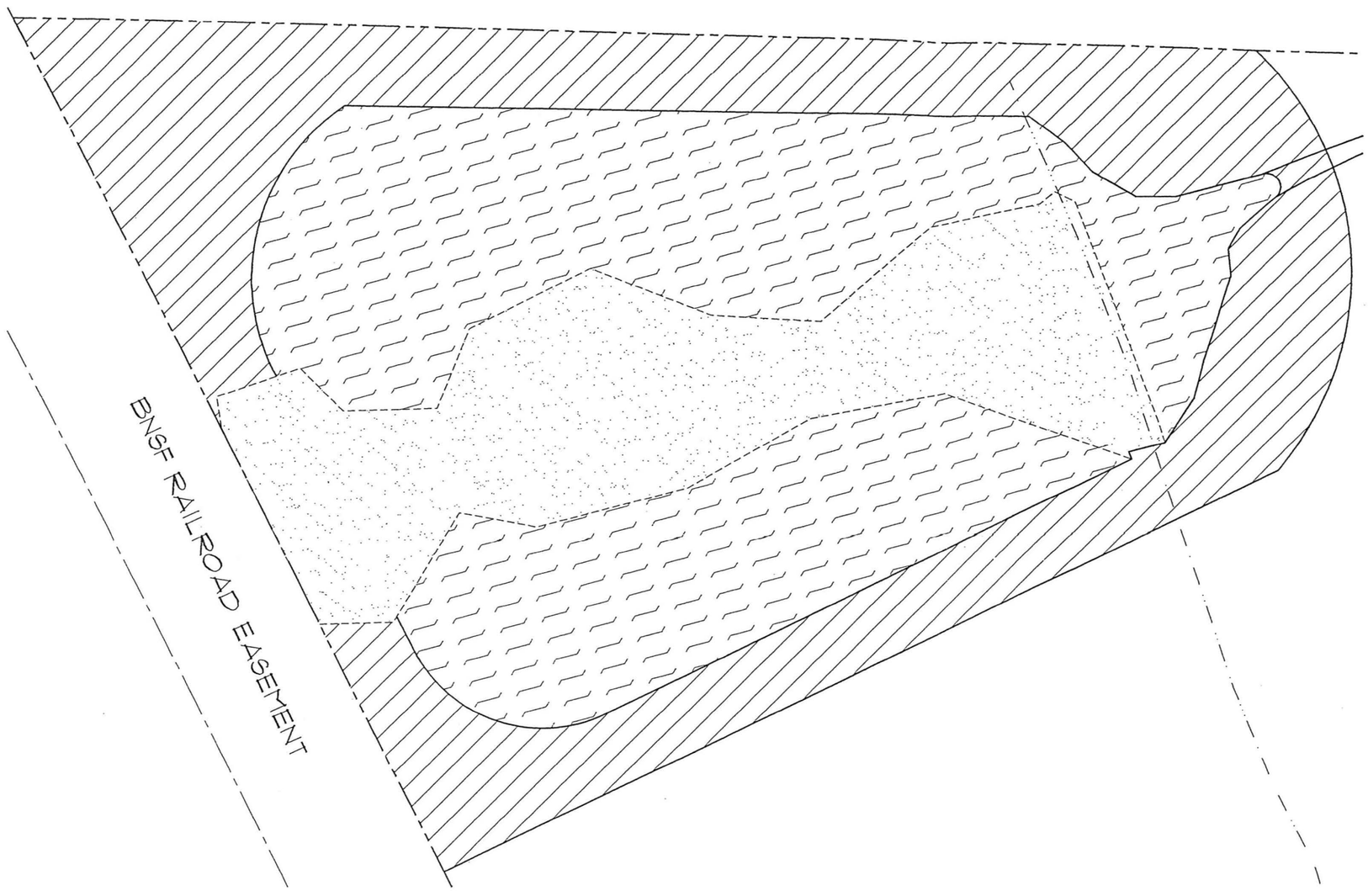
Fig. 2

PROJECT: ASKO 12112

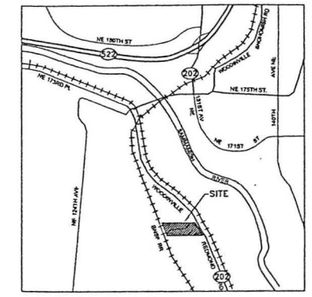
NW 1/4, SECTION 15, TOWNSHIP 26 N., RANGE 5 E., W.M.

0 20
10 40
SCALE: 1" = 20'
Date: 12-04-2012

NORTH



VICINITY MAP
(NOT TO SCALE)



PROJECT INFO

OWNER: ASKO PROCESSING GROUP
MIKE KELLY
434 N. 35TH ST.
SEATTLE, WA 98103
PHONE: 206.634.2080
E-MAIL: mikek@askogroup.com

SITE ADDRESS:
15801 & 15701 WOODINVILLE-REDMOND RD.
WOODINVILLE, WA 98072

CONTACT: CAMIE ANDERSON
SHOCKEY PLANNING GROUP
2716 COLBY AVE.
EVERETT, WA 98201
PHONE: 425.258.9308
E-MAIL: canderson@shockeyplanning.com

LEGAL DESCRIPTION

LOTS 3 AND 4 OF KING COUNTY SHORT PLAT NO. 1076043 RECORDED UNDER RECORDING NO. 7805070040, RECORDS OF KING COUNTY, WASHINGTON.

SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON.

ZONING

INDUSTRIAL WITH TOURIST OVERLAY

BUILDING SETBACKS

MINIMUM STREET SETBACK IS 25'
NO MINIMUM INTERIOR SETBACK REQUIRED
PER WMC 21.12.040

WETLAND NOTE

WETLANDS WERE FLAGGED BY:
SHOCKEY PLANNING GROUP
2716 COLBY AVE.
EVERETT, WA 98201
425.258.9308

THE FLAGS WERE LOCATED BY HARMSEN AND ASSOCIATES ON JUNE 1, 2012.

AREA SUMMARY

TOTAL AREA:	266,537 SQ. FT.	(6.119 AC.)
LOT 3:	133,269 SQ. FT.	(3.059 AC.)
LOT 4:	133,268 SQ. FT.	(3.059 AC.)

TOTAL WETLAND REMAINING: 19,520 SQ. FT (0.45 AC.)

LEGEND

- DITCH
- BUFFER ENHANCEMENT 32,003 SF
- WETLAND CREATION 35,140 SF
- WETLAND ENHANCEMENT 19,520 SF

EXHIBIT 8
PAGE 39 OF 65

PROJECT FILE NUMBER:

ISSUE DATE: 12-2012 | DY: ALK

REVISIONS	DATE

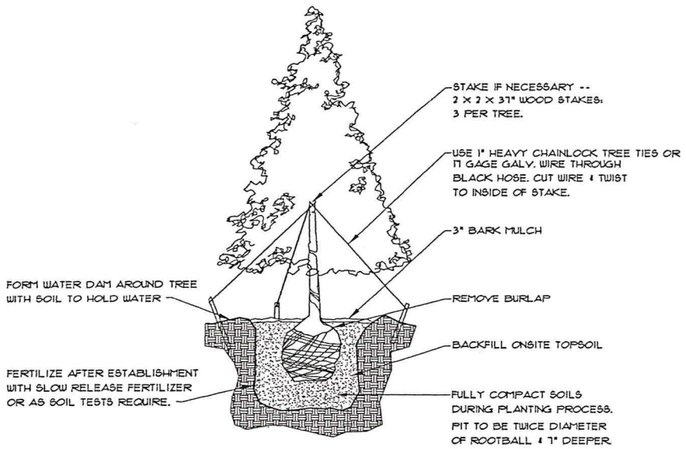
SHOCKEY PLANNING GROUP, Inc.
Land Use
Environmental Analysis
Permitting
Public Policy
2716 Colby Avenue
Everett, WA 98201
p 425.258.9308
f 425.259.4114
www.shockeyplanning.com

ASKO PROCESSING, INC.
PROPOSED MITIGATION PLAN
KING COUNTY, WA

Fig. 3

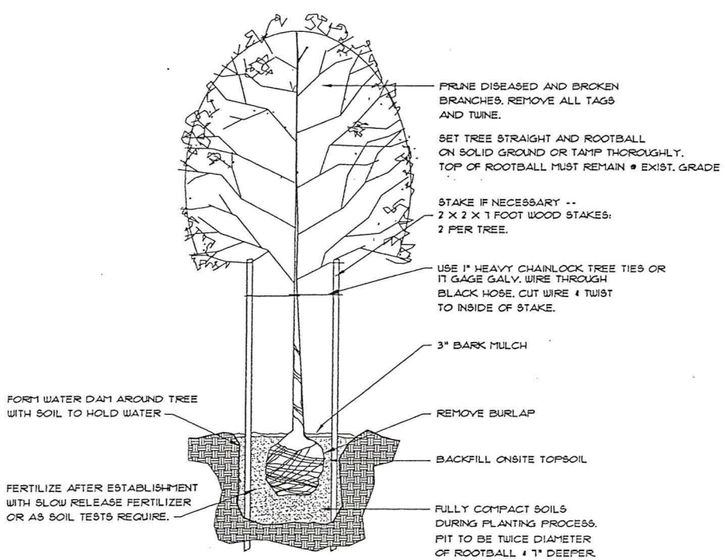
PROJECT: ASKO 12112

NW 1/4, SECTION 15, TOWNSHIP 26 N., RANGE 5 E., W.M.



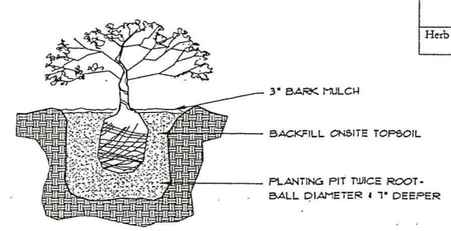
EVERGREEN TREE PLANTING DETAIL

N.T.S.



DECIDUOUS TREE PLANTING DETAIL

N.T.S.



SHRUB AND GROUNDCOVER PLANTING DETAIL

N.T.S.

PLANT LIST

Wetland Creation Area.

Strata	Scientific Name	Common Name	Size	Quantity
Tree	*Fraxinus latifolia*	Oregon ash	5 gallon	50
	Salix lucida	Pacific willow	5 gallon	50
Shrub	*Cornus sericea*	Red-osier dogwood	1 gallon	100
	Lonicera involucrate	Black twinberry	1 gallon	100
	Rubus spectabilis	Salmonberry	1 gallon	100
	Salix sitchensis	Sitka willow	1 gallon	100

Wetland Enhancement Area.

Strata	Scientific Name	Common Name	Size	Quantity
Tree	*Alnus rubra*	Red alder	5 gallon	20
	Fraxinus latifolia	Oregon ash	5 gallon	20
	Populus balsamifera	Black cottonwood	5 gallon	20
Shrub	*Physocarpus capitatus*	Pacific ninebark	1 gallon	30
	Rosa nutkana	Nootka rose	1 gallon	30
	Rubus spectabilis	Salmonberry	1 gallon	30
	Salix sitchensis	Sitka willow	1 gallon	30

Buffer Enhancement Area.

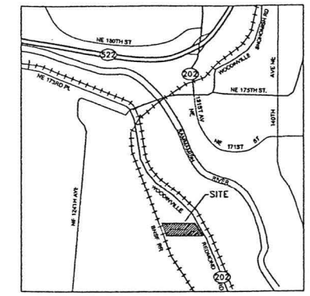
Strata	Scientific Name	Common Name	Size	Quantity
Tree	*Acer macrophyllum*	Bigleaf maple	5 gallon	35
	Alnus rubra	Red alder	5 gallon	35
	Pinus contorta var. contorta	Shore pine	5 gallon	35
	Pseudotsuga menziesii	Douglas fir	5 gallon	35
	Rhamnus purshiana	Cascara	5 gallon	35
	Tsuga heterophylla	Western hemlock	5 gallon	35
Shrub	*Acer circinatum*	Vine maple	1 gallon	50
	Holodiscus discolor	Oceanspray	1 gallon	50
	Ribes sanguineum	Red-flowering currant	1 gallon	50
	Rosa gymnocarpa	Wood rose	1 gallon	50
	Rubus parviflorus	Thimbleberry	1 gallon	50
	Symphoricarpos albus	Snowberry	1 gallon	50
	Vaccinium ovatum	Evergreen huckleberry	1 gallon	50
Herb	*Polystichum munitum*	Sword fern	1 gallon	100

NORTH

Date: 12-04-2012

VICINITY MAP

(NOT TO SCALE)



PROJECT INFO

OWNER: ASKO PROCESSING GROUP
MIKE KELLY
434 N. 35TH ST.
SEATTLE, WA 98103
PHONE: 206.634.2080
E-MAIL: mikek@askogroup.com

SITE ADDRESS:
15801 & 15701 WOODINVILLE-REDMOND RD.
WOODINVILLE, WA 98072

CONTACT: CAMIE ANDERSON
SHOCKEY PLANNING GROUP
2716 COLBY AVE.
EVERETT, WA 98201
PHONE: 425.258.9308
E-MAIL: canderson@shockeyplanning.com

LEGAL DESCRIPTION

LOTS 3 AND 4 OF KING COUNTY SHORT PLAT NO. 1276043 RECORDED UNDER RECORDING NO. 7805021040, RECORDS OF KING COUNTY, WASHINGTON.

SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON.

ZONING

INDUSTRIAL WITH TOURIST OVERLAY

BUILDING SETBACKS

MINIMUM STREET SETBACK IS 25'
NO MINIMUM INTERIOR SETBACK REQUIRED PER WMC 21.12.040

WETLAND NOTE

WETLANDS WERE FLAGGED BY:
SHOCKEY PLANNING GROUP
2716 COLBY AVE.
EVERETT, WA 98201
425.258.9308

THE FLAGS WERE LOCATED BY HARMSEN AND ASSOCIATES ON JUNE 1, 2012.

AREA SUMMARY

TOTAL AREA: 266,537 SQ. FT. (6.119 AC.)
LOT 3: 133,269 SQ. FT. (3.059 AC.)
LOT 4: 133,268 SQ. FT. (3.059 AC.)

TOTAL WETLAND REMAINING: 19,520 SQ. FT (0.45 AC.)

EXHIBIT 8
PAGE 40 OF 65

PROJECT FILE NUMBER:

ISSUE DATE: 12-2012 | DY: ALK

REVISIONS	DATE

SHOCKEY PLANNING GROUP, Inc.
2716 Colby Avenue
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www.shockeyplanning.com
Land Use
Environmental Analysis
Permitting
Public Policy

ASKO PROCESSING, INC.

PROPOSED PLANTING PLAN

KING COUNTY, WA

Fig. 4

PROJECT: ASKO 12112

EXHIBIT 8
PAGE 41 OF 65

APPENDIX C
WETLAND DATA SHEETS

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

Project/Site: ASKO vacant lots City/County: King Sampling Date: 5-31-12

Applicant/Owner: ASKO Processing Group, Inc. State: WA Sampling Point: SP-

Investigator(s): Doug Gresham Section, Township, Range: Section 15, Township 26N, Range 5E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): A Lat: 47 44' 27" Long: -122 9' 45" Datum: _____

Soil Map Unit Name: Indianola loamy fine sand, 4-15% slopes NWI classification: _____

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 ☐ No ☐	**Is the Sampled Area within a Wetland?** Yes ☐ No ☐
Hydric Soil Present?	Yes ☐ No ☐	
Wetland Hydrology Present?	Yes ☐ No ☐	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		
% Bare Ground in Herb Stratum _____			

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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 ☐ No ☐

Remarks:

SOIL

Sampling Point: SP-

EXHIBIT 8
PAGE 43 OF 65

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]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)
- ☐ 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 ☐ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ 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)
- ☐ 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**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ 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 ☐ Depth (inches): _____

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

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

Wetland Hydrology Present? Yes ☐ 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: ASKO vacant lots City/County: King Sampling Date: 5-31-12

Applicant/Owner: ASKO Processing Group, Inc. State: WA Sampling Point: SP-4

Investigator(s): Doug Gresham Section, Township, Range: Section 15, Township 26N, Range 5E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): A Lat: 47 44' 27" Long: -122 9' 45" Datum: _____

Soil Map Unit Name: Indianola loamy fine sand, 4-15% slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks:
Although meets criteria for plants and soils, there was no hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Phalaris arundinacea	40	X	FACW
2. Agrostis capillaris	35	X	FAC
3. Vicia sativa	10		FACU
4. Ranunculus acris	10		FAC
5. Cirsium arvense	5		FAC
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 5

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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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 ☒ No ☐

Remarks:
Dominant species are hydrophytic.

SOIL

EXHIBIT 8
PAGE 45 OF 65

Sampling Point: SP-4

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 %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	100					Silty sand	
6-11	10YR 2/2	95	10YR 3/4	5	C	M	Silty sand	
11-18	2.5Y 4/2	90	10YR 3/4	10	C	M	Silty 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)
- ☐ 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)
- ☐ 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 ☒ No ☐

Remarks: Sandy soil with redoximorphic features.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ 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)
- ☐ 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**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ 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 ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

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

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No signs of hydrology and 1' higher than swale.

EXHIBIT 8
PAGE 46 OF 65

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

Project/Site: ASKO vacant lots City/County: King Sampling Date: 5-31-12

Applicant/Owner: ASKO Processing Group, Inc. State: WA Sampling Point: SP-3

Investigator(s): Doug Gresham Section, Township, Range: Section 15, Township 26N, Range 5E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): A Lat: 47 44' 27" Long: -122 9' 45" Datum: _____

Soil Map Unit Name: Indianola loamy fine sand, 4-15% slopes NWI classification: PEM

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks:
Meets all three criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Phalaris arundinacea	100	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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 ☒ No ☐

Remarks:
Dominant species is hydrophytic.

SOIL

Sampling Point: SP-3

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 %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Mucky sand	
5-10	10YR 2/1	100					Silty sand	
10-18	2.5Y 4/1	90	10YR 3/6	10	C	M	Silty 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)
- ☐ 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)
- ☐ 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 ☒ No ☐

Remarks: Sandy soil with redoximorphic features below mucky surface layer.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ 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)
- ☐ 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**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ 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 ☒	Depth (inches):
Water Table Present?	Yes ☒	No ☐	Depth (inches): 4
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches): 2-10

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Surface layer saturated over drier bottom layer.

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

Project/Site: ASKO vacant lots City/County: King Sampling Date: 5-31-12

Applicant/Owner: ASKO Processing Group, Inc. State: WA Sampling Point: SP-2

Investigator(s): Doug Gresham Section, Township, Range: Section 15, Township 26N, Range 5E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): A Lat: 47 44' 27" Long: -122 9' 45" Datum: _____

Soil Map Unit Name: Indianola loamy fine sand, 4-15% slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks:
Doesn't meet criteria for plants and hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Equisetum arvense	5	X	FAC
2. Polystichum munitum	T	X	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. Rubus armeniacus	100	X	FACU
2.			
	100	= Total Cover	

% Bare Ground in Herb Stratum 90

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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 ☐ No ☒

Remarks:
Dominant species is not hydrophytic.

SOIL

Sampling Point: SP-2

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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 %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	100					Silty sand	
6-11	10YR 3/2	95	10YR 3/4	5	C	M	Silty sand	
11-18	10YR 4/2	90	10YR 3/4	10	C	M	Silty 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)
- ☐ 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)
- ☐ 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 ☒ No ☐

Remarks: Sandy matrix with redoximorphic features.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ 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)
- ☐ 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**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ 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 ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

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

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No signs of hydrology and 1' higher than swale.

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

Project/Site: ASKO vacant lots City/County: King Sampling Date: 5-31-12

Applicant/Owner: ASKO Processing Group, Inc. State: WA Sampling Point: SP-1

Investigator(s): Doug Gresham Section, Township, Range: Section 15, Township 26N, Range 5E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): A Lat: 47 44' 27" Long: -122 9' 45" Datum: _____

Soil Map Unit Name: Indianola loamy fine sand, 4-15% slopes NWI classification: PEM

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks:
Meets all three criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Ranunculus acris	30	X	FAC
2. Holcus lanatus	35	X	FAC
3. Juncus effusus	15		FACW
4. Agrostis capillaris	10		FAC
5. Vicia sativa	5		FACU
6. Equisetum arvense	5		FAC
7. Galium trifidum	T		FACW
8. Cirsium arvense	T		FACU
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0

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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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 ☒ No ☐

Remarks:
Dominant species are hydrophytic.

SOIL

Sampling Point: SP-1

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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 %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Silty sand	
5-11	10YR 2/2	95	10YR 3/4	5	C	M	Silty sand	
11-18	2.5Y 4/1	90	10YR 3/6	10	C	M	Sandy 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)
- ☐ 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 ☒ No ☐

Remarks: Sandy matrix with redoximorphic features.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☒ 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)
- ☐ 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**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ 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 ☐ Depth (inches): 1

Water Table Present? Yes ☒ No ☐ Depth (inches): 0-6

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 0-6

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Saturated soil in top 6" from groundwater seeps.

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

Project/Site: ASKO vacant lots City/County: King Sampling Date: 5-31-12

Applicant/Owner: ASKO Processing Group, Inc. State: WA Sampling Point: SP-5

Investigator(s): Doug Gresham Section, Township, Range: Section 15, Township 26N, Range 5E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): A Lat: 47 44' 27" Long: -122 9' 45" Datum: _____

Soil Map Unit Name: Indianola loamy fine sand, 4-15% slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks:
Although there is hydric soil, it did not meet criteria for plants and hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. Cytisus scoparius	10	X	UPL
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Phalaris arundinacea	60	X	FACW
2. Cirsium arvense	5		FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	65	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. Rubus armeniacus	20	X	FACU
2.			
	20	= Total Cover	

% Bare Ground in Herb Stratum 25

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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 ☐ No ☒

Remarks:
Only one dominant species is hydrophytic.

SOIL

EXHIBIT 8
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Sampling Point: SP-5

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 %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	100					Silty sand	
5-9	2.5Y 5/2	90	10YR 4/6	10	C	M	Silty sand	
9-18	10YR 2/2	100					Silty 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)
- ☐ 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)
- ☐ 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 ☒ No ☐

Remarks: Sandy soil with redoximorphic features.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ 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)
- ☐ 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**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ 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 ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

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

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No signs of hydrology and 2' higher than swale.

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APPENDIX D
WETLAND RATING FORMS

Wetland name or number _____

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WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): A Date of site visit: 5/31/12

Rated by DG Trained by Ecology? Yes__No___ Date of training_____

SEC: ___ TWNSHP: ____ RNGE: ____ Is S/T/R in Appendix D? Yes___ No___

Map of wetland unit: Figure ____ Estimated size _____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	7
Score for Hydrologic Functions	8
Score for Habitat Functions	9
TOTAL score for Functions	24

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply X

Final Category (choose the "highest" category from above) IV

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above		Check if unit has multiple HGM classes present	

Wetland name or number A

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Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number A

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Classification of Wetland Units in Western Washington

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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*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 rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
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?
X The wetland is on a slope (*slope can be very gradual*),
X 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.
X The water leaves the wetland **without being impounded**?
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 <3ft diameter and less than 1 foot deep).*
NO - go to 5 YES – The wetland class is **Slope**

Wetland name or number A

EXHIBIT 8
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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 two years.

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

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

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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 A

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S	Slope Wetlands WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality	Points (only 1 score per box)
S	**S 1. Does the wetland unit have the potential to improve water quality?**	*(see p.64)*
S	S 1.1 Characteristics of average slope of unit: Slope is1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	1
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure ___ 6
S	**Total for S 1** *Add the points in the boxes above*	7
S	**S 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150ft — Untreated stormwater discharges to wetland — Tilled fields, logging, or orchards within 150 feet of wetland — Residential, urban areas, or golf courses are within 150 ft upslope of wetland — Other _____ YES multiplier is 2 NO multiplier is 1	*(see p.67)* multiplier 1
S	**TOTAL - Water Quality Functions** Multiply the score from S1 by S2 *Add score to table on p. 1*	7

Comments

Wetland name or number A

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S	Slope Wetlands HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream erosion	Points (only 1 score per box)
	S 3. Does the wetland unit have the potential to reduce flooding and stream erosion?	*(see p.68)*
S	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland. points = 6 Dense, uncut, **rigid** vegetation > 1/2 area of wetland points = 3 Dense, uncut, **rigid** vegetation > 1/4 area points = 1 More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid points = 0	6
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	8
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* — Wetland has surface runoff that drains to a river or stream that has flooding problems — Other_____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 70)* multiplier 1
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	8

Comments

Wetland name or number A

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These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	Points (circle score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed __X__Emergent plants ____Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 1 structure — points = 0 Map of Cowardin vegetation classes	Figure ___ 0
H 1.2. Hydroperiods *(see p. 73)* *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 acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ____Seasonally flooded or inundated — 3 types present — points = 2 __X__Occasionally flooded or inundated — 2 types present — point = 1 __X__Saturated only — 1 type present — points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points** Map of hydroperiods	Figure ___ 1
H 1.3. Richness of Plant Species *(see p. 75)* 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)* *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 *List species below if you want to:*	1

Total for page 2

Wetland name or number A

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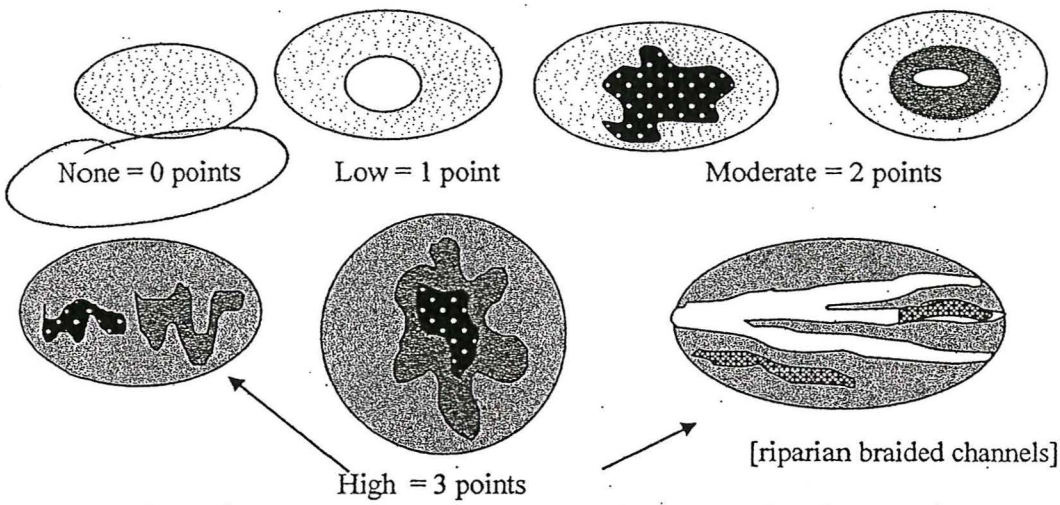
H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure ___



0

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

0

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

2

Comments

Wetland name or number A

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H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open ~~water for~~ > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure ___ 3
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor)* YES = **4 points** *(go to H 2.3)* NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** *(go to H 2.3)* NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	2

Total for page 5

Wetland name or number A

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H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

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

____**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 p. 152*).

____**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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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:** Woodlands 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*).

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

____**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*).

____**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.

____ **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: pp. 167-169 and glossary in Appendix A).*

____**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 7.6 m (25 ft) high and occurring below 5000 ft.

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

____**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 > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

0

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H 2.4 Wetland Landscape *(choose the one description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	2
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	7
TOTAL for H 1 from page 14	2
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	9