Wetland Resources, Inc.

Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

9505 19th Avenue S.E.
Suite 106
Everett, Washington 98208
**(425) 337-3174**
Fax (425) 337-3045

# *CRITICAL AREA STUDY*
# *AND*
# *BUFFER MITIGATION PLAN*

**FOR**

## *Crown Short Plat*

*Wetland Resources, Inc.* Project #03028

Prepared By:

*Wetland Resources, Inc.*
9505 19th Ave. SE, Suite 106
Everett, WA 98208
(425) 337-3174

For:

Crown Development
17117 59th Avenue NE
Arlington, WA 98223

**January 30, 2007**

## Table of Contents

## SITE DESCRIPTION

*Wetland Resources, Inc.* conducted a wetland delineation to identify jurisdictional wetlands in June of 2003. The site covers approximately 4 acres and is located southeast of the intersection of 172nd Street NE and 59th Avenue NE in Snohomish County, Washington. The property lies in a portion of Section 27, Township 31N, Range 5E, W.M.

Edgecomb Creek and an associated tributary run just off-site of the subject property along the east and southern boundaries. Surrounding land use is comprised mainly of agricultural land use. The slope is essentially level across the entire site.

The subject property is an open agricultural field with no shrubs or trees on-site. The dominant herbs in the wetland portions of the site include water foxtail and creeping buttercup. The non-wetland areas on-site are dominated by common velvetgrass, tall fescue, colonial bentgrass, and white clover.

No wetlands are located within the subject property, however three are located within the immediate vicinity. These off-site wetlands are shown on the enclosed *Critical Area Study and Mitigation Map* and are labeled Wetlands A-C. These wetland boundaries have been confirmed by Matt Bennett of the US Army Corps of Engineers. Said wetlands were rated using the Department of Ecology (DOE) Wetland Rating Form for Western Washington, and were categorized as Category III wetlands. In the city of Arlington Category III wetlands with a high intensity land use typically receive 50-foot buffers.

One wetland is located northeast of the subject property, across a tributary to Edgecomb Creek. This wetland is currently being monitored using shallow groundwater monitoring wells, and a boundary has not yet been determined. Given the similarity of this wetland to the surrounding wetlands, it would likely be rated as a Category III with a 50-foot buffer. As this wetland is more than 300 feet from the subject property, its boundary and buffer would not extend into the subject property.

A Type 3 ESA-stream (Edgecomb Creek) flows along the western property boundary. Edgecomb Creek empties into Quilceda Creek off-site to the south. In the city of Arlington ESA streams are typically given 150-foot protective buffers. Edgecomb Creek is identified on the Snohomish County Bull Trout Distribution Map as presumed habitat for bull trout, which grants this stream certain protections described below in the City of Arlington Classification section. Fish were also observed in the creek during the site visit.

## PROPOSED DEVELOPMENT

The applicant is proposing a 3-lot short plat with associated access road and utilities on the subject property. In order to accommodate Lot 3 and the detention facility multiple impacts to Environmentally Critical Areas are proposed.

## Proposed Impacts and Mitigation

To accommodate Lot 3 the applicant proposes to buffer avearage 917 square feet of Wetland C buffer. As mitigation for this impact the applicant proposes to provide 917 square feet of additional buffer in an equivalently vegetated area adjacent to the impact area. This area proposed for additional buffer is contiguous with the subject wetland and stream buffer and is allowed per Arlington Municipal Code (AMC) 20.88.320.

The proposed detention pond will be placed within the outer 50 feet of a portion of the stream buffer south of Lots 2 and 3. Stormwater Management Systems are allowed in the outer 50-foot management zone of the 150-buffer per AMC 20.88.430. To comply with the requirements of section 20.88.430, the applicant proposes to plant the detention pond with native vegetation and establish 65% native tree cover in the remaining portion of buffer. Plantings will follow the Detention Pond Planting Plan set forth by HBA Design Group, LLC.

## Buffer Enhancement

To comply with the requirements of Section 20.88.430, the applicant proposes to enhance 66,318 square feet of stream buffer by planting native trees. The proposed distribution of native plants for this buffer enhancement plan follows:

*Buffer Enhancement (per 66,318 square feet)*

| Common Name | *Latin Name* | Size | Spacing | Quantity |
|---|---|---|---|---|
| Douglas fir | *Pseudotsuga menziesii* | 1 gallon | 10' | 143 |
| Western red cedar | *Thuja plicata* | 1 gallon | 10' | 143 |
| Big leaf maple | *Acer macrophyllum* | 1 gallon | 10' | 143 |

## Planting Notes

A meeting will take place between the consulting biologist and the contracted landscaper prior to commencement of enhancement activities. This will provide an opportunity to clarify any questions that may arise and ensure success of the enhancement project in a timely manner. Siltation fencing shall be placed as shown on the TESC design and be inspected prior to any mitigation site disturbance.

Planting shall take place in the early spring or late fall. Potted plants should be obtained from a reputable nursery. All plant materials recommended in this plan are typically available from local and regional sources, depending on seasonal demand. Some limited species substitution may be allowed, only with the agreement of the consulting biologist or city representative. Care and handling of plant materials is extremely important to the overall success of the project.

Lath stakes, or similar approved marking system, should be placed next to each tree and shrub to assist in locating the plants while removing the competing non-native vegetation. This will be done for all installed plants.

Plants will be arranged in a pattern with the appropriate numbers, sizes, species, and distribution to achieve the desired vegetation coverage. The actual placement of individual plants shall mimic natural, asymmetric vegetation patterns found on similar undisturbed sites in the area.

## Project Monitoring Program

### Requirements for monitoring project

1. Initial compliance report
2. Semi-annual site inspections (twice yearly, in the spring and fall) for five years
3. Annual reports (One report submitted in the fall of each monitored year)

### Purpose of Monitoring

The purpose of monitoring this project is to evaluate the success of the enhancement plantings. Success will be determined if monitoring shows that at the end of five years the performance standards are being met and that habitat values in the enhancement areas are equivalent to similar ecosystems in the immediate area.

### Inspection Schedule

Upon completion of the mitigation project, an inspection by a qualified wetland biologist will be made to determine plan compliance. A compliance report will be supplied to the City of Arlington regarding the completeness of the project. Condition monitoring of the plantings will be done by a qualified wetland biologist in the spring and fall annually for the five-year monitoring period. A written report describing the monitoring results will be submitted to the City of Arlington shortly after the fall inspection of each monitored year. Final inspection will occur five years after completion of planting. The contracted wetland professional will prepare a final report as to the success of the project. Vegetation monitoring transects and photo points will be established in the compliance report.

### Definition of Success / Performance Standards

The enhancement areas shall support at least 80% survivorship, and at least 65% aerial coverage of the native plants set forth in this plan by the end of five years. The species mix should resemble that proposed by the planting plans, but strict adherence to obtaining all of the species shall not be a criterion for success. Reproduction of volunteer native species may be used to establish aerial coverage requirements. If a given area contains more than 10% aerial coverage of invasive, non-native species within the planting areas, the enhancement shall not be considered successful for that area.

## Maintenance

The enhancement area will require periodic maintenance during the monitoring period. The buffer enhancement will be maintained at least two times during the spring and once in the fall for each of the five monitored years, or as needed to assure the success of the mitigation project. Maintenance may include, but will not be limited to, removal of invasive vegetation (by hand or chemical means as necessary), replacement of plant mortality, and/or the replacement of mulch for

each maintenance period. Chemical control, if necessary, shall be applied by a licensed applicator following all label instructions.

## Contingency Plan

If more than 20% of the plants are severely stressed during any of the inspections, or it appears more than 20% may not survive, additional plantings of the same species or, if necessary, alternative species may be added to the enhancement areas. If this situation persists into the next inspection, a meeting with a representative for the City of Arlington, the consulting wetland biologist and the property owner will be scheduled to decide upon contingency plans. Elements of the contingency plan may include, but will not be limited to more aggressive weed control, plant mortality replacement, species substitution, fertilization, and/or soil amendments.

## Performance Bond

A performance bond shall be provided to the City of Arlington for the period of five years from the completion of the project, in the amount of 100% of the estimated cost for plant material and labor. Annual monitoring reports and seasonal maintenance will be required to assure the success of this enhancement plan. The City of Arlington shall release this bond at the end of the five years, upon successful determination for all portions of this mitigation project. The following is an estimate of plant materials and labor only. This does not represent a bid to install:

| **Estimated Project Cost** | |
|---|---|
| Quantity of one-gallon plants (at $9.50 per plant) | 429 |
| Estimated Cost of Plant Material and Installation Labor | $4,075.00 |
| Estimated Cost of Monitoring for three years | $2,000.00 |
| Estimated Cost of Maintenance for three years | $5,000.00 |
| Total Estimated Project Cost | $11,075.00 |
| **Total Estimated Bond Amount (100%)** | **$11,075.00** |

## Wetlands and Stream Classifications - Cowardin System

According to the Cowardin System, as described in Classification of Wetlands and Deepwater Habitats of the United States, the classification for the on-site wetlands and streams is as follows:

Category 3 Wetlands: Palustrine, Emergent, Seasonally Flooded.

Type 3 Stream: Riverine, Upper Perennial, Unconsolidated Bottom, Cobble/Gravel

## WETLAND AND STREAM CLASSIFICATIONS - CITY OF ARLINGTON

Under the City of Arlington Environmentally Critical Areas Regulations (ECAR), Chapter 20.88, the off-site wetlands and streams are classified as follows:

Wetlands A through C: Category III Wetlands w/ Habitat Scores below 20: These wetlands received total scores for functions of 33 with habitat scores of 15, on the DOE Wetland Rating Form. In the City of Arlington, wetlands receiving a total score between 30 and 50 points are classified as Category III wetlands. In the City of Arlington the standard buffer for Category III wetlands, with high intensity land use, is 50 feet from the delineated edge.

Type 3 Stream: The Type 3 stream channel near the eastern and southern property boundaries is used by anadromous fish for spawning, rearing, or migration. Fish and wildlife habitat conservation areas (F&WHCA) are established where aquatic habitats have a primary association with any salmonid species listed as threatened or endangered, such as the bull trout. F&WHCA are those lands within 150 feet horizontally of the ordinary high water mark (OHWM) of all documented and presumed aquatic habitat of the subject salmonid species. The first 100 feet of this buffer shall be designated as NGPA, and the remaining 50 feet shall be designated as a management zone. Specific restrictions within these zones are set forth in 20.88.440.

In the City of Arlington, regulated streams, wetlands, and their buffers are designated collectively as Native Growth Protection Areas (NGPAs). Native Growth Protection Areas are subject to the following conditions:

> *"NATIVE GROWTH PROTECTION AREA (NGPA) means an area which is to be left permanently undisturbed in a substantially natural state and in which no clearing, grading, filling, building construction or placement, or road construction of any kind is allowed..."*

## WETLAND DETERMINATION REPORT

**Methodology**

On-site, the routine methodology described in the Washington State Wetlands Identification and Delineation Manual (Washington State Department of Ecology Publication #96-94, March 1997) was used to make a determination, as required by Snohomish County. Under this method, the process for making a wetland determination is based on three sequential steps:

1.) Examination of the site for hydrophytic vegetation (species present and percent cover);

2.) If hydrophytic vegetation is found, then the presence of hydric soils is determined.

3.) The final step is determining if wetland hydrology exists in the area examined under the first two steps.

The following criteria descriptions were used in the boundary determination:

**Wetland Vegetation Criteria:**
The 1997 edition of the Washington State Wetlands Identification and Delineation Manual defines hydrophytic vegetation as "the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present." Field indicators were used to determine whether the vegetation meets the definition for hydrophytic vegetation.

**Wetland Soils Criteria and Mapped Description:**
The 1997 edition of the Washington State Wetlands Identification and Delineation Manual defines hydric soils as "soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part." Field indicators were used to determine whether a given soil meets the definition for hydric soils.

The soils underlying the site are mapped in the Soil Survey of Snohomish County Area Washington as Custer fine sandy loam and Norma loam. Soils sampled on-site appear to match the description for these soils.

Custer fine sandy loam: This very deep, poorly drained soil is in basins on outwash plains. It formed in glacial outwash. Typically, the surface layer is very dark grayish brown fine sandy loam about nine inches thick. The upper part of the subsoil is loamy fine sand about 7 inches thick. Included in this unit are small areas of Indianola soils on terraces, Norma soils in upland drainageways, and Custer soils that have been partially drained. Permeability of this Custer soil is moderately slow in the discontinuous hardpan and very rapid below it. Available water capacity is low. This soil is listed as hydric in the Hydric Soils List for Washington.

This very deep poorly drained soil is in depressional areas on outwash plains and till plains. It formed in alluvium. Typically the surface layer is very dark gray loam about 10 inches thick. The subsoil is dark grayish brown sandy loam about 18 inches thick. Included in this unit are small areas of soils that have a surface layer and subsoil of silt loam and soils that have a gravelly and sandy subsoil. Also included are areas of Bellingham and Custer soils and Terric medisaprists in depressional areas. Included areas make up about 15 percent of the total acreage. Permeability of this soil is moderately rapid. Available water capacity is moderate. This soil is listed as hydric in the Hydric Soils List for Washington.

**Wetland Hydrology Criteria:**
The 1997 edition of the Washington State Wetlands Identification and Delineation Manual states that the "term wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season." It also explains that "areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and chemically reducing conditions, respectively."

Additionally, the manual states that "areas which are seasonally inundated and/or saturated to the surface for a consecutive number of days ≥12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas inundated or saturated between 5 and 12.5 percent of the growing season in most years may or may not be wetlands. Areas saturated to the surface for less than 5 percent of the growing season are non-wetlands." Field indicators were used to determine whether wetland hydrology parameters were met on this site.

## Boundary Determination Findings

**Category 3 Wetlands:**
Wetlands A-C are small depressional wetlands located with the adjacent field. Typical vegetation in these wetlands is represented by water foxtail (*Alopecurus geniculatus*-Obl) and creeping buttercup (*Ranunculus repens*-FacW), with lesser amounts of colonial bentgrass (*Agrostis tenuis*, Fac).

Typical soils in the wetland areas have Munsell colors ranging from very dark gray to black (10 YR 3/1 to 10 YR 2/1) from 0 to 8 inches below the surface. From 8 to 18 inches, soils have a Munsell colors ranging from gray to dark gray (5 Y 5/1 to 5 Y 4/1). Textures were found to be silt loam to sandy loam. Soils sampled in the wetland portions of the site were wet during our June 2003 site visit.

**Non-wetland Areas:**
The entire site is comprised of farmed pasture. Dominant vegetation on the upland portions of the site include tall fescue (*Festuca arundinacea*-Fac-), colonial bentgrass (*Agrostis tenuis*-Fac), common velvetgrass (*Holcus lanatus*-Fac), and white clover (*Trifolium repens*-Fac). Creeping buttercup also exists to a lesser extent in the non-wetland areas.

Typical soils in the upland portions of this property have Munsell colors ranging from very dark gray to black (10 YR 3/1 to 10 YR 2/1) from 0 to 8 inches below the surface. From 8 to 18 inches, soils have a Munsell colors ranging from olive gray to gray (5 Y 5/2 to 5 Y 5/1). Upland soils have textures ranging from sand to sandy loam and were dry to slightly moist at the time of investigation.

## Existing Wetland Functions and Values Assessment

**Methodology:**
The methodology for this functions and values assessment is based on professional opinion developed through past field analyses and interpretations. This assessment pertains specifically to the on-site wetland and stream systems, but is typical for assessments of similar systems throughout western Washington.

**Existing Conditions:**
All of the subject wetlands are relatively small, isolated pasture wetlands. As such, the overall functions and values provided by these areas are low. Stormwater storage and floodflow attenuation are limited by the small size and catchment areas of these wetlands as well as their isolation from streams or other downstream systems. The dense herbaceous cover in these wetlands serves to filter overland flow and prevent

erosion. However, these wetlands provide minimal water quality functions due to the lack of vegetative structure and the frequent occurrence of disturbance in the form of farming and grazing. Wildlife habitat is also limited due to the lack of vegetative structure and diversity. Functions and values of these wetlands could be slightly improved through an increase in vegetative structure and species diversity. Overall potential functions and values are limited by the small size and isolated nature of these wetlands.

A portion of Edgecomb Creek flows just off of the eastern and southern border of this property. This creek serves to convey stormwater and provide important habitat for salmonid fish. Due to the presence of fish and the location of this creek within the landscape, Edgecomb Creek has the potential to provide a very high level of functions and values. However, in its current state this creek provides only a moderate level of functions and values at best. Although Edgecomb Creek is an important local creek that supports fish, this stream is functioning more as a large farm ditch than a stream. Historically, the on-site portion of this creek was ditched and relocated to the sides of these fields causing it to have relatively steep straight banks and to be separated from its flood plain. There is minimal woody vegetation along the banks to provide shade, large woody debris, or allochthonous material to the creek. The lack of tortuosity, lack of connection to riparian wetlands, and the steep banks mean that water flows quickly off this site, reducing the opportunity for groundwater recharge, limiting habitat for wildlife, and increasing the potential for downstream flooding and subsequent erosion. Functions and values of this site could be dramatically improved if this stream were re-connected with a flood plain and allowed to meander freely. Enhancement of the buffers using native trees and shrubs would also provide improved functions and values.

## USE OF THIS REPORT

This Critical Area Study is supplied to Crown Development as a means of determining on-site wetland conditions, as required by Snohomish County during the permitting process. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions.

The laws applicable to wetlands are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the applicant's attempt to comply with the laws now in effect.

The work for this report has conformed to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work or this report and any implied representation or warranty is disclaimed.

*Wetland Resources, Inc.*

Nick Ostrovsky
*Associate Wetland Ecologist*

## REFERENCES


Cowardin, et al., 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S.D.I. Fish and Wildlife Service. FWS/OBS-79/31. December 1979.

National List of Plant Species that Occur in Wetlands, Northwest Region. 1996. U.S. Department of the Interior, Fish and Wildlife Service. Washington, D.C.

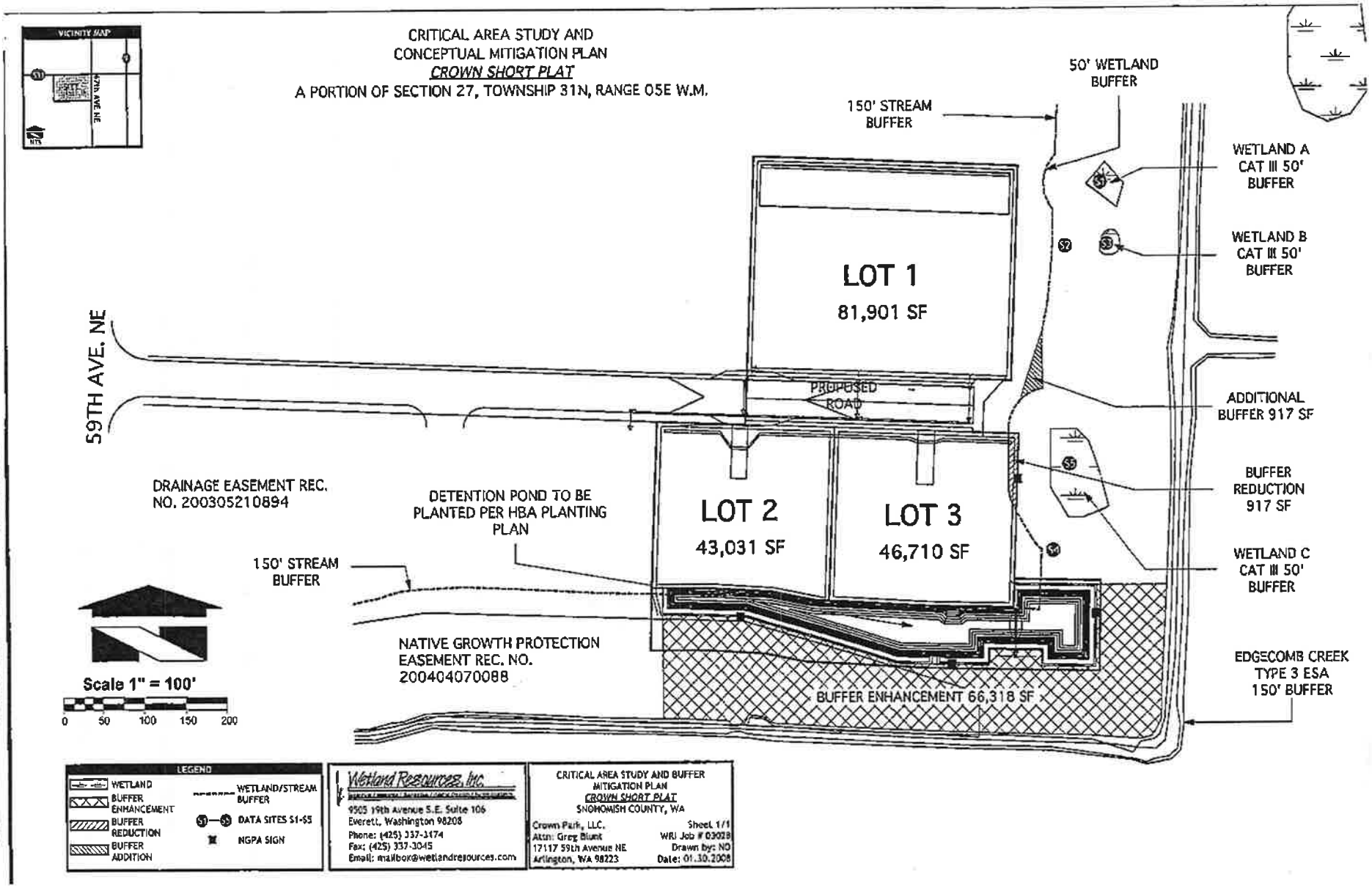
Soil Survey of Snohomish County Area Washington. U.S.D.A. Soil Conservation Service. July 1983.

Snohomish County Code: Critical Area Regulations. Chapter 30.62. Snohomish County, Washington. October 2002.

Washington State Wetlands Identification and Delineation Manual. Washington State Department of Ecology. Publication #96-94. March 1997.

**Field Data Sheet**
**Crown Short Plat-WRI #03028**
**Investigation Date: 06/04/03**

| Pit | Depth | Texture | Color | Moisture | Species | % | Status | Strata |
|---|---|---|---|---|---|---|---|---|
| S1 | 0"-7" | sandy loam | 10 YR 2/1 | moist | *Salix lucida* | 10 | FacW+ | shrub |
| **Wetland** | 7"-18" | sand | 5Y 4/1 | moist | *Agrostis tenuis* | 60 | Fac | herb |
| | | | | | *Alopecurus geniculatus* | 40 | Obl | herb |
| | | | | | *Ranunculus repens* | tr | FacW | herb |
| Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met. | | | | | | | | |
| S2 | 0"-10" | silt | 2.5Y 3/2 | moist | *Festuca arundinacea* | 40 | Fac- | herb |
| **Non-Wetland** | 10"-18" | sand | 5Y 5/2 | moist | *Holcus lanatus* | 40 | Fac | herb |
| | | | mott 10YR 5/6 | | *Agrostis tenuis* | 15 | Fac | herb |
| | | | CMP | | *Trifolium repens* | tr | Fac | herb |
| Conclusion: Non-wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are not met. | | | | | | | | |
| S3 | 0"-7" | silt | 10YR 3/1 | moist | *Festuca arundinacea* | 10 | Fac- | herb |
| **Wetland** | | | mott 5YR 3/4 | | *Alopecurus geniculatus* | 20 | Obl | herb |
| | | | CMP | | *Ranunculus repens* | 30 | FacW | herb |
| | 7"-18" | sandy loam | 5Y 5/1 | moist | *Agrostis tenuis* | 20 | Fac | herb |
| | | | mott 10YR 4/6 | | *Holcus lanatus* | 5 | Fac | herb |
| | | | MMP | | *Lolium multiflorum* | tr | NL | herb |
| Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met. | | | | | | | | |
| S4 | 0"-11" | 10YR 3/1 | sandy loam | moist | *Festuca arundinacea* | 40 | Fac- | herb |
| **Non-Wetland** | 11"-18" | 5Y 5/2 | sandy loam | moist | *Agrostis tenuis* | 20 | Fac | herb |
| | | | | | *Holcus lanatus* | 20 | Fac | herb |
| | | | | | *Trifolium repens* | 5 | Fac | herb |
| | | | | | *Taraxacum officinale* | 5 | FacU | herb |
| | | | | | *Lolium multiflorum* | tr | NL | herb |
| | | | | | *Dactylis glomerata* | tr | FacU | herb |
| Conclusion: Non-Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are not met. | | | | | | | | |
| S5 | 0"-8" | silt | 2.5Y 2.5/1 | moist | *Alopecurus geniculatus* | 60 | Obl | herb |
| **Wetland** | 8"-18" | fine sand loam | Gley1 5/5GY | moist | *Agrostis tenuis* | 20 | Fac | herb |
| | | | mott 10YR 4/6 | | | | | |
| Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met. | | | | | | | | |


VICINITY MAP
CRITICAL AREA STUDY AND
CONCEPTUAL MITIGATION PLAN
CROWN SHORT PLAT
A PORTION OF SECTION 27, TOWNSHIP 31N, RANGE 05E W.M.
50' WETLAND BUFFER
150' STREAM BUFFER
WETLAND A CAT III 50' BUFFER
WETLAND B CAT III 50' BUFFER
LOT 1
81,901 SF
59TH AVE. NE
PROPOSED ROAD
ADDITIONAL BUFFER 917 SF
BUFFER REDUCTION 917 SF
DRAINAGE EASEMENT REC. NO. 200305210894
DETENTION POND TO BE PLANTED PER HBA PLANTING PLAN
LOT 2
43,031 SF
LOT 3
46,710 SF
150' STREAM BUFFER
WETLAND C CAT III 50' BUFFER
NATIVE GROWTH PROTECTION EASEMENT REC. NO. 200404070088
BUFFER ENHANCEMENT 66,318 SF
EDGECOMB CREEK TYPE 3 ESA 150' BUFFER
Scale 1" = 100'
0 50 100 150 200
LEGEND
WETLAND
BUFFER ENHANCEMENT
BUFFER REDUCTION
BUFFER ADDITION
WETLAND/STREAM BUFFER
DATA SITES S1-S5
NGPA SIGN
Wetland Resources, Inc.
9505 19th Avenue S.E. Suite 106
Everett, Washington 98208
Phone: (425) 337-3174
Fax: (425) 337-3045
Email: mailbox@wetlandresources.com
CRITICAL AREA STUDY AND BUFFER MITIGATION PLAN
CROWN SHORT PLAT
SNOHOMISH COUNTY, WA
Crown Park, LLC.
Attn: Greg Blunt
17117 59th Avenue NE
Arlington, WA 98223
Sheet 1/1
WRI Job # 03028
Drawn by: NO
Date: 01.30.2008