



**Department of Public Works**

## **Prospectus II**

### **Clark County Public Works Wetland Mitigation Bank**

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### 1. Introduction - General

Clark County Public Works proposes to develop a multi-site wetland and habitat mitigation bank on county-owned properties that have significant potential for increase in their ecological functions. The bank is primarily intended to provide off-site mitigation credit for impacts to wetlands and other jurisdictional environmental components that are brought about by projects initiated by local governments and public agencies in Clark County. The sites presented in this prospectus represent a significant start for the Clark County Wetland Bank, by utilizing land currently owned by Public Works as mitigation sites. We are currently working with other county departments to determine the potential availability of much larger parcels to include in the wetland bank. We understand that the long-term success of the bank will require larger sites with high potential for functional lift. We will continue to work with the MBRT as we add sites in the future.

The proposed mitigation bank will include at least 5 sites totaling approximately 122 acres (Figure 1, Table 1). It is intended that other bank sites will be added in the future to this “umbrella” bank. Each of the proposed bank sites is discussed separately below. These sites have been in county ownership for differing lengths of time and have undergone differing levels of site investigation and mitigation planning. Planning for some of the sites has progressed beyond the initial concept level and portions of these sites have already been proposed as mitigation for specific projects. We present below baseline information for all sites. At the request of the MBRT, we also present much greater design details for one site (Gabbert), about which we know much more and whose design has been developed to a much higher level of detail. This is intended to serve as an example of the level of detail that will be presented about all the sites in the bank instrument.

Table 1. Summary of proposed wetland bank sites

Site	Site Size	Watershed/ Sub-watershed	Watershed Position	Physiographic Area	HGM Class
Gabbert	42.96	Salmon/Mill	Headwaters	Battle Ground/ Lacomas Flatlands	Depressional Outflow, Riverine Flow-through, Slope
Padden	38.47	Salmon/Curtin	Headwaters	Battle Ground/ Lacomas Flatlands	Depressional Outflow
Grimm	12.39	Salmon/Curtin	Headwaters	Battle Ground/ Lacomas Flatlands	Depressional Outflow
Veatch	6.16	Salmon/Curtin	Lower	Battle Ground/ Lacomas Flatlands	Riverine Flow-through
Ford	28.40	Whipple/Packard	Headwaters	West Slope Ridges and Valleys	Riverine Flow-through, Slope

### 2. Ecological Goals and Objectives

The primary goal of the program is to compensate for unavoidable impacts to wetlands and other ecological elements and functions incurred by the construction of public projects. The proposed complex of mitigation sites will cover a range of wetland and other ecosystem contexts and ecological functions in two of the county’s watersheds and major physiographic regions (Figure 1, Table 1).

### 3. Site Locations

Five bank sites are proposed for development at the present time (Figure 1). One of these (Ford) is located in the Whipple Creek watershed. Another (Gabbert) is located in the Mill Creek sub-watershed of the Salmon Creek watershed. The remaining 4 sites (Padden, Grimm, and Veatch) are located in the

Curtin Creek sub-watershed of the Salmon Creek watershed. All but the Ford site lies within the Battle Ground/ Lacamas Flatlands physiographic area as described by Swanson (1994. Unpublished ms.) This area formed in the flood channels of the Missoula floods of the Columbia River. The Ford site occurs in the Columbia Slope Ridges and Valleys physiographic area.

#### 4. Rationale for Site Selection

The proposed complex of sites represents those properties that have been purchased previously by the county for the purpose of wetland and general habitat mitigation. They all possess significant opportunities for increased wetland function. The potential for function gain is described below in the discussions of the individual bank sites. Table 2 summarizes the types and quantities of mitigation, in terms of acreage, that can be expected to result from proposed site improvement measures. Table 3 summarizes the general types of function gain expected from the proposed improvements. Previous mitigation has been conducted on the Padden site. The rationale for site selection for each of these sites is provided in the following sections. A general overview is provided in this section.

Following the definition of preservation in DOE 2004, Guidance on Wetland Mitigation in Washington State (Publication 04-06-013a, p. 42), we designate here as preservation those areas of the bank sites from which we are removing current and ongoing adverse impacts. We will be preventing additional future impacts to their ecological integrity by removing them from the threat of development, and by providing weed management and site security. The designation is applied to both wetland and upland, but the two are discussed and calculated separately.

Other portions of the site will require more extensive improvement measures to increase their levels of function. Upland areas are included in anticipation of modifications to the County Habitat Protection Ordinance to accommodate banking for upland mitigation.

Table 2. Summary of mitigation types and quantities at the proposed bank sites.

<b>Bank Site</b>	<b>Wetland Creation</b>	<b>Wetland Re-establishment</b>	<b>Wetland Rehabilitation</b>	<b>Wetland Enhancement</b>	<b>Wetland Preservation</b>	<b>Total Wetland</b>	<b>Upland Enhancement</b>	<b>Upland Preservation</b>	<b>Previous Mitigation</b>	<b>Total</b>
Gabbert	0.70	2.58	12.11	16.67	3.09	<b>35.15</b>	7.81			<b>42.96</b>
Padden			15.80	0.25	4.71	<b>20.76</b>	6.51		11.20	<b>38.47</b>
Grimm			0.78	4.21	3.52	<b>8.51</b>	3.85			<b>12.36</b>
Veatch				5.45	0.49	<b>5.94</b>	0.22			<b>6.16</b>
Ford				6.38		<b>6.38</b>	8.85	13.16		<b>28.39</b>
<b>Total</b>	<b>0.70</b>	<b>2.58</b>	<b>28.69</b>	<b>30.28</b>	<b>24.97</b>	<b>76.74</b>	<b>27.24</b>	<b>13.16</b>	<b>11.20</b>	<b>122.18</b>

Table 3. Summary of potential function gain afforded by the proposed bank sites.

Bank Site	Potential Function Gain		
	Hydrologic	Water Quality	Habitat
Gabbert	High	High	High
Padden	High	High	High
Grimm	Moderate	Moderate	High
Veatch	Low	Low	High
Ford	Low	Low	High

### 5. Service Area

We propose that the service area for the proposed bank be WRIA 28, which includes Clark County south of the Lewis River watershed (Figure 1). Since our proposal is for a multi-site, or “umbrella” bank, the mitigation measures will be distributed over a large portion of the WRIA, and will provide a much broader coverage than would a single large site. The proposed bank is intended to compensated for impacts due to linear transportation projects which may cross watershed and boundaries. An attempt will be made with each project to compensate for non-transferable, site-specific impacts such as potential habitat for endangered species, dispersal corridor connections, etc., at the impact site if possible.

### 6. Financial Resources

Clark County Public Works is committed to moving forward with various mitigation projects and our wetland banking program. As a part of the development of the state mandated six-year Transportation Improvement Program (TIP), several on-going programs are included and funded by the County Road Fund. The Wetland Mitigation On-going Program is included in TIP. Each year the program receives a funding allocation through the Annual Construction Program (ACP) to cover costs through the year, and is approved by the Board of County Commissioners. For example, for 2005, we anticipate bank approval by the end of the summer. Subsequently, we allocated \$224,000 for various planting/start-up activities on the bank sites, to be spent in the fall. At the end of 2005, we will allocate appropriate funds for 2006, based on estimates for continued implementation activities on the bank sites. We anticipate that, in time, our Wetland Banking Program will supplement itself through the sale of credits, after our initial investments.

### 7. Permanent Protection Mechanisms

All sites developed as wetland banks will be protected from further development with conservation covenants. In addition, a Memorandum of Agreement will be established with interested agencies. This MOA will prevent future uses of the sites that are inconsistent with the approved plans.

All sites will be fenced and provided with locked gates to prevent unauthorized access

## **8.1 Gabbert Wetland Bank Site**

### 8.1.1 Existing conditions

#### 8.1.1.1 Site Size and Location.

The Gabbert bank site covers 46 acres spanning the intersection of NE 199<sup>th</sup> Street and 29<sup>th</sup> Avenue in Sections 1, 2, and 12 of T3N, R1E, WM (Figures 1, 2). Legal descriptions for the site are included in Appendix A. Seventeen acres of the site (N. Gabbert) is north of NE 199<sup>th</sup> Street; 29 acres is to the south. The majority of the northwest portion (approximately 12 acres) has been proposed as mitigation for the county's NE 179<sup>th</sup> Street improvement project.

#### 8.1.1.2 Landscape Position

The Gabbert site constitutes the headwater wetland and upper reaches of a tributary of Mill Creek, which is a tributary of Salmon Creek and the Columbia River via Lake River. The N. Gabbert site is near the extreme upper limit of the sub-basin and functions as a depressional outflow wetland with a significant component of slope wetlands on the west side. The S. Gabbert contains the outflow channel and functions as a riverine flow-through wetland with a broad, gently sloping flood-plain in the north and central portions and more steeply sloping sides toward the south.

#### 8.1.1.3 Rationale for Site Selection

The site was purchased in 2002 and 2003 with the primary intent of providing a mitigation bank for the compensation of impacts to wetlands and riparian ecosystems due to county Public Works projects in the Mill Creek sub-watershed of the Salmon Creek watershed. The county was strongly encouraged to develop this site as a wetland bank by DOE. The site is in a favorable landscape position and includes many ecological features and characteristics that potentially could provide high levels of ecological function but that have been compromised by ill-advised agricultural and other land use practices. The site meets many of the criteria listed in WAC 173-700-320 and presents a superior opportunity to upgrade ecological functions at the site, watershed, and regional levels.

The site includes the headwater wetland of a tributary of Mill Creek which has been cleared, drained, and partially filled for agriculture. (The fill was ostensibly for agriculture, but this is questionable). It is also surrounded by an increasing density of rural residential development. Headwater detention and water quality functions can be recovered in the site's upper portion by:

1. The termination of agricultural use
2. Removal of the fill as well as additional material
3. Realignment of the drainage ditch
4. Reducing the outflow rate.

The upper portion (North Gabbert) of the site also includes a remnant of wet prairie/oak savanna habitat. This very rare and special habitat can be conserved and integrated into a greatly enhanced and diversified ecosystem.

The lower portion of the site (South Gabbert) has also been compromised in its ability to provide ecological services by clearing, ditching, and subsurface tiling for agriculture. Roadways and their ditches adjacent to (NE 29<sup>th</sup> Avenue) and bisecting the site (NE 199<sup>th</sup> Street, which separates North and South Gabbert) have further disrupted the hydrologic functions and compromised water quality functions of the site. Potentially, these functions can be recovered by:

1. The termination of agricultural practices

2. Breaking and filling the subsurface tile lines
3. Rerouting the roadside ditches to prevent the flows from bypassing the site and discharging to the stream as surface water
4. Slowing the flow in the stream channel through a series of channel enhancements
5. Re-establishing riparian, flood-plain, and slope wetland, and upland forested habitats through a program of plantings

The outflow stream in S. Gabbert (the lower portion) has been channelized and is deeply degraded in some reaches on the site. However, the South Gabbert portion of the site offers the potential to recover in-stream and riparian habitat that can potentially benefit native cutthroat trout and anadromous coho salmon. These benefits have regional significance. The site offers the potential to extend the forested riparian corridor from the headwaters to the confluence of Mill Creek.

The site also includes an agricultural water right that can be used for irrigation of the plantings.

The Mill Creek sub-watershed in general has been identified as being critically deficient in its ability to provide headwater storage and water quality functions. Salmon Creek is a TMDL stream with identified deficiencies in temperature and coliform bacteria. Salmonid habitat resources are severely compromised in the Mill Creek sub-watershed and throughout the county. The Gabbert site offers the potential to increase these functions.

#### 8.1.1.4 Wetlands

The site consists primarily of emergent wetlands in abandoned agricultural fields. The wetlands were delineated in 2003 and 2004 (Appendix B). The wetlands were cleared and used for agriculture (primarily grazed pasture). They are now primarily emergent wetlands dominated by introduced grasses. The ditch in N. Gabbert contains a narrow riparian strip of willow. The S. Gabbert also contains a narrow riparian strip of shrub wetland extending approximately 350 feet south of NE 199<sup>th</sup> Street. A forested riparian strip of ash and cottonwood extends another 750 feet to the south.

##### 8.1.1.4.1 Hydrology

The Gabbert wetland receives water from a contributing basin of approximately 700 acres. Water enters the site through precipitation, from a ditch entering the site from the north, runoff from NE 199<sup>th</sup> Street and 29<sup>th</sup> Avenue, and shallow ground water moving into the wetlands from the side slopes. A small tributary that had historically flowed into the S. Gabbert site from the northeast was cut off by NE 199<sup>th</sup> Street and now flows in the roadside ditch to the creek at the road crossing. The area that had received this stream contains hydric soil but is no longer jurisdictional wetland.

Water leaves the site through the artificial ditch in N. Gabbert and the tributary to Mill Creek in the S. Gabbert portion of the site. Traces of additional lateral ditches are apparent in N. Gabbert, but these have mostly filled in. The field in the northern portion of S. Gabbert also contained evidence of lateral ditches (as seen in historic aerials) and drain tiles. The ditches have become filled in and are now barely discernible. It is unclear whether the tiles continue to drain the field.

##### 8.1.1.4.2 Soils

The wetlands contain silt loam belonging to the Gee and Odne series. The surrounding uplands contain Gee silt loam. These are both fine silty alluvial soils with significant clay content in the B horizons. These soil series were deposited by the Missoula Floods of the Columbia River.

Approximately 2 acres of the wetlands of N. Gabbert have been filled with between 3,000 and 4,000 cubic yards of soil material. The material is mostly fine-silty clay-loam subsoil that has been spread evenly and compacted over about half the fill area and left in loose piles and long ridges up to 4 feet high over the remaining fill area. The fill material forms a relatively impervious surface, especially in the areas where it has been spread and compacted.

#### 8.1.1.4.3 Vegetation

The majority of the vegetation on the site is wet pasture grasses, dominated in some areas by reed canarygrass (*Phalaris arundinacea*). Much of the site is dominated by other introduced pasture grasses (*Poa pratensis*, *Festuca pratensis*, etc), soft rush (*Juncus effusus*), and bird's foot trefoil (*Lotus corniculatus*). The northern portion contains an apparent remnant of native wet prairie and includes tufted hair grass (*Deschampsia caespitosa*), camas (*Camassia quamash*), and several species of native sedges and rushes. The rest of the site was probably forested prior to European settlement.

The shrub wetland associated with riparian area of the north ditch contains Pacific and Scouler's willow (*Salix lucida lasiandra* and *S. scouleri*). The central portion the shrub wetland contains mostly Nootka and clustered rose (*Rosa nutkana* and *R. pisocarpa*) and Douglas spirea (*Spiraea douglasii*). It also contains taller willows at the downstream end.

The forested riparian wetland area in the central portion is dominated by a canopy of Oregon ash (*Fraxinus latifolia*) and black cottonwood (*Populus balsamifera*). The understory is diverse and includes hazel (*Corylus cornuta*), twinberry (*Lonicera involucrata*), osoberry (*Oemleria cerasiformis*), snowberry (*Symphoricarpos albus*), etc. This plant association is actively expanding, especially to the west where ash seedlings are invading the emergent wetland.

The site also includes patches of upland around the perimeter, in the central portion of S. Gabbert, and on a high terrace of the floodplain at the downstream end. These areas are dominated by introduced grasses and other agricultural weeds.

#### 8.1.1.5 Wetland Classification

Together, the 2 wetland areas belong to category 1 (score = 75) using DOE's wetland rating system (revised 2004). Under Clark County's rating system, the northern portion belongs to category 4. The emergent portions of the southern wetland area belong to category 4. The forested riparian wetland area belongs to category 2. The buffers belong to type D. A riparian priority zone of 150 feet is associated with the stream.

#### 8.1.1.6 Ecological Functions (Existing Condition)

The depressional outflow model of DOE's function assessment methods indicate the levels of function shown in Table 4. The ability of the site to provide hydrologic and water quality functions has been severely compromised by the drainage ditches, the roadside ditches, the drainage tiles, and the channelization of the stream in the lower portion. In its existing condition, the site appears to have only moderate potential for removing sediment, nutrients, and toxic substances, as well as for reducing peak flows, decreasing downstream erosion, and recharging groundwater. Flow in the ditch and stream continue into mid summer in most years. Standing water remains in the deeper reaches of the upper ditch throughout the remainder of the dry season in most years.

The site has relatively low habitat potential due to its long history of agricultural use and domination by non-native plant species. The potential for providing these ecological functions was further compromised by the addition of fill material in the northern portion of the site.

Table 4. Summary of wetland functions at the Gabbert site using DOE WAFAM Depressional Outflow model for existing and proposed conditions (maximum score = 10).

Function	Index		
	Existing	Proposed	Change
Potential for Removing Sediment	4	8	+ 4
Potential for Removing Nutrients	2	5	+ 3
Potential for Removing Heavy Metals and Toxic Organics	4	5	+ 1
Potential for Reducing Peak Flows	3	8	+ 5
Potential for Decreasing Downstream Erosion	3	7	+ 4
Potential for Groundwater Recharge	2	4	+ 2
General Habitat Suitability	3	7	+ 4
Habitat for Invertebrates	3	7	+ 4
Habitat for Amphibians	2	6	+ 4
Habitat for Anadromous Fish	1	4	+ 3
Habitat for Resident Fish	2	6	+ 3
Habitat for Wetland Associated Birds	4	5	+ 1
Habitat for Wetland Associated Mammals	2	4	+ 2
Native Plant Richness	2	7	+ 5
Primary Production and Export	5	8	+ 3

### 8.1.2 Site Design.

#### 8.1.2.1 Goals and Objectives

The site design for the N. Gabbert portion has been developed beyond the conceptual stage and has been proposed for permitting as part of the county's NE 179<sup>th</sup> Street improvement project. This plan includes the following goals:

1. Recover lost or compromised hydrologic functions of mitigation wetlands. To accomplish this, measures will include increasing flood storage capacity, increasing infiltration, extending duration of hydroperiod, and reducing downstream erosion. This will be accomplished by excavating approximately 18,000 cubic yards (including 4,000 cubic yards of fill material) to realign the channel in an extended, meandering configuration that will include deep pools and flood plain benches (Figure 4). This will add 3.5 acre-feet of dead storage and increase the live storage by approximately 7 acre-feet for the 2-year storm.
2. Increase water quality functions. The deep pools and meandered channel will facilitate the removal of suspended sediments and other pollutants. The meandered channel will more than double the length of the existing flow-path. This will slow the flow and greatly increase the time of exposure of the water to emergent vegetation, which will promote filtration and settling of suspended particles and facilitate the uptake of dissolved nutrients.

The roadside ditches from NE 29<sup>th</sup> Avenue will be diverted into a swale in the upland buffer of the NE corner of the site. This will treat (remove suspended and dissolved pollutants from) the road runoff and recover the water by allowing it to infiltrate into the shallow groundwater of the wetland area rather than shunting it downstream to the creek as polluted surface water.

3. Enhance habitat functions. This will be accomplished by planting willow swamp plant association in the lower elevation shoreline areas, Oregon ash/cottonwood plant association in the floodplain

wetland areas, and Oregon white oak woodland in the upland buffer areas. Large woody material will also be distributed throughout the areas to be enhanced. A large patch of remnant wet prairie plant association will be preserved in the southern portion of N. Gabbert.

In the S. Gabbert portion of the site, the goals will also include recovering lost or compromised hydrologic functions through 3 measures:

1. Pulling back the banks of the creek in two reaches where the creek has become deeply incised
2. Recovering the northeast tributary from the roadside ditch of NE 199<sup>th</sup> St. and returning it to the wetland
3. Recovering intercepted shallow groundwater from the roadside ditches of NE 29<sup>th</sup> Ave. and returning it to the wetland

The main stream will be widened in 2 locations by pulling back the banks. The slope of the banks will be reduced from very steep and nearly vertical in places to between 10:1 and 20:1. These areas are immediately downstream of NE 199<sup>th</sup> Street and downstream of the forested wetland riparian area (Figure 8). This will increase flood storage capacity, reduce erosive energy in the flow, and increase infiltration of the peak flows into the re-established floodplain.

The small tributary that formerly entered the S. Gabbert portion of the project area from the northeast will be brought into the site in a shallow impounded area that will be excavated in the upland buffer of the northeast corner. The water from the restored flow will enable the re-establishment of wetland to this area. The excavated impoundment will treat the flow which has been mixed with road runoff in the roadside ditch and help to remove suspended and dissolved pollutants. The pond will be bordered on its downstream side by a low embankment of the access road. This will facilitate infiltration of the water into the floodplain of the main creek.

The roadside ditches of NE 29<sup>th</sup> Avenue from the south of NE 199<sup>th</sup> Street, which are currently intercepting shallow groundwater flow that otherwise would feed the wetland, will be redirected back into the S. Gabbert mitigation area in its northwest corner. This water will be further contained by a low berm approximately 1 foot in height. This measure will recover an additional 2-4 acre feet of water that would otherwise be shunted directly to the creek as surface water. The wetland will be designed to increase winter storage while conserving a hydroperiod consistent with the requirements of ash/cottonwood forest.

The habitat will be enhanced by planting forested and shrub wetland plant associations throughout the site. A small area (0.70 acre) in the southeast corner of the site will be preserved as emergent wetland in order to retain habitat for an existing population of *Juncus patens*, which is a very rare species in Clark County. As in N. Gabbert, the low elevation shoreline areas will be planted with a willow plant association. The floodplain wetlands will be planted with Oregon ash/cottonwood plant association. The central patches of upland will be planted with Oregon white oak woodland. The peripheral upland areas will be planted with a mixed coniferous/deciduous plant association reflecting the association on adjacent uplands.

#### 8.1.2.2 Gain in Ecological Functions (Proposed Conditions)

The levels of function for the proposed condition for the Gabbert bank site according to the depressional outflow model of DOE's function assessment methods are presented in Table 4. This model indicates significant gain in all categories of function.

Although gains are indicated in all water quality functions, the potentials for removing nutrients, heavy metals, and toxic organics is considered by the model to be moderate. These functions are probably underestimated by the model since the proposal calls for greatly increasing the hydrologic connection between the flow in the ditch and its floodplain, which will afford greatly increased contact between flood waters and the floodplain and wetland vegetation. Water quality functions will be enhanced by the addition of 3.5 acre feet in dead storage. The primary source of metals and toxic organics will be

eliminated in the upper portion of the site by the construction of a treatment swale in the upland buffer for the runoff from NE 29<sup>th</sup> Avenue. The diversion of the roadside ditch of NE 199<sup>th</sup> Street into the upland buffer in the northeast corner of S. Gabbert will further contribute to the removal of pollutants from the hydrologic input to the wetlands.

The addition of around 7 acres of live storage distributed over both upper and lower portions will reduce peak storm flows and decrease the erosive force of the out-flowing water. The increased live and dead storage will also contribute to infiltration although this will remain at moderate levels due to the high clay content of the subsoil.

Table 4 indicates that habitat functions on the site will be significantly increased for all measures evaluated. The wetland and aquatic components will be diversified by the addition of permanent open water, the re-establishment of large areas of seasonally flooded wetland by meandering the channel and lowering the flood-plain in the upper portion and pulling back the banks of the stream in the lower portion, and by planting willow and ash/cottonwood forested wetlands. Upland and transitional areas will be diversified by planting oak woodland, cedar/maple and Douglas fir/maple plant communities. Two distinctive emergent plant communities will also be conserved, adding to the overall habitat diversity of the site.

The function category “native plant richness” as shown in Table 4 is somewhat misleading. A comprehensive plant survey conducted on the site in 2002 and 2003 indicated a total of 138 species, 72 (52%) of which were native. Since no additional species will be added to the site, the “native plant richness” (defined as the number of native species) will not increase. However, the proportion of the site dominated by non-native plants will decrease, and the diversity (defined as evenness of distribution) of native plants and their communities, will increase and will greatly enhance the habitat value of the site.

The function category “habitat for wetland associated birds”, as shown in Table 4, evaluates the suitability of the site to waterfowl, shorebirds, and herons and misrepresents the value of the site improvements to birds in general. The addition of 30 to 35 acres of forested habitats will benefit at least 40 species of songbirds, woodpeckers, raptors, etc. Many of these species are habitat generalists, but some, such as the willow flycatcher, and the white-breasted nuthatch are narrowly restricted to habitats being re-established on the site and are seriously declining in the region.

#### 8.1.2.3 Potential Adverse Impacts from Bank Development

Excavation of approximately 20,000 cubic yards of soil will present a challenge for erosion control. Excavation will be conducted during the driest time of the year, August and September, when the risk of runoff is lowest. Resulting bare surfaces will be mulched and seeded with native grasses following construction.

Landscape installation will require the construction of temporary access trails, which will need to cross jurisdictional wetlands (0.98 acre) and buffers (0.58 acre) in order to reach planting areas. These can be returned to natural habitat following establishment of the landscape plantings.

#### 8.1.2.4 Site Protection

The site will be protected from future development or modification in any way not approved by the MBRT by a Memorandum of Agreement. The site will also be protected by a Conservation Covenant. The site will be fenced and provided with locked gates to prevent unauthorized access. Future development of the surrounding land will result in an increase in the sources of non-native weed infestations. The Clark County Weed Control Dept. is committed to long-term management of the site. Stormwater impacts from the future low density residential development and road improvements are regulated by the county’s stormwater ordinance.

8.1.3 Potential Credits

Proposed measures in the Gabbert portion of the site will greatly improve hydrologic, water quality, and habitat functions of the site. The upgraded water quality and hydrology functions will directly benefit the downstream watersheds of Mill Creek and Salmon Creek. The upgraded habitat functions have benefits at the regional level. A summary of functions under existing and proposed conditions at the Gabbert site is shown above in Table 4 and discussed in section 8.1.2.2. In terms of regulatory categories, the acreages resulting from the proposed measures are summarized in Table 5.

Table 5. Summary of types and quantities of mitigation at the Gabbert wetland bank site.

Site	Wetland Establishment	Wetland Re-establishment	Wetland Rehabilitation	Wetland Enhancement	Wetland Preservation	Total Wetland	Upland Enhancement
N. Gabbert	0.70	1.79	7.41	3.18	1.40	<b>14.48</b>	<b>1.59</b>
S. Gabbert		0.79	4.70	13.49	1.69	<b>20.67</b>	<b>6.22</b>
<b>TOTAL</b>	<b>0.70</b>	<b>2.58</b>	<b>12.11</b>	<b>16.67</b>	<b>3.09</b>	<b>35.15</b>	<b>7.81</b>

## **8.2. Padden Mitigation Bank Site**

### 8.2.1 Existing conditions

#### 8.2.1.1 Site Size and Location

The Padden site covers approximately 38.5 acres south of NE Padden Parkway and west of NE Andresen Road in section 6 of T2N, R2E, WM (Figures 1, 11, and 12). Legal descriptions for the site are included in Appendix A.

#### 8.2.1.2 Landscape Position

The wetlands of the Padden site occur in scour channels in a flat alluvial outwash plateau formed by the Missoula floods of the Columbia River. The channels apparently filled with depressional wetlands which accumulated a deep layer of muck soil in some portions before being drained out to Curtin Creek by a man-made ditch in the early 1900s. The site now functions primarily as a riverine flow-through wetland in the northern portion adjacent to the Curtin Creek ditch, and as depressional outflow wetland in the south.

#### 8.2.1.3 Rational for Site Selection

The Padden bank site was purchased by Clark County Public Works in 1997 as a wetland mitigation bank. The primary motivation for the purchase was mitigation for an arterial roadway to be constructed through the site. Since the wetland area met many criteria for a high quality mitigation area, additional acreage was purchased beyond what was needed to mitigate for the initial roadway construction. The site meets many of the criteria listed in WAC 173-700-320 and presents a superior opportunity to upgrade ecological functions at the site, watershed, and regional levels.

The area was identified as a Priority Habitat and Species area by the Washington Dept. Fish and Wildlife in the early 1990s. The overall wetland area at that time comprised over 70 acres and included upland areas, some of which were forested. The wetland areas were primarily abandoned dairy pastures which had been drained by a network of ditches but also included open water ponds and small areas of mature forested wetland. The site represents the headwaters of Curtin Creek and is therefore in a favorable landscape position to provide significant gains in local and regional hydrology and water quality functions.

A of the site has already been used for mitigation, but much remains to be improved. The remaining areas have high potential for gain in their level of ecological functioning. The surrounding area has been subjected to intense pressure for commercial, light industrial, and residential development. A large portion of wetland to the north has been filled, some of which was regulated, some not. The remaining area has therefore been compromised in its ability to provide important hydrology and water quality functions. Much of these function deficits can be mitigated through various measures included in the proposed plan. The areas on the site with relatively mature plant communities offer reservoirs of biological diversity and refuges for wildlife species. These areas serve as a natural seed source to the developing portions and add depth to the site as a natural area.

#### 8.2.1.4 Wetlands

The Padden wetlands were first delineated in 1993 as part of the Padden Parkway Environmental Assessment and again in 1998 for the mitigation plan (Appendix B). The wetlands are separated into two areas by a ridge of upland oriented from northwest to southeast. The northeastern portion of the wetlands includes the main ditch of Curtin "Creek" and a broad "flood-plain" dominated by reed canarygrass. The two wetland areas are contiguous in the southeastern corner of the site. Previous mitigation associated with the construction of the Padden Parkway on the site totals 11.2 acres including

4.06 acres of wetland creation, 4.81 acres of wetland enhancement and 2.33 acres of upland enhancement. The remaining 27.3 acres of the site are divided into approximately 21 acres of wetland and 6.3 acres of upland.

#### 8.2.1.4.1 Hydrology

The site receives hydrologic input from precipitation, shallow groundwater discharge, surface flow from the Curtin Creek ditch in the northeastern portion, two large culverts that provide a hydrologic connection to wetlands northwest of Padden Parkway, a drainage ditch that enters the site in the southeast corner, treated stormwater runoff from NE Padden Parkway and from the church and its parking lots in the southwest corner of the site, and untreated stormwater runoff from NE Andresen Road and NE 78<sup>th</sup> Street. Water leaves the site through the Curtin Creek ditch and through infiltration to groundwater. The southern wetland area contains a drainage ditch that formerly drained this wetland to the Curtin Creek ditch. In 2001, this ditch was filled just upstream of its confluence with the southeast drainage ditch as one of the mitigation measures associated with the construction of the Padden Parkway. Water stands at or slightly above the ground surface over much of the site from late fall to late spring.

#### 8.2.1.4.2 Soils

Soils of the wetland areas consist primarily of McBee silt loam with Semiahmoo muck in the deeper depressions. Geotechnical evaluations conducted prior to construction of the Padden Parkway indicated that the muck was up to 12 feet deep. The upland areas are covered with Hillsboro loam.

#### 8.2.1.4.3 Vegetation

The wetlands are dominated primarily by reed canarygrass. Large patches of cattail (*Typha latifolia*) and Douglas spirea (*Spiraea douglasii*) also occur in the wetlands especially in southern portion. Patches of willow (*Salix spp.*) and aspen (*Populus tremuloides*) are becoming established in some areas, particularly in the southern wetland area and along Curtin Creek ditch in the north. Approximately 10 acres of the site were planted with forested plant communities including Oregon ash / cottonwood (*Fraxinus latifolia* / *Populus balsamifera*) in the wetlands and Oregon white oak (*Quercus garryana*) on the upland areas.

Existing uplands in un-enhanced areas are dominated by non-native grasses and other agricultural weeds.

#### 8.2.1.4.4 Classification and Functions

The two wetland areas of the Padden site both belong to category I of DOE's function-based wetland rating system (scores = 72 for southern wetland, 70 for northern wetland). The wetlands score highly for both potential and opportunity to provide water quality and hydrologic functions due to their size, headwater position in the watershed, and vegetated condition. However, the water quality and hydrologic functions of the northern wetland are significantly compromised by the degraded structure of the ditch, which reduces the frequency and extent of overbank flooding and therefore reduces the contact of the stream flow with the flood plain. The habitat potential of the site is severely compromised by its previous agricultural land use and its resulting domination by non-native species, especially reed canarygrass.

By the Clark County Wetland Protection ordinance, the wetlands belong to category 3. Their buffers belong to types C and D.

The site also lies within a Priority Habitat and Species area as designated by the Washington State Dept. of Fish and Wildlife and regulated under the Clark County Habitat Conservation Ordinance.

### 8.2.2 Conceptual Site Design

#### 8.2.2.1 Goals and Objectives

The goals for increasing wetland and other ecological functions on the Padden site are to:

1. Improve hydrologic and water quality functions in the northern portion by increasing connectivity between the flow in Curtin Creek ditch with its flood plain.
2. Increase hydrologic and water quality functions in the southern portion by lowering the ground surface in the upper depressions.
3. Improve habitat resources by diversifying and enhancing wetland and upland plant communities.

Goal 1 will be accomplished by lowering the flood plain elevation and reconfiguring the channel in a meandering pattern. This will increase the flow-through time in the wetland and increase the contact between the flow and vegetation, increasing the opportunity for water quality treatment. It will also increase the storage capacity of the wetland, which will help to reduce the magnitude of flood peaks downstream.

Goal 2 will be accomplished by removing the upper foot of reed canarygrass in the upper depressions at the west end of the southern wetland area. The majority of the excavated material will be placed in the upland area, but will also be piled in the wetland area to create low wetland islands. The resulting wetland will have increased storage capacity, which will help to reduce the magnitude of flood peaks downstream.

Goal 3 will be accomplished by providing a wider range of water elevations and hydrologic regimes within the excavated area than currently occur in the existing wetland. These areas will be planted with a range of forested, shrub, and emergent plant associations. Ash/cottonwood swamp will be planted on the higher elevations within the wetland. Willow swamp will be planted at intermediate elevations. Lower, seasonally exposed areas will be seeded with emergent species. The upland areas will be planted with Oregon white oak woodland.

#### 8.2.2.2 Potential Adverse Impacts from Bank Development

As with the Gabbert bank site, excavation in the northeast portion of the site will present a challenge for erosion control. Excavation will be conducted during the driest time of the year, August and September, when the risk of runoff is lowest. Resulting bare surfaces will be mulched and seeded with native grasses following construction.

#### 8.2.2.3 Site Protection

The Padden site will be protected from future development or modification in any way not approved by the MBRT by a Memorandum of Agreement. The site will also be protected by a Conservation Covenant. The site will be fenced and provided with locked gates to prevent unauthorized access. Future development of the surrounding land will result in an increase in the sources of non-native weed infestations. The Clark County Weed Control Dept. is committed to long-term management of the site. Stormwater impacts from the future development and road improvements are regulated by the county's stormwater ordinance.

### 8.2.3 Potential Credits

As shown in Table 1, the proposed measures for the Padden site will result in 15.80 acres of wetland rehabilitation, 0.25 acres of wetland enhancement, 4.71 acres of preservation/conservation, and 6.51 acres of upland enhancement. The total for wetland related measures is 20.76 acres.

In terms of function gain, the proposed mitigation measures will increase the site's ability to provide hydrologic and water quality benefits. Meandering the channel of Curtin Creek and lowering its flood plain will result in a greater functional connection between the stream and flood plain. The flow will be able to leave the channel on much lower storm peaks and will be distributed throughout the floodplain. This will enable greater infiltration and floodplain storage and increased contact of the flows with wetland vegetation which can filter and absorb pollutants.

The meandering of the Curtin Creek channel will also enable a reduction in the area covered by reed canarygrass and an increased range of plant communities.

### **8.3 Grimm Mitigation Bank Site**

#### **8.3.1 Existing conditions**

##### **8.3.1.1 Site Size and Location**

The Grimm property covers approximately 14 acres in section 31 of T3N, R2E WM. It is located to the south of the Lewis and Clark Railroad and west of NE 72<sup>th</sup> Ave. (Figures 1, 13, and 14). Legal descriptions for the site are included in Appendix A.

##### **8.3.1.2 Landscape Position**

The area containing the Grimm property was apparently formed as a closed-depressional wetland in minor scour features on a broad, flat, alluvial plateau formed by deposits of the Missoula floods of the Columbia River. The plateau forms a very low ridge separating the Curtin Creek and LaLonde Creek sub-basins of the Salmon Creek watershed. Although the depressional wetlands of this area were extensive prior to European settlement, nearly all have been drained to a greater or lesser extent through a network of ditches to Curtin Creek.

##### **8.3.1.3 Rational for Site Selection**

The Grimm site presents an opportunity to recover natural headwater detention in a depressional wetland system. This will also contribute to the improvement of water quality as dissolved pollutants generated by the adjacent roadway, railway, residential and light industrial development will be retained within the system. The site is adjacent to a larger multi-class wetland system covering approximately 70 acres, 35 of which are contiguous. The rest of this wetland system is separated by roads and railway. The proposed mitigation will enable an enlargement of this system and add to its overall habitat value. The Grimm site includes a remnant of wet prairie/oak grassland plant community and contains populations of several rare species from this and other habitat types (see detailed discussions of plant communities below in section 8.3.1.4.3 Vegetation and 8.3.1.5 Wetland Functions). Protection and enhancement will contribute to the conservation of these rare ecosystem elements.

##### **8.3.1.4 Wetlands**

According to the wetland delineation conducted in spring, 2003 (see Appendix B for delineation report), the Grimm site contains 8.8 acres of wetland in 3 contiguous areas (Figure 13). The site also includes 3.85 acres of upland.

###### **8.3.1.4.1 Hydrology,**

The Grimm property receives water primarily from precipitation with small inputs from surface runoff from NE 72<sup>nd</sup> Ave. and the impervious surface of the Clark Public Utilities' electrical substation at the east end of the site. The wetland is drained in its northeast corner by the roadside ditch of NE 72<sup>nd</sup> Ave. This ditch conveys water eastward along NE 99<sup>th</sup> St. approximately 0.7 mile to Curtin Creek. The northwest-to-southeast coursing wetland area at the west boundary of the site is drained by an excavated ditch, which exits the wetland at its southeast end and conveys water along NE 88<sup>th</sup> St. to Curtin Creek. Curtin Creek originates approximately 1 mile southwest of the site and flows to Salmon Creek approximately 2.5 miles north of the site. Salmon Creek is a tributary of the Columbia River via Lake River.

#### 8.3.1.4.2 Soils

Soils mapping (1972, US Department of Agriculture, Soil Conservation Service) of the project area indicates McBee silt loam as the primary soil type on the Grimm property with Hillsboro loam on the upland ridge that runs diagonally through the site from southeast to northwest. An area of Semiahmoo muck also occurs in the wetland at the west end of the property.

#### 8.3.1.4.3 Vegetation

Several plant community types were found on the Grimm property. Emergent (marsh), shrub, and forested plant communities were found in the wetlands. Upland areas consisted primarily of grasslands, shrub thickets, and scattered trees (including one small cottonwood grove).

Palustrine emergent wetland (PEM) was the predominant general plant community type overall. Within this community type were large patches of reed canarygrass (*Phalaris arundinacea*). Between these patches were areas with much greater species richness and diversity including several species of sedges (*Carex ovalis* (*leporina*), *C. feta*, *C. unilateralis*, etc.), rushes (*Juncus effusus pacificus*, *J. (tenuis) occidentalis*, etc.), grasses (*Alopecurus pratensis*, *Poa pratensis*, etc.), and other herbaceous plants (*Myosotis bicolor*, *Veronica serpyllifolia*, *Plantago lanceolata*, *Montia linearis*, *Vicia hirsuta*, etc.). The drier transition zones of the emergent wetlands were dominated by wet grasses (*Alopecurus pratensis*, *Poa pratensis*, *Festuca rubra*, *Anthoxanthum odoratum*, etc.), vetches (*Vicia hirsuta*, *V. sativa*), thistles (*Cirsium arvense*, *C. vulgare*), and other non-native herbaceous species.

Although most of the dominant species and approximately 40% of the species overall were non-native, some noteworthy populations of native species were identified. These included camas lily (*Camassia quamash*), which occurred in the transition zones of wetlands in the northern portion of the site; *Carex pallascens*, a small patch of which was found in the emergent transition zone of the wetland in the northwest portion of the site (this represents only the second recorded occurrence of this sedge in the state of Washington, and the first record for southern Washington); *Danthonia californica* and *Festuca rubra*, two species of native grasses associated with oak savanna habitat, were found in all emergent wetland areas as well as the upland grassland.

The emergent wetlands and transition zones were being invaded by native shrub and tree species such as cascara (*Rhamnus purshiana*), cottonwood (*Populus balsamifera*), Oregon white oak (*Quercus garryana*), Oregon ash (*Fraxinus latifolia*), and other shrubs (*Rosa nutkana*, *Spiraea douglasii*, etc.). The most aggressive woody invader of the emergent wetlands and upland grassland, however, was English Hawthorn (*Crataegus monogyna*), which was found in all areas.

Palustrine shrub/scrub (PSS) wetland occurred in large patches in all of the wetland areas. The largest single patch occurred in wetland 2 and covered approximately 0.9 acres. The primary species in this plant community were *Spiraea douglasii* and *Rosa nutkana*. The spirea often occurred in dense, single-species patches.

Palustrine forested (PFO) wetland occurred only in wetland 1, but was the dominant habitat type there. On the property itself, forested wetland covered approximately 1.2 acres but extended to the south to cover approximately 10 acres more. It was dominated primarily by Oregon ash (*Fraxinus latifolia*) with highly variable understory and ground layer vegetation.

Upland plant communities consisted primarily of weedy grasslands resulting from abandoned pastures. These grasslands were dominated by non-native species which accounted for 66% of the species found in the upland areas. The dominant species included Kentucky bluegrass (*Poa pratensis*), field fescue (*Festuca pratensis*), thistles (*Cirsium arvense*, and *C. vulgare*), vetches (*Vicia hirsuta*, *V. sativa*), St. Johns wort (*Hypericum perforatum*), ox-eye daisy (*Chrysanthemum leucanthemum*), etc. Two native grasses (*Festuca rubra* and *Danthonia californicum*) were also common in these areas indicating (along

with the presence of camas and large mature oak trees) that the area may have been maintained as grassland by native Americans through the use of fire.

Shrub wetland vegetation extended beyond the wetland boundaries into the upland area to the west wetland 3. These thickets included of spirea, rose, and willow. Thickets of Scot's broom (*Cytisus scoparium*) also occurred in this area as well as along NE 72<sup>nd</sup> Ave. A dense thicket of snowberry (*Symphoricarpos albus*) and Nootka rose (*Rosa nutkana*) occurred along the northern boundary of the site adjacent to the railroad.

A small grove of cottonwood trees (*Populus balsamifera*) occurred in the southern portion of the site. The understory and ground layer was dominated by Himalayan blackberry thicket (*Rubus procerus*).

Significant weed infestations included English hawthorn (*Crataegus monogyna*), thistles (*Cirsium arvense*, and *C. vulgare*), reed canarygrass (*Phalaris arundinacea*), Himalayan blackberry (*Rubus procerus*), Scot's broom (*Cytisus scoparium*), and nightshade (*Solanum dulcamara*).

#### 8.3.1.4 Classification

The wetlands of the Grimm site were classified under DOE's wetland rating system (revised 2004). Together, the 3 wetland areas are considered to belong to category 1 (score = 78). Under Clark County's rating system, wetland 1 belongs to category 1; wetland 2 belongs to category 3; and wetland 3 belongs to category 4. The buffers belong to type D for wetlands 1 and 2. The buffers of wetland 3 are a mix of type C and D.

#### 8.3.1.5 Wetland Functions

The three wetland areas of the Grimm site were evaluated separately using DOE's Methods for Assessing Wetland Functions. For this methodology, it was assumed that wetlands 1 and 2 had functional outlets, but that wetland 3 had no outlet. The results of the evaluations are shown in Table 6.

Table 6. Summary of DOE wetland function assessment for the Grimm wetland mitigation site.

FUNCTION	INDEX		
	Wetland 1	Wetland 2	Wetland 3
Potential for Removing Sediment	7	7	10
Potential for Removing Nutrients	8	8	8
Potential for Removing Heavy Metals and Toxic Organics	7	8	5
Potential for Reducing Peak Flows	7	7	10
Potential for Reducing Downstream Erosion	9	8	10
Potential for Groundwater Recharge	4	3	1
General Habitat Suitability	7	3	3
Habitat Suitability for Invertebrates	5	3	3
Habitat Suitability for Amphibians	6	1	1
Habitat Suitability for Anadromous Fish	2	1	N/A
Habitat Suitability for Resident Fish	3	2	N/A
Habitat Suitability for Wetland Associated Birds	4	2	3
Habitat Suitability for Wetland Associated Mammals	3	2	0
Native Plant Richness	10	4	3
Primary Production and Export	5	5	N/A

The three wetland areas in general were considered to have relatively high potential for water quality treatment. Although wetland 3 was considerably smaller than the other two wetland areas, it received a higher index for removing sediment due to its lack of an outlet. However, wetland 3 had lower potential for removing heavy metals and toxic organics due to its lack of muck soil.

The wetland areas also showed high potential for reducing storm peak flows and downstream erosion. Their potential for recharging groundwater, however, was considered to be relatively low due to the low permeability of the soils, which have a high clay content in the B horizon.

The wetlands were considered to have lower potential for habitat than might be expected, due to their isolation from other significant natural areas, poor buffer condition, and relatively simple habitat structure of wetlands 2 and 3 (eastern portions of the site). The model, however, is insensitive to the relative closeness of the three wetlands and appears to underestimate their habitat value. If the wetland complex were evaluated together, the habitat value of wetlands 2 and 3 would probably be considered greater.

Although wetlands 1 and 2 scored a 2 and 1 respectively for anadromous fish potential, both wetlands are isolated by several impassable culverts.

The wetlands scored low for habitat suitability for wetland associated birds. However, in the course of the field work 48 species of birds were observed, 9 of which were primarily associated with wetland habitats. Most of the wetland-associated species were regularly seen on the site. The Green Heron, Bittern, and the Northern Harrier were observed only once, but the other species were observed regularly. The list of wetland-associated species could be expected to be larger if the census were to include the large pond in wetland 1 to the southwest of the Grimm site. Most of the other species listed for the site were observed in or above the wetlands. Based on birdwatching experience at other sites in the vicinity, the observed total for all bird species at the site can be considered to be high for the area. The function assessment model appears to have underestimated the value of the site to birds.

A locally concentrated population of the checkerspot butterfly (*Euphydryas chalcedona colon*) occurs on the site. This butterfly is not officially listed as a species of concern, but is rare in Clark County, especially in developed portions. Caterpillars were observed feeding only on wetland-associated plant species: snowberry (*Symphoricarpos albus*), lance-leaved plantain (*Plantago lanceolata*), and seedlings of Oregon ash (*Fraxinus latifolia*). Adults were observed feeding on the flowers of ox-eye daisy (*Chrysanthemum leucanthemum*) in the upland meadow. A search was made for checkerspot butterflies on apparently suitable sites in the vicinity of the Grimm site, but no butterflies were found. The Grimm site population appears to be isolated.

### 8.3.2 Conceptual site design

#### 8.3.2.1 Goals and Objectives

The conceptual design for the Grimm site calls for a small amount of wetland rehabilitation and more extensive efforts with wetland enhancement, conservation, and upland enhancement. The relative proportions of these management categories are shown in Table 2 and Figure 13.

Wetland rehabilitation will consist of extending the lower elevation area of wetland 2 northwestward by excavating up to 2 feet of reed canarygrass turf. The area of depressional wetland has been greatly reduced by previous fills due to the adjacent roadway (NE 72<sup>nd</sup> Avenue), construction of the electrical substation to the south, and a residential yard to the north. It will be further reduced by proposed improvements to the roadway. The proposed measure will recover some of this lost wetland area.

Wetland enhancement will consist of converting degraded emergent wetland to forested ash and willow swamp plant communities. Areas that are currently dominated by reed canarygrass in wetlands 1 and 3 will be converted to willow swamp by first mowing the reed canarygrass, covering it with long strips of

salvaged silt fence material, and planting with willow stakes cut from onsite parent material. Portions of the wetland at higher elevations and dominated by other introduced grasses will be planted with ash/cottonwood plant association.

Preservation will involve minimum management activities in areas with elements considered to have high conservation priority. These areas are:

- The relatively mature ash wetland in the northwest corner of wetland 1. This area will require only periodic weed management for English hawthorn, holly, etc.
- The emergent transition zone to the east of the forested ash swamp. This is a very weedy and degraded area but contains 2 species with high conservation priority for the site. One is lance-leaved plantain, which is one of the primary larval host plants for the checkerspot butterfly. The other is *Carex pallescens*, an extremely rare species of sedge, which occurs on only one other known site in Clark County and nowhere else in southwest Washington.
- Emergent wetland in the north of wetland 2. This area contains remnant wet prairie species including camas (*Camassia quamash*), sedges (*Carex ovalis (leporina)*, *C. feta*, *C. unilateralis*), etc.
- The low elevation emergent and open water area of wetland 2. This area provides wintering and breeding habitat for waterfowl. This wetland component has been reduced in size by previous fills but will be expanded by the proposed wetland rehabilitation described above.

Upland (buffer) enhancement will consist of re-establishing Oregon white oak (*Quercus garryana*) savannah habitat in the upland meadow. This plant association was formerly common throughout the Willamette Valley and Clark County and is considered a high priority for conservation and re-establishment by the Washington Department of Fish and Wildlife and Department of Natural Resources. It is habitat for the white-breasted nuthatch (*Sitta carolinensis*), which is a state candidate threatened species. The meadow contains remnant populations of native grasses (*Danthonia californica*, *Festuca rubra*) and a few large spreading oaks indicating that this plant association formerly occurred on the site. Most of the oaks have been eliminated from the surrounding properties and this plant association has greatly declined. We propose to plant several widely scattered oak trees throughout the uplands of the property, gradually reduce the dominance of non-native invasive species, and increase the proportion of native grasses. This can be done by treating several small plots with herbicide each year and then replanting with native grasses.

#### 8.3.2.2 Potential Adverse Impacts

Potential adverse impacts from the proposed mitigation measures are limited to the construction of the access road across the north end of wetland 3 and the saddle between wetlands 1 and 2. This amounts to approximately 0.04 acre of impact.

#### 8.3.2.3 Site Protection

The site will be protected from future development or modification in any way not approved by the MBRT by a Memorandum of Agreement. The site will also be protected by a Conservation Covenant. The site will be fenced and provided with locked gates to prevent unauthorized access.

The wetland to the west is protected from development by existing regulations. The remaining surrounding land is already built out to existing zoning regulations and will not be rezoned in the foreseeable future. The site will therefore not be subjected to greatly increased levels of impact above the existing.

Infestations non-native weeds will continue to arise in the future. The Clark County Weed Control Dept. is committed to long-term management of the site. Stormwater impacts from the future low density residential development and road improvements are regulated by the county's stormwater ordinance.

### 8.3.3 Potential credits

The proposed improvements for the Grimm Bank Site will yield 0.78 acre of wetland rehabilitation, 4.21 acres of wetland enhancement, 3.52 acres of wetland preservation/conservation, and 3.85 acres of upland enhancement.

In terms of ecological function gain, the proposed mitigation measures will increase the site's ability to provide hydrologic and water quality benefits. Expanding the open water area of wetland 3 will increase the sites ability to retain water and absorb pollutants.

The proposed habitat enhancement measures will increase several aspects of habitat functions. The excavation of additional open water will expand the most productive habitat for waterfowl and wetland associated non-passerine bird species. This is also prime habitat for amphibians and a great diversity of aquatic invertebrates. The expansion of forested wetland will increase habitat available to a diversity of song-birds and other species. The proposed expansion of the oak savanna habitat will re-establish this rare and declining plant community on the site and facilitate conservation of the rare checkerspot butterfly. Habitat for camas and the extremely rare *Carex pallescens* will be protected and carefully managed for the exclusion of invasive weed species. The oaks will eventually provide habitat for the state-threatened White-breasted Nuthatch.

## **8.4 Veatch Mitigation Bank Site**

### 8.4.1 Existing Conditions

#### 8.4.1.1 Site Size and Location

The Veatch site covers 6.25 acres adjacent to Curtin Creek at NE 139<sup>th</sup> Street, west of NE 82<sup>nd</sup> Avenue, in section 20 of T3N, R2E WM (Figures 1,15). The legal description for the site is included in Appendix A.

#### 8.4.1.2 Landscape Position

The Veatch site is in the flood plain of lower Curtin Creek, approximately 2,000 feet upstream of its confluence with Salmon Creek. It is surrounded by low-density residential land use.

#### 8.4.1.3 Rational for Site Selection

The Veatch site was purchased in 1998 as a supplemental mitigation site intended for use as wetland habitat enhancement in association with the Padden Parkway project. However, since we were subsequently able to acquire the Padden site (section 8.2), we did not need to use the Veatch site as mitigation for the Padden Parkway project. The site is at the lower end of the Curtin Creek sub-basin and lies in a gap in the forested riparian corridor connecting Salmon Creek with a forested reach on Curtin Creek upstream of NE 139<sup>th</sup> St. The proposed mitigation measures offers an opportunity to reduce this gap and significantly upgrade the riparian habitat of the Salmon Creek corridor as well as that of Curtin Creek. The site includes potential rearing habitat for Coho and Chinook salmon and for steelhead and cutthroat trout.

The site is surrounded by rural residential land use. This can be expected to become more dense in the immediate vicinity in the future. However, the stream corridor downstream of the site will be protected by the county's Habitat Conservation Ordinance. The primary adverse impact of the increased development will be weed infestations. The county is committed to a long-term weed management for this and all natural areas in county ownership. The habitat resources that will be enhanced can be expected to continue to provide increased and meaningful ecological functions.

#### 8.4.1.4 Wetlands

The Veatch site was delineated in 1998 prior to purchase by the county. Additional soil and hydrologic evaluation was conducted in the interior of the site in the spring of 2004 to increase our understanding of the hydrologic processes operating on the site. A delineation report will be prepared for the Bank Instrument. The wetland evaluations indicate that site is almost entirely jurisdictional wetland (Figure 15). The wetland area nearly spans the Curtin Creek flood plain. The east boundary of the site closely approximates the wetland boundary. Wetland extends upstream to the southeast and downstream to the northwest. Curtin Creek flows across the southwest corner of the site and includes a narrow, lower flood plain bench approximately 100 feet wide on the west side and 70 to 80 feet wide on the east. The great majority of the remainder of the site is a slightly higher flood plain terrace, rising to approximately 6 feet above the ordinary high water level. The site functions as a riverine flow-through wetland with a significant component of slope wetland in the outer flood plain terrace.

#### 8.4.1.4.1 Hydrology

The Veatch site receives water from precipitation, shallow groundwater flow, untreated runoff from NE 139<sup>th</sup> St, surface flow from Curtin Creek, and from domestic septic systems from 2 homes, one on either side of the site. The 100-year flood plain extends approximately 120 to 150 feet from the creek, covering approximately 30% of the site. Most of the site is seasonally saturated. Water leaves the site through Curtin Creek and through infiltration to groundwater.

#### 8.4.1.4.2 Soils

Although the soils of the Veatch site were mapped as being almost entirely Semiahmoo muck (Sr), the muck was found to be confined to the southern third of the site, with a second, smaller patch adjacent to the site on the north side. The remainder of the wetland was covered with McBee silt loam (MIA). The upland areas surrounding the site contained Hillsboro loam.

#### 8.4.1.4.3 Vegetation

The riparian zone of Curtin Creek is forested on its west side with a canopy composed almost entirely of red alder (*Alnus rubra*) with a few red cedars (*Thuja plicata*) in the extreme southwest corner. The west side of the riparian zone is dominated by reed canarygrass. The remainder of the site is emergent wetland dominated by non-native grasses and other agricultural weeds.

#### 8.4.1.5 Classification and Functions

The Veatch site belongs to category 2 (score = 64) using the DOE wetland rating system (revised 2004). The site has moderate potential but significant opportunity to provide water quality and hydrologic functions. It has high potential for habitat functions due to its position in the Curtin Creek corridor and its proximity to Salmon Creek which has well-established riparian habitat. Although the landscape position is favorable for hydrologic and water quality functions, enhancing these functions is not cost-effective given the sites size and topography. However, the site is in a position to offer excellent opportunity for upgrading wetland and riparian habitat resources in the Curtin Creek/Salmon Creek corridor.

### 8.4.2 Conceptual Site Design

#### 8.4.2.1 Goals and Objectives

The primary goal for the Veatch bank site is to upgrade wetland and riparian habitat. This will be done through the planting of native plant communities suitable to the sites ecological characteristics.

The emergent wetland area of the Veatch site will be planted with forested wetland plant associations that reflect those in comparable ecological situations on the site and in the near vicinity. These plant associations are wide-spread and well-documented in the region (McCain 2004, Christy 2004, Kunze 1994).

The lower floodplain will be planted with a canopy of red alder (*Alnus rubra*). The understory will consist primarily of salmonberry (*Rubus spectabilis*), and red osier dogwood (*Cornus sericea*), and red elderberry (*Sambucus racemosa*).

The upper flood plain terrace will be planted with Oregon ash (*Fraxinus latifolia*) and black cottonwood (*Populus balsamifera*). Understory will be similar to that of the low flood plain but with the addition of

twinberry (*Lonicera involucrata*), Douglas hawthorn (*Crataegus douglasii*), and straggly gooseberry (*Ribes divaricata*).

#### 8.4.2.2 Potential Adverse Impacts from Bank Development

Since no modifications to the site other than planting native plant communities are proposed, no significant adverse impacts are anticipated.

#### 8.4.2.3 Site Protection

The Veatch site will be protected from future development or modification in any way not approved by the MBRT by a Memorandum of Agreement. The site will also be protected by a Conservation Covenant. The site will be fenced and provided with locked gates to prevent unauthorized access. Future low-density residential development of the surrounding land will result in an increase in the sources of non-native weed infestations. The Clark County Weed Control Dept. is committed to long-term management of the site. Stormwater impacts from the future low density residential development and road improvements are regulated by the county's stormwater ordinance.

#### 8.4.3 Potential Credits

The proposed mitigation measures for the Veatch Bank site will result in 5.45 acres of wetland enhancement and 0.49 acres of preservation/conservation. The site will also yield an additional 0.22 acre of upland enhancement.

## **8.5 Ford Mitigation Bank Site**

### 8.5.1 Existing Conditions

#### 8.5.1.1 Site Size and Location

The Ford site covers approximately 28 acres located west of the intersection of NW 184<sup>th</sup> Street and 11<sup>th</sup> Avenue in section 9, T3N,R1E (Figures 1, 17). Legal descriptions for the site are included in Appendix A.

#### 8.5.1.2 Landscape Position

The Ford site is near the upstream end of a tributary of Packard Creek (approximately 1500 feet from the watershed boundary), which is a tributary of Whipple Creek and the Columbia River via Lake River. The site also includes a headwater wetland and swale that flows into this tributary. The Whipple Creek watershed lies in the physiographic area known as “west slope valleys and ridges”, which includes the northwestern portion of Clark County (Swanson, R. D., 1994, Physiographic areas in Clark County, unpublished ms.). The area consists of low ridges and deep valleys with a foundation of upper Troutdale formation and a relatively uniform covering of silts and sands deposited by the Missoula floods of the Columbia River.

The stream channel of the Packard Creek tributary ranges from nearly level with the adjacent ground at the upstream end of the site, to very deeply incised at the downstream end, with a V-shaped valley over 40 feet deep. The creek is associated with a very narrow active flood plain between 5 and 20 feet wide in the downstream portion. Wetland is also associated with a groundwater discharge areas on the low side slopes of the creek. The headwater wetland and swale has a very broad, shallow cross section with an area of mass-wasting extending approximately 100 feet upstream of its confluence with the Packard Creek tributary. The swale and adjacent wetland area functions as a steep slope wetland. Just upstream of the swale is a heavily grazed sheep pasture.

#### 8.5.1.3 Rational for site selection

The Ford site was purchased in 1999 primarily for the mitigation of impacts due to the construction of the proposed NE 15<sup>th</sup> Ave. This project will require only a small amount of mitigation (approximately 3 acres of combined wetland and upland enhancement), but since the remainder of the parcel contains significant potential for additional mitigation and conservation, the entire site was purchased.

The site has a narrow forested riparian strip of relatively mature cedar in the lower portion and a larger patch of mature upland mixed coniferous/deciduous forest. These forest patches can be connected by the planting of 4 acres of abandoned pasture. The wetland swale area in the southeast was cleared many years ago and was severely overgrazed until purchased by the county. It currently provides water quality treatment for the sheep pasture upstream. This area can be returned to forested wetland. The main creek in the northeast portion of the site was also cleared and has been severely downgrading due to trampling by cattle and lack of forest cover. The cattle were removed at the time of purchase by the county. The site has shown significant recovery in vegetation cover, but some persistent weed infestations remain. The site also contained a country garbage dump in the upper portion of the stream, which was cleaned up by the county following purchase. Some streamside plantings were made following cleanup, but additions of large woody material and additional plantings will be required to provide a complete riparian plant community.

The site is surrounded by rural residential land use. This can be expected to become more dense in the immediate vicinity in the future. However, the stream corridor downstream of the site will be protected by the county's Habitat Conservation Ordinance. Although the increasing residential density around the site will come with increases in some types of impact to habitat areas, the sheep and other livestock in the

pasture upstream of the southeast wetland will eventually disappear. The primary adverse impact of the increased development will be weed infestations. The county is committed to a long-term weed management for this and all natural areas in county ownership. The habitat resources that will be enhanced can be expected to continue to provide increased and meaningful ecological functions.

### 8.5.1.3 Wetlands

The wetlands of the Ford site were delineated in Of the Ford site's 28 acres, approximately half are forested, with 3.2 acres of forest on the steep slopes of the riparian area and another 10 acres of forest in the southwest corner. The wetland area covers approximately 5 acres, of which 1.86 has been proposed for mitigation for mitigation of the NE 15<sup>th</sup> Avenue project. Open pastures cover 3.2 acres in the northern portion and 10 acres in the eastern portion, 2.08 acres of which has been proposed for mitigation of the NE 15<sup>th</sup> Avenue project.

#### 8.5.1.3.1 Hydrology

The wetland receives water from precipitation, shallow groundwater flow, surface flow from Packard Creek, and runoff from the roadside ditches of NW 11<sup>th</sup> Avenue and NW 184<sup>th</sup> Street. Water leaves the site through Packard Creek, which continues to flow until late in the dry season during years with normal rainfall.

#### 8.5.1.3.2 Soils

The gently sloping area at in the upstream flood plain of Packard Creek consists of Cove silty clay loam. The remainder of the wetland area including the swale consists of Odne silt loam. The upland areas are covered with Sara silt loam.

#### 8.5.1.3.3 Vegetation

Introduced pasture grasses dominated the vegetation of the wetland. Bentgrass (*Agrostis gigantea*), bluegrass (*Poa pratensis*) and scattered sweet vernalgrass (*Anthoxanthum odoratum*) dominated the wetland areas. Velvet grass (*Holcus lanatus*) and common foxtail (*Alopecurus pratensis*) were common. Scattered patches of rush (*Juncus effusus*) and water tolerant forbs (*Ranunculus repens*, *Rumex crispus*, *Plantago lanceolata*) were also common in the wetland areas. In the upland areas of the pasture, tall fescue (*Festuca arundinacea*), crested dogtail (*Cynosurus cristatus*), and vernal grass were dominant.

The stream is dominated by reed canarygrass at the east end where it is not incised. Where a gully has formed, the banks are dominated by young second growth trees and shrubs. Scattered individuals of black cottonwood (*Populus balsamifera*), red alder (*Alnus rubra*), red cedar (*Thuja plicata*), Scouler's willow (*Salix scouleriana*), and Oregon ash (*Fraxinus latifolia*) occur in the riparian zone. The understory contains hazel (*Corylus cornuta*), vine maple (*Acer circinatum*), ocean spray (*Holodiscus discolor*), and cascara (*Rhamnus purshiana*).

The riparian area of the northern portion of the site is dominated by a dense canopy of second growth cedar, big-leaf maple, and Douglas fir. The understory at streamside and in the active flood plain included vine maple, and hazel. Higher on the side slopes, serviceberry (*Amelanchier alnifolia*), osoberry, cascara, Oregon grape (*Mahonia nervosa*), and snowberry were also found. Sword ferns were common in the ground layer on the side slopes.

The forested area in the southwest portion of the site was dominated by relatively complete canopy of Douglas fir, big-leaf maple, red cedar, red alder, and black cottonwood. A dense understory is dominated

by hazel, vine maple, osoberry, cherry (*Prunus emarginata* (?)), Oregon grape, and ocean spray (*Holodiscus discolor*).

The forested areas also contained serious infestations of English ivy (*Hedera helix*), English hawthorn (*Crataegus monogyna*), and holly (*Ilex aquifolia*).

#### 8.5.1.4 Classification and Ecological Functions

The Ford site belongs to category 2 (score = 53) using the DOE wetland rating system (revised 2004). The site has moderate potential but limited opportunity to provide water quality and hydrologic functions. It has high potential for habitat functions due to its position in the Packard Creek/Whipple Creek corridor with its large areas of protected riparian and upland habitat.

### 8.5.2 Conceptual Site Design

#### 8.5.2.1 Goals and Objectives

The goal of the proposed improvements to the Ford site to upgrade and conserve its habitat resources. This will be accomplished by returning the old pasture areas of the site to forest. Eventually, the entire 28 acres will be forested and the entire reach of Packard Creek will include a closed riparium. This will involve planting the north pasture area with red cedar, Douglas fir, and big-leaf maple forest with understory and ground layers comparable to those in the existing woods. This will connect the existing forest in the southwest with the riparium of Packard Creek. The wetland swale in the eastern portion will be planted with ash/cottonwood forest with cedar around the edges. The upland portions will be planted with mixed Douglas fir/big-leaf maple forest comparable to that in the southwest corner of the site.

#### 8.5.2.2 Potential Adverse Impacts from Bank Development

Since no modifications to the site other than planting native plant communities are proposed, no significant adverse impacts are anticipated.

#### 8.5.2.3 Site Protection

The site will be protected from future development or modification in any way not approved by the MBRT by a Memorandum of Agreement. The site will also be protected by a Conservation Covenant. The site will be fenced and provided with locked gates to prevent unauthorized access. Future development of the surrounding land will result in an increase in the sources of non-native weed infestations. The Clark County Weed Control Dept. is committed to long-term management of the site. Stormwater impacts from the future low density residential development and road improvements are regulated by the county's stormwater ordinance.

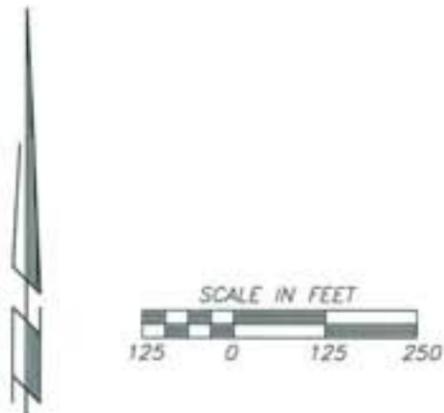
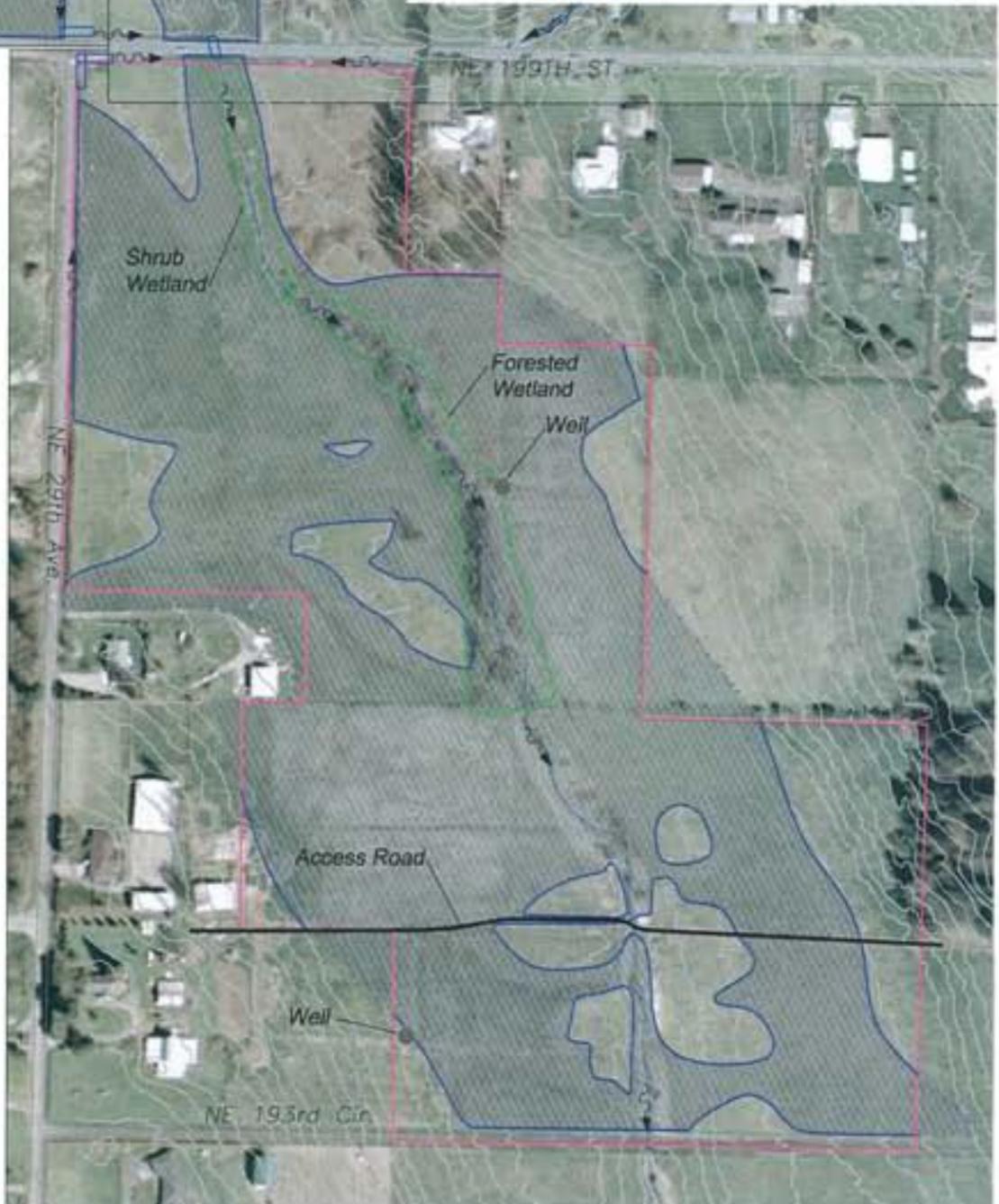
### 8.5.3 Potential Credits

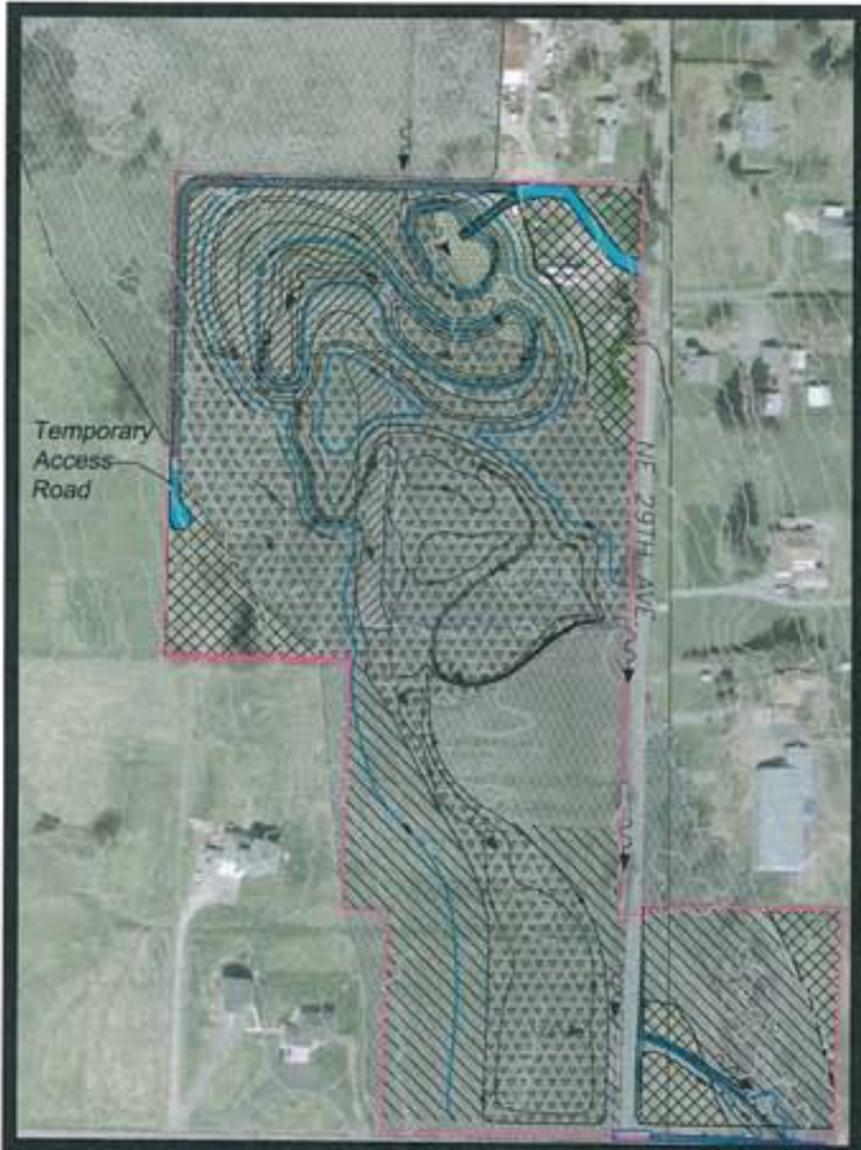
The proposed mitigation measures for the Ford Bank Site will result in 6.38 acres of wetland enhancement, 8.85 acres of upland enhancement, and 13.16 acres of preservation.



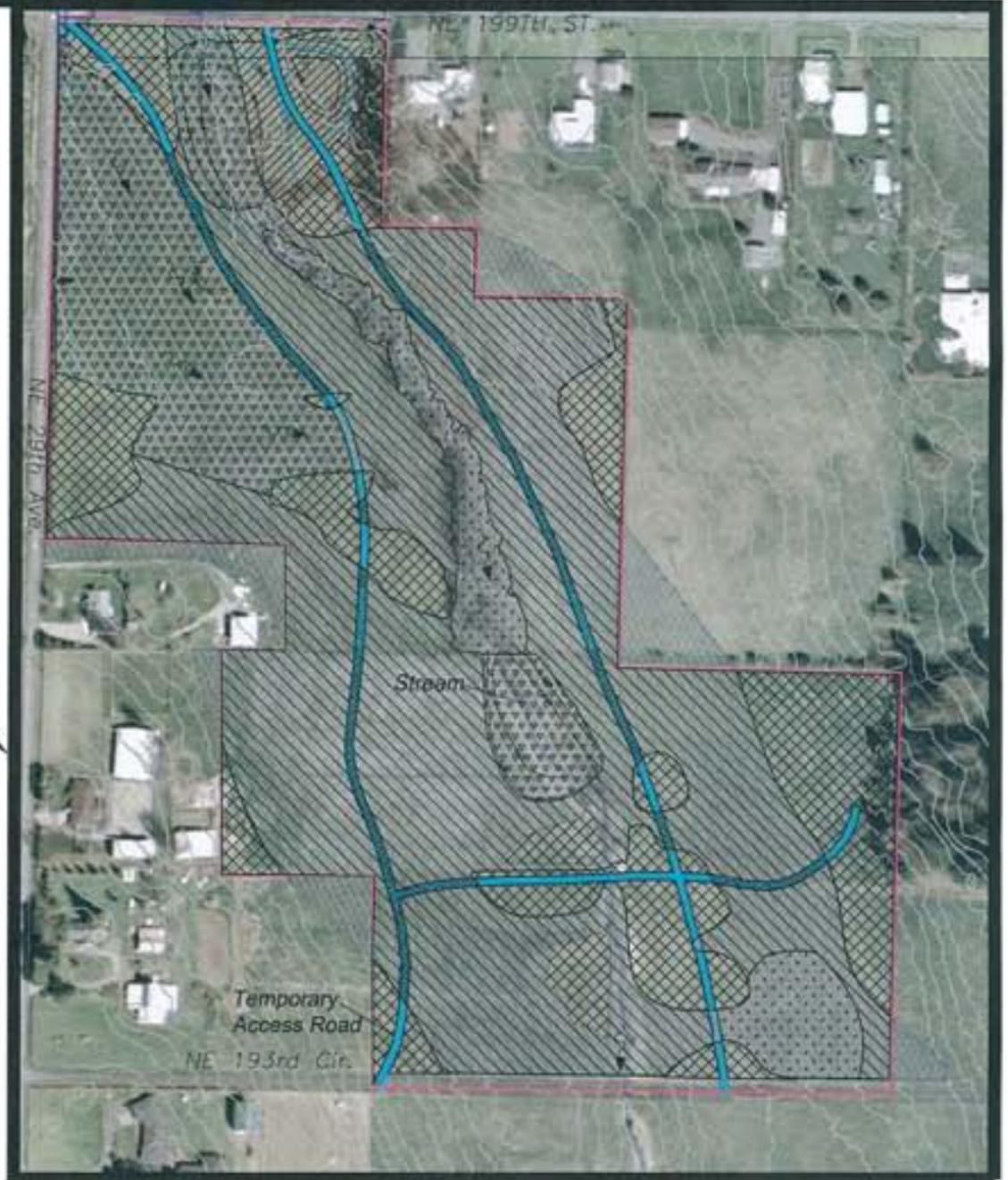


-  Wetland
-  Wetland Boundary, Delineated
-  Wetland Boundary, Estimated
-  Site Boundary
-  Existing Contours
-  Stream/Ditch
-  Culvert
-  Water Flow





North Gabbert  
Figure 4



South Gabbert  
Figure 8

SEE FIGURES 4  
AND 8 FOR LEGEND



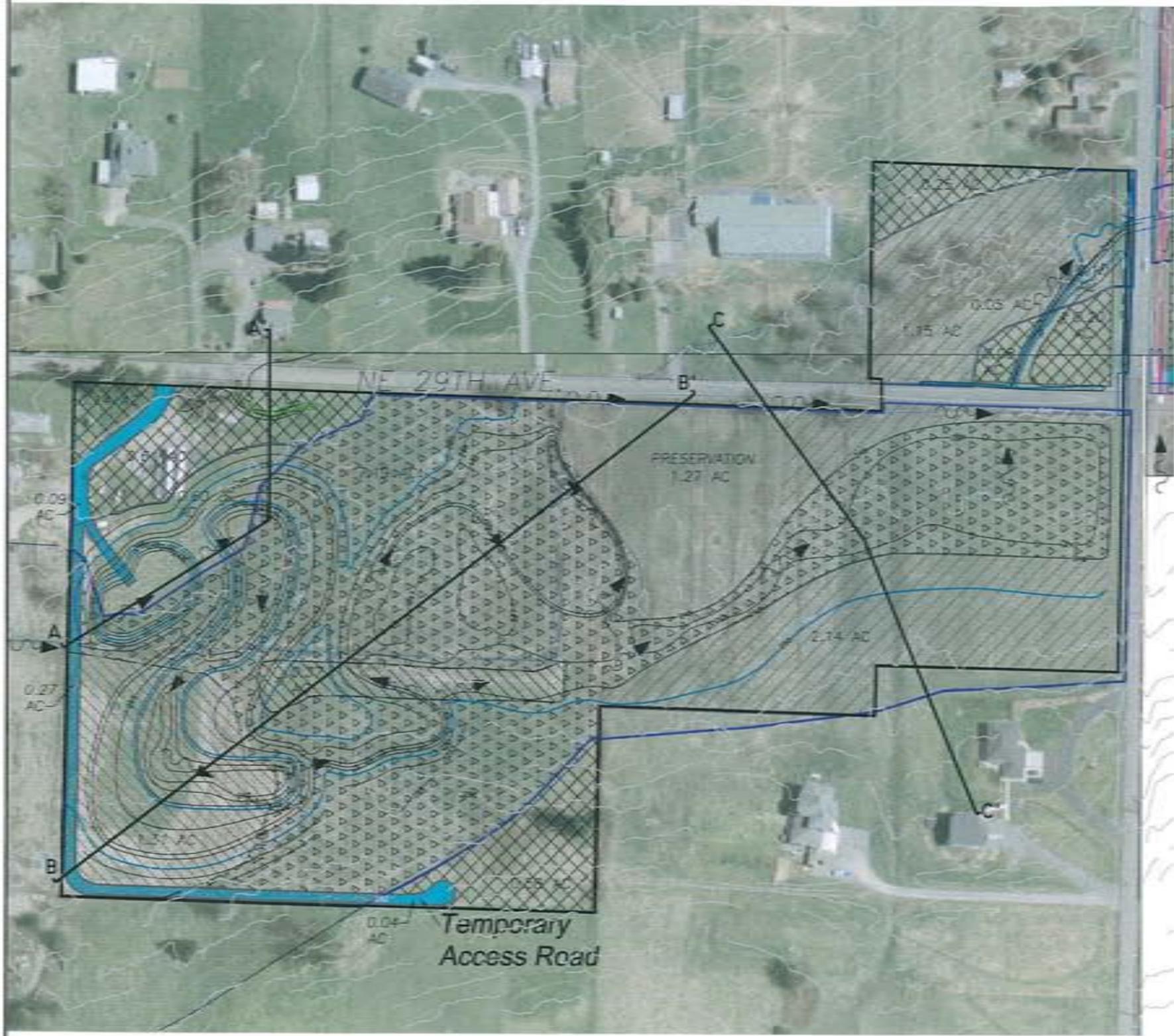
CLARK COUNTY  
WASHINGTON

DESIGN & ENGINEERING SERVICES  
ENVIRONMENTAL PERMITTING SECTION

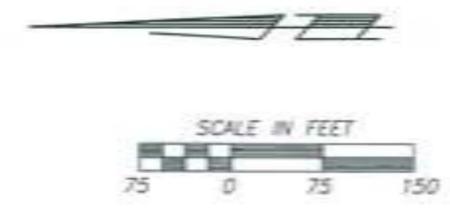
Figure 3  
Gabbert Bank Site, proposed conditions

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HDR.	
VERT.	1:250
DATE	02/04/2005
DWG:	Gabbert Concept
SHEET	3 OF 18

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|--|----------------------------------|--|--|
|  | Wetland                          |  | Wetland Creation<br>0.65 AC                      |
|  | Wetland Boundary, Delineated     |  | Wetland Re-establishment<br>2.47 AC              |
|  | Wetland Boundary, Estimated      |  | Wetland Rehabilitation<br>11.93 AC               |
|  | Site Boundary                    |  | Wetland Enhancement<br>16.80 AC                  |
|  | Proposed Contours                |  | Wetland Preservation<br>1.82 AC                  |
|  | Stream/Ditch                     |  | Upland Enhancement<br>7.13 AC                    |
|  | Section Line                     |  | Temporary Access Road Impacts-Wetland<br>1.03 AC |
|  | Water Flow                       |  | Temporary Access Road Impacts-Buffer<br>0.60 AC  |
|  | Temporary Access Road<br>1.58 AC |  |  |
|  |                                  |  | Preservation 1.27 AC                             |
|  |                                  |  | Total all areas 44.69 AC                         |

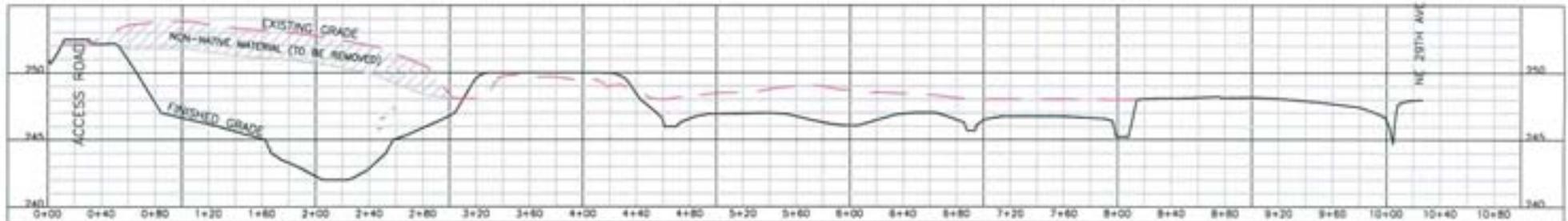


DESIGNED: JG  
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 CWP: JBT/122  
 HOR: 1:150  
 DATE: 02/04/2005  
 DWG: North Gabbert Concept  
 SHEET: 4 OF 18

**DESIGN & ENGINEERING SERVICES**  
**ENVIRONMENTAL PERMITTING SECTION**

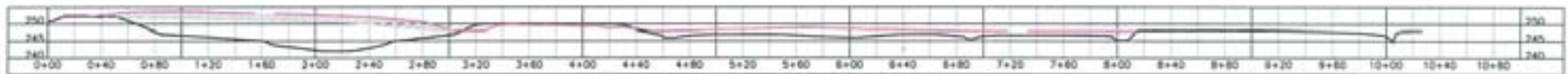
Figure 4  
 North Gabbert, proposed conditions





SECTION B-B'

VER. SCALE: 1" = 4'  
HOR. SCALE: 1" = 40'

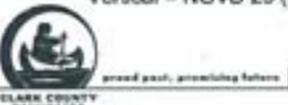


SECTION B-B'

VER. SCALE: 1" = 1'  
HOR. SCALE: 1" = 40'

Figure 6 - North Gabbert cross section B-B'

Purpose: Wetland Fill for Road Widening  
Datum: Horizontal = NAD 83 (91)  
Vertical = NGVD 29 (47)



Applicant: Clark County Public Works  
COE Reference:  
Location: NE 179th St. between I-5 and NE 50th Ave.  
County: Clark State: Washington

Proposed: Fill 2.51 AC of Wetland  
Date: 02/04/2005  
Sheet: 6 of 18

























## Appendix A

# WCAFT WETLAND DELINEATION

## GRIMM PROPERTY

June, 2003

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- A. Field Data Sheets
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## 1.0 Introduction

### 1.1 Project Location

The Grimm property covers approximately 14 acres in section 31 of T3N, R2E WM. It is located to the south of the Lewis and Clark Railroad and west of NE 72<sup>nd</sup> Ave. (Figure 1).

### 1.2 Project Description

The wetlands of the Grimm property will be impacted by the widening of NE 72<sup>nd</sup> Ave., as proposed by the Clark County Department of Public Works. The property is also a potential mitigation site.

### 1.3 Project Area

#### 1.3.1 Geomorphology

The area containing the Grimm property was apparently formed as a closed-depressional wetlands in minor scour features on a broad, flat, alluvial plateau formed by deposits of the Missoula floods of the Columbia River.

#### 1.3.2 Hydrology

The Grimm property receives water primarily from precipitation with small inputs from surface runoff from NE 72<sup>nd</sup> Ave. and the impervious surface of the Clark Public Utilities' electrical substation at the east end of the site. The wetland is drained in its northeast corner by the roadside ditch of NE 72<sup>nd</sup> Ave. This ditch conveys water eastward along NE 99<sup>th</sup> St. approximately 0.7 mile to Curtin Creek. The northwest-to-southeast coarsing wetland area at the west boundary of the site is drained by an excavated ditch which exits the wetland at its southeast end and conveys water along NE 88<sup>th</sup> St. to Curtin Creek. Curtin Creek originates approximately 1 mile southwest of the site and flows to Salmon Creek approximately 2.5 miles north of the site. Salmon Creek is a tributary of the Columbia River via Lake River.

#### 1.3.3 Soils

Soils mapping (1972, US Department of Agriculture, Soil Conservation Service) of the project area indicates McBee silt loam as the primary soil type on the Grimm property with Hillsboro loam on the upland ridge that runs diagonally through the site from southeast to northwest. An area of Semiahmoo muck also occurs in the wetland at the west end of the property.

**Hillsboro loam (HIA)**, is classed as a fine-silty, mixed, mesic series of the subgroup Ultic Argixerolls, order Mollisols. It is typically a deep, well-drained, medium textured soil that developed in deposits of old Columbia River alluvium.

**McBee silt loam (MIA)**, is classed as a coarse loamy, mixed, mesic series of the subgroup Aquic Haploxerolls, order Mollisols. It is typically a deep, somewhat poorly drained soil formed in depressions and drainageways in areas of Columbia river alluvium.

**Semiahmoo muck (Sr)**, is a histosol formed from decayed organic material in low, wet basins or depressions. It is typically a deep, very poorly drained soil.

#### 1.3.4 Climate

The project area normally receives approximately 40 inches of precipitation annually. The great majority of the precipitation typically falls as rain by early February with the heaviest rainfall in December and January.

#### 1.3.5 Land Use

The project area is zoned as light industrial (MI). The most recent use is agriculture/pasture, but the land has been fallow for several years. The Lewis and Clark railroad borders the property on the north. The land north of the railroad is being developed as an industrial park. NE 72<sup>nd</sup> Ave. runs along its east boundary. An electrical transformer substation is also located at the eastern boundary of the property. Light industrial and low density residential areas occur to the south and east. The site is bordered on the west by a wetland/natural area complex covering approximately 25 acres in several ownerships.

## 2.0 Methods

Documented existing and historic conditions for the study site were reviewed using the Soil Survey of Clark County (1972, US Department of Agriculture, Soil Conservation Service), historic aerial photographs in approximate 10 year intervals beginning in 1955, and 2-ft elevation contours available through the County's ClarkView GIS program. The elevation contours were derived from aerial photography.

Precipitation data was obtained through the NOAA internet site for the Vancouver weather station (Pearson Air Park). Based on previous history, precipitation for the Grimm property can be expected to be about 10% higher than the Vancouver readings. Precipitation data is also provided in the Soil Survey of Clark County.

The delineation was conducted according to the 1987 Corps of Engineers Wetland Delineation Manual and Washington State Wetlands Identification and Delineation Manual (DOE Publication 96-94). This procedure calls for the evaluation of vegetation, soils, and hydrology for one typical observation point in each distinctive wetland habitat type of the subject area. A determination of the jurisdictional status of the observation point requires independent confirmation of wetland characteristics in each of these three parameters.

The primary soil and hydrology samples were taken by digging a hole 16 inches deep using a tiling spade, examining the soil profile, and evaluating the depth of standing water after allowing ground water to seep into the hole. Additional soil and hydrology samples were taken using a 1 1/2 inch diameter soil auger in a grid pattern consisting of transects at approximately 100' intervals perpendicular to the wetland boundary. The auger holes were placed at intervals of approximately 50 ft. along the transect. The auger holes were marked with wire flags and monitored throughout the spring from February 11 to May 28, 2003.

At the Grimm property, the growing season is approximately 250 days long and typically begins in early March (when minimum air temperatures rise above 28° F in one of two years and soil temperature rises above 41° F at 20 inches below the surface). Soil temperatures were measured during the early field visits using a compost thermometer.

According to US Army Corps of Engineers and Washington Department of Ecology wetland delineation methodologies, the study site is considered to have wetland hydrology where water stands at 12" or less from the surface for 12.5% of the growing season. For the Grimm property, the critical period for hydrology is approximately 31 days. A given sample station was considered to have wetland hydrology if water stood in the hole at a depth of 12 inches or less for at least 31 days. The soil was considered to be hydric if it contained a significant proportion of it matched the description of a listed hydric soil, or met the technical criteria described in the delineation manuals listed above.

Waterbodies and wetland areas were classified according to the Cowardin system of the US Fish and Wildlife Service (Cowardin, L. M., et al. 1979, Classification of wetlands and deepwater habitats of the United States, US Fish and Wildlife Service FWS/OBS-79/31). They were also classified according to the Washington State Department of Ecology (DOE) Wetland Rating System (DOE Publication # 91-57) and according to the Clark County Wetland Ordinance.

Ecological functions were evaluated according to the Washington State Department of Ecology "Methods for Assessing Wetland Functions" (DOE Publications 99-115 and 99-116), using the depressional outflow model for wetlands 1 and 2, and using the depressional closed model for wetland 3.

Field investigations were conducted on February 11, March 11, 31, April 1, 16, May 8, 13, 14, 27 and 28, 2003. The wetland boundary was finalized on April 16 after water levels had receded significantly (Figure 3). The wetland boundaries and other field reference points were located using a Trimble Global Positioning System (Geo Explorer XT) which yielded accuracy of +/- 1 foot. Field visits early in the season focused on hydrology and soils. Identification of plant species (especially grasses, sedges, and rushes) continued through the later field visit after the delineation boundaries had been set. This effort will continue through the summer to identify late blooming species.

### 3.0 Results

#### 3.1 Climatic Conditions

Rainfall totals for the previous winter had been within the normal range. At the start of the fieldwork in February, the project area had received approximately 20 inches of rainfall for the water year. By mid March, approximately 25 inches of rainfall had fallen. The spring season received above average rainfall, and approximately 30 inches had fallen by mid April. This is about 4 inches above average.

Soil temperature was at 41° F on February 11, and at 44° F on March 11, 2003. At least some of the plant species were showing signs of growth in mid February. The site can be considered to have been in the growing season from the beginning of the observation period. Air temperatures during the previous winter had been consistently above freezing, making it unlikely that the soil temperature went significantly below 41° F.

#### 3.2 Hydrology

Initial measurements of groundwater levels in February indicated that groundwater was deeper than 12 inches over much of the wetland area. By mid March, however, groundwater levels had

risen dramatically, resulting in groundwater within 12 inches over a substantially greater area. Water levels had begun to recede by mid April, resulting in the wetland boundaries shown in Figure 3. Throughout much of the period of high groundwater, water stood at less than 12 inches below the surface outside the area of hydric soils. In some cases, water stood at less than 12 inches in areas later determined to be upland based on soils and vegetation.

### 3.3 Soils

The soils of the project site were dominated by mineral soil types that differed from the typical descriptions of the mapped McBee silt loam and Hillsboro loam series in structure, color, and profile (Figure 2). Muck soil also occurred in wetland 1.

### 3.4 Vegetation

Several plant community types were found on the Grimm property (a list of all plants identified on the site is given in Appendix B). Emergent (marsh), shrub, and forested plant communities were found in the wetlands. Upland areas consisted primarily of grasslands, shrub thickets, and scattered trees (including one small cottonwood grove).

Palustrine emergent wetland (PEM) was the predominant general plant community type overall and covered approximately 8.8 acres. Within this community type were large patches of reed canarygrass (*Phalaris arundinacea*). Between these patches were areas with much greater species richness and diversity including several species of sedges (*Carex ovalis* (*leporina*), *C. jeta*, *C. militoralis*, etc.), rushes (*Juncus effusus pacificus*, *J. (tennis) oregonensis*, etc.), grasses (*Alopecurus pratensis*, *Poa pratensis*, etc.), and other herbaceous plants (*Myosotis bicolor*, *Veronica serpyllifolia*, *Plantago lanceolata*, *Montia linearis*, *Vicia hirsuta*, etc.). The drier transition zones of the emergent wetlands were dominated by wet grasses (*Alopecurus pratensis*, *Poa pratensis*, *Festuca rubra*, *Anthoxanthum odoratum*, etc.), vetches (*Vicia hirsuta*, *V. sativa*), thistles (*Carthamus arvensis*, *C. vulgare*), and other non-native herbaceous species.

Although most of the dominant species and approximately 40% of the species overall were non-native, some noteworthy populations of native species were identified. These included camas lily (*Camassia quamash*), which occurred in the transition zones of wetlands 1 and 2; *Carex paleacensis*, a small patch of which was found in the emergent transition zone of wetland 1 (this represents only the second recorded occurrence of this sedge in the state of Washington, and the first record for southern Washington); *Danthonia californica* and *Festuca rubra*, two species of native grasses associated with oak savanna habitat, were found in all emergent wetland areas as well as the upland grassland.

The emergent wetlands and transition zones were being invaded by native shrub and tree species such as cascara (*Rhamnus purshiana*), cottonwood (*Populus balsamifera*), Oregon white oak (*Quercus garryana*), Oregon ash (*Fraxinus latifolia*), and other shrubs (*Rosa nutkana*, *Spiraea douglasii*, etc.). The most aggressive woody invader of the emergent wetlands and upland grassland, however, was English Hawthorn (*Crataegus monogyna*), which was found in all areas.

Palustrine shrub/scrub (PSS) wetland occurred in large patches in all of the wetland areas. The largest single patch occurred in wetland 2, where it covered approximately 0.9 acres. The primary species in this plant community were *Spiraea douglasii* and *Rosa nutkana*. The spirea often occurred in dense, single species patches.

Palustrine forested (PFC) wetland occurred only in wetland 1, but was the dominant habitat type there. On the property itself, forested wetland covered approximately 1.2 acres but extended to the south to cover approximately 10 acres more. It was dominated primarily by Oregon ash (*Fraxinus latifolia*) with highly variable understory and ground layer vegetation.

Upland plant communities consisted primarily of weedy grasslands resulting from abandoned pastures. These grasslands were dominated by non-native species which accounted for 66% of the species found in the upland areas. The dominant species included Kentucky bluegrass (*Poa pratensis*), field fescue (*Festuca pratensis*), thistles (*Cirsium arvense*, and *C. vulgare*), vetches (*Vicia hirsuta*, *V. sativa*), St. John's wort (*Hypericum perforatum*), ox-eye daisy (*Chrysanthemum leucanthemum*), etc. Two native grasses (*Festuca rubra* and *Danthonia californicum*) were also common in these areas indicating (along with the presence of oaks and large mature oak trees) that the area may have been maintained as grassland by native Americans through the use of fire.

Shrub wetland vegetation extended beyond the wetland boundaries into the upland area to the west of wetland 3. These thickets included of spirea, rose, and willow. Thickets of Scot's broom (*Cytisus scoparium*) also occurred in this area as well as along NE 77<sup>th</sup> Ave. A dense thicket of snowberry (*Symphoricarpos albus*) and Nootka rose (*Rosa nutkana*) occurred along the northern boundary of the site adjacent to the railroad.

A small grove of cottonwood trees (*Populus balsamifera*) occurred in the southern portion of the site adjacent to wetland 3. The understory and ground layer was dominated by Himalayan blackberry thicket (*Rubus procerus*).

Significant weed infestations included English hawthorn (*Crataegus nomogyne*), thistles (*Cirsium arvense*, and *C. vulgare*), reed canarygrass (*Phalaris arundinacea*), Himalayan blackberry (*Rubus procerus*), Scot's broom (*Cytisus scoparium*), and nightshade (*Solanum dulcamara*).

### 3.5.0 Wetland Areas

Three wetland areas were identified on the Grimm property. Although these wetlands were contiguous in terms of regulatory criteria, they appeared to be functionally isolated. The three wetland areas were analyzed separately for the classification and function assessment procedures.

*Wetland 1* occurs on the west side of a low ridge that runs northwest-southeast through the property. On the Grimm property, the wetland covers 4.1 acres consisting of emergent, shrub/scrib, and forested wetlands. It extends offsite to the southeast to include approximately 20 acres.

*Wetland 2* is primarily emergent but includes a large area of shrub wetland. It covers 3.9 acres in the northeast of the property.

*Wetland 3* is a small emergent wetland in the southeast corner of the property. It covers approximately 0.8 acre.

3.5.1 Wetland 1 received hydrologic input from precipitation and runoff from a catchment basin that is only slightly larger than the wetland itself. The watershed contains 1:205 over about 40% of the wetland's perimeter. The Lewis and Clark Railroad runs along its northern boundary. The

wetland's buffer also includes 5 residences with septic systems. Outside the Grimm property, the wetland contains a pond measuring approximately 1.5 acres that reportedly resulted from a peat mining operation in the early 1960s. Within the Grimm property, wetland 1 contains a significant area that is flooded most of the year.

Wetland 1 is partially drained by a ditch that now originates midway through its length (south of the Grimm property). The ditch is evident in the 1955 aerial photo of the site and apparently originated further to the north within the Grimm property at that time.

In the emergent wetland along its eastern boundary, Wetland 1 contained silt loam that differed considerably from the mapped McBee silt loam in being much paler and containing a coarse sandy silt subsoil. This soil type graded to non-hydric loam at the upland boundary that was paler than the mapped Hillsboro loam. An area of Semihydric muck soil occurred along the eastern edge of the forested wetland. Further west and outside of the Grimm property, the wetland was dominated by sandy clay loam soil that differed from the mapped McBee silt loam in having considerably paler subsoil.

Wetland 1 contained primarily forested wetland but also included areas of shrub-dominated wetland as well as emergent wetland in its eastern transition zone. As shown in Appendix B, 81 species of plants identified in the wetland area. The forested portion was dominated by Oregon ash (*Fraxinus latifolia*), but also contained a patch of quaking aspen (*Populus tremuloides*) covering approximately 0.2 acres at its northeast boundary. Along the north and northwestern boundary of the wetland, the transition zone has developed a mosaic character with cottonwood (*Populus balsamifera*) and scattered Oregon white oak (*Quercus garryana*) among the ash trees on the higher spots. The forested plant community appears to be expanding eastward into the emergent wetland zone.

The understory of the forested wetland was diverse and highly variable. Understory patches were often so dense that ground layer vegetation was virtually excluded. In other areas, the understory was mixed with emergent vegetation. Other areas were much more open and were dominated by ground layer and emergent vegetation. Dominant understory species included manebark (*Physocarpus opulifolius*), red osier dogwood (*Cornus sericea*), Douglas spirea (*Spiraea douglasii*), Nootka rose (*Rosa nutkana*), and crabapple (*Malus fusca*).

The ground layer vegetation within the forested wetland was also diverse and highly variable. Among the dominant species were slough sedge (*Carex obnupta*) and star sedge (*Carex ovalis* (*leporina*)), soft rush (*Juncus effusus*), swamp horsetail (*Equisetum palustre*), willow herb (*Epilobium ciliatum*), small bedstraw (*Galium trifidum*), etc. Other noteworthy species include *Trillium parviflorum* (listed state sensitive), *Camassia quamash*, and *Scutellaria lateriflora*.

Non-native species account for 27% of the 81 species identified in the forested wetland. Although this proportion is lower than for the other habitat areas of the property, it represents a significant level of infestation. Among the more serious invaders were English hawthorn (*Crataegus monogyna*), English ivy (*Hedera aquifolium*), wall lettuce (*Lactuca muralis*), creeping buttercup (*Ranunculus repens*), and nightshade (*Solanum dulcamara*).

3.5.2 Wetland 2 received water from precipitation and runoff from a catchment basin that is only slightly larger than the wetland. Its watershed includes an electrical transformer station, about 250 feet of NE 72<sup>nd</sup> Ave., and a residence with a septic system. The wetland drains to the northeast through a roadside ditch along NE 72<sup>nd</sup> Ave. Water from the wetland is then conveyed

through roadside ditches along NE 99<sup>th</sup> St. to Curtin Creek. Water stands above the surface at the east end of the wetland until late summer in most years. The majority of the wetland dried out by mid June.

Wetland 2 contained a highly organic surface layer over a much paler clay loam subsoil. This soil series did not resemble the mapped McBeo silt loam. The depth of the surface layer was highly variable through the wetland. Shovel pits in some areas showed a steeply slanting boundary between A and B horizons possibly indicating the results of previous plowing or other disturbance.

Palustrine emergent and palustrine shrub wetland occur in wetland 2. The shrub wetland occurred in the western portion where surface water stood over a foot above the surface much of the year. Where the water stood above the surface but at less than about a foot deep for much of the spring, dense thickets of *Spiraea douglasii* and *Rosa nutkana* occurred. Where the water was deeper than this, the plants were more sparsely distributed among areas of open water and included some obligate emergent species. Notable species occurring in this area were water plantain (*Alisma plantago-aquatica*), water smartweed (*Polygonum amphibium*), and *Carex vesicaria*.

Emergent wetland occurred in the remainder of the wetland. Large areas of reed canarygrass (*Phalaris arundinacea*) occurred in the lower portions. More diverse and variable areas of emergent vegetation were dispersed among the reed canarygrass patches. These areas included several sedges (*Carex ovalis* (leparina), *C. lasiocarpa*, *C. feta*, *C. obtusa*, *C. unilateralis*), rushes (*Juncus effusus pacificus*, *J. tenuis occidentalis*), wet grasses (*Poa pratensis*, willow herb (*Epilobium ciliatum*), popcorn flower (*Plagiobothrys figuratus*), and bedstraw (*Galium parisiense*). The drier transition zones were dominated wet grasses (*Festuca rubra*, *Poa pratensis*, *Alopecurus pratensis*, *Anthoxanthum odoratum*, *Festuca pratensis*, *Holcus lanatus*), thistles (*Cirsium arvense*, *C. vulgare*), plantain (*Plantago lanceolata*), sheep sorrel (*Rumex acetosella*), and vetches (*Vicia hirsuta*, *V. sativa*).

3.5.3 Wetland 3 also received water from precipitation and runoff from a catchment basin that is only slightly larger than the wetland. It's watershed includes a very small reach NE 77<sup>th</sup> Ave. The wetland has no surface outlet.

Wetland 3 contained silt loam that differed considerably from the mapped McBeo silt loam in being paler and duller. Much of the area in the northwestern portion of the wetland contained a highly compacted and impervious subsoil. This subsoil was impenetrable with the hand auger and took great effort to chip through with the tiling spade. The most heavily compacted layer was about 6 inches thick.

Wetland 3 was dominated by emergent wetland although it also contained patches of shrub wetland. Dense patches of *Spiraea douglasii* measuring 20' to 50' diameter occurred in the northwest portion of the wetland and extended outside the wetland boundary. Smaller patches and isolated shrub and tree saplings occurred in the southern portion. Reed canarygrass patches and foxtail grass (*Alopecurus pratensis*) filled the gaps between spirea thickets in the northern portion. More diverse emergent vegetation resembling that of wetland 2 occurred elsewhere in wetland 3.

### 3.6 Classification

The classification of the wetland areas and their buffers are summarized in Table 1. No priority habitat areas or riparian priority areas occur on the property.

Wetland 1 consisted primarily of palustrine forested wetland dominated by deciduous broad-leaved species and with a seasonally flooded/saturated water regime (PFO1E). It also contained areas of palustrine scrub/shrub wetland dominated by deciduous broad-leaved species and with a seasonally flooded/saturated water regime (PSS1E), as well as areas of palustrine emergent wetland with persistent vegetation and a saturated water regime (PEM1B). It met the criteria for category I by both the DOE and Clark County classification systems, due to the predominance of mature forest with an average age over 50 years, high structural diversity and relatively low level of domination by non-native species. The upland buffer belongs to type D of the Clark County Wetland Protection Ordinance due to its domination by non-native species.

Wetland 2 consisted primarily of palustrine emergent wetland with persistent vegetation and a saturated water regime (PEM1B). It also contains palustrine scrub/shrub wetland dominated by deciduous broad-leaved species and with a seasonally flooded/saturated water regime (PSS1E). The wetland belongs to category III by the DOE classification system (20 pts.) and category III by the Clark County rating system. Its undeveloped buffer area belonged to type D.

Wetland 3 consisted entirely of palustrine emergent wetland with persistent vegetation and a saturated water regime (PEM1B). Except for that portion of its buffer that included the cottonwood grove, its buffer belonged to type D. The cottonwood grove belonged to type C.

Table 1. Summary of wetland and buffer classification for the Grimm property.

SITE	DESCRIPTION	SIZE (acres)	CLASSIFICATION			
			Cowardin	DOE	CC	Buffer CC
1	Asb/Aspen swamp with areas of shrub and emergent wetland	20	PFO1E PSS1E PEM1B	I	I	D
2	Emergent wetland with large patch of Shrub wetland	4.5	PEM1B PSS1E	III	III	D
3	Emergent wetland	0.8	PEM1B	III	IV	D/C

### 3.7 Wetland Functions

The three wetland areas were modeled assuming that wetlands 1 and 2 had functional outlets, but that wetland 3 had no outlet. The results of the models are shown in Table 2.

The three wetland areas in general were considered to have relatively high potential for water quality treatment. Although wetland 3 was considerably smaller than the other two wetland areas, it received a higher index for removing sediment due to its lack of an outlet. However, wetland 3 had lower potential for removing heavy metals and toxic organics due to its lack of muck soil.

The wetland areas also showed high potential for reducing storm peak flows and downstream erosion. Their potential for recharging groundwater, however, was considered to be relatively low due to the low permeability soils, which have a high clay content in the B horizon.

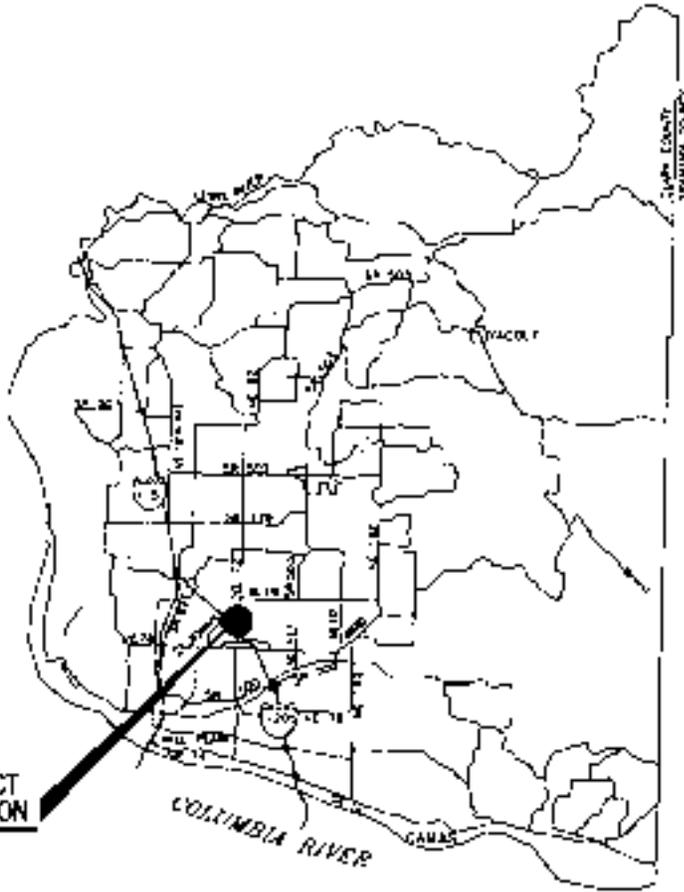
Table 2. Summary of DOE wetland assessment for the Grimm property.

FUNCTION	INDEX		
	Wetland 1	Wetland 2	Wetland 3
Potential for Removing Sediment	7	7	10
Potential for Removing Nutrients	8	8	8
Potential for Removing Heavy Metals and Toxic Organics	7	8	5
Potential for Reducing Peak Flows	7	7	10
Potential for Reducing Downstream Erosion	9	8	10
Potential for Groundwater Recharge	4	3	1
General Habitat Suitability	7	3	3
Habitat Suitability for Invertebrates	5	3	3
Habitat Suitability for Amphibians	6	1	1
Habitat Suitability for Anadromous Fish	2	1	1
Habitat Suitability for Resident Fish	3	2	1
Habitat Suitability for Wetland Associated Birds	4	2	3
Habitat Suitability for Wetland Associated Mammals	3	2	0
Native Plant Richness	10	4	3
Primary Production and Export	5	5	10

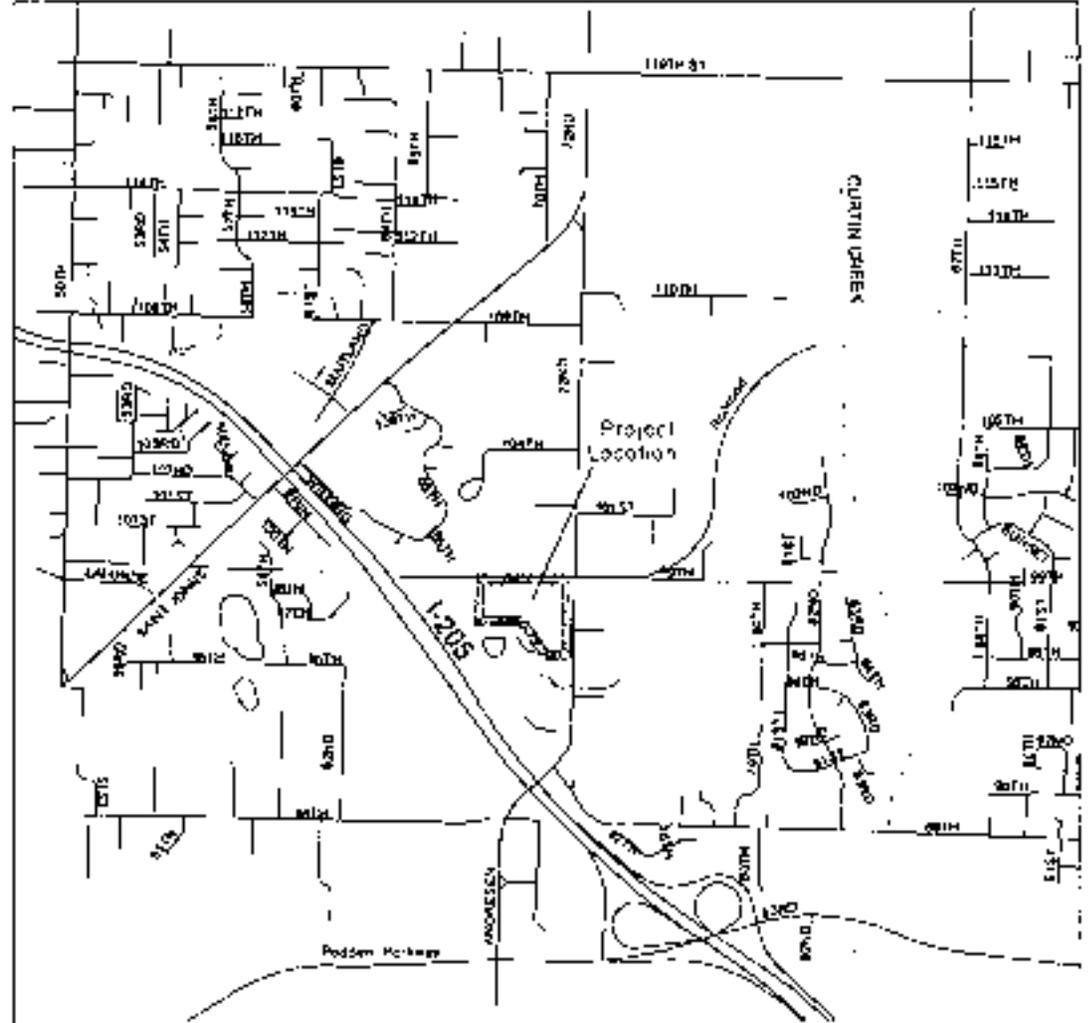
The wetlands were considered to have lower potential for habitat than might be expected, due to their isolation from other significant natural areas, poor buffer condition, and relatively simple habitat structure of wetlands 2 and 3. The model, however, is insensitive to the relative closeness of the three wetlands and appears to underestimate their habitat value. If the wetland complex were evaluated together, the habitat value of wetlands 2 and 3 would probably be considered greater.

Although wetlands 1 and 2 scored a 2 and 1 respectively for anadromous fish potential, both wetlands are isolated by multiple impassable culverts.

The wetlands scored low for habitat suitability for wetland associated birds. However, in the course of the field work 45 species of birds were observed (Appendix C), 9 of which were primarily associated with wetland habitats. Most of the wetland-associated species were regularly seen on the site. The Green Heron and the Northern Harrier were observed only once, but the other species were observed regularly. The list of wetland-associated species could be expected to be larger if the census were to include the large pond in wetland 1 to the southwest of the Grimm site. Most of the other species listed for the site were observed in or above the wetlands. Based on birdwatching experience at other sites in the vicinity, the observed total for all bird species at the site can be considered to be high for the area. The function assessment model appears to have underestimated the value of the site to birds.



**PROJECT LOCATION MAP**



**PROJECT AREA MAP**



SCALE IN FEET  
 0 2000



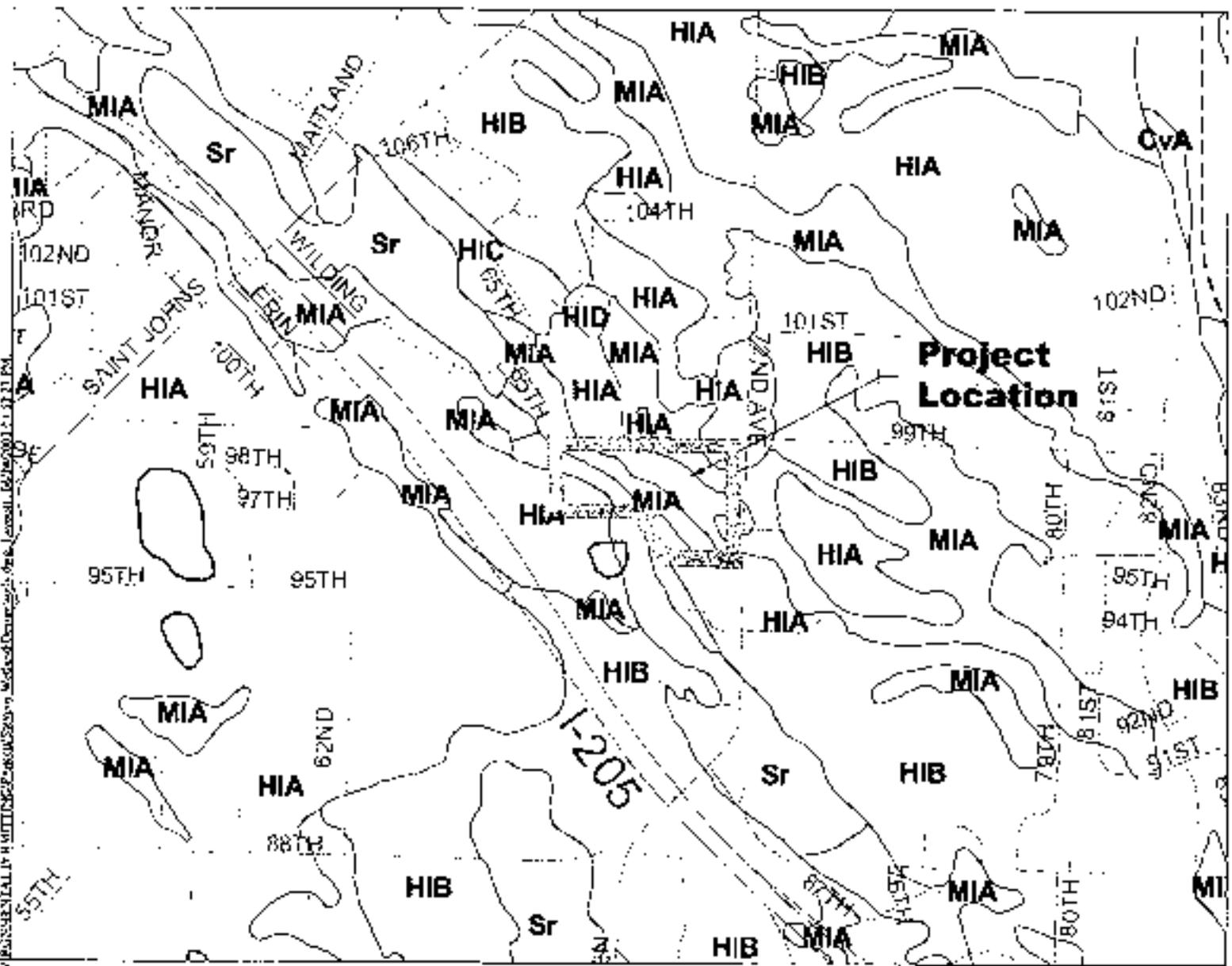
great past, promising future

CLARK COUNTY  
 WASHINGTON

**FIGURE 1 -- Grimm Wetland Site  
 PROJECT LOCATION & PROJECT AREA**

DESIGNED BY	PC
DRAWN BY	MAP
CAD FILE	
SCALE	
NO. 1	1,2000
DATE	6/27/2006
1 SHEET OF 1	

N:\CIP\GIS\PROJECTS\WETLANDS\WETLANDS\MapDocs\Demarc\figs\figs\Leamall\6/21/2003 11:11 AM  
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- CvA COVE SILTY CLAY LOAM
- CwA COVE SILTY CLAY LOAM, THIN SOLOM
- Su SEMIAHMOO MUCK, SHALLOW VARIANT
- Sr SEMIAHMOO MUCK
- MIA McBEE SILT LOAM



FIGURE 2 — Grimm Wetland Site Soils Map

DESIGNED BY	PT
DRAWN BY	MAN
COPY	12
SCALE	
DATE	7-22-03
BY	44
DATE	6-21-2003
SHEET	1 OF 1







**Wetland Routine Quality Determination Data Sheet**

Project/Contact: Grimm County: \_\_\_\_\_  
 Field Investigator(s): \_\_\_\_\_ File No. \_\_\_\_\_  
 Applicant/Owner: \_\_\_\_\_ Date: 04/16/2003  
 Plant Community: W12 Plot No. 2  
 Plot or Pit Location: On upland ridge about 150' south of railroad  
 Recent Weather: \_\_\_\_\_  
 Do normal environ. conditions exist? Y

Is there noticeable disturbance of this site's native vegetation, soils, and/or hydrology?

**Vegetation: Dominant Plant Species**

Herb Stratum		Ind. status	% Cover	Tree Stratum	
Total cover				Total cover	
<i>Trifolium pratense</i>		FAC	20%		
<i>Chrysanthemum leucanthemum</i>		NL	30%		
<i>Cirsium arvense</i>		FACU+	20%		
<i>Vicia hirsuta</i>		NL			
<i>Rumex acetosella</i>		FACU			
<i>Vicia sativa</i>		NL			
<i>Festuca rubra</i>		FAC+		<b>Shrub/Strawb Stratum</b>	
<i>Myosotis discolor</i>		FACW		<b>Total cover</b>	
<i>Inula britannica</i>		FACU			
<i>Senecio jacobaea</i>		NL			
<i>Lupinus polyphyllus</i>		FAC+			

Percent of dominant species that are OBL, FACW, and/or FAC: 1 of 3 = 33% \*dominant

Other Notable Species: \_\_\_\_\_

**Soils:**

Map Unit Name: Hillsboro Inasm Drainage Class: \_\_\_\_\_  
 Taxonomy: \_\_\_\_\_ Is the soil on the hydric soils list? Y  

Depth	Horizon	Matrix color	Redox Concentrations	Redox Depletions	Texture	Structure
0-8"		10YR4/4			loam	
8-16"		10YR5/3			loam	

**Hydric soil Indicators:**

Hydroic _____	Regulating Conditions _____	Organic streaking (in sandy soils) _____
High Epipedon _____	Redox Features (with 10%) _____	Organic pan (in sandy soils) _____
Sulfidic Ochr _____	Concretions/Nodules (with 3%, >6mm) _____	On Hydric Soils (at pond soil profile matches) _____
Clayed _____	High organic content in surface (in sandy soils) _____	Other _____

**Hydrology:**

Recorded Data Available? Y/N

Annual photos _____	Stream gauge _____	Other _____
<b>Primary Hydrology Indicators</b>	<b>Secondary Hydrology Indicators</b>	
Depth of inundation: _____	Inundated _____	Oxidized Root Channels (upper 12") _____
Depth to saturation: <u>0</u>	Saturated in upper 12" <u>0</u>	Water-stained leaves _____
Depth to free water: <u>0</u>	Water marks _____	Local Soil Survey Data _____
	Drift lines _____	FAC-Neutral Foot _____
	Sediment deposits _____	Other _____
	Drainage patterns _____	

**Wetland Determination:**

Is the hydrophylic vegetation criterion met?	<u>Y/N</u>	<u>N</u>
Is the hydric soil criterion met?	<u>Y/N</u>	<u>N</u>
Is the specific hydrology criterion met?	<u>Y/N</u>	<u>N</u>
Is this plant community a wetland?	<u>Y/N</u>	<u>N</u>

Comments: \_\_\_\_\_

**Wetland Routine Onsite Determination Data Sheet**

Project Contact: Gilman County: \_\_\_\_\_  
 Field Investigator(s): \_\_\_\_\_ File No. \_\_\_\_\_  
 Applicant/Owner: \_\_\_\_\_ Date: 04/16/2003  
 Plant Community: PCM Plot No. 3  
 Plot or Pit Location: N1/2 of site, 100' N of Inage, 300' west of 22nd Ave  
 Recent Weather: \_\_\_\_\_  
 Do normal environ. conditions exist? Y

Is there noticeable disturbance of this site's native vegetation, soils, and/or hydrology? \_\_\_\_\_

**Vegetation: Dominant Plant Species**

Herb Stratum	Ind. status	% Cover	Tree Stratum	Ind. status	% Cover
Total cover			Total cover		
<i>*Phalaris arundinacea</i>	FACW	30%			
<i>*Juncus cockerillii (terrestris)</i>	FACW	30%			
<i>*Anthoxanthum odoratum</i>	FACU	20%			
<i>Poa pratensis</i>	FAC				
<i>Rumex acetosella</i>	FACU				
<i>Myosotis discolor</i>	FACW		<b>Sapling/ Shrub Stratum</b>		
<i>Cirsium vulgare</i>	FACU		Total cover		
<i>Trifolium repens</i>	FAC+				
<i>Lythrum salicaria</i>	FACW				
<i>Lupinus polyphyllus</i>	FAC+				
<i>Ranunculus acris</i>	FACW				
<i>Hypericum perforatum</i>	NL				

Percent of dominant species that are DBI, FACW, and/or FAC : 2 of 3 = 67% \*dominant

Other Notable Species : \_\_\_\_\_

**Soils:**

Map Unit Name: Melrose silt loam Drainage Class: \_\_\_\_\_  
 Taxonomy: \_\_\_\_\_ Is the soil on the hydric soils list? Y  
 Depth Horizon Matrix color Redox Concentrations Redox Depletions Texture Structure  
 0-6" \_\_\_\_\_  
 6-14" 10YR5/1 10YR5/1 10YR5/1 silt loam clay loam

**Hydric soil indicators:**  
 Hue: \_\_\_\_\_ Reducing Conditions \_\_\_\_\_ Organic streaking (in sandy soils) \_\_\_\_\_  
 Munsell Chroma: \_\_\_\_\_ Redox Features (w/in 10") X Organic pan (in sandy soils) \_\_\_\_\_  
 Sulfidic Odor \_\_\_\_\_ Concentrations/Nodules (w/in 3", >2mm) \_\_\_\_\_ On Hydric Soils List (and soil profile matches) \_\_\_\_\_  
 Gleyed \_\_\_\_\_ High organic content in surface (in sandy soils) \_\_\_\_\_ Other \_\_\_\_\_

**Hydrology:**

Recorded Data Available? Y/N Aerial photos \_\_\_\_\_ Still gauge \_\_\_\_\_ Other \_\_\_\_\_  
Primary Hydrology Indicators Secondary Hydrology Indicators  
 Depth of inundation: \_\_\_\_\_ Inundated \_\_\_\_\_ Oxidized Root Channels (upper 12") \_\_\_\_\_  
 Depth to saturation: 0 Saturated in upper 12" X Water-stained leaves \_\_\_\_\_  
 Depth to free water: 4" Water marks \_\_\_\_\_ Local Soil Survey Data \_\_\_\_\_  
 \_\_\_\_\_ Drift lines \_\_\_\_\_ FAC Neutral Test \_\_\_\_\_  
 Water <12" >31 days in growing season \_\_\_\_\_ Sediment deposits \_\_\_\_\_ Other \_\_\_\_\_  
 \_\_\_\_\_ Drainage patterns \_\_\_\_\_

**Wetland Determination:**

Is the hydrophytic vegetation criterion met? Y/N Y  
 Is the hydric soil criterion met? Y/N Y  
 Is the specific hydrology criterion met? Y/N Y  
 Is this plant community a wetland? Y/N Y

Comments: \_\_\_\_\_

**Wetland Routine Onsite Determination Data Sheet**

**Project Contact:** Grimm **County:** \_\_\_\_\_  
**Field Investigator(s):** \_\_\_\_\_ **File No.:** \_\_\_\_\_  
**Applicant/Owner:** \_\_\_\_\_ **Date:** 04/10/2003  
**Plant Community:** (1) (1) **Plot No.:** 4  
**Plot or Pit Location:** Wetland, Outer transition zone, 250' south of railroad, 40' west of wetland boundary  
**Recent Weather:** \_\_\_\_\_  
**Do normal environ. conditions exist?** Y

Is there noticeable disturbance of this site's native vegetation, soils, and/or hydrology? \_\_\_\_\_

**Vegetation: Dominant Plant Species**

Herb Stratum	Ind. status	% Cover	Tree Stratum	Ind. status	% Cover
Total cover:			Total cover:		
<i>Poa pratensis</i>	FAC	40%			
<i>Festuca pratensis</i>	FACU+	20%			
<i>Myosotis discolor</i>	FACW	20%			
<i>Ranunculus acris</i>	FACW-				
<i>Rumex acetosella</i>	FACU				
<i>Cirsium arvense</i>	FACU+		<b>Sapling/ Shrub Stratum</b>		
<i>Cirsium vulgare</i>	FACU		Total cover:		
<i>Mercurialis annua</i>	NL				
<i>Lupinus polyphyllus</i>	FAC+				
<i>Vicia hirsuta</i>	NL				

Percent of dominant species that are DII, FACW, and/or FAC: 2 of 3 = 67%

Other Notable Species: \_\_\_\_\_

**Soils:**

**Map Unit Name:** McBee silt loam **Drainage Class:** \_\_\_\_\_  
**Taxonomy:** \_\_\_\_\_ **Is the soil on the hydric soils list? Y**  

Depth	Horizon	Matrix color	Redox Concentrations	Redox Depletions	Texture	Structure
0-4"		10YR4/3			silt loam	
4-8"		10YR4/2	10YR4/3		sandy silt	
8-16"		10YR5/2	10YR4/2		coarse sandy silt	

**Hydric soil indicators:**  
 Histosol \_\_\_\_\_ **Redox Conditions** \_\_\_\_\_ **Organic breaking (in sandy soils)** \_\_\_\_\_  
 Hist. Rippled \_\_\_\_\_ **Redox features (w/in 10")** X **Organic pan (in sandy soils)** \_\_\_\_\_  
 Sulfidic Odor \_\_\_\_\_ **Concretions/Nodules (w/in 3", >2mm)** \_\_\_\_\_ **On Hydric Soils List (and soil profile matches)** \_\_\_\_\_  
 Clayed \_\_\_\_\_ **High organic content in surface (in sandy soils)** \_\_\_\_\_ **Other** \_\_\_\_\_

**Hydrology:**

**Recorded Data Available? Y/N** \_\_\_\_\_ **Aerial photos** \_\_\_\_\_ **Stm. gauge** \_\_\_\_\_ **Other** \_\_\_\_\_  
**Primary Hydrology Indicators** \_\_\_\_\_ **Secondary Hydrology Indicators** \_\_\_\_\_  
**Depth of inundation:** \_\_\_\_\_ **Inundated** \_\_\_\_\_ **Oxidized Root Channels (upper 12")** \_\_\_\_\_  
**Depth to saturation:** 0 **"Saturated in upper 12"** X **Water-stained leaves** \_\_\_\_\_  
**Depth to free water:** 10" **Water marks** \_\_\_\_\_ **Local Soil Survey Data** \_\_\_\_\_  
**Drift lines** \_\_\_\_\_ **FAC-Neutral Test** \_\_\_\_\_  
under 12" of water in upper 12" **Sediment deposits** \_\_\_\_\_ **Other:** \_\_\_\_\_  
**Drainage patterns** \_\_\_\_\_

**Wetland Determination:**

Is the hydrophytic vegetation criterion met? Y/N Y  
 Is the hydric soil criterion met? Y/N Y  
 Is the specific hydrology criterion met? Y/N Y  
 Is this plant community a wetland? Y/N Y

Comments: \_\_\_\_\_







**Wetland Routine On-site Determination Data Sheet**

Project/Contact: Grimm County: \_\_\_\_\_  
 Field Investigator(s): \_\_\_\_\_ File No. \_\_\_\_\_  
 Applicant/Owner: \_\_\_\_\_ Date: 04/16/2003  
 Plant Community: Upland grassland Plot No. 8  
 Plot or PI Location: 50' west of 72nd Ave., 100' south of electrical substation  
 Recent Weather: \_\_\_\_\_  
 Do normal environ. conditions exist? Y

Is there noticeable disturbance of this site's native vegetation, soils, and/or hydrology?

**Vegetation: Dominant Plant Species**

Herb Stratum	Ind. status	% Cover	Tree Stratum	Ind. status	% Cover
Total cover			Total cover		
<i>*Anthoxanthum odoratum</i>	FACU	40%			
<i>*Poa rubra</i>	FACU	30%			
<i>*Stachys hirsutissima (seedlings)</i>	NL	20%			
<i>Poa pratensis</i>	FACU				
<i>Cirsium discolor</i>	FACU*				
<i>Rumex acetosella</i>	FACU		Seedling/ Shrub Stratum		
<i>Vicia hirsuta</i>	NL		Total cover		
<i>Polygonum lanceolatum</i>	FACU		<i>Cytisus scoparius</i>	NL	
<i>Myrica ascarular</i>	FACW		<i>Quercus garryana (sapling)</i>	NL	
<i>Chrysanthemum leucanthemum</i>	NL				

Percent of dominant species that are OBL, FACW, and/or FAC : 1 of 3 = 33%

Nearby: \_\_\_\_\_

**Soils:**

Map Unit Name: McBee silt loam Drainage Class: \_\_\_\_\_

Taxonomy: \_\_\_\_\_ Is the soil on the hydric soil list? Y/N Yes

Depth	Horizon	Mollic Color	Mollic Concentrations	Mollic Deposition	Texture	Structure
0-2"	A	10YR3/3	None		silt loam	
2-10"	A	10YR3/3	None		silt loam	
10-18"	B	10YR5/2	10YR5/0	large, frequent	silt loam	compacted

Hydric soil indicators:

Indicator	Meets Criteria?	Remarks
Mollic		Remaining Conditions
Thick Mollisol		Redox Features (w/in 10") <u>X</u>
Audible Oor		Concretions/ nodules (w/in 3" ± 2mm)
Clayey		High organic content in surface (in sandy soils)

Organic staining (in sandy soils) \_\_\_\_\_  
 Organic pan (in sandy soils) \_\_\_\_\_  
 (on Hydric Soils list (and soil profile matches)) \_\_\_\_\_  
 Other \_\_\_\_\_

**Hydrology:**

Recorded Data Available? Y/N

Primary Hydrology Indicators	Secondary Hydrology Indicators
Aerial photos _____	Stream gauge _____
Inundated _____	Other _____
Saturated in upper 12" <u>X</u>	Oxidized Root Channels (upper 12") _____
Water marks _____	Water-stained leaves _____
Drift lines _____	Local Soil Survey Data _____
Sediment deposits _____	FAC Neutral Test _____
Drainage patterns _____	Other _____

water <12" >31 days in growing season

**Wetland Determination:**

Is the hydrophytic vegetation criterion met? Y/N N  
 Is the hydric soil criterion met? Y/N Y  
 Is the specific hydrology criterion met? Y/N N  
 Is this plant community a wetland? Y/N N

Comments: depth to compacted subsoil variable throughout wetland, probably site of abandoned motorcycle track

**Wetland Routine Onsite Determination Data Sheet**

Project/ Contact: Grimm County: \_\_\_\_\_  
 Field Investigator(s): \_\_\_\_\_ File No. \_\_\_\_\_  
 Applicant/Owner: \_\_\_\_\_ Date: 04/16/2003  
 Plant Community: \_\_\_\_\_ Plot No. 8  
 Plot or Pit Location: W 1/4 S, SE Corner of site, 60' west of 72nd Ave., 80' North of south property boundary  
 Recent Weather: \_\_\_\_\_  
 Do normal environ. conditions exist? Y

Is there noticeable disturbance of this site's native vegetation, soils, and/or hydrology? \_\_\_\_\_

**Vegetation: Dominant Plant Species**

Herb Stratum	Ind. status	% Cover	Tree Stratum	Ind. status	% Cover
Total cover:			Total cover:		
<i>*Phalaris arundinacea</i>	FACW	40%			
<i>*Alopecurus pratensis</i>	FACW	40%			
<i>Anthoxanthum odoratum</i>	FACU				
<i>Veronica serpyllifolia</i>	FAC				
<i>Cirsium arvense</i>	FACU+				
<i>Galium aparine</i>	FACU		<b>Sapling/ Shrub Stratum</b>		
<i>Cirsium vulgare</i>	FACU		Total cover:		
			<i>Spartina douglasii</i>	FACW	

Percent of dominant species that are OBL, FACW, and/or FAC: 2 of 2 = 100%

Other Notable Species: Nearby small patches of sedge and Rose nutmeg, scattered *Centaurus monogyna*, *Amalanchier alnifolia*.

**Soils:**

Map Unit Name: McLee silt loam Drainage Class: \_\_\_\_\_

Taxonomy: \_\_\_\_\_ is the soil on the hydric soils list? Y/N Yes

Depth	Horizon	Matrix color	Redox Concentrations	Redox Depletions	Texture	Structure
0-8"	A	10YR5/1	None		silt loam	compacted
8-14"	A	10YR5/3	large, frequent	Min concentrations	silt loam	compacted
10-18"	B	10YR3/2	None		silt loam	compacted

Hydric soil indicators:

Molisol	Reducing Conditions	Organic muck (in sandy soils)
Hist Epipedon	Redox Features (w/in 10")	Organic pan (in sandy soils)
Sulfide Odor	Concretions/Nodules (w/in 3", < 2mm)	On Hydric Soils List (and soil profile matches)
Clayey	High organic content in surface (in sandy soils)	Other

**Hydrology:**

Recorded Data Available? Y/N

Primary Hydrology Indicators	Other
Aerial photos	_____
Soil gauge	_____
Depth of inundation:	_____
Depth to saturation:	_____
Depth to free water:	_____
Inundated	_____
Saturated in upper 12"	<u>X</u>
Water marks	_____
Drift lines	_____
Sediment deposits	_____
Drainage patterns	_____
Oxidized Root Channels (upper 12")	_____
Water-stained leaves	_____
Local Soil Survey Data	_____
FAC Neutral Test	_____
Other	_____

water <12" >31 days in growing season

**Wetland Determination:**

Is the hydrophytic vegetation criterion met? Y/N Y  
 Is the hydric soil criterion met? Y/N Y  
 Is the specific hydrology criterion met? Y/N Y  
 Is this plant community a wetland? Y/N Y

Comments: depth to compacted subsoil variable throughout wetland, probable site of abandoned motorcycle track

**Wetland Routine Onsite Determination Data Sheet**

Project/ Contact: Grimm County: \_\_\_\_\_  
 Field Investigator(s): \_\_\_\_\_ File No. \_\_\_\_\_  
 Applicant/Owner: \_\_\_\_\_ Date: 04/16/2003  
 Plant Community: Grassland with scattered cottonwoods and shrub Plot No. 10  
 Plot or Pit Location: Between large isolated cottonwoods in center of property, 150' west of GPS, 200' N of south property line.  
 Recent Weather: \_\_\_\_\_  
 Do normal environ. conditions exist? Y

Is there noticeable disturbance of this site's native vegetation, soils, and/or hydrology?

**Vegetation: Dominant Plant Species**

Herb Stratum	Ind. status	% Cover	Tree Stratum	Ind. status	% Cover
<b>Total cover</b>			<b>Total cover</b>		
* <i>Festuca rubra</i>	FAC+	35%	* <i>Populus hybridans</i>	FAC	100%
* <i>Vicia hirsuta</i>	NL	20%			
* <i>Poa pratensis</i>	FAC	10%			
<i>Vicia sativa</i>	NL	10%			
* <i>Plantago lanceolata</i>	FAC				
<i>Anthoxanthum odoratum</i>	FACU				
			<b>Shrub/ Shrub Stratum</b>	<b>Ind. status</b>	<b>% Cover</b>
			<b>Total cover</b>		
			* <i>Quercus coccifera</i>	FACU	
			* <i>Symphoricarpos alba</i>	FACU	
			<i>Rubus discolor</i>	FACU-	
			<i>Corylus cornuta</i>	FACU	

Percent of dominant species that are OBL, FACW, and/or FAC: 2 of 6 = 33%  
 Nearby: *Truncella vulgaris*, *Chrysanthemum leucanthemum*, *Ononis aspera*, *Tritium dubium*, *Lupinus polyphyllus*.

**Soils:**

Map Unit Name: Mulden soil loam Drainage Class: \_\_\_\_\_  
 Taxonomy: \_\_\_\_\_ Is the soil on the hydric soils list? Y/N Yes  
 Depth Horizon Matrix color Redox Concentrations Redox Depletion Texture Structure  
 0-8" A 10YR4/3 None \_\_\_\_\_ sandy clay loam  
 8-18" B 10YR6/2 10YR5/5 Mn concretions \_\_\_\_\_

**Hydric soil indicators:**

Moist	Reducing Conditions	Organic smearing (in sandy soils)
High H <sub>2</sub> pipeline	Redox Features (with 10%)	Organic pan (in sandy soils)
Acidic Odor	Concretions/Nodules (with 2% >2mm)	On Hydric Soils List (and soil profile indicators)
Grayed	High organic content in surface (in sandy soils)	Other _____

**Hydrology:**

Recorded Data Available? Y/N Aerial photos \_\_\_\_\_ Sim. gauge \_\_\_\_\_ Other \_\_\_\_\_  
**Primary Hydrology Indicators** **Secondary Hydrology Indicators**  
 Depth of inundation. \_\_\_\_\_ Inundated \_\_\_\_\_ Oxidized Root Channels (upper 12") \_\_\_\_\_  
 Depth to saturation. 0 (saturated in upper 12") X Water-saturated inverts \_\_\_\_\_  
 Depth to free water: 0" Water marks \_\_\_\_\_ Local Soil Survey Data \_\_\_\_\_  
 \_\_\_\_\_ Drift lines \_\_\_\_\_ FAC: Neutral land \_\_\_\_\_  
 water <12" >31 days \_\_\_\_\_ Sediment deposits \_\_\_\_\_ Other \_\_\_\_\_  
 \_\_\_\_\_ Drainage patterns \_\_\_\_\_

**Wetland Determination:**

Is the hydrophytic vegetation criterion met? Y/N N  
 Is the hydric soil criterion met? Y/N N  
 Is the specific hydrology criterion met? Y/N Y  
 Is this plant community a wetland? Y/N N

Comments:

## WETLAND DELINEATION

### PADDEN PARKWAY, WEST PHASE

Clark County Department of Public Works is proposing to build 0.9 mile of new arterial roadway connecting NE 78<sup>th</sup> St. at NE 51<sup>st</sup> Ave. with 83<sup>rd</sup> St. at Andresen Rd. (SW and SE quarters of Section 6, T2N, R2E) (Figures Land 2). This proposed roadway crosses an extensive and diverse system of wetlands that forms the headwaters of Curtin Creek, a tributary of Salmon Creek and the Columbia River. This report identifies the boundaries of the wetlands in the zone of impact of the proposed roadway (Figure 5).

#### METHODS

The wetland delineation was conducted according to the "Routine On site" method of the US Army Corps of Engineers Wetland Delineation Manual (1987). Field investigations were conducted on November 16, 18, 29, December 4, 9, 18, and 28, 1998. The procedure calls for evaluation of vegetation, soils, and hydrology for one typical observation point in each distinctive habitat type of the subject area. A determination of the jurisdictional status of the observation point requires independent confirmation of wetland characteristics in each of these three parameters.

Eight sample stations were evaluated, 6 in wetland areas and 2 in upland portions of the site. Additional soil and hydrology samples were taken at other locations throughout the transitional areas from wetland to upland in order to locate the wetland boundary. The boundary was marked at intervals of between 50 and 100 ft. The boundary markers were then surveyed. The primary soil and hydrology samples were taken by digging a hole 18 inches deep, examining the soil profile and evaluating the depth of standing water and saturated soil in the hole after allowing ground water to seep into the hole. Additional samples were taken using a soil auger. A given sample station was considered to have wetland hydrology if standing water or saturated soil was found in the hole at a depth of 12 inches or less. The soil was considered to be hydric if it had a chroma of 1 or contained a significant proportion of brightly colored mottles and/or had a low matrix chroma at a depth of 10 inches from the surface. Vegetation was judged to be hydrophytic if more than 50% of the dominant species were designated Obligate, Facultative Wet, or Facultative according to the Washington List of Plant Species that Occur in Wetlands (USF&WS, 1988, and Supplement, 1993).

#### RESULTS

The proposed alignment crosses five wetland areas with varying degrees of connectedness (Figure 4). Wetland 1 occurs in an isolated depression in the southwest portion of the project area. It is separated from the main wetland area by a ridge of upland grassland. The main wetland system can be subdivided for the sake of discussion and numbered as wetlands 2, 3, 4, and 5 from west to east along the proposed alignment (Figure 5). Most of the main system was ditched in the past. Wetlands 2 and 4 are connected by ditches at the east end of the site. Wetland 5 is connected to wetland 4 by a ditch in the northeast portion of the site. Wetland 3 is isolated from the other branches of the wetland during most of the year, although only a very low, narrow ridge separates it from the other wetlands.

**Wetland 1** occurs in an isolated depression and is classified in the Cowardin system as palustrine emergent, persistent, and intermittently exposed (PEM1C). The wetland covers over 7 acres.

**Hydrology** The central portion of this wetland, and the greater portion of its area, normally remains inundated throughout the year. The two forested shoreline areas (PEO1C) are inundated seasonally. The wetland receives water from rainfall, runoff from a small basin, and probably also from shallow groundwater. The RV storage lot to the west discharges stormwater directly to the wetland without treatment or detention. Most of the runoff from the commercial machine shop southeast of the wetland is treated and detained prior to discharge to the wetland. Considering the likely discharge and accumulation of pollutants (petroleum hydrocarbons, metals, etc.) in the wetland, it is likely that the water quality in the wetland has been compromised.

**Vegetation** The wetland's southern margin is forested with red alder (*Alnus rubra*), Pacific willow (*Salix lasiandra*), black cottonwood (*Populus trichocarpa*), and Oregon ash (*Fraxinus latifolia*). The forested area extends further south up a gentle slope into mixed upland forest of Douglas fir and big-leaf maple. The forested upland area covers approximately 5 acres. Another narrow forested shoreline area occurs along the northwest of the wetland. Together, the forested wetlands cover approximately 40% of the perimeter of the wetland. Neither of the forested wetland areas associated with this wetland contain trees over 50 years old. The remainder of the shoreline areas are dominated by reed canarygrass (*Phalaris arundinacea*) or thickets of Himalayan blackberry (*Rubus discolor*). The forested wetlands are heavily infested with these exotic species. An area in the southeast corner of the wetland was filled prior to county ownership. It lies within the proposed impact zone of the proposed roadway. The adjacent upland area to the north and northeast consists of abandoned pasture dominated by bluegrass (*Poa pratensis*), bentgrass (*Agrostis*, sp.), vetch (*Vicia hirsuta*, *V. sativa*, etc.), and other introduced grasses and forbs. It contains few native plant species although willow herb (*Epilobium ciliatum*) and horsetail (*Equisetum telmateia*) attain dominant status in some parts of the transition zone. Some portions are heavily infested with Canada thistle (*Cirsium arvense*). This abandoned pasture community is widespread throughout the project area in upland and transition zones.

**Soils** The soils in this area were mapped by the Soil Conservation Service (Figure 3) (McGee, 1972) as consisting of McBee silt loam, coarse variant (M1A) in the wetlands and Hillsboro loam (H1A and H1B) in the surrounding uplands. The soil in the wetland differed from the typical McBee silt loam in being paler and drier (10YR 4/1-4/2 or even 5/1-5/2 as opposed to 10YR 3/3) than that described by McGee but was comparable in other characteristics of structure and profile. The McBee soil is somewhat poorly drained.

**Wetlands 2 - 5** The main wetland area consists primarily of palustrine emergent, persistent, seasonally inundated wetland (PEM1C) dominated by reed canarygrass. A large forested area over 10 acres in size and containing a convoluted wetland/upland boundary occurs in the center of the project area. The overall wetland extends upstream to the north and northwest and downstream to the east of the project area and is estimated at over 70 acres.

**Hydrology** The wetland is fed by rainfall, runoff from a small watershed, and by shallow ground water. A system of ditches was established many decades ago and now forms the headwaters of Curran Creek, a tributary of Salmon Creek and the Columbia River. Since the abandonment of

the Padden Dairy in the mid-1950's, the ditches have continued to fill in with reed canarygrass, allowing a return in the direction of prior wetland conditions. The wetland receives runoff from light industrial development to the north and northwest and from residential subdivisions to the south. The majority of the stormwater runoff received by the wetland is untreated.

**Soils:** The majority of the wetlands contain McBee silt loam (M1A) (Figure 3). Some portions of the wetland have developed deposits of Semiahmoo muck soil (Sr), a very poorly drained histosol. The proposed roadway crosses two areas of Semiahmoo muck. Hillsboro loam (H1A and H1B) occurs in the upland areas. Many parts of the wetland have received fill material in the past and a few of these appear to be ongoing, especially in the west and north.

**Vegetation:** The majority of the main wetland is dominated by reed canarygrass with a few patches of cattail (*Typha latifolia*) in the more persistently inundated areas. Several small patches of Pacific willow are scattered throughout the wetland. Some areas have developed dense thickets of spirea (*Spiraea douglasii*) of varying size. Several very large patches of Himalayan blackberry span the wetland boundary, particularly in the western portion of the impact area. A grove of forested wetland and upland with a convoluted boundary occurs in the central portion of the impact area. The forested area contains three separate forested wetland areas. A fourth area of mature willow with young Oregon ash extends from the southeast corner and is connected to the largest of the forested wetlands by a strip of shrub/scrub wetland.

The largest of the forested wetlands occurs at the northwest end of wetland 3. It is classified (Cowardin system) as palustrine, broad-leaved deciduous, permanently flooded (PFO1U). Its canopy in the impact zone of the proposed roadway consists of Oregon ash and black cottonwood, many of which are over 80 years old. In this portion of the wetland, the water typically stands up to 7 ft. deep and is virtually devoid of understory. The alignment has been shifted to the south to avoid the mature portions of the forested wetland. To the southeast of this, younger ash and cottonwood dominate the canopy although many of the trees are over 50 feet tall. Understory of ninebark (*Physocarpus capitatus*), red osier dogwood (*Cornus stolonifera*), and Nootka rose (*Rosa nutkana*) is scattered throughout, and a dense stand of slough sedge (*Carex obnupta*) covers the floor. Further to the southeast and east is a band of shrub/scrub consisting of these understory species and willow. The northern and western portions of this wetland contain young ash and cottonwood. A large patch of quaking aspen (*Populus tremuloides*) extends from the shoreline up the slope to the south in the western portion of the wetland. The surrounding uplands are dominated by western red cedar. Several large Douglas fir trees occur further to the northeast of the wetland.

The two smaller forested wetland areas are classified as palustrine, broad-leaved deciduous, semi-permanently flooded (PFO1F) since neither appears to have portions deep enough to retain permanent water. They both contain understory and ground layer vegetation throughout. The westernmost of these two areas contains a large grove of aspen. The deepest portion of this wetland is on private property but has been connected to the large emergent wetland to the south by a ditch. It is unclear when this ditch was constructed. Beavers, however, have recently dammed the ditch. The other small, forested wetland area contains several Oregon white oak trees (*Quercus garryana*) around its margins, the largest of which measures 31 inches dbh. This appears to be the only oak tree over 80 years old.

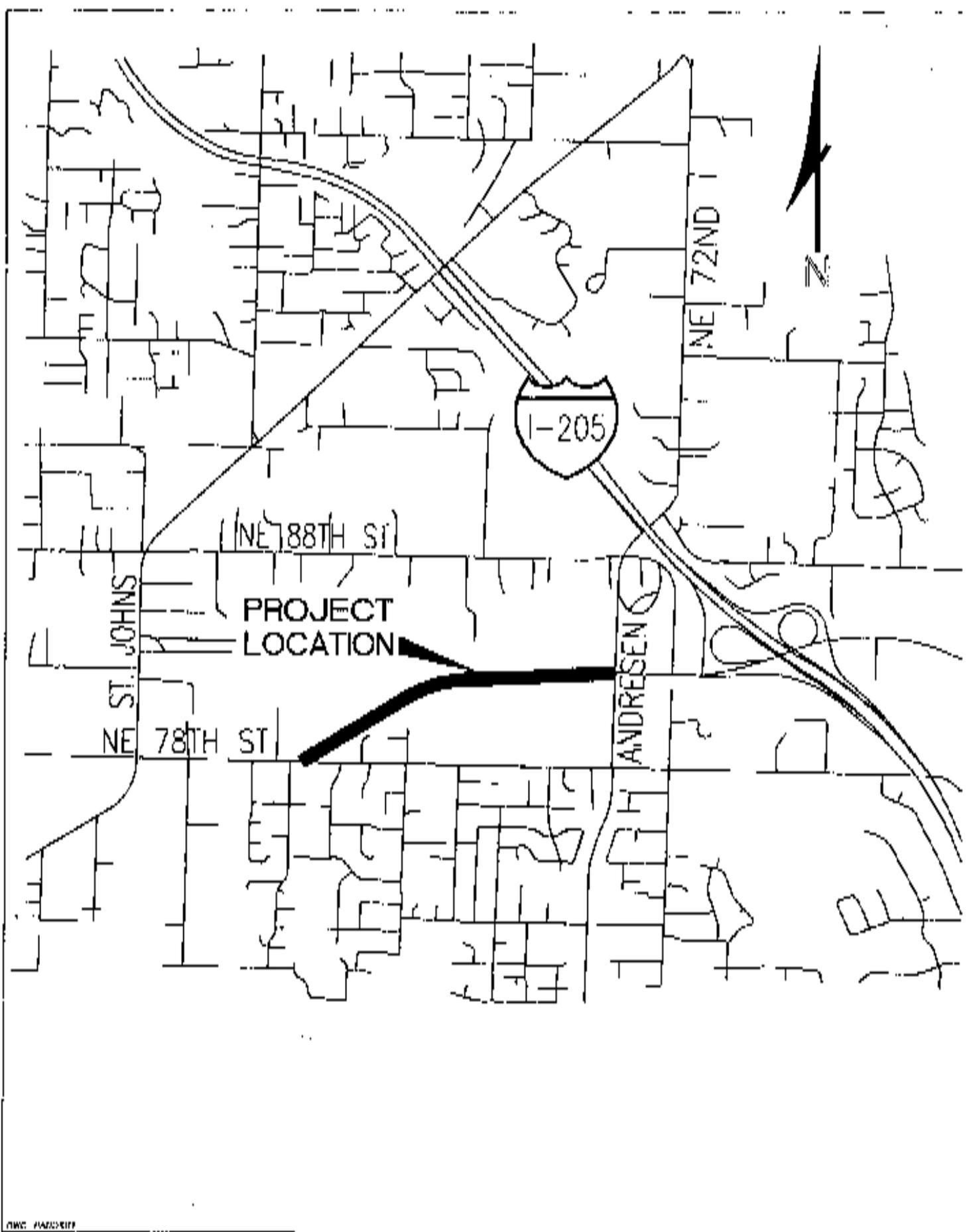
## DETERMINATION

Jurisdictional wetland occurs throughout the majority of the project site in two separate systems. An isolated wetland area (wetland 1) covering 7 acres occurs in the southwest corner of the project area. It belongs to category II of the Washington Department of Ecology's Wetland Rating System. Under the Clark County Wetland Protection Ordinance, its forested areas belong to category III. Its emergent and inundated areas belong to category IV. The main wetland (wetland areas 2 - 5) covers an estimated 70 acres and is dominated by reed canarygrass over most of its area. It includes a forested area covering about 10 acres of both wetland and upland. One portion of the forested wetland (the northwest end of wetland 3) includes many trees over 80 years old and may be classified as category I under both the DOE and CCWPO rating systems. The remainder of the wetland belongs to DOE category II. Under the Clark County Wetland Protection Ordinance, its forested areas belong to CC category III. Its emergent areas belong to CC category IV.

ADDENDUM FOR CLARK COUNTY WETLAND PROTECTION ORDINANCE PERMIT APPLICATION

The buffers are shown in Figure 6. Upland areas adjacent to wetlands that are dominated by grasses or blackberries belong to buffer type D. Forested buffers belong to type A. The buffer area to the northwest of wetland # 1 consists of scattered trees in a blackberry thicket. It belongs to buffer type C.





DWG. NUMBER



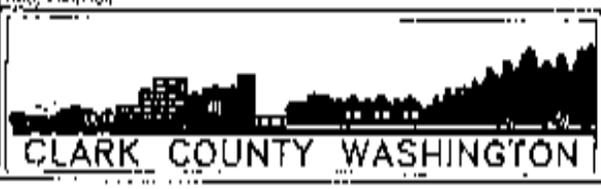
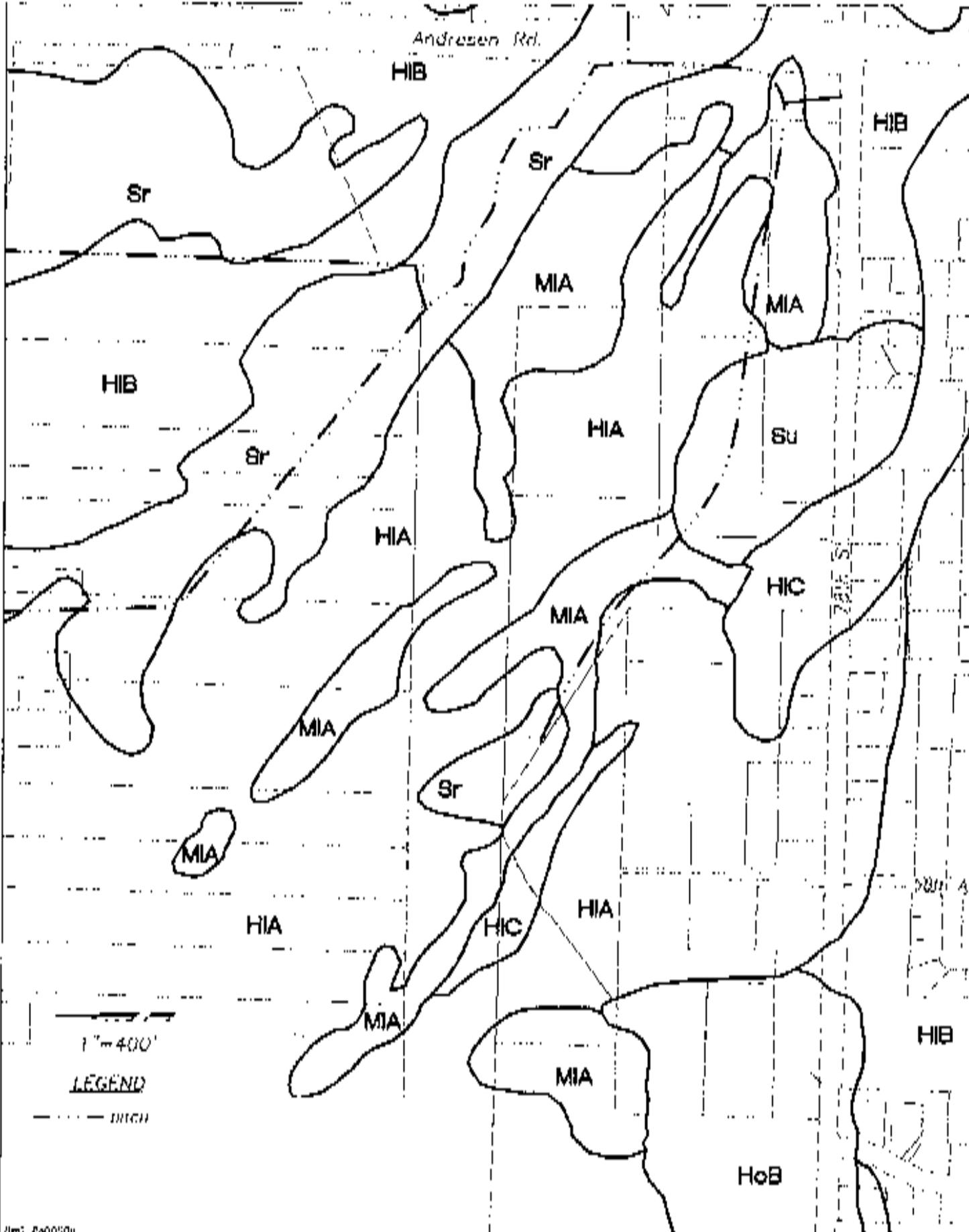
Design & Engineering Division

SITE MAP  
PADDED WEST

FIGURE

2

DESIGNED BY  
DRAWN BY  
DATE 1/20/04



Design & Engineering Division

SOILS MAP  
PADDEN WEST

FIGURE  
3

Andresen Rd.

15th St

Public

1" = 400'

**LEGEND**

EMERGENT WETLAND

FORESTED WETLAND

FOREST

CATEGORY 1

DITCH

WETLAND BOUNDARIES THIS PROJECT - OTHER BOUNDARIES ESTIMATED FROM AERIAL PHOTOS

① SAMPLE SITES

1 WETLAND AREA

ROAD WETLANDS



Design & Engineering Division

PROPOSED ALIGNMENT AND WETLAND IMPACT AREA PADDEN WEST

FIGURE 4

DATE: 12/1/20

NE ANDRESIN RD

EXISTING AIR DUCT

PROMPT DRAINAGE  
DOWLEY STRUCTURE

5

NE 98TH ST

NE 78TH ST

ALTERNATIVE 2

ALTERNATIVE 1

CROSSED PADDEN PARKWAY

NE 55TH AV

**Legend**

- EXISTING WETLAND
- COMPOSED WETLAND
- FUTURE
- CATEGORY 1

- CATCH
- WETLAND BOUNDARIES
- WETLAND AREA
- ALTERNATIVE 1
- ALTERNATIVE 2

1" = 500'

DATE: 1/20/79



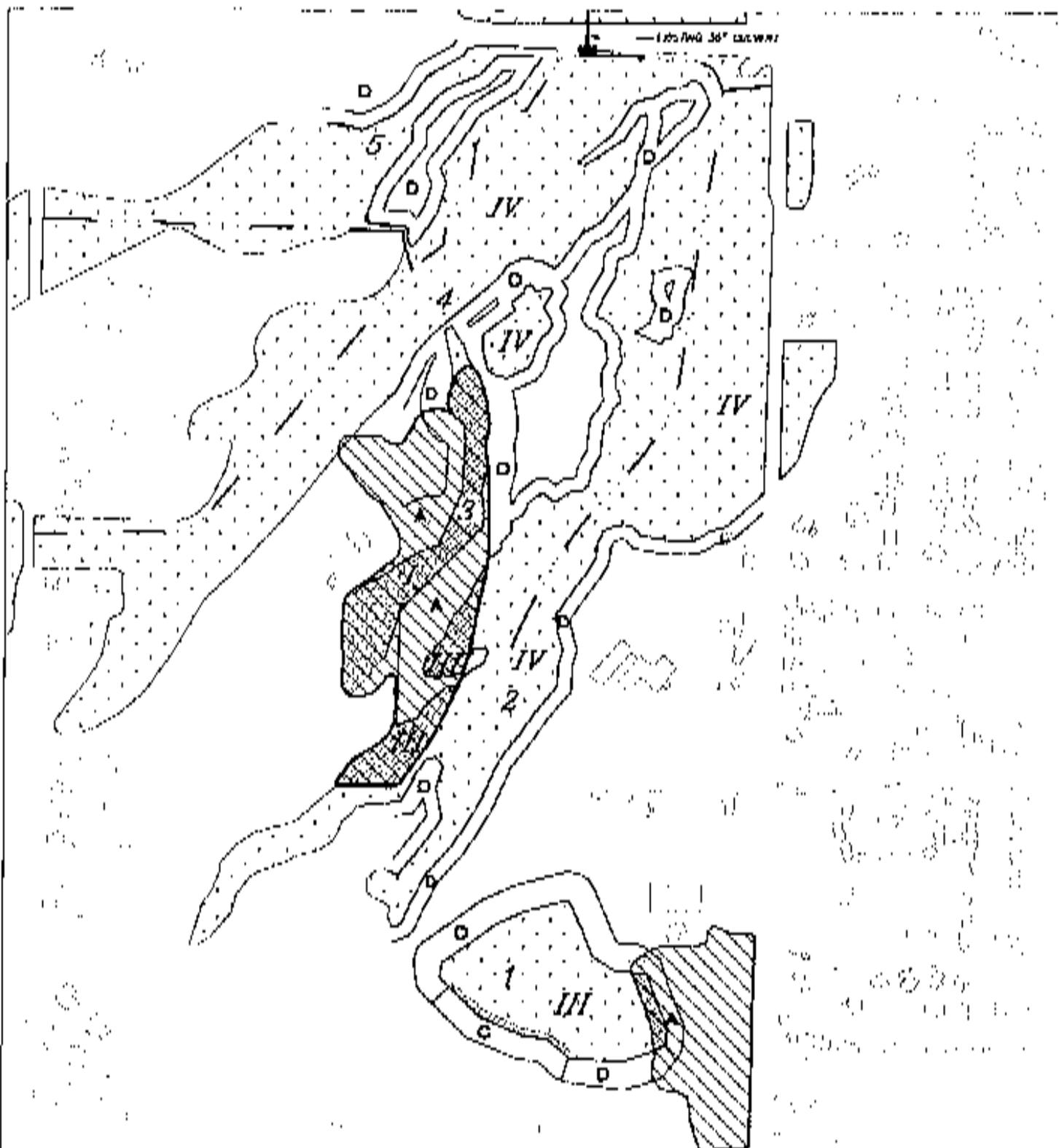
Design & Engineering Division

ALTERNATIVE ALIGNMENTS  
PADDEN WEST

FIGURE

5

BY: JAW/12  
DRAWN: JAW  
DATE: 1/20/79



**Legend**

- |                     |                      |                    |                     |
|---------------------|----------------------|--------------------|---------------------|
| [Dotted Pattern]    | EMERGENT WETLAND     | [Dashed Line]      | TRASH               |
| [Diagonal Hatching] | LOW SLUDG WETLAND    | [Solid Line]       | WETLAND BOUNDARIES  |
| [Cross-hatching]    | SHRUB WETLAND        | [Thick Solid Line] | WETLAND AREAS       |
| [Stippled Pattern]  | WETLAND CATEGORY I   | [Thin Solid Line]  | WETLAND CATEGORY IV |
| [Diagonal Hatching] | WETLAND CATEGORY IV  | [Dashed Line]      | BUFFER TYPE D       |
| [Stippled Pattern]  | WETLAND CATEGORY III | [Dashed Line]      | BUFFER TYPE C       |

1" = 500'

DRG 31177-29



Design & Engineering Division

PADDEN WEST  
WETLAND AND BUFFERS

FIGURE  
6

Revised by  
EJG/ML  
Date 1/2/2004

DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: Clark County Application Number: \_\_\_\_\_ Project Name: Waterway project  
 State: \_\_\_\_\_ County: \_\_\_\_\_ Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: 11/15/98 Plot No.: 1 Section: Section 10, T4N, R10E

Vegetation (list the three dominant species in each vegetation layer (3 if only 1 or 2 layers)). Indicate species with observed morphological or known physiological adaptations with an asterisk.

<u>Species</u>	<u>Indicator Status</u>	<u>Species</u>	<u>Indicator Status</u>
<u>Trees</u>		<u>Herbs</u>	
1. <u>Salix lasiolepis</u>	<u>FA</u>	7. <u>Phalaris arvensis</u>	<u>FA</u>
2. <u>Alnus</u>	<u>FA</u>	8.	
3. <u>Populus trichocarpa</u>	<u>FA</u>	9.	
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4. <u>Cornus stolonifera</u>	<u>FA</u>	10.	
5. <u>Poa</u>	<u>FA</u>	11.	
6.		12.	

% of species that are UHF, FACW, and/or FAC: 100. Other indicators: \_\_\_\_\_  
 Hydrophytic vegetation: Yes  No  Basis: \_\_\_\_\_

Soil

Series and phase: Melrose silt loam (UFA) On hydric soils list? Yes ; No   
 Mottled: Yes ; No . Mottle color: 25YR 4/6; Matrix color: 10YR 4/6  
 Gleyed: Yes  No  Other indicators: \_\_\_\_\_  
 Hydric soils: Yes  No ; Basis: \_\_\_\_\_

Hydrology

Inundated: Yes ; No . Depth of standing water: \_\_\_\_\_  
 Saturated soils: Yes ; No . Depth to saturated soil: 1.12'  
 Other indicators: \_\_\_\_\_  
 Wetland hydrology: Yes ; No . Basis: \_\_\_\_\_  
 Atypical situation: Yes ; No .  
Normal Circumstances? Yes  No

Wetland Determination: Wetland \_\_\_\_\_; Nonwetland \_\_\_\_\_

Comments: Tested wells not inundated. Well to North was inundated  
AW

Determined by: JL

DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: Clark County Application Number: \_\_\_\_\_ Project Name: P. D. Co. water  
 State: \_\_\_\_\_ County: \_\_\_\_\_ Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: 11/16/28 Plot No.: 2 Section: Section 11, T28N, R14E

Vegetation (list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)). Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status
<u>Trees</u>		<u>Herbs</u>	
1. <i>Acer macrophyllum</i>	FACW	7. <i>Hydrilla verticillata</i>	FACW
2. <i>Betula pumila</i>	HL	8.	
3.		9.	
<u>Sapling/shrub</u>		<u>Woody vines</u>	
4. <i>Salix lasiolepis</i>	HL	10.	
5.		11.	
6.		12.	

2 of species that are OBL, FACW, and/or FAC: \_\_\_\_\_. Other indicators: \_\_\_\_\_  
 Hydrophytic vegetation: Yes \_\_\_ No  Basis: \_\_\_\_\_

Soil

Series and phase: Holliston silty loam (M1) On hydric soils list? Yes \_\_\_; No   
 Mottled: Yes \_\_\_; No  Mottle color: \_\_\_\_\_; Matrix color: 10YR 7/4  
 Gleyed: Yes \_\_\_; No  Other indicators: \_\_\_\_\_  
 Hydric soils: Yes \_\_\_; No  Basis: \_\_\_\_\_

Hydrology

Inundated: Yes \_\_\_; No  Depth of standing water: \_\_\_\_\_  
 Saturated soils: Yes \_\_\_; No  Depth to saturated soil: not found  
 Other indicators: \_\_\_\_\_  
 Wetland hydrology: Yes \_\_\_; No  Basis: \_\_\_\_\_  
 Atypical situation: Yes \_\_\_; No   
 Normal Circumstances? Yes  No \_\_\_  
 Wetland Determination: Wetland \_\_\_\_\_; Nonwetland   
 Comments: Soil not in wetland

A10

Determined by: PK

DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: Clark County Application Number: \_\_\_\_\_ Project Name: Madison MS&S  
 State: \_\_\_\_\_ County: \_\_\_\_\_ Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: 11/12/98 Plot No.: 3 Section: 2nd NW 1/4, 1/2 Sec

Vegetation (List the three dominant species in each vegetation layer (3 if only 1 or 2 layers)). Indicate species with observed morphology or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status
<u>Trees</u>		<u>Herbs</u>	
1.		1. <u>Phytolacca americana</u>	<u>FAC-W</u>
2.		2.	
3.		3.	
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4.		10.	
5.		11.	
6.		12.	

% of species that are OBL, FACW, and/or FAC: 0/0. Other indicators: \_\_\_\_\_  
 Hydrophytic vegetation: Yes  No  Basis: \_\_\_\_\_

Soil  
 Series and phase: MsDce sll 10sm On hydric soils list? Yes  No   
 Mottled: Yes  No  Mottle color: 1.5 YR 7/6; Matrix color: 1.5 YR 7/2  
 Gleyed: Yes  No  Other indicators: \_\_\_\_\_  
 Hydric soils: Yes  No  Basis: \_\_\_\_\_

Hydrology  
 Inundated: Yes  No  Depth of standing water: \_\_\_\_\_  
 Saturated soils: Yes  No  Depth to saturated soil: 5.1'  
 Other indicators: Asypical root abnorma  
 Wetland hydrology: Yes  No  Basis: soils, etc  
 Atypical situation: Yes  No   
 Normal circumstances? Yes  No   
 Wetland Determination: Wetland  Nonwetland

Comments: wetland transfer to soils at sample point  
A 9 W  
 Determined by: [Signature]

DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: Grant County Application Number: \_\_\_\_\_ Project Name: Badger Creek  
 State: \_\_\_\_\_ County: \_\_\_\_\_ Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: 11/16/2009 Plot No.: 1 Section: Section 36, North

Vegetation [list the three dominant species in each vegetation layer (3 if only 1 or 2 layers)]. Indicate species with observed morphology or known physiological adaptations with an asterisk.

<u>Species</u>		<u>Indicator Status</u>	<u>Species</u>		<u>Indicator Status</u>
<u>Trees</u>			<u>Herbs</u>		
1.			7.	<u>Agrostis sp</u>	<u>FAO</u>
2.			8.	<u>Paspalum</u>	<u>FAO</u>
3.			9.	<u>Cirsium arvense</u>	<u>FAO</u>
<u>Saplings/shrubs</u>			<u>Woody vines-bleeds</u>		
4.			10.	<u>Lespedeza bicolor</u>	<u>FAO</u>
5.			11.		
6.			12.		

X of species that are OBI, FAO, and/or FAO: 0. Other indicators: \_\_\_\_\_  
 Hydrophytic Vegetation: Yes  No \_\_\_\_\_ Basis: \_\_\_\_\_

Soil  
 Series and phase: Hillsboro sil loam (HA) on hydric soils list? Yes \_\_\_\_\_; No   
 Mottled: Yes \_\_\_\_\_; No  Mottle color: \_\_\_\_\_; Matrix color: HYR 2/4  
 Gleyed: Yes \_\_\_\_\_; No  Other indicators: \_\_\_\_\_  
 Hydric soils: Yes \_\_\_\_\_; No ; Basis: \_\_\_\_\_

Hydrology  
 Inundated: Yes \_\_\_\_\_; No . Depth of standing water: \_\_\_\_\_  
 Saturated soils: Yes \_\_\_\_\_; No . Depth to saturated soil: > 12"  
 Other indicators: \_\_\_\_\_  
 Wetland hydrology: Yes \_\_\_\_\_; No . Basis: \_\_\_\_\_  
 Atypical situation: Yes \_\_\_\_\_; No   
 Normal circumstances? Yes  No \_\_\_\_\_  
 Wetland Determination: Wetland \_\_\_\_\_; Nonwetland

Comments: In abundance pasture between wetlands 7.  
 A-4 U  
 Determined by: [Signature]

DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: Clark County Application Number: \_\_\_\_\_ Project Name: Boilermakers  
 State: \_\_\_\_\_ County: \_\_\_\_\_ Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: 11/18/98 Plot No.: 52 Section: Boilermakers

Vegetation (list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)). Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status
<u>Tree</u>		<u>Herbs</u>	
1. <i>Fraxinus</i> <u>white</u>	<u>FACU</u>	7. <i>Carex</i> <u>strep</u>	<u>OB</u>
2.		8.	
3.		9.	
<u>Sapling/shrub</u>		<u>Woody vines</u>	
4. <i>Spiraea</i> <u>do</u>	<u>FACU</u>	10.	
5. <i>Physalis</i> <u>sp</u>	<u>FACU</u>	11.	
6. <i>Cornus</i> <u>sp</u>	<u>FACU</u>	12.	

# of species that are DBL, FACW, and/or FAC: 11. Other indicators: \_\_\_\_\_  
 Hydrophytic vegetation: Yes ✓ No \_\_\_\_\_ Basis: \_\_\_\_\_

Soil  
 Series and phase: Mt. Lee silt loam (AW) On hydric soils list? Yes ✓; No \_\_\_\_\_  
 Mottled: Yes ✓; No \_\_\_\_\_ Mottle color: 10YR 7/6; Matrix color: 10YR 7/6  
 Cleyed: Yes \_\_\_\_\_ No ✓ Other indicators: \_\_\_\_\_  
 Hydric soils: Yes ✓ No \_\_\_\_\_; Basis: low protein chroma, use 11C2

Hydrology  
 Inundated: Yes \_\_\_\_\_; No \_\_\_\_\_ Depth of standing water: \_\_\_\_\_  
 Saturated soils: Yes ✓; No \_\_\_\_\_ Depth to saturated soil: 12"  
 Other indicators: \_\_\_\_\_  
 Wetland hydrology: Yes ✓; No \_\_\_\_\_ Basis: 5.2.1.1  
 Atypical situation: Yes \_\_\_\_\_; No ✓  
 Normal circumstances? Yes ✓ No \_\_\_\_\_  
 Wetland Determination: Wetland ✓; Nonwetland \_\_\_\_\_

Comments: 1-19

Determined by: [Signature]

DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: Clark County Application Number: \_\_\_\_\_ Project Name: Baldwin  
 State: \_\_\_\_\_ County: \_\_\_\_\_ Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: 12/4/98 Plot No.: 60 Section: W/4, N/2, W/4

Vegetation (list the three dominant species in each vegetation layer (3 if only 1 or 2 layers)). Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status
<u>Trees</u>		<u>Herbs</u>	
1. <i>Fraxinus latifolia</i>	FACW	7. <i>Carex obnupta</i>	OBL
2. <i>Spartina trichocarpa</i>	FAC	8.	
3.		9.	
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4. <i>Spiraea alba</i>	FACW	10.	
5. <i>Cornus alternifolia</i>	FACW	11.	
6.		12.	

% of species that are OBL, FACW, and/or FAC: 100. Other indicators: \_\_\_\_\_  
 Hydrophytic vegetation: Yes  No  Basis: \_\_\_\_\_

Soil  
 Series and phase: \_\_\_\_\_ On hydric soils list? Yes ; No   
 Mottled: Yes ; No . Mottles color: \_\_\_\_\_; Matrix color: \_\_\_\_\_  
 Gleyed: Yes  No  Other indicators: \_\_\_\_\_  
 Hydric soils: Yes  No ; Basis: \_\_\_\_\_

Hydrology  
 Inundated: Yes ; No . Depth of standing water: 3" (> 4" in 1997/98)  
 Saturated soils: Yes ; No . Depth to saturated soil: \_\_\_\_\_  
 Other indicators: \_\_\_\_\_  
 Wetland hydrology: Yes ; No . Basis: \_\_\_\_\_  
 Atypical situation: Yes ; No .  
 Normal Circumstances? Yes  No .  
 Wetland Determination: Wetland ; Nonwetland

Comment: Most of Nodporker inundated w/ ice underlying emergent layer vegetation.  
Category I: 1.11

Determined by: [Signature]

DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: Clark County Application Number: \_\_\_\_\_ Project Name: Redden West  
 State: \_\_\_\_\_ County: \_\_\_\_\_ Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: 11/14/2008 Plot No.: 1 Section: 4th 1/4 Sec. 2, East end

Vegetation (list the three dominant species in each vegetation layer (3 if only 1 or 2 layers)). Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status
<u>Trees</u>		<u>Herbs</u>	
1.		7. <i>Phalaris arundinacea</i>	FACU
2.		8. <i>Agrostis</i> spp	FACW
3.		9. <i>Poa pratensis</i>	FACU

Species	Indicator Status	Species	Indicator Status
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4. <i>Solidago nemoralis</i>	FACU	10.	
5. <i>Aspirula Douglasii</i>		11.	
6. <i>Athyrium filix-femina</i>		12.	

% of species that are OSL, FACW, and/or FAC: \_\_\_\_\_. Other indicators: \_\_\_\_\_  
 Hydrophytic vegetation: Yes  No  Basis: \_\_\_\_\_

Soil  
 Series and phase: McBee silt loam MIA On hydric soils list? Yes ; No   
 Mottled: Yes ; No  Mottle color: 10YR 7/6; Matrix color: 10YR 7/1  
 Gleyed: Yes  No  Other indicators: \_\_\_\_\_  
 Hydric soils: Yes  No  Basis: Low chroma, mottle

Hydrology  
 Inundated: Yes ; No  Depth of standing water: 8"-12" in deepest part  
 Saturated soils: Yes ; No  Depth to saturated soil: \_\_\_\_\_  
 Other indicators: \_\_\_\_\_  
 Wetland hydrology: Yes ; No  Basal unconsolidated  
 Atypical situation: Yes ; No   
 Normal Circumstances? Yes  No   
 Wetland Determination: Wetland ; Nonwetland

Comments: scattered oak saplings  
 1-2  
 Determined by: PLS

DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: Clark County Application Number: \_\_\_\_\_ Project Name: Baldwin Wetland  
 State: \_\_\_\_\_ County: \_\_\_\_\_ Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: 11/18/98 Plot No.: B Section: Wetland #5 NE 1/4

Vegetation (list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)). Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status
<u>Trees</u>		<u>Herbs</u>	
1.		7. <u>Agrostis sp.</u>	<u>1 Mo.</u>
2.		8. <u>Poa pratensis</u>	<u>PAC</u>
3.		9. <u>Phalaris canadensis</u>	<u>PAC</u>
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4.		10.	
5.		11.	
6.		12.	

# of species that are OHL, FACW, and/or FAC: 111. Other indicators: \_\_\_\_\_  
 Hydrospheric vegetation: Yes F No \_\_\_\_\_ Basis: \_\_\_\_\_

Soil  
 Series and phase: Loam Shallow sand (S) On hydric soils list? Yes ✓; No \_\_\_\_\_  
 Mottled: Yes \_\_\_\_\_; No ✓. Mottle color: \_\_\_\_\_; Matrix color: 10YR/1  
 Clayed: Yes \_\_\_\_\_ No \_\_\_\_\_ Other indicators: Herb epiphytes in 40cm high zone  
 Hydric soils: Yes ✓ No \_\_\_\_\_; Basis: \_\_\_\_\_

Hydrology  
 Inundated: Yes \_\_\_\_\_; No \_\_\_\_\_ Depth of standing water: \_\_\_\_\_  
 Saturated soils: Yes ✓; No \_\_\_\_\_ Depth to saturated soil: 5-12"  
 Other indicators: Moistured soil channels  
 Wetland hydrology: Yes ✓; No \_\_\_\_\_ Basis: hydrology, soil  
 Atypical situation: Yes \_\_\_\_\_; No \_\_\_\_\_  
 Normal Circumstances? Yes ✓ No \_\_\_\_\_  
 Wetland Designation: Wetland ✓; Nonwetland \_\_\_\_\_

Comments: large green blocks beneath of sample site  
NE 1/2

Determined by: MS

## WETLAND DELINEATION

### GABBERT WETLAND MITIGATION SITE (S. Gabbert)

September, 2003

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Figure 1. Project vicinity and site location

Figure 2. Soils of the project area

Figure 3. Wetland boundaries

#### APPENDIXES:

List of Plant Species

Field Data Sheets

## 1.0 Introduction

### 1.1 Project Location

The Gabbert mitigation site covers 30 acres in section 12 of T3N, R1E WM. It extends from 300 feet north of the intersection of NE 199<sup>th</sup> St and 29<sup>th</sup> Ave. southward to NE 193<sup>rd</sup> Ct. (Figure 1).

### 1.2 Project Description

The Gabbert site is a potential mitigation site for the compensation of impacts to wetlands due to the widening of NE 179<sup>th</sup> as proposed by Clark County Public Works Dept.

### 1.3 Project Area

#### 1.3.1 Geomorphology

The area containing the Gabbert site constitutes the downstream end of a headwater wetland that drains to a tributary of Mill Creek, which is a tributary of Salmon Creek and the Columbia River. It lies in a broad swale that narrows and steepens toward the downstream end. The wetland is relatively flat in the center through most of the site but becomes more steeply sloped toward the outside, especially at the downstream end. The wetland functions as a headwater depressional outflow wetland at its upstream end. In the middle of the site and downstream end, it functions as a slope wetland with depressional outflow wetlands on slightly elevated terraces with a narrow strip of riverine wetland immediately adjacent to the channelized stream.

#### 1.3.2 Hydrology

The wetland receives water from watershed of approximately 450 acres. Water enters the wetland directly through precipitation; from runoff from NE 29<sup>th</sup> Ave., 199<sup>th</sup> St., driveways and other structures; shallow groundwater flow; and from occasional overbank flow in a narrow floodplain of the stream.

#### 1.3.3 Soils

Soils mapping (1972, US Department of Agriculture, Soil Conservation Service) of the project area indicates Odne silt loam occurs in the wetlands of the Gabbert site. The upland areas are covered with Gee silt loam.

Gee silt loam (GcB) is classed as a fine-silty, mixed mesic series of subgroup Ultic Haploxeralfs, order Alfisols. It is typically a deep, moderately well-drained, medium textured soil that developed in deposits of old Columbia River alluvium.

Oodne silt loam (Odb) is classed as a fine silty, mixed mesic series of subgroup Typic Ochraqualf, order Alfisols. It is poorly drained and slowly permeable. It typically occurs in drainageways or depressions in areas of Gee soils.

#### 1.3.4 Climate

The project area normally receives approximately 45 inches of precipitation annually. The great majority of the precipitation typically falls as rain by early February with the heaviest rainfall in December and January.

### 1.3.5 Land Use

The portion of the site south of NE 199<sup>th</sup> St. is zoned Urban Reserve with a 10-acre minimum lot size (UR-10). That portion north of NE 199<sup>th</sup> St. is zoned Residential with a 5-acre minimum lot size (R-5). Ten residences with septic systems are adjacent to the site. Four of these residences include agricultural or commercial structures. One includes a horse stable. The site is bordered on the west by NE 29<sup>th</sup> Ave. and on the south by NE 193<sup>rd</sup> Ct. NE 199<sup>th</sup> St. crosses the site near the north end. Most of the site had been used until 2002 for the production of grass hay. Eight acres in the southern portion were actively grazed by horses.

## 2.0 Methods

Documented existing and historic conditions for the study site were reviewed using the Soil Survey of Clark County (1972, US Department of Agriculture, Soil Conservation Service), historic aerial photographs in approximate 10 year intervals beginning in 1955, and 2-ft elevation contours available through the County's ClarkView GIS program. Precipitation data was obtained through the NOAA internet site for the Vancouver weather station (Pearson Air Park). Based on previous history, precipitation for the Gibbert site can be expected to be about 20% - 25% higher than the Vancouver readings. Precipitation data is also provided in the Soil Survey of Clark County.

The delineation was conducted according to the 1987 Corps of Engineers Wetland Delineation Manual and Washington State Wetlands Identification and Delineation Manual (DCEP Publication 96-94). This procedure calls for the evaluation of vegetation, soils, and hydrology for one typical observation point in each distinctive wetland habitat type of the subject area. A determination of the jurisdictional status of the observation point requires independent confirmation of wetland characteristics in each of these three parameters.

The primary soil and hydrology samples were taken by digging a hole 16 inches deep using a tiling spade, examining the soil profile, and evaluating the depth of standing water after allowing ground water to seep into the hole. Additional soil and hydrology samples were taken using a 1½ inch diameter soil auger in a grid pattern consisting of transects at approximately 100' intervals perpendicular to the wetland boundary. The auger holes were placed at intervals of approximately 50 ft. along the transect. The auger holes were marked with wire flags and monitored throughout the spring from February 11 to May 28, 2003.

According to US Army Corps of Engineers and Washington Department of Ecology, wetland delineation methodologies, the study site is considered to have wetland hydrology where water stands at 12" or less from the surface for 12.5% of the growing season. For the Gibbert site, since the growing season is approximately 220 days long, the critical period for hydrology is approximately 28 days. A given sample station was considered to have wetland hydrology if water stood in the hole at a depth of 12 inches or less for at least 28 days. The soil was considered to be hydric if a significant proportion of it matched the description of a listed hydric soil, or met the technical criteria described in the delineation manuals listed above. The growing season typically begins in early April (when minimum air temperatures rise above 28° F in one of two years and soil temperature rises above 41° F at 20 inches below the surface). Soil temperatures were measured during the early field visits using a compost thermometer.

Waterbodies and wetland areas were classified according to the Cowardin system of the US Fish and Wildlife Service (Cowardin, L. M., et al. 1979, Classification of wetlands and deepwater habitats of the United States, US Fish and Wildlife Service FWS/OBS-79/31). They were also classified according to the Washington State Department of Ecology (DOE) Wetland Rating System (DOE Publication # 91-57) and according Clark County's Wetland Protection and Habitat Conservation Ordinances. The Habitat Conservation Ordinance uses the stream classification of the Washington State Department of Natural Resources (DNR) and buffer recommendations for those stream types from the Washington State Department of Fish and Wildlife.

Ecological functions were evaluated according to the Washington State Department of Ecology "Methods for Assessing Wetland Functions" (DOE Publications 99-115 and 99-116), using the depressional outflow model since a model for slope wetlands has not yet been developed.

Field investigations were conducted on January 7, February 4, 24, 26, April 7, 22, 23, 28, 30, May 5, 6, 7, 29, and June 12, 2003. The wetland boundaries were finalized on May 5, 6, and 7 after water levels had receded significantly (Figure 3). Field visits early in the season focused on hydrology and soils. Identification of plant species (especially grasses, sedges, and rushes) continued through the later field visits after the delineation boundaries had been set. This effort will continue through the summer to identify late blooming species.

### 3.0 Results

#### 3.1 Climatic Conditions

Rainfall totals for the previous winter had been within the normal range. At the start of the fieldwork in January, the project area had received approximately 16 inches of rainfall for the water year. By late February, approximately 24 inches of rain had fallen. The spring season received above average rainfall, and approximately 34 inches had fallen by early May. This is about 5 inches above average.

Soil temperature was at 44° F on February 4, and February 24. However, the soil temperature dropped down to 40° F by February 26, after a few nights of frost. Air temperatures warmed up after this. Air temperatures during the previous winter had been consistently above freezing, making it unlikely that the soil temperature went below 41° F for a significant duration. The site can be considered to have been in the growing season from the beginning of the observation period. Many plant species were showing signs of growth in mid February.

#### 3.2 Hydrology

Initial measurements of groundwater levels in January and February indicated that groundwater was deeper than 12 inches over much of the wetland area. By mid March, however, groundwater levels had risen dramatically, resulting in groundwater within 12 inches over a substantially greater area. Water levels had begun to recede by late April, resulting in the wetland boundaries shown in Figure 3. Throughout much of the period of high groundwater, water stood at less than 12 inches below the surface outside the area of hydric soils. In some cases, water stood at less than 12 inches in areas later determined to be upland based on soils and vegetation.

### 3.3 Soils

The soils of the project site were dominated by mineral soil types that differed from the typical description of the mapped Odne and Gee silt loam series in structure, color, and profile. The differences were likely due to the long history of agricultural use. The soils, nevertheless met hydric soil criteria over nearly the entire site.

### 3.4 Vegetation

Several plant community types were found on the Cabbert site (a list of all plant species identified on the site is given in Appendix ). The channelized stream was associated with a narrow strip of shrub riparian area in the north and forested wetlands in the north central portion of the site. Upland areas consisted primarily of grasslands with a few scattered trees. A total of 112 species of plants were identified on the site, of which 49% were non-native. Of the three basic habitat types found on the site, (emergent wetland, forested wetland, and upland meadow), the upland meadow had the lowest species richness (44 species) and the highest proportion of non-native species (80%). Emergent wetland (marsh) covered the great majority of the site.

Palustrine emergent wetland (PEM) was the predominant wetland class overall and covered 20.9 acres. A total of 84 plant species were identified in the emergent wetland plant communities, of which 56% were non-native. Where water stood above the surface during late winter and spring, the plant communities were dominated by spike-rush (*Eleocharis pratensis*), water foxtail (*Alopecurus geniculatus*), slender rush (*Juncus occidentalis(tenuis)*), creeping buttercup (*Ranunculus repens*), and curly dock (*Rumex crispus*). Later in the season, when these areas had dried considerably, other species such as red-top bentgrass (*Agrostis gigantea (alba)*), Kentucky bluegrass (*Poa pratensis*), field fescue (*Festuca pratensis*), and bird's foot trefoil (*Lotus corniculatus*) gained prominence. Small patches of reed canarygrass (*Phalaris arundinacea*) were also scattered throughout.

In the drier transition zones of the emergent wetland, the plant community was dominated by sweet vernal-grass (*Anthoxanthum odoratum*), meadow foxtail (*Alopecurus pratensis*), Kentucky bluegrass (*Poa pratensis*), field fescue (*Festuca pratensis*), velvet grass (*Holcus lanatus*), bird's foot trefoil (*Lotus corniculatus*), etc. Early in the season, narrow-leaved montia (*Montia linearis*), tall buttercup (*Ranunculus acris*), thyme-leaved veronica (*Veronica serpyllifolia*), blue and yellow forget-me-not (*Myosotis discolor*), and sheep sorrel (*Rumex acetosella*) were abundant and flowered profusely among the developing grasses. Later in the season, as the ground dried out, the taller grasses were the predominant species along with vetches (*Vicia sativa* and *V. hirsuta*), clovers (*Trifolium dubium*, *T. hybridum*, *T. pratense*, and *T. subterraneum*) and thistles (*Cirsium arvense* and *C. vulgare*).

The forested wetland area covered approximately 1 acre in a long narrow strip associated with the stream in the north central portion of the site. The canopy was dominated by Oregon ash (*Fraxinus latifolia*) with understory of cascara (*Rhamnus purshiana*), nine bark (*Physocarpus capitatus*), twin berry (*Lonicera involucrata*), hazel (*Corylus cornuta*), osoberry (*Oemleria carolinensis*), and snowberry (*Symphoricarpos albus*).

Shrub wetland occupied a narrow riparian strip associated with the stream in the northern portion of the site. It also occurred in scattered patches in the lower, southern portion of the riparian zone. The continuous strip in the north was approximately 350 feet by 20 - 30 feet wide and covered 0.22 acre. It consisted primarily of Nootka rose (*Rosa nutkana*), Douglas spirea (*Spiraea douglasii*), ninebark (*Physocarpus capitatus*) and Scouler's willow (*Salix scouleriana*) with saplings of Oregon ash (*Fraxinus latifolia*) and cascara (*Rhamnus purshiana*).

### 3.5.0. Wetland Classification

The wetland area is classified as category 2 under the DOE rating system. Under the Clark County rating system the emergent and shrub wetland areas belong to category 4. The forested riparian wetland belongs to category 2 of the Clark County rating system. The upland buffer belongs to type D of the Clark County Wetland Protection Ordinance due to its domination by non-native species.

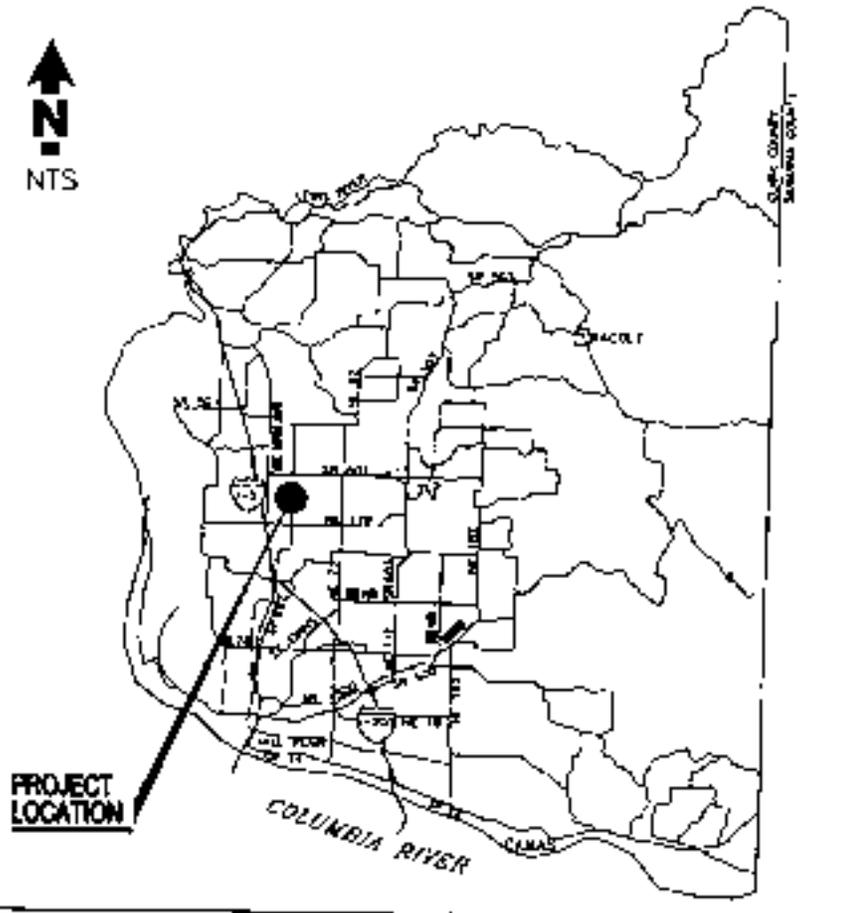
The channelized stream is intermittent and belongs to DNR category 4. It is associated with a riparian priority zone which is 150 feet in width.

### 3.6 Wetland Functions

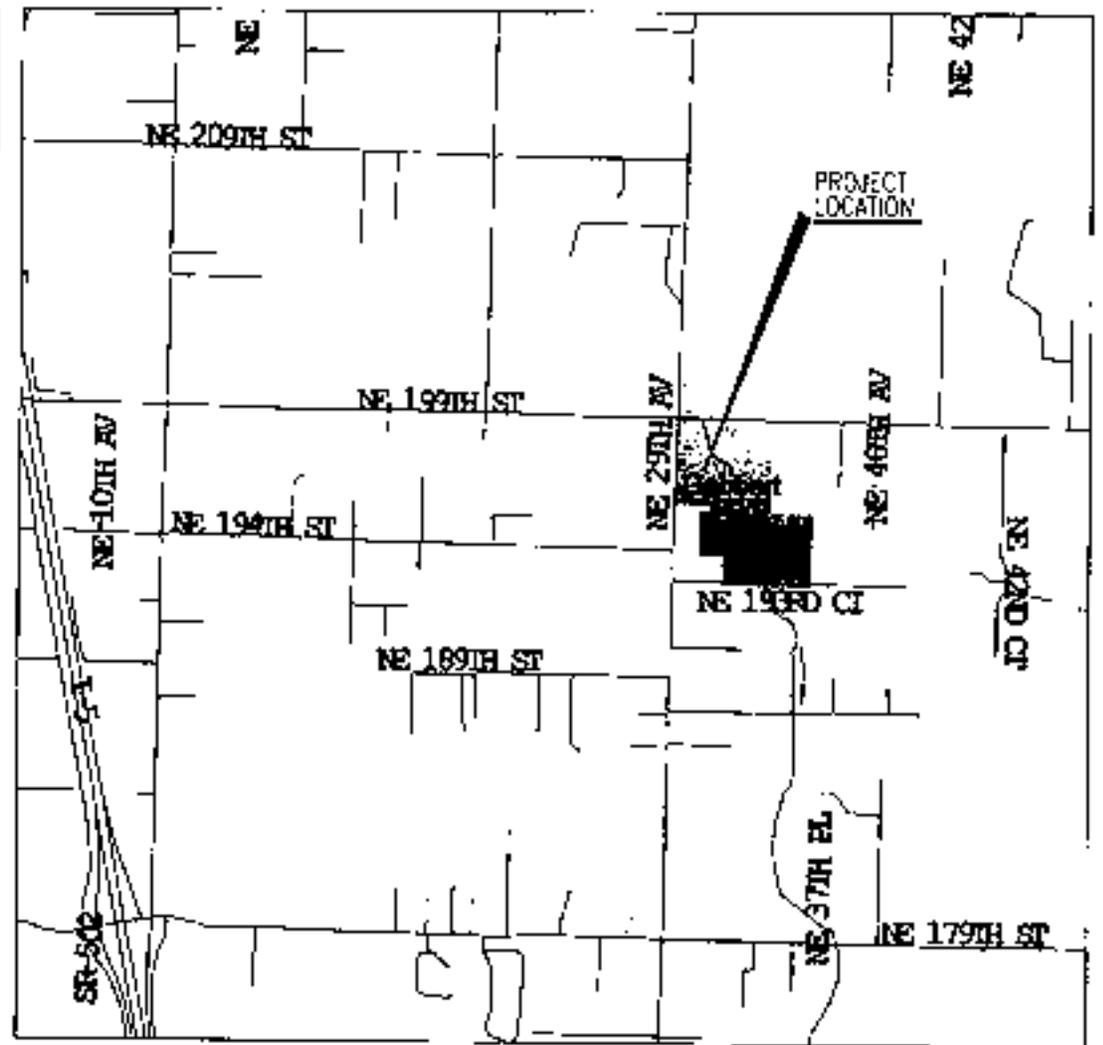
The depressional outflow model for function assessment (DOE WAFAM) indicated the levels of function shown in Table 1. The wetland area appears to have moderately good potential for removing sediment, but relatively low potential for removing nutrients and toxic substances from upstream runoff. The wetland has high potential for reducing peak flows and decreasing downstream erosion, but low potential for recharging groundwater due to the high clay content and resulting low permeability of its subsoil. The site has relatively low habitat potential due to its long history of agricultural use and domination by non-native plant species.

Table 1. Summary of wetland functions using DOE WAFAM Depressional Outflow model.

Function	Index
Potential for Removing Sediment	7
Potential for Removing Nutrients	3
Potential for Removing Heavy Metals and Toxic Organics	4
Potential for Reducing Peak Flows	8
Potential for Decreasing Downstream Erosion	10
Potential for Groundwater Recharge	2
General Habitat Suitability	4
Habitat for Invertebrates	3
Habitat for Amphibians	2
Habitat for Anadromous Fish	3
Habitat for Resident Fish	2
Habitat for Wetland Associated Birds	4
Habitat for Wetland Associated Mammals	2
Native Plant Richness	2
Primary Production and Export	5



**PROJECT LOCATION MAP**



**PROJECT AREA MAP**



SCALE IN FEET

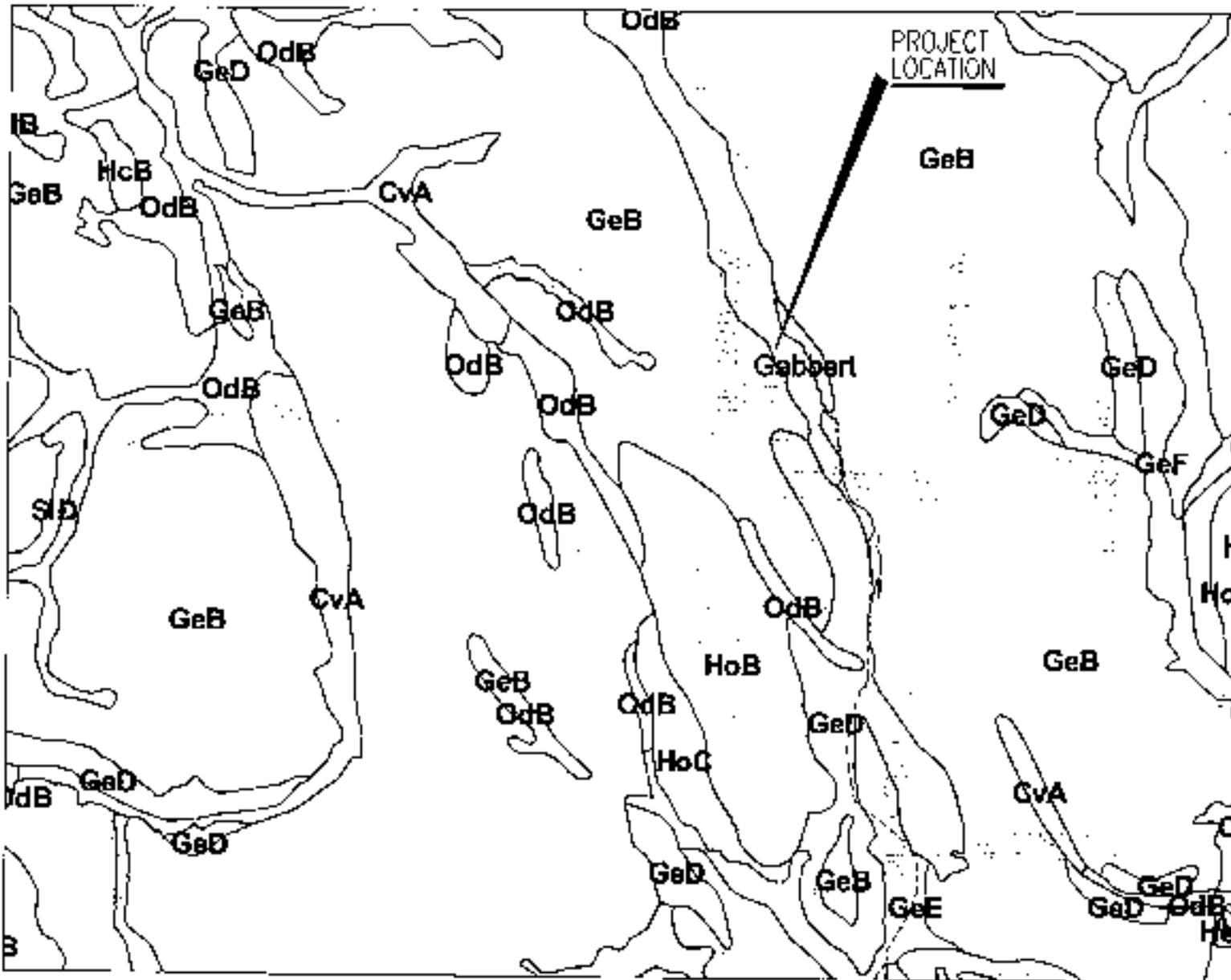


CLARK COUNTY  
WASHERTON

shaping great, promising future

**FIGURE 1 — Gabbert Wetland Site  
PROJECT LOCATION & PROJECT AREA**

DESIGNED	PG
DRAWN	MAP
CIP	581129
SCALE	
FOR	1:3000
YEAR	
DATE	9/26/2003
SHEET 1 OF 1	



- CvA** COVE SILTY CLAY DAM
- GeB** Gee Silt Loam (0%-8% slope)
- GeD** Gee Silt Loam (8%-20% slope)
- GeE** Gee Silt Loam (20%-30% slope)
- GeF** Gee Silt Loam (30%-50% slope)
- HcB** Hesson Clay Loam
- HoB** Hillsboro Silt Loam (3%-8% slope)
- HoC** Hillsboro Silt Loam (8%-15% slope)
- OdB** Odne Silt Loam
- SIB** Sara Silt Loam

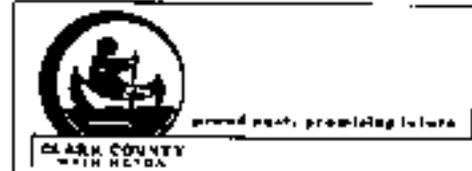


FIGURE 2 -- Gabbert Wetland Site Soils Map

DESIGNED BY  
 DRAWN BY  
 CIP 38122  
 SCALE  
 1" = 1,750'  
 DATE 2-15-2003  
 SHEET 2 OF 3

C:\p\proj\2003\12\38122\38122.dwg  
 User: j...  
 Date: 2/15/2003 10:58:12 AM



**Wetland Routine Onsite Determination Data Sheet**

Project/Contract: Osbert Mitigation Site County: \_\_\_\_\_  
 Field Investigator(s): Phil Gaddig File No. \_\_\_\_\_  
 Applicant/Owner: \_\_\_\_\_ Date: May 7, 2003  
 Plant Community: Upland pasture Plot No. 81  
 Plot or Plot Location: 150' north of NE 199th St., 60' east of 26th Ave.  
 Recent Weather: \_\_\_\_\_  
 Do normal environ. conditions exist? Y

Is there noticeable disturbance of this site's native vegetation, soils, and/or hydrology? \_\_\_\_\_

**Vegetation: Dominant Plant Species**

Herb Stratum	Ind. status	% Cover	Tree Stratum	Ind. status	% Cover
Total cover:			Total cover:		
<i>Trifolium repens</i>	FAC	40%			
<i>Trifolium pratense</i>	FACU+	30%			
<i>Rumex acetosella</i>	FACU+				
<i>Plantago lanceolata</i>	FAC				
<i>Taraxacum officinale</i>	FACU+				
<i>Trifolium subterraneum</i>	NL		Sapling/ Shrub Stratum		
<i>Myosotis discolor</i>	FACW		Total cover:		
<i>Poa pratensis</i>	FAC				
<i>Viola arvensis</i>	NL				
<i>Cirsium vulgare</i>	FACU				
<i>Daucus carota</i>	NL				

Percent of dominant species that are OBL, FACW, and/or FAC: 1 of 2 = 50%

Nearby Species: \_\_\_\_\_

**Soils:**

Map Unit Name: Oshtemo silt loam Drainage Class: \_\_\_\_\_  
 Taxonomy: \_\_\_\_\_ Is the soil on the hydric soils list? Y  
 Depth Horizon Matrix color 10YR4/3 Redox Concentrations \_\_\_\_\_ Redox Depletions \_\_\_\_\_ Texture \_\_\_\_\_ Structure \_\_\_\_\_  
 0-10" A1 10YR4/3 \_\_\_\_\_ all loam  
 10-14" A2 10YR4/3 \_\_\_\_\_ all loam

Hydric soil indicators:  
 Salient \_\_\_\_\_ Redox Conditions \_\_\_\_\_ Organic streaking (in sandy soils) \_\_\_\_\_  
 Hist Epipedon \_\_\_\_\_ Redox Features (with 10') \_\_\_\_\_ Organic pan (in silty soils) \_\_\_\_\_  
 Sulfidic layer \_\_\_\_\_ Concentrations/Nodules (with 3" >2mm) \_\_\_\_\_ On Hydric Soils List (and soil profile matches) \_\_\_\_\_  
 Gleyed \_\_\_\_\_ High organic content in surface (in silty soils) \_\_\_\_\_ Other \_\_\_\_\_

**Hydrology:**

Recorded Data Available? Y/N Aerial photos \_\_\_\_\_ Stream gauge \_\_\_\_\_ Other: \_\_\_\_\_  
 Primary Hydrology Indicators Secondary Hydrology Indicators  
 Depth of inundation: \_\_\_\_\_ Inundated \_\_\_\_\_ Oxidized Root Channels (upper 12") \_\_\_\_\_  
 Depth to saturation: \_\_\_\_\_ Saturated in upper 12" \_\_\_\_\_ Water-stained leaves \_\_\_\_\_  
 Depth to free water: \_\_\_\_\_ Water marks \_\_\_\_\_ Local Soil Survey Data \_\_\_\_\_  
 Drift lines \_\_\_\_\_ FAC Neutral Test \_\_\_\_\_  
 Sat. <5 of growing season Sediment deposits \_\_\_\_\_ Other: \_\_\_\_\_  
 Drainage patterns \_\_\_\_\_

**Wetland Determination:**

Is the hydrophytic vegetation criterion met? Y/N N  
 Is the hydric soil criterion met? Y/N N  
 Is the specific hydrology criterion met? Y/N N  
 Is this plant community a wetland? Y/N N

Comments: \_\_\_\_\_



**Wetland Routine Onsite Determination Data Sheet**

Project/Contact: Gabbart Mitigation Site County: \_\_\_\_\_  
 Field Investigator(s): Phil Gaddis File No. \_\_\_\_\_  
 Applicant/Owner: \_\_\_\_\_ Date: May 6, 2003  
 Plant Community: PCM/pasture transition zone Plot No. G1  
 Plot or Pit Location: Upland ridge 130 ft. west of stream, 130' north of fence in center of site.  
 Recent Weather: \_\_\_\_\_  
 Do normal environ. conditions exist? Y

Is there noticeable disturbance of this site's native vegetation, soils, and/or hydrology? \_\_\_\_\_

**Vegetation: Dominant Plant Species**

Herb Stratum	Ind. status	% Cover	Tern Stratum	Ind. status	% Cover
Total cover			Total cover:		
<i>*Aristida purpurascens</i>	FACU+	80%			
<i>*Trifolium hybridum</i>	FACU+	75%			
<i>*Rumex acetosella</i>	FACU+	20%			
<i>Plantago lanceolata</i>	FAC				
<i>Lupinus polyphyllus</i>	FAC+				
<i>Monarda mollis</i>	NL				
<i>Hypochaeris radicata</i>	FACU+				
<i>Geranium molle</i>	NL				
<i>Viola blanda</i>	NL				
<i>Ranunculus acris</i>	FACW-				
<i>Cirsium discolor</i>	NL				
<i>Myosotis discolor</i>	FACW				

Percent of dominant species that are OIL, FACW, and/or FAC: 0 of 3 = 0%

Other Notable Species: \_\_\_\_\_

**Soils:**

Map Unit Name:	Odne silt loam	Drainage Class:	Is the soil on the hydric soils list? Y	
Taxonomy:				
Depth	Horizon	Matrix color	Redox Concentrations	Redox Depletions
0-7"	A1	10YR6/3		
7-10"	A2	10YR6/3	10YR5/6 low iron mottles	
10-16"	B1	10YR5/2	10YR5/6 large abundant mottles	
Hydric soil indicators:				
High Cation			Reducing Conditions <u>X</u>	Organic streaking (in sandy soils)
High Epipedon			Redox Fragments (w/in 10") <u>X weak</u>	Organic pan (in sandy soils)
Sulfidic Order			Concretions/Nodules (w/in 3", >2mm)	On Hydric Soils List (and soil profile matches)
Glycud			High Organic content in surface (in sandy soils)	Other

**Hydrology:**

Recorded Data Available? Y/N	Annual photo	Stm. gauge	Other
	<i>Primary Hydrology Indicators</i>		<i>Secondary Hydrology Indicators</i>
Depth of inundation:	Inundated		Oxidized Root Channels (upper 12")
Depth to saturation:	Saturated in upper 12"		Water-stained leaves
Depth to free water:	Water marks		Final Soil Survey Data
	Drift lines		FAC-Neutral Test
sat >6%, <12.5% of growing season	Sediment deposits		Other
	Drainage patterns		

**Wetland Determination:**

Is the hydrophytic vegetation criterion met? Y/N N  
 Is the hydric soil criterion met? Y/N N  
 Is the specific hydrology criterion met? Y/N N  
 Is this plant community a wetland? Y/N N

Comments: \_\_\_\_\_

**Wetland Routine Onsite Determination Data Sheet**

Project Contact: Gabbert Mitigation Site County: \_\_\_\_\_  
 Field Investigator(s): Phil Gaddis File No. \_\_\_\_\_  
 Applicant/Owner: \_\_\_\_\_ Date: May 8, 2003  
 Plant Community: PEMpasture transitional zone Plot No. 02  
 Plot or Pit Location: 80 ft. west of stream, 200 north of fence in center of site  
 Recent Weather: \_\_\_\_\_  
 Do normal environ. conditions exist? Y

Is there noticeable disturbance of this site's native vegetation, soils, and/or hydrology? \_\_\_\_\_

**Vegetation: Dominant Plant Species**

Herb Stratum	Ind. status	% Cover	Tree Stratum	Ind. status	% Cover
Total cover			Total cover		
<i>*Anthoxanthum odoratum</i>	FACU+	30%			
<i>*Equisetum palustre</i>	FACW	25%			
<i>*Carex stipata</i>	FACU+	20%			
<i>*Molinia lanata</i>	FAC	20%			
<i>Hieracium acris</i>	FACW-				
<i>Miralis himalaica</i>	NL		Sapling/ Shrub Stratum		
<i>Hypochaeris radicata</i>	FACU+		Total cover		
<i>Myosotis discolor</i>	FACW				
<i>Vicia hirsuta</i>	NI				
<i>Lotus corniculatus</i>	FAC				
<i>Caradran verpusum</i>	NL				
<i>Carex ovalis (hypania)</i>	FAC				
<i>Atopocurus paniculatus</i>	FACW+				

Percent of dominant species that are OQL, FACW, and/or FAC: \_\_\_\_\_ 4 \_\_\_\_\_ of \_\_\_\_\_ 4 \_\_\_\_\_ 100%

Nearby Species: Juncus effusus, Carex foeta, Populus balsamifera, Prunella vulgaris

**Soils:**

Map Unit Name: Organic silt loam Drainage Class: \_\_\_\_\_  
 Taxonomy: \_\_\_\_\_ Is the soil on the hydric soils list? Y  
 Depth: \_\_\_\_\_ Horizon: \_\_\_\_\_ Matrix color: \_\_\_\_\_ Redox Concentration: \_\_\_\_\_ Mottles Depletions: \_\_\_\_\_ Texture: \_\_\_\_\_ Structure: \_\_\_\_\_  
 0-8" A 10Y1R/1 Oxidized rhizospheres \_\_\_\_\_  
 8-14" B 10Y1R/2 8YR-els singly mottled \_\_\_\_\_

Hydric soil indicators: \_\_\_\_\_  
 Histosol \_\_\_\_\_ Reducing Conditions \_\_\_\_\_ Organic streaking (in sandy soils) \_\_\_\_\_  
 Hist. epipedon \_\_\_\_\_ Rhiz. Features (w/in 10") X Organic soil (in sandy soils) \_\_\_\_\_  
 Aquatic Use \_\_\_\_\_ Concentrations/Nodules (w/in 3", 2" min) \_\_\_\_\_ On Hydric Soils 1 leg (and) soil profile matches \_\_\_\_\_  
 Gleyed \_\_\_\_\_ High organic content in surface (in sandy soils) \_\_\_\_\_ Other: \_\_\_\_\_

**Hydrology:**

Recorded Data Available? Y/N Aerial photos \_\_\_\_\_ Strm. gage \_\_\_\_\_ Other: \_\_\_\_\_  
 Primary Hydrology Indicators \_\_\_\_\_ Secondary Hydrology Indicators \_\_\_\_\_  
 Depth of inundation: \_\_\_\_\_ Inundated \_\_\_\_\_ Oxidized Root Channels (upper 12") X  
 Depth to saturation: 0" Saturated in upper 12" X Water-stained images \_\_\_\_\_  
 Depth to free water: 0" Water marks \_\_\_\_\_ Local Soil Survey Data \_\_\_\_\_  
 Drift lines \_\_\_\_\_ FAC-Neutral Test \_\_\_\_\_  
 Sediment deposits \_\_\_\_\_ Other: \_\_\_\_\_  
 Drainage patterns \_\_\_\_\_

**Wetland Determination:**

Is the hydrophytic vegetation criterion met? Y/N Y  
 Is the hydric soil criterion met? Y/N Y  
 Is the specific hydrology criterion met? Y/N Y  
 Is this plant community a wetland? Y/N Y

Comments: \_\_\_\_\_





**Wetland Routine Onsite Determination Data Sheet**

Project/Contact: Gabbert Mitigation Site County: \_\_\_\_\_  
 Field Investigator(s): Phil Gaddis File No. \_\_\_\_\_  
 Applicant/Owner: \_\_\_\_\_ Date: May 6, 2009  
 Plant Community: Upland prairie Plot No. G6  
 Plot or 1/4 Location: 80' east of NE 29th Ave, 50' south of NE 189th St  
 Recent Weather: \_\_\_\_\_  
 Do normal environ. conditions exist? Y

Is there noticeable disturbance of this site's native vegetation, soils, and/or hydrology? \_\_\_\_\_

**Vegetation: Dominant Plant Species**

Herb Stratum	Ind. Status	% Cover	Tree Stratum	Ind. Status	% Cover
Total cover:			Total cover:		
<i>Anthoxanthum odoratum</i>	FAC	45%			
<i>Danucus carota</i>	NL	25%			
<i>Trifolium hybridum</i>	FACU	20%			
<i>Prunella vulgaris</i>	FACU				
<i>Santago taraxacifolia</i>	FAC				
<i>Sarracenia purshiana</i>	FACU		Sapling/Shrub Stratum		
<i>Chrysanthemum leucanthemum</i>	NL		Total cover:		
<i>Lupinus albus</i>	FACU				

Percent of dominant species that are OBL, FACW, and/or FAC: 1 of 3 = 33% \*dominant

Nearby Species: \_\_\_\_\_

**Soils:**

Map Unit Name: Odn silt loam Drainage Class: \_\_\_\_\_  
 Taxonomy: \_\_\_\_\_ Is the soil on the hydric soils list? Y  
 Depth Horizon Matrix color Redox Concentrations Redox Depletions Texture Structure  
 0-10" A1 10YH4/3 \_\_\_\_\_  
 10-14" A2 10YH2/2 \_\_\_\_\_

Hydric soil indicators:  
 Histosol \_\_\_\_\_ Redoxing Conditions \_\_\_\_\_ Organic streaking (in sandy soils) \_\_\_\_\_  
 Mottling \_\_\_\_\_ Redox Fragments (with 10") \_\_\_\_\_ Organic pits (in sandy soils) \_\_\_\_\_  
 Sulfate Oxide \_\_\_\_\_ Concretions/Nodules (with 10" > 2mm) \_\_\_\_\_ On Hydric Soils list (any soil profile matches) \_\_\_\_\_  
 Gleyed \_\_\_\_\_ High organic content in surface (in sandy soils) \_\_\_\_\_ Other: \_\_\_\_\_

**Hydrology:**

Recorded Data Available? Y/N Annual photos \_\_\_\_\_ Strm. gauge \_\_\_\_\_ Other: \_\_\_\_\_  
*Primary Hydrology Indicators* \_\_\_\_\_ *Secondary Hydrology Indicators* \_\_\_\_\_  
 Depth of inundation: \_\_\_\_\_ Inundated \_\_\_\_\_ Oxidized Root Channels (upper 12") \_\_\_\_\_  
 Depth to saturation: \_\_\_\_\_ Saturated in upper 12" \_\_\_\_\_ Water-stained leaves \_\_\_\_\_  
 Depth to free water: \_\_\_\_\_ > 10" \_\_\_\_\_ Water marks \_\_\_\_\_ Local Soil Survey Data \_\_\_\_\_  
 Drift lines \_\_\_\_\_ FAC-Neutral Test \_\_\_\_\_  
 Sediment deposits \_\_\_\_\_ Other: \_\_\_\_\_  
 Drainage patterns \_\_\_\_\_

**Wetland Determination:**

Is the hydrophytic vegetation criterion met? Y/N N  
 Is the hydric soil criterion met? Y/N N  
 Is the specific hydrology criterion met? Y/N N  
 Is this plant community a wetland? Y/N N

Comments: \_\_\_\_\_







**Wetland Routine Onsite Determination Data Sheet**

<b>Project/Contact:</b>	Gabbert Mitigation Site	<b>County:</b>	_____
<b>Field Investigator(s):</b>	Phil Gaddis	<b>File No.:</b>	_____
<b>Applicant/Owner:</b>	_____	<b>Date:</b>	May 7, 2003
<b>Plant Community:</b>	Upland pasture	<b>Plot No. B3</b>	_____
<b>Plot or PIR Location:</b>	700' east of creek, 200' south of Schumann/Tranburg fence		
<b>Recent Weather:</b>	_____		
<b>Do normal environ. conditions exist? Y</b>	_____		

Is there noticeable disturbance of this site's native vegetation, soils, and/or hydrology? \_\_\_\_\_

**Vegetation: Dominant Plant Species**

Herb Stratum	Ind. status	% Cover	Tree Stratum	Ind. status	% Cover
<b>Total cover:</b>			<b>Total cover:</b>		
<i>Festuca pratensis</i>	FACU+	20%			
<i>Festuca rubra</i>	FAC+	10%			
<i>Alopecurus pratensis</i>	FACW				
<i>Ranunculus acris</i>	FACU+	5%			
<i>Poa pratensis</i>	FACW	5%			
<i>Viola hirsuta</i>	NL	20%			
<i>Potentilla racemosa</i>	FAC-	15%			
<i>Anthoxanthum odoratum</i>	FACU+				
<i>Viola spica</i>	NL				
<i>Trisetum alpinum</i>	FACU+				
<i>Corniculum vesicarium</i>	NL				
<i>Myosotis discolor</i>	FACW				
<i>Rumex acetosella</i>	FACU+				
<b>Percent of dominant species that are OML, FACW, and/or FAC :</b>			1	of	3 = 33%
<b>Nearby Species :</b>			_____		

**Soils:**

<b>Map Unit Name:</b>	Odie silt loam	<b>Drainage Class:</b>	_____
<b>Taxonomy:</b>	_____	<b>Is the soil on the hydric soils list? Y</b>	_____
<b>Depth</b>	<b>Horizon</b>	<b>Matrix color</b>	<b>Redox Concentrations</b>
0-7"	A1	10YR3/3	
7-12"	A2	10YR4/3	
12-19"	B1	10YR3/3	few faint small
<b>Hydric soil indicators:</b>			
Molisol _____	Redding Conditions _____	Organic streaking (in sandy soils) _____	
M.M. Lopedol _____	Redox Features (w/in 10") _____	Organic pan (in sandy soils) _____	
Sulfidic Oxis _____	Concretions/Nodules (w/in 3"; >5mm) _____	(*) Hydric Soils List (and soil profile matches) _____	
Clayed _____	High organic content in surface (in sandy soils) _____	Other _____	

**Hydrology:**

<b>Recorded Data Available? Y/N</b>	<b>Aerial photos</b>	<b>Stem groups</b>	<b>Other:</b>
	<i>Primary Hydrology Indicators</i>		<i>Secondary Hydrology Indicators</i>
<b>Depth of inundation:</b>	Inundated _____	Oxidized Root Channels (upper 12") _____	
<b>Depth to saturation:</b>	Saturated in upper 12" _____	Water-stained leaves _____	
<b>Depth to free water:</b>	Water marks _____	Local Soil Survey Data _____	
	Drift lines _____	FAC Neutral Test _____	
<b>Sat &gt;5% of growing season</b>	Sediment deposits _____	Other: _____	
	Drainage patterns _____		

**Wetland Determination:**

Is the hydrophytic vegetation criterion met?	Y/N <u>N</u>
Is the hydric soil criterion met?	Y/N <u>N</u>
Is the specific hydrology criterion met?	Y/N <u>N</u>
Is this plant community a wetland?	Y/N <u>N</u>

Comments: \_\_\_\_\_

**Wetland Routine Onsite Determination Data Sheet**

Project/Contact: Gobbert Mitigation Site County: \_\_\_\_\_  
 Field Investigator(s): Phil Gaddis File No. \_\_\_\_\_  
 Applicant/Owner: \_\_\_\_\_ Date: May 7, 2003  
 Plant Community: 1/2M, on bench in slope wetland Plot No. 1264  
 Plot or Pit Location: 150' southeast of B3, 200' north of NF-193rd Ct.  
 Recent Weather: \_\_\_\_\_  
 Do normal environ. conditions exist? Y

Is there noticeable disturbance of this site's native vegetation, soils, and/or hydrology? \_\_\_\_\_

**Vegetation: Dominant Plant Species**

Herb Stratum	Ind. Status	% Cover	Tree Stratum	Ind. Status	% Cover
Total cover:			Total cover:		
<i>Festuca pratensis</i>	FACU+	30%			
<i>Juncus effusus</i>	FACW	20%			
<i>Juncus (tenax) acrobrachy</i>	FACW-	5%			
<i>Allopecurus pratensis</i>	FACW				
<i>Poa pratensis</i>	FACW	5%			
<i>Vicia hirsuta</i>	NL		Sapling/ Shrub Stratum		
<i>Urtica congestifolia</i>	FAC	20%	Total cover:		
<i>Anthoxanthum odoratum</i>	FACU+	10%			
<i>Carex (leptocoma) ovata</i>	FAC				
<i>Holcus lanatus</i>	FAC				
<i>Rumex crispus</i>	FACW				
<i>Montia fontana</i>	OBL				
<i>Montia linearis</i>	NL				
Percent of dominant species that are OBL, FACW, and/or FAC:			2	of	3 = 67%
Nearby Species:					

**Soils:**

Map Unit Name: Orid all loam Drainage Class: \_\_\_\_\_  
 Taxonomy: \_\_\_\_\_ Is the soil on the hydric soils list? Y

Depth	Horizon	Matrix color	Redox Concentrations	Redox Depositions	Texture	Structure
0-5"	A1	10YR4/2	few fine mottles 10Y1/1-0, ORO		sil loam	
5-14"	Bt	10Y1R4/2	frequent thin platy-sized mottles 10Y1R4/0		sil loam	

Hydric soil indicators:  
 Alkaline \_\_\_\_\_ Reducing Conditions \_\_\_\_\_ Organic streaking (in sandy soils) \_\_\_\_\_  
 Hist. Epigeon \_\_\_\_\_ Redox Features (w/in 10") X Organic pits (in sandy soils) \_\_\_\_\_  
 Sulfidic Odor \_\_\_\_\_ Concentration Anhydrides (w/in 3", >2mm) \_\_\_\_\_ On Hydric Soils List (and does profile match) \_\_\_\_\_  
 Gleyed \_\_\_\_\_ High organic content in 4:1:1cc (in sandy soils) \_\_\_\_\_ Other \_\_\_\_\_

**Hydrology:**

Recent Data Available? Y/N Aerial photos \_\_\_\_\_ Strm. gauge \_\_\_\_\_ Other \_\_\_\_\_

Depth of inundation:	Primary Hydrology Indicators	Secondary Hydrology Indicators
_____	<u>X</u>	<u>X</u>
Depth to saturation: _____	Saturated in upper 12"	Water-stained leaves
Depth to free water: _____	Water marks	Local Soil Survey Data
	Orch lines	FAC-Neutral Test
Sat. >12.5% of growing season	Siltment deposits	Other: _____
	Drainage patterns	

**Wetland Determination:**

Is the hydrophytic vegetation criterion met? Y/N Y  
 Is the hydric soil criterion met? Y/N Y  
 Is the specific hydrology criterion met? Y/N Y  
 Is this plant community a wetland? Y/N Y

Comments: \_\_\_\_\_

## WETLAND DELINEATION

### RODDA WETLAND MITIGATION SITE *(N. Gabbart)*

March 25, 2004

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#### FIGURES:

- Figure 1. Project vicinity and site location
- Figure 2. Soils of the project area
- Figure 3. Wetland boundaries

#### APPENDIXES:

- Field Data Sheets

## Wetland Delineation, Roadside Wetland Mitigation Site

### 1.0 Introduction

#### 1.1 Project Location

The Rodda mitigation site covers 17 acres in sections 1 and 2 of T3N, R1E WM (Figure 1). The site extends approximately 1300 feet north of the intersection of NE 199<sup>th</sup> St. and 29<sup>th</sup> Ave. on the west side, and 300 feet on the east side.

#### 1.2 Project Description

The Rodda site is a potential regional stormwater management area and mitigation site for the compensation of impacts to wetlands due to the widening of NE 179<sup>th</sup> as proposed by Clark County Public Works Dept. This wetland delineation will contribute to our understanding of the nature of the site and will be used in planning appropriate mitigation measures.

#### 1.3 Project Area

##### 1.3.1 Geomorphology

The area containing the Rodda site (Figure 3) constitutes a headwater wetland that drains to a tributary of Mill Creek, which is a tributary of Salmon Creek and the Columbia River. It lies in a broad swale that narrows and steepens approximately 1500 feet downstream of the site to the south. The wetland is relatively flat in the center through most of the site but becomes more steeply sloped toward the west. The wetland functions as a headwater depositional outflow wetland with significant slope wetland on the west side.

##### 1.3.2 Hydrology

The wetland receives water from a watershed of approximately 450 acres. Water enters the wetland directly through precipitation, from runoff from NE 29<sup>th</sup> Ave., driveways and other structures; shallow groundwater flow, especially from higher ground to the west; and from occasional overbank flow from a drainage ditch running through the center of the northern portion of the site and from the roadside ditch along NE 29<sup>th</sup> Ave. in the southern portion of the site. Following periods of strong precipitation, the wetland also receives concentrated surface flow in a swale entering the site from the west approximately 250 feet north of NE 199<sup>th</sup> St. Water leaves the site through the central man-made ditch and through the roadside ditches along NE 29<sup>th</sup> Ave. and NE 199<sup>th</sup> St. The south-central portion of the site shows traces of several shallow drainage ditches running west to east. These may contribute to the drainage of this portion of the site. The ditches form a tributary to Mill Creek, which then flows to Salmon Creek, Lake River, and then to the Columbia River.

##### 1.3.3 Soils

Soils mapping (1972, US Department of Agriculture, Soil Conservation Service) of the project area (Figure 2) indicates Ode silt loam occurs in the wetlands of the Rodda site. The upland areas are covered with Gee silt loam. These are fine silty alluvial soils deposited by the Missoula Floods of the Columbia River.

Gee silt loam (GeB) is classed as a fine-silty, mixed mesic series of subgroup Udic Haploxeralfs, order Alfisols. It is typically a deep, moderately well-drained, medium textured soil that developed in deposits of old Columbia River alluvium.

## Wetland Delineation, Rodda Wetland Mitigation Site

Odne silt loam (OdB) is classed as a fine-silty, mixed mesic series of subgroup Typic Ochraqualf, order Alfisols. It is poorly drained and slowly permeable. It typically occurs in drainageways or depressions in areas of Gae soils.

A large quantity of fill material was deposited in the northwest portion site prior to County ownership, probably between 2000 and 2002. The fill material consists primarily of compacted, fine-silty clay-loam that appears to be primarily B-horizon subsoil with hydric characteristics. It is occasionally mixed with imported medium-textured flood gravels. Some of the fill material has been evenly spread and heavily compacted, forming a nearly impermeable surface. In other areas, the material occurs in scattered piles and long ridges.

### 1.3.4 Climate

The project area normally receives approximately 45 inches of precipitation annually. The majority of the precipitation typically falls as rain by early February with the heaviest rainfall in December and January. Prior to 1970, the average annual snowfall for Vancouver was 8.4 inches with much higher amounts reported for higher elevations in the north and east parts of the County (USDA Soil Conservation Service, 1972. Soil Survey of Clark County). However, snowfall has been much lighter and rare in the last decade.

### 1.3.5 Land Use

The site is zoned Residential with a 5 acre minimum lot size (R-5). Four residences with septic systems are immediately adjacent to the site on the west side. Another occurs in the southeast. Several other residences, casual agriculture, and minor commercial activities also occur to the north, and others occur within the contributing watershed. Although pasture and grain production have been attempted on the site in the past, it has been fallow for many years.

## 2.0 Methods

Documented existing and historic conditions for the study site were reviewed. These included:

- Soil Survey of Clark County (1972, US Department of Agriculture, Soil Conservation Service),
- Historic aerial photographs in approximate 10-year intervals beginning in 1955,
- Aerial photography in true color and infra-red from March, 2002,
- 10-ft USGS elevation contours available through the County's ClarkView GIS program,
- Precipitation data from the NOAA internet site for the Vancouver weather station (Pearson Air Park) and the Soil Survey of Clark County. (Based on previous history, precipitation for the Rodda site can be expected to be about 10% - 15% higher than the Vancouver readings.)

The delineation was conducted according to the 1987 Corps of Engineers Wetland Delineation Manual and Washington State Wetlands Identification and Delineation Manual (DOE Publication 98-94). This procedure calls for the evaluation of vegetation, soils, and hydrology for one typical observation point in each distinctive wetland habitat type of the subject area. A determination of the jurisdictional status of the observation

## Wetland Delineation, Rodda Wetland Mitigation Site

point requires independent confirmation of wetland characteristics in each of these three parameters.

The primary soil and hydrology samples were taken by digging a hole 16 inches deep using a tilling spade, examining the soil profile, and evaluating the depth of standing water after allowing ground water to seep into the hole. Additional soil and hydrology samples were taken using a 1½ inch diameter soil auger. The auger holes were marked with wire flags and monitored from late winter through early spring (January 21, 28, February 3, 11, 13, 26, March 2, 10, 2004).

According to US Army Corps of Engineers and Washington Department of Ecology, wetland delineation methodologies, the study site is considered to have wetland hydrology where water stands at 12' or less from the surface for 12.5% of the growing season. For the Rodda site, since the growing season is approximately 220 days long, the critical period for hydrology is approximately 28 days. A given sample station was considered to have wetland hydrology if water stood in the hole at a depth of 12 inches or less for at least 28 days. The soil was considered to be hydric if a significant proportion of it matched the description of a listed hydric soil, or met the technical criteria for a hydric soil described in the delineation manuals listed above. The growing season typically begins in early March (when minimum air temperatures rise above 28° F in one of two years and soil temperature rises above 41° F at 20 inches below the surface). Soil temperatures were measured during the early field visits using a compost thermometer.

Waterbodies and wetland areas were classified according to the Cowardin system of the US Fish and Wildlife Service (Cowardin, L. M., et al. 1979, Classification of wetlands and deepwater habitats of the United States. US Fish and Wildlife Service FWS/OBS-79/31). They were also classified according to the Washington State Department of Ecology (DOE) Wetland Rating System (DOE Publication # 91-57) and according Clark County's Wetland Protection and Habitat Conservation Ordinances. The Habitat Conservation Ordinance uses the stream classification of the Washington State Department of Natural Resources (DNR) and buffer recommendations for those stream types from the Washington State Department of Fish and Wildlife.

Ecological functions were evaluated according to the Washington State Department of Ecology "Methods for Assessing Wetland Functions" (DOE Publications 99-115 and 99-116), using the depressional outflow model.

Field investigations were conducted on January 21, 28, February 3, 11, 13, 26, March 2, 10, 2004. The wetland boundaries were finalized on March 10, 2004, after water levels had receded significantly (Figure 3). Field visits early in the season focused on hydrology and soils. Identification of plant species (especially grasses, sedges, and rushes) continued through the later field visits after the delineation boundaries had been set.

## 3.0 Results

### 3.1 Climatic Conditions

Rainfall totals for the previous winter had been within the normal range. At the start of the fieldwork in January, the project area had received approximately 16 inches of

## Wetland Delineation, Rodda Wetland Mitigation Site

rainfall for the water year. By late February, approximately 24 inches of rain had fallen. The spring season received above average rainfall, and approximately 34 inches had fallen by early May. This is about 5 inches above average. The site received approximately 6-8 inches of snow which stayed in the site for over a week in late December, 2003, and early January, 2004.

Soil temperature was at 42° F on February 3, and February 11, but dropped down to 40° on February 26 after several days of low temperatures and overnight frost. Soil temperature rose to 44° by March 2 and did not drop back below 41°. The site can be considered to have been in the growing season from early February. Many plant species were showing strong signs of growth by mid February.

### 3.2 Hydrology

Precipitation in December, 2003 and January, 2004 was above the 30-year average value (<20 inches), and by mid February, water stood at less than 12 inches from the surface outside the area of hydric soils, covering nearly the entire site. By mid March, however, after below average precipitation in February and early March, water had receded to approximately those areas covered by hydric soils.

### 3.3 Soils

The soils of the project site were dominated by mineral soil types that differed from the typical description of the mapped Odne and Gee silt loam series in structure, color, and profile. The differences were likely due to the long history of agricultural use. The soils, nevertheless met hydric soil criteria over nearly the entire site. Approximately 2 acres in the northwest portion of the site were covered with additional soil material prior to County ownership as described above.

### 3.4 Vegetation

Several plant community types were found on the Gabbert site. Emergent wetland (marsh) covered the great majority of the site. The ditch was associated with a narrow strip of shrub riparian area in the north central portion of the site. Upland areas consisted primarily of grasslands with a few mature trees.

The emergent plant community was dominated by reed canarygrass (*Phalaris arundinacea*), soft rush (*Juncus effusus gracilis*), slough sedge (*Carex obrupta*), curly dock (*Rumex crispus*), bird's foot trefoil (*Lotus corniculatus*). A few small patches of tufted hairgrass (*Deschampsia cespitosa*) occur in the south central portion of the site. A few mature Oregon ash trees (*Fraxinus latifolia*) occurred adjacent to the ditch in the southeast central portion of the site. One large mature Oregon white oak (*Quercus garryana*) occurs at the northeast corner of the site, and seeding oaks are coming up in the near vicinity. Willow (*Salix* sp.) also occurred along the ditch in the central portion of the site.

### 3.5.0 Wetland Classification

1

The wetland area is classified as category 2 under the DOE rating system. Under the Clark County rating system, the wetland belongs to category 4. The upland buffer belongs to type D of the Clark County Wetland Protection Ordinance due to its domination by non-native species.

## Wetland Delineation, Rodda Wetland Mitigation Site

The channelized stream is intermittent and belongs to DNR category 4. It is associated with a riparian priority zone which is 150 feet in width.

### 3.6 Wetland Functions

The depressional outflow model for function assessment (DOE WAFAM) indicated the levels of function shown in Table 1. In its existing condition, the wetland appears to

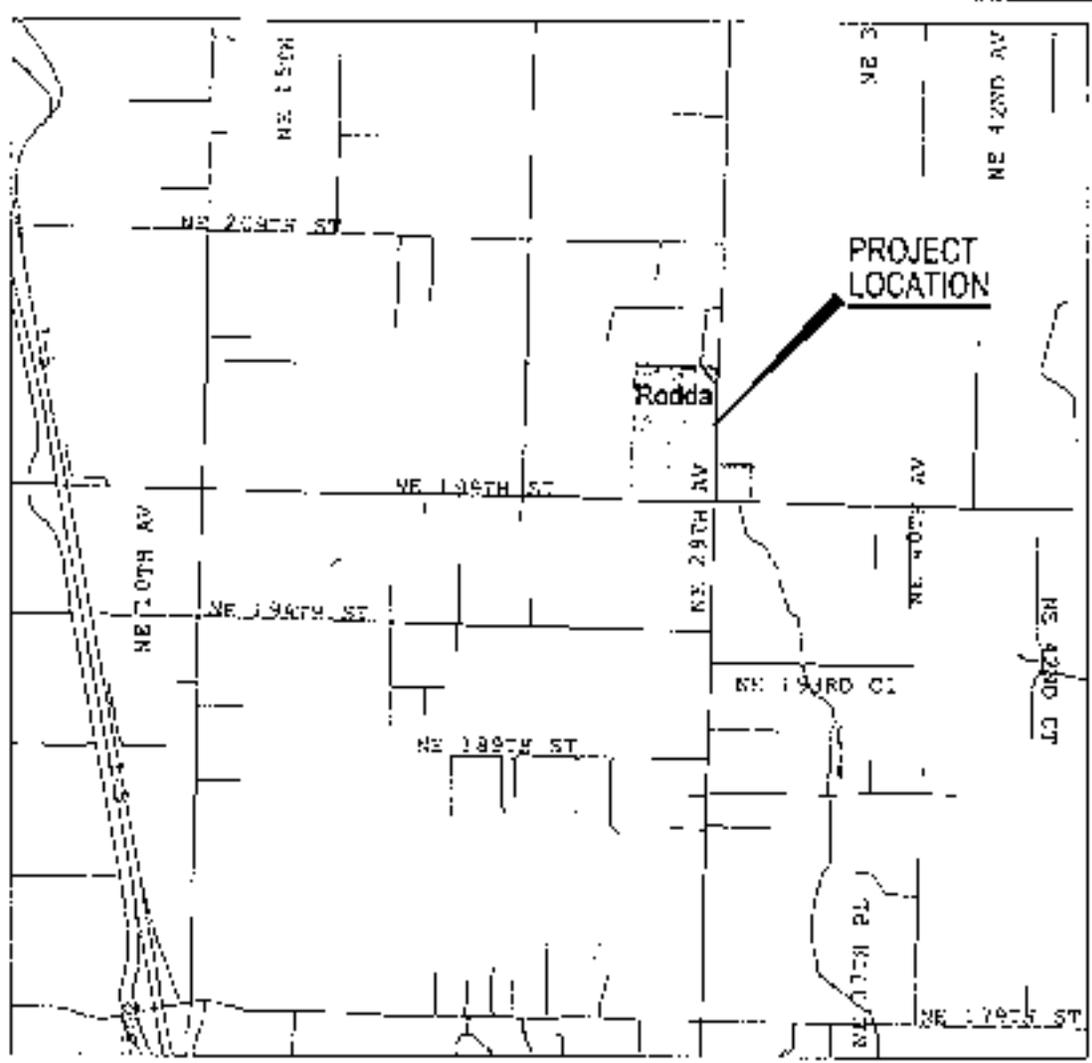
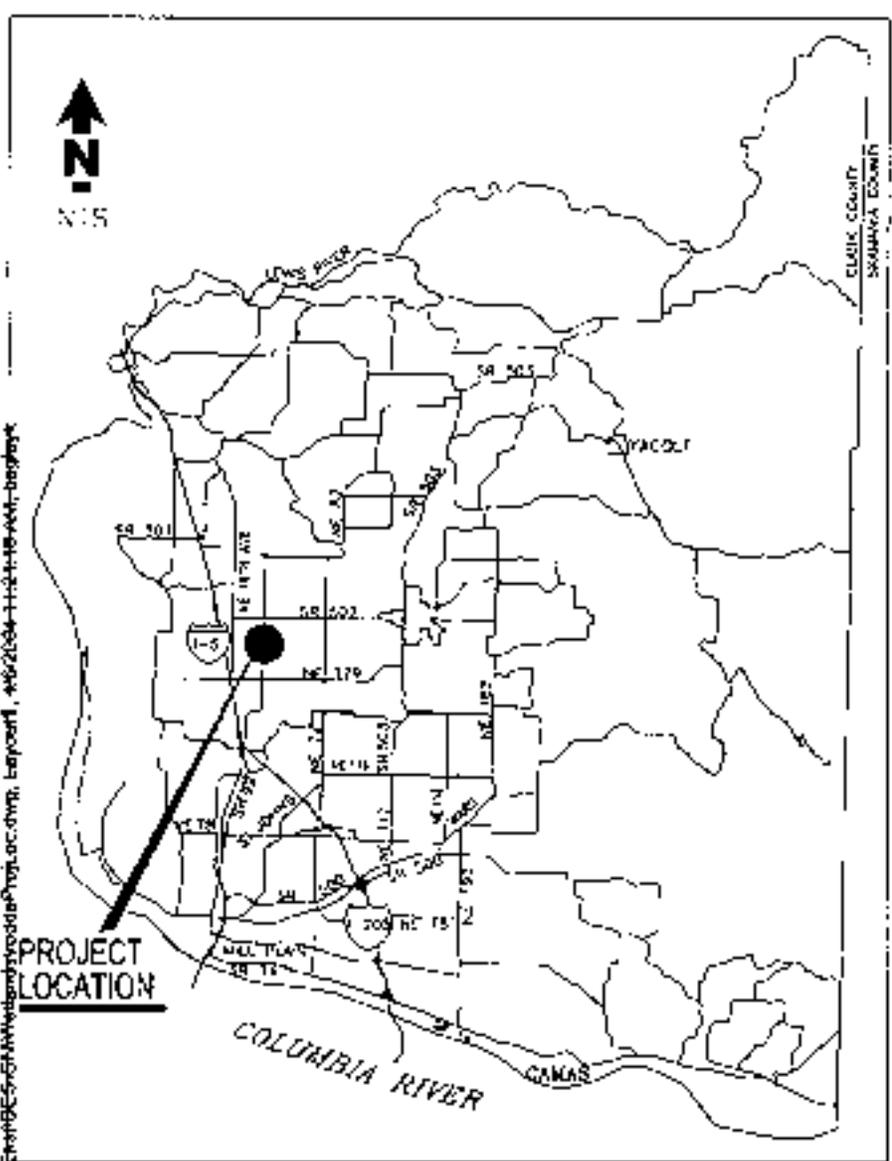
**Table 1. Summary of wetland functions using DOE WAFAM Depressional Outflow model (maximum score = 10).**

Function	Index
Potential for Removing Sediment	5
Potential for Removing Nutrients	6
Potential for Removing Heavy Metals and Toxic Organics	7
Potential for Reducing Peak Flows	5
Potential for Decreasing Downstream Erosion	5
Potential for Groundwater Recharge	5
General Habitat Suitability	<del>4</del> 3
Habitat for Invertebrates	2
Habitat for Amphibians	3
Habitat for Anadromous Fish	1
Habitat for Resident Fish	3
Habitat for Wetland Associated Birds	3
Habitat for Wetland Associated Mammals	2
Native Plant Richness	<del>4</del> 2
Primary Production and Export	6

have only moderate potential for removing sediment, nutrients, and toxic substances, as well as for reducing peak flows, decreasing downstream erosion, and recharging groundwater. The site has relatively low habitat potential due to its long history of agricultural use and domination by non-native plant species. The potential for providing these ecological functions was further compromised by the addition fill material over a large portion of the site.

However, the landscape position of the wetland affords it significant opportunity to provide hydrologic and water quality benefits to the watershed if these functions are enhanced. The site is also large enough to provide significant habitat benefits if enhanced.

N:\CIP\PROJECTS\122-NE1791P-Environ\Rodda\ProjLoc.dwg, layout1, 4/6/2004 11:24:16 AM, baplyk



PROJECT LOCATION MAP

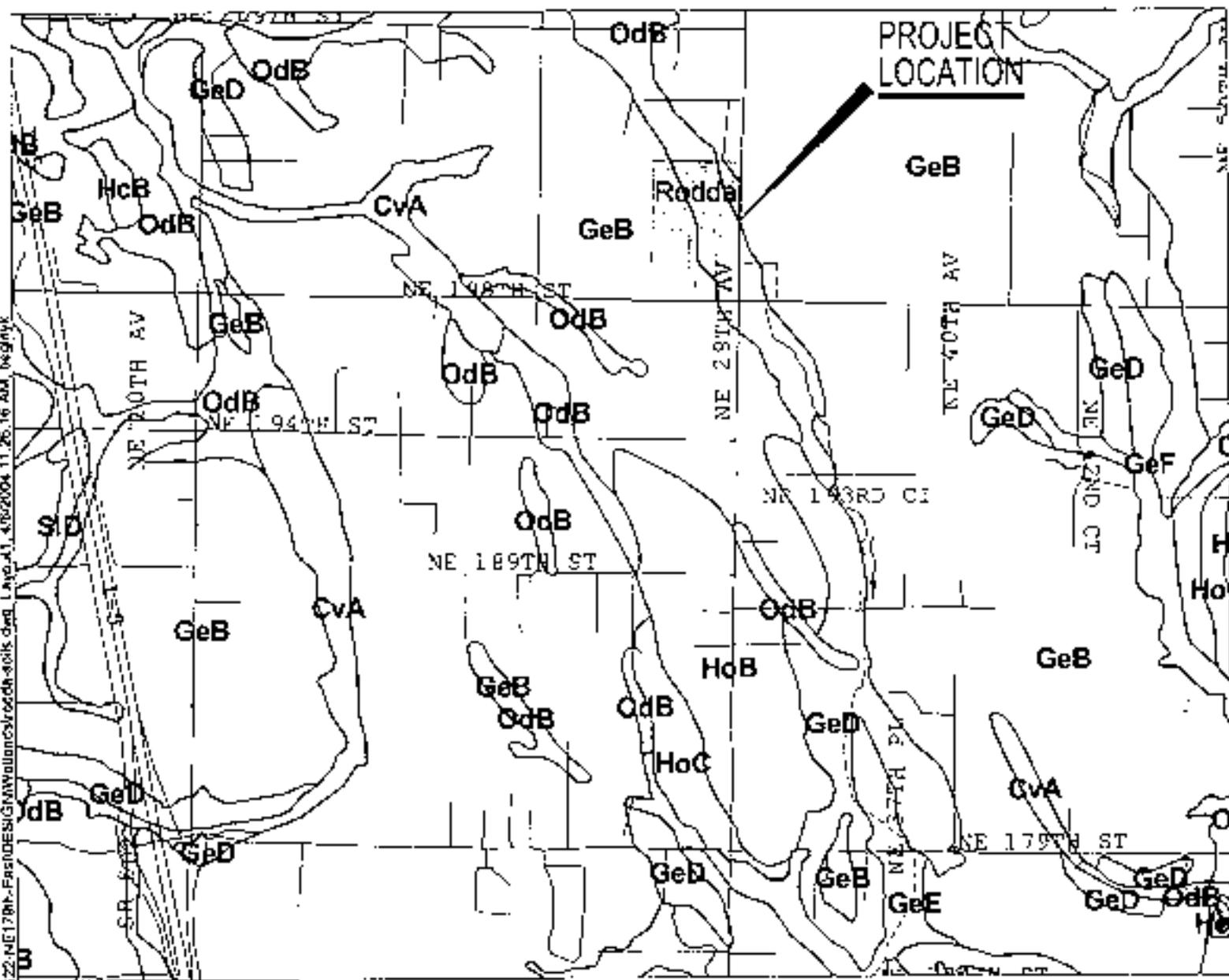
PROJECT AREA MAP



FIGURE 1 --- Rodda Wetland Site  
PROJECT LOCATION & PROJECT AREA

PROJECT	122-NE1791P-Environ
DATE	4/6/04
SCALE	1"=1000'
DRAWN BY	baplyk
CHECKED BY	
DATE	4/6/04
SCALE	1"=1000'
PROJECT	122-NE1791P-Environ

N:\CIP\PROJECTS\031122-NET170N-Farides\GIM\Wallace\roads\soils.dwg, Layer=1, 4/8/2004, 11:26:16 AM, neglany



- CvA Cove Silty Clay Loam
- GeB Gee Silt Loam (0%-8% slope)
- GeD Gee Silt Loam (8%-20% slope)
- GeE Gee Sil Loam (20%-30% slope)
- GeF Gee Sil Loam (30%-60% slope)
- HcB Hesson Clay Loam
- HoB Hillsboro Sil Loam (3%-6% slope)
- HoC Hillsboro Sil Loam (8%-15% slope)
- OdB Odne Sil Loam
- SID Sara Sil Loam



proud past, promising future

CLARK COUNTY  
WATERBENCH

FIGURE 2 --- Rodda Wetland Sites  
Soils Map

DESIGNED: JG  
DRAWN: NW  
CIP: 341172  
SCALE:  
MAP: 1:2500  
WET:  
DATE: 4/8/04  
SHEET: 2 OF 3















## WETLAND DELINEATION

Sample sheets?

### FORD/HOLBROOK WETLAND MITIGATION SITE

December, 1999

The subject site is located west of the intersection of NW 11<sup>th</sup> Ave. and 184<sup>th</sup> St. in the southeast quarter of Section 9, T3N, R1E, Willamette Meridian (Figure 1). The site is in the headwaters of an unnamed tributary of Packard Creek in the Whipple Creek watershed. The subject site is approximately the eastern half of a 20-acre, County-owned parcel, which consists of recently abandoned pasture. The western portion consists of second growth forest. This site contains a broad wetland swale and a creek along its northern boundary. Most of the creek lies in a deeply incised gully, whose walls are covered primarily with young second growth forest.

#### METHODS

The wetland delineation was conducted on November 18, 29, and 30, 1999 according to the 1987 Corps of Engineers Wetland Delineation Manual. This procedure calls for evaluation of vegetation, soils, and hydrology for one typical observation point in each distinctive habitat type of the subject area. A determination of the jurisdictional status of the observation point requires independent confirmation of wetland characteristics in each of these three parameters.

Two sample sites were evaluated, on each side of the creek channel that divides the site. Additional soil and hydrology samples were taken at many other locations throughout the wetland areas from wetland to upland in order to locate the wetland boundaries. The primary soil and hydrology samples were taken by digging a hole 16 inches deep, examining the soil profile and evaluating the depth of standing water in the hole after allowing ground water to seep into the hole. The other samples were taken using a 1 1/4 inch diameter soil auger. Typically, a given sample station would be considered to have wetland hydrology if water stood in the hole at a depth of 12 inches or less. The soil was considered to be hydric if it contained a significant proportion of brightly colored mottles and/or had a low matrix chroma at a depth of 10 inches from the surface. The dominant plant species were identified and their wetland status determined. The vegetation was considered to be hydrophytic if more than 50 % of the dominant species were classified as Obligate, Facultative Wetland, or Facultative.

Since the delineation was conducted early in the water year, the groundwater had not risen to its typical winter level. Rainfall for the water year at the time of delineation was approximately 10 inches with 7 inches falling in the month of November. Ground water stood at less than 12 inches from the surface in the central portions of the wetland at the primary sample sites, but not necessarily at the outer perimeter of the area judged to be wetland. Nor was the vegetation in an optimal state for confident wetland determination due to heavy grazing by cattle during the previous summer. The boundaries were therefore tentatively determined based primarily on the presence of reasonably saturated hydric soil. Less weight was given to hydrology and vegetation pending confirmation later in the coming spring when water levels will have reached equilibrium and the plants have become more easily identifiable.

#### RESULTS

The site consists of a broad floodplain of a headwater stream along the north boundary with a second broad swale entering from the south on a relatively steep slope of approximately 6%. The site receives water from upstream in the subwatershed via roadside ditches in the intersection of NW 11<sup>th</sup> Ave. and 184<sup>th</sup> St. and from considerable groundwater discharge in the swale and from

the slopes above it. The swale originates above the subject property to the southeast. In addition to the swale area, groundwater appears to discharge from high on the north-facing shoulder of the slope in the east central portion of the pasture.

The stream appears to originate at the east end of the subject site where it is fed by roadside ditches of NW 11<sup>th</sup> Ave. and 184<sup>th</sup> St. Flow in the stream appears to be intermittent, at least at the upstream end. The bed of the stream is nearly level with the adjacent floodplain at the upstream end but becomes progressively incised as it flows from east to west along the northern boundary of the site. It is over 20 ft. below the adjacent floodplain 400 ft. downstream. A broad swale continues upstream to the east approximately 1200 ft.

The soils on the site belong to three different soil series (Figure 2). The relatively floodplain of the stream consists of Cove silty clay loam. The more steeply sloping ground outside of the floodplain and the swale are covered with Odra silt loam. The upland areas consist of Sura silt loam.

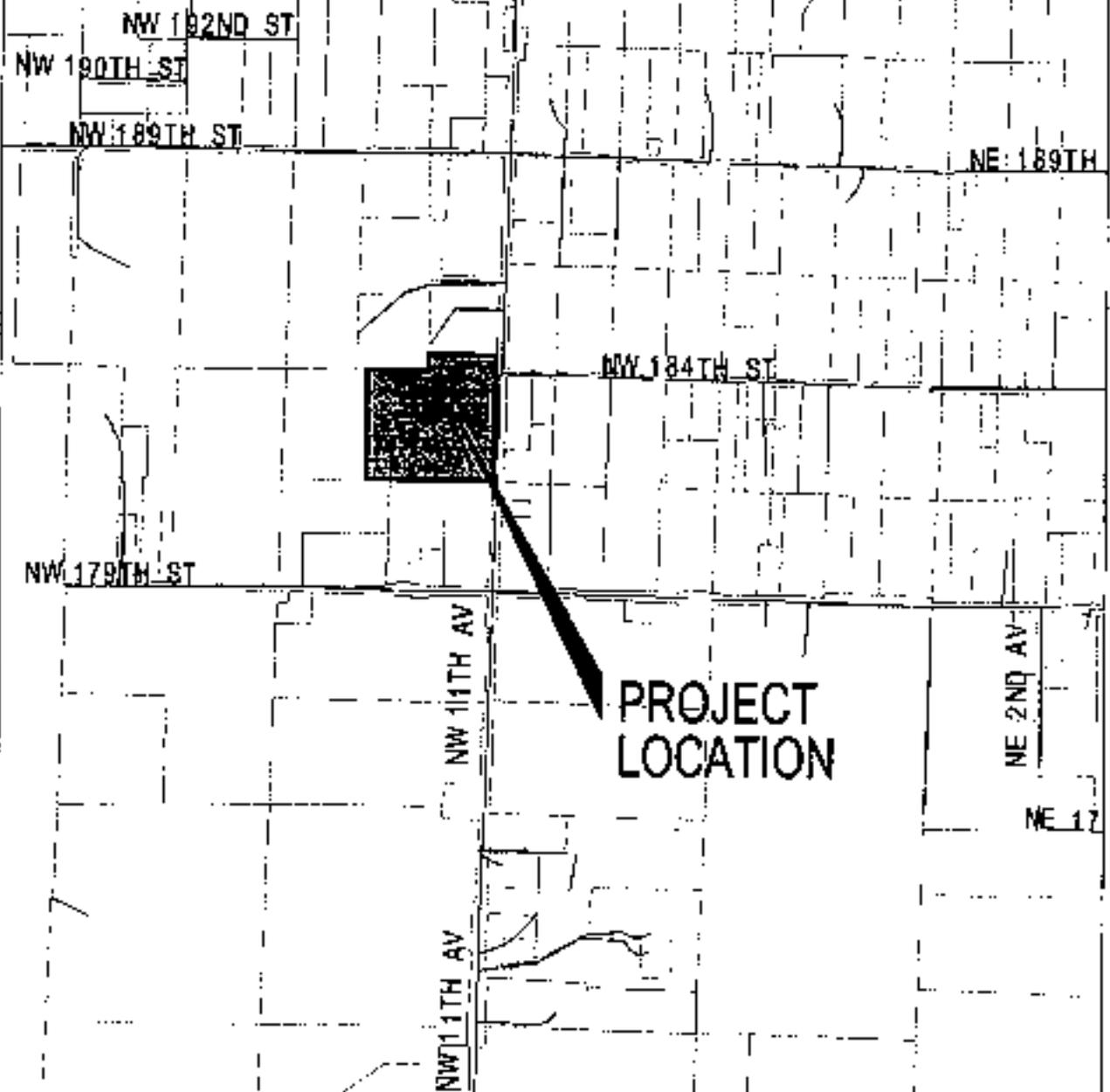
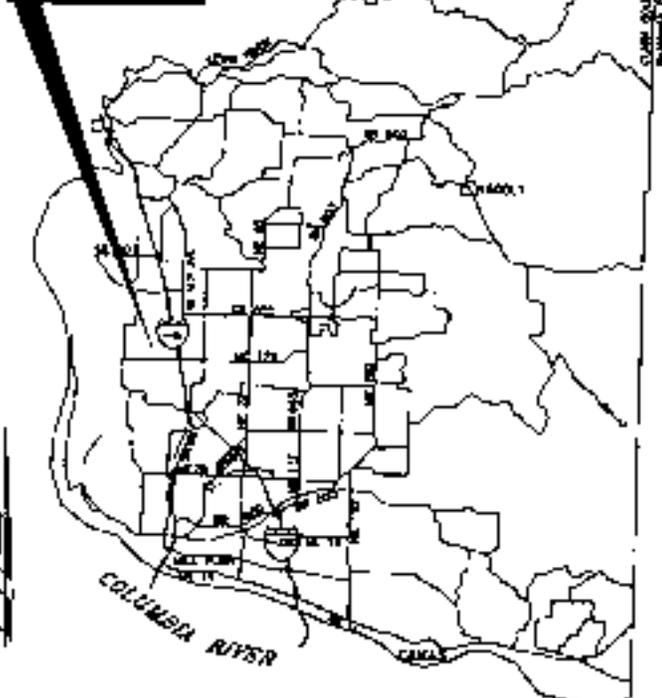
Introduced pasture grasses dominated vegetation on the site. Bentgrass (*Agrostis alba*), bluegrass (*Poa pratensis*) and scattered sweet vernalgrass (*Anthoxanthum odoratum*) dominated the wetland areas. Velvet grass (*Holcus lanatus*) and common foxtail (*Alopecurus pratensis*) were common. Scattered patches of rush (*Juncus effusus*) and water tolerant forbs (*Rumex repens*, *Rumex crispus*, *Plantago lanceolata*) were also common in the wetland areas. In the upland areas of the pasture, tall fescue (*Festuca arundinacea*), crested dogtail (*Cynosurus cristatus*), and vernalgrass were dominant.

The stream is dominated by reed canarygrass at the east end where it is not incised. Where a gully has formed, the banks are dominated by young second growth trees and shrubs. Scattered individuals of black cottonwood (*Populus trichocarpa*), red alder (*Alnus rubra*), red cedar (*Thuja plicata*), Scouler's willow (*Salix scouleriana*), and Oregon ash (*Fraxinus latifolia*) occur in the riparian zone. The understory contains hazel (*Corylus cornuta*), vine maple (*Acer circinatum*), ocean spray (*Holodiscus discolor*), and cascara (*Rhamnus purshiana*). Upstream of the subject site, the stream appears to be collected by roadside ditches of NW 11<sup>th</sup> Ave. and 184<sup>th</sup> St.

#### DETERMINATION

The portion of the cleared pasture within the County property that was judged to be wetland covered 6.27 acres (Figure 3). The wetland belongs category IV of the Clark County Ordinance with type D buffers in the pasture areas and type A buffers in the forested areas. The stream belongs to category IV of the Clark County Ordinance and type 5 by DNR classification. The area adjacent to the creek is a designated Riparian Priority Zone by the Clark County Habitat Conservation Ordinance.

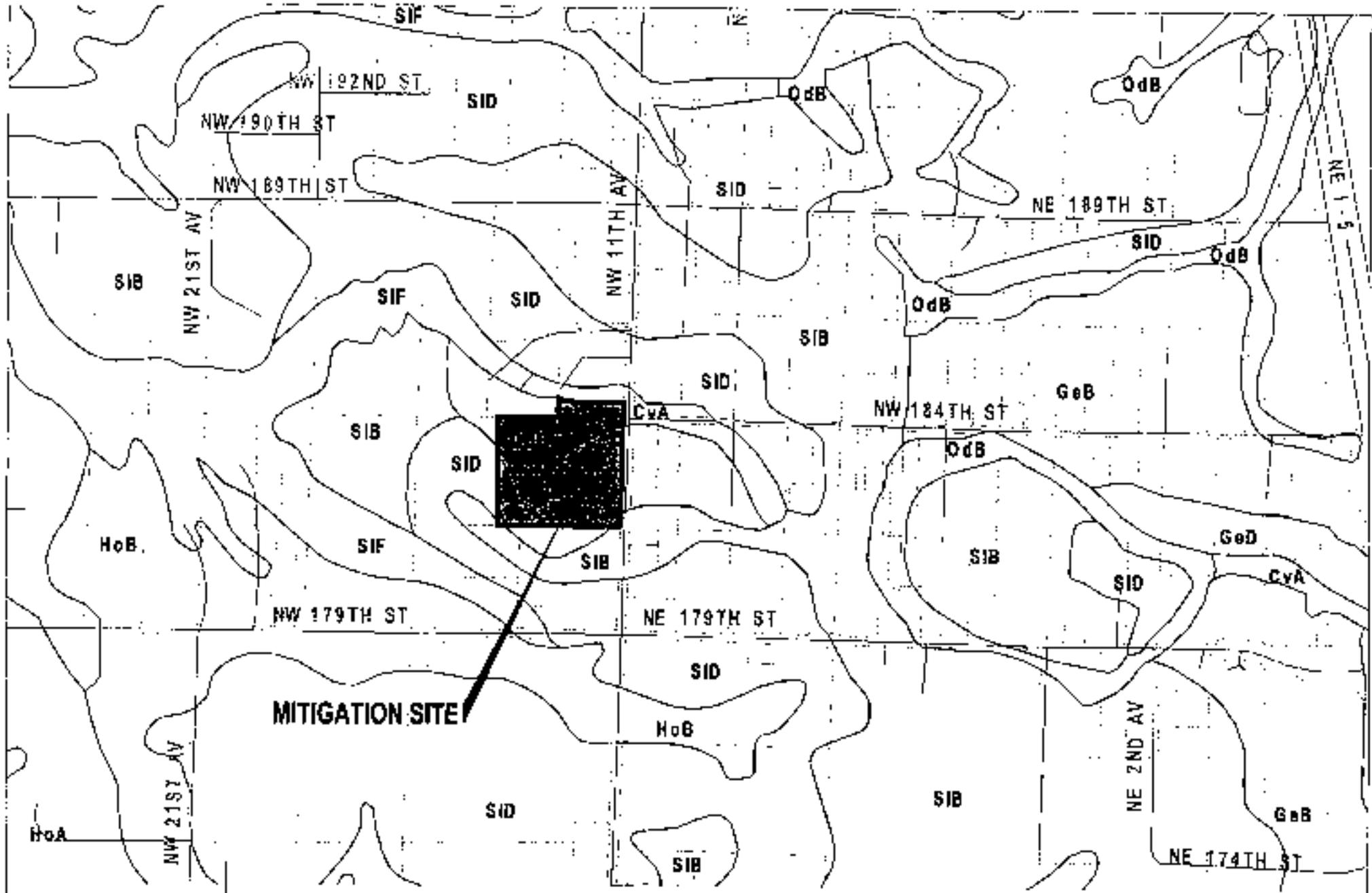
**PROJECT  
LOCATION**



Design & Engineering Division  
Design Section

FIGURE 1 - FORD/HOLBROOK WETLAND DELINEATION VICINITY MAP

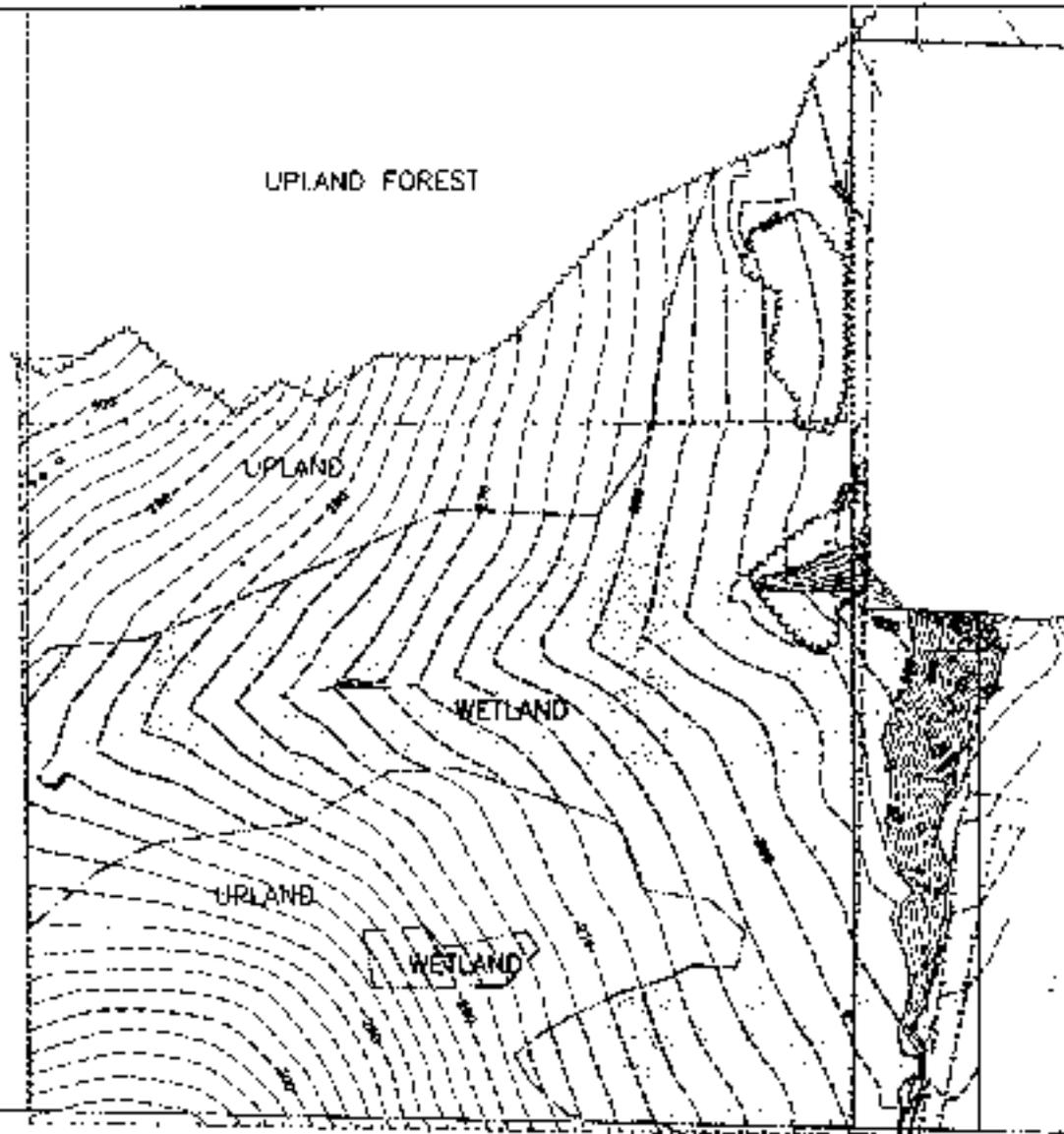
DESIGNED BY	PC
DRAWN BY	KB
APP. NO.	300422
SCALE	
HOL.	
VEPT.	
DATE	12/10/99
SHEET	1 of 3



Design & Engineering Division  
Design Section

FIGURE 2 - FORD/HOLBROOK MITIGATION  
SOILS MAP

DESIGNED BY	PC
DRAWN BY	XJ
CHEK BY	152/22
SCALE	
DATE	11/2/99
NO. OF SHEETS	2 OF 3



- WETLAND BOUNDARY
- ~~~~ TREE LINE
- WETLAND AREA

NW 11TH AVENUE



1" = 150'



Design & Engineering Division  
Design Section

FIGURE 3 - FORD/HOLBROOK DELINEATION  
SITE MAP

DESIGNED BY	AC
DRAWN BY	JK
APP. NO.	330423
SCALE	
CHKD.	
DATE	9/8/99
SHEET	3 OF 3

## Appendix B

Recording requested by:  
Clark County Public Works  
Real Property Services  
P.O. Box 9910  
Vancouver, WA 98666-9910

Real Estate Excise Tax  
Ch. 11 Rev. Laws 1951

EXEMPT  
Affd.# 506449 Date 10-11-02  
For Details of tax paid see

Affd.# \_\_\_\_\_  
Doug Lasher  
Clark County Treasurer  
By \_\_\_\_\_ Deputy

Document Title: Statutory Warranty Deed  
Reference Number of Related Documents:  
Grantor(s): JAMES D. GABBERT and GAYLE L. GABBERT  
Grantee: Clark County, Washington  
Legal Description: Sec. 12 T3N R1E WM  
Additional Legal Description is attached as Exhibit "A"  
Serial #: 181473-000, 181475-000, 181651-000  
Project: NE 17th St. (Wetlands Mitigation)  
CRP #: 381122

STATUTORY WARRANTY DEED

THE GRANTORS, JAMES D. GABBERT and GAYLE L. GABBERT, husband and wife, for and in consideration of valuable consideration as set out in part below, conveys and warrants to CLARK COUNTY, a political subdivision of the State of Washington, its heirs and assigns, the following described real estate situated in the County of Clark, State of Washington, to wit:

SEE LEGAL DESCRIPTION ATTACHED HERETO, WHICH, BY THIS REFERENCE, IS INCORPORATED HEREIN

The Grantor represents and warrants that they are not aware of any hazardous or toxic waste, substance or material on or under the subject property.

NOTE: It is understood and agreed that the delivery of this deed is hereby tendered and the terms and obligations hereof shall not become binding upon Clark County, Washington, until this document is accepted and approved by the Clark County Board of County Commissioners.

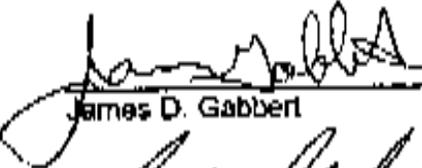
CONSIDERATIONS: Two Hundred Sixty Four Thousand and 00/100 Dollars (\$264,000.00)

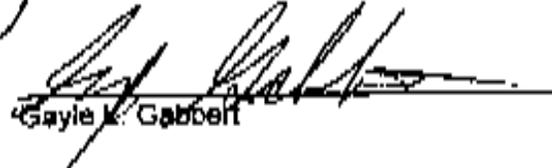
*10-11-02*

*3525172*

Statutory Warranty Deed  
Serial #: 181473-000, 181474-000, 181551-000  
Project: NE 179th St. (Wetlands Mitigation)  
CRP #: 361122

Dated this 24<sup>th</sup> day of September, 2002

  
James D. Gabbert

  
Gayle L. Gabbert

STATE OF WASHINGTON

COUNTY OF CLARK

ACCEPTED FOR RECORDING BY  
BOARD OF COUNTY COMMISSIONERS  
CLARK COUNTY, WASHINGTON

  
JULIE STANTON, CHAIR

CYNTHIA PRIDEMORE, COMMISSIONER

BETTY BDE MORRIS, COMMISSIONER

I hereby certify that I know or have satisfactory evidence that JAMES D. GABBERT and GAYLE L. GABBERT are the persons who appeared before me, and said persons acknowledged that they signed this instrument and acknowledged it to be their free and voluntary act for the uses and purposes mentioned in the instrument.

DATE: 9-24-02

  
Notary Public in and for the State of WA  
residing at Vanadium Hill

My commission expires

August 2005





DEPARTMENT OF  
PUBLIC WORKS

Superior service that is responsive and cost-justified.

DESIGN & ENGINEERING  
COUNTY SURVEYOR'S OFFICE

**EXHIBIT " A "**  
**NE 179th STREET - CRP # 381122**  
**WETLANDS MITIGATION**

A parcel of land lying in the Northwest quarter of Section 12, Township 3 North, Range 1 East of the Willamette Meridian in Clark County, Washington, being more particularly described as follows:

The Northwest 1/4 of the Northwest 1/4 of the Northwest 1/4 of said Section 12, Township 3 North, Range 1 East, WM, except the Easterly 132 feet of the North 1/2 of said Northwest 1/4 of the Northwest 1/4 of the Northwest 1/4 of said Section 12, together with the North 1/2 of the Southwest 1/4 of the Northwest 1/4 of the Northwest 1/4 of said Section 12, except the Westerly 400 feet of the Southerly 172 feet of said North 1/2 of the Southwest 1/4 of the Northwest 1/4 of the Northwest 1/4 of said Section 12, Township 3 North, Range 1 East, WM.

Except those portions lying within the right-of-way of NE 199th Street and NE 29th Avenue.



9-23-02

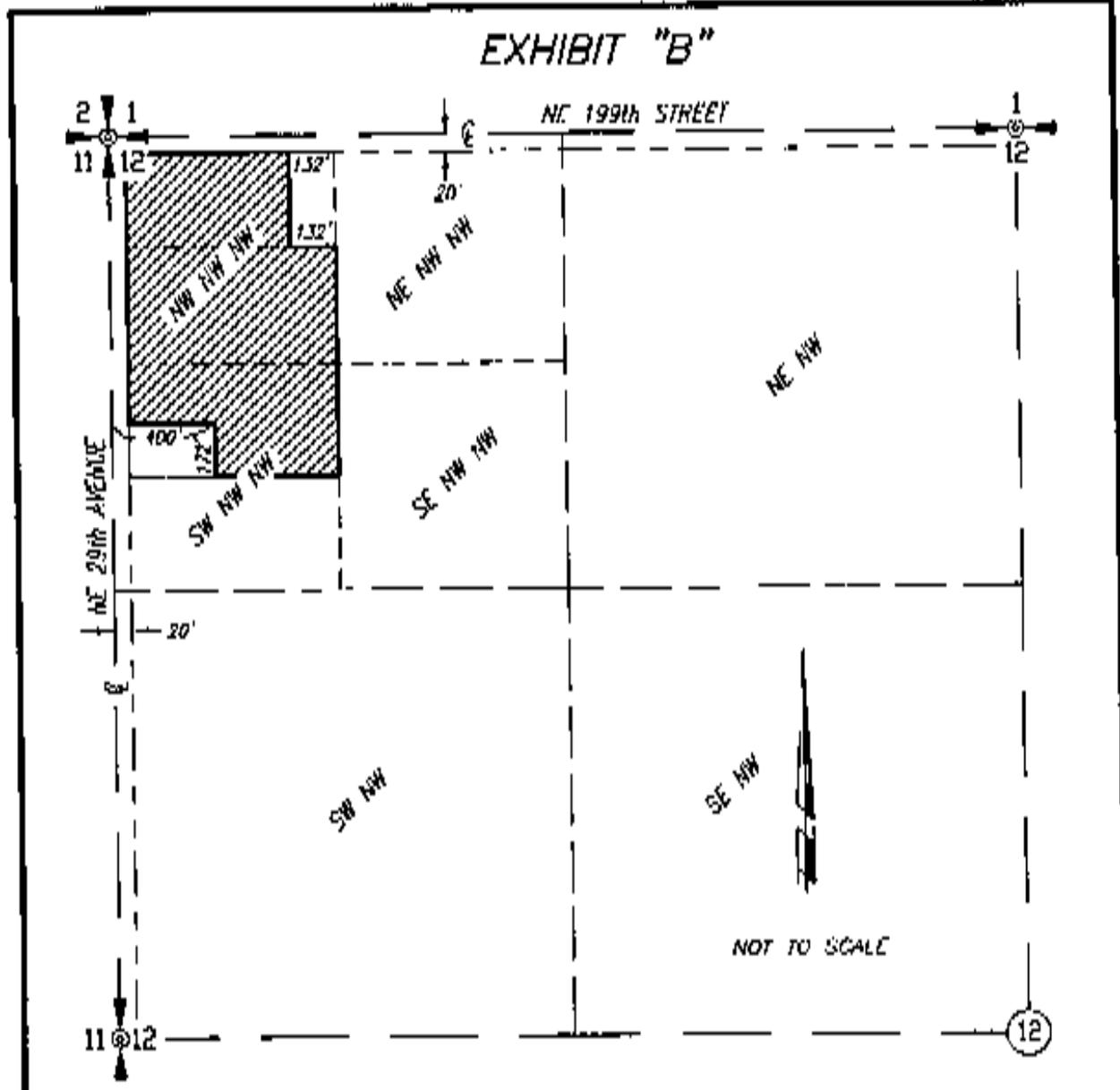
watmit

1300 FETHER STREET - P.O. BOX 9810 - VANCOUVER WA 98666-9810 - www.co.clark.wa.us

(360) 397-6118 • EXTENSION 4228 • FAX (360) 397-6053 • TDD (360) 397-6057



EXHIBIT "B"



9-13-02

Clark County Public Works Vancouver, Washington		
DESIGN & ENGINEERING DIVISION OFFICE OF THE COUNTY SURVEYOR		
NW 1/4 SECTION 12 T 3 N, R 1 E, W.M.		
SKETCH TO ACCOMPANY LEGAL DESCRIPTION		
DATE	SCALE	DRAWN BY
SEPT 2002	NOT TO SCALE	CJS

Recording requested by:  
Clark County Public Works  
Real Property Services  
P.O. Box 9810  
Vancouver, WA 98668-9810

Excel ✓  
GIS ✓  
Acquire ✓

Real Estate Excise Tax  
Ch. 11 Rev. Laws 1951  
EXEMPT  
Afd. # 52904M Date 10/6/03  
For Details of tax paid see  
Afd. # \_\_\_\_\_  
By \_\_\_\_\_  
Deputy

Document Title: Statutory Warranty Deed  
Reference Number of Related Documents:  
Grantor(s): MICHAEL S. ALLEN and PAMELA A. ALLEN  
Grantee: Clark County, Washington  
Legal Description: Sec. 2 T3N R1E W4  
Additional Legal Description is attached as Exhibit "A"  
Serial #: 179185-000  
Project: NE 179th St. (Wetlands Mitigation)  
CRP #: 381122

STATUTORY WARRANTY DEED

THE GRANTORS, MICHAEL S. ALLEN and PAMELA A. ALLEN, husband and wife, for and in consideration of valuable consideration as set out in part below, conveys and warrants to CLARK COUNTY, a political subdivision of the State of Washington, its heirs and assigns, the following described real estate situated in the County of Clark, State of Washington, to wit:

**SEE LEGAL DESCRIPTION ATTACHED HERETO, WHICH,  
BY THIS REFERENCE, IS INCORPORATED HEREIN**

The Grantor represents and warrants that they are not aware of any hazardous or toxic waste, substance or material on or under the subject property.

NOTE: It is understood and agreed that the delivery of this deed is hereby tendered and the terms and obligations hereof shall not become binding upon Clark County, Washington, until this document is accepted and approved by the Clark County Board of County Commissioners.

CONSIDERATIONS: FORTY SIX THOUSAND and NO/100 DOLLARS (\$46,000.00) FOR REAL PROPERTY.

4E 2-3-1

Statutory Warranty Deed  
Serial #: 178185-000  
Project: NE 179th St. (Wetlands Mitigation)  
CRP #: 381122

Dated this 29 day of APRIL, 2003

Michael S. Allen  
Michael S. Allen

Pamela A. Allen  
Pamela A. Allen

ACCEPTED FOR RECORDING BY:  
BOARD OF COUNTY COMMISSIONERS  
CLARK COUNTY, WASHINGTON  
Craig A. Pridemore  
CRAIG A. PRIDEMORE, CHAIR  
Betty Bok Morris  
BETTY BOK MORRIS, COMMISSIONER  
Jodie Stanton  
JODIE STANTON, COMMISSIONER

STATE OF WASHINGTON  
COUNTY OF CLARK

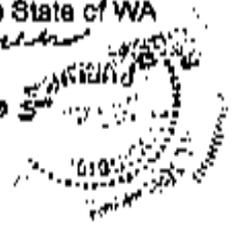
I hereby certify that I know or have satisfactory evidence that MICHAEL S. ALLEN and PAMELA A. ALLEN are the persons who appeared before me, and said persons acknowledged that they signed this instrument and acknowledged it to be their free and voluntary act for the uses and purposes mentioned in the instrument.

DATE: 4-29-03

Craig A. Pridemore

Notary Public in and for the State of WA  
residing at San Juan  
My commission expires

August, 2005





3729943

Page: 3 of 4  
10/05/2003 11:10A  
Clark County, WA

REAL PROPERTY SERVICES

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D 00



*proud past, promising future*

**CLARK COUNTY**  
WASHINGTON

*Superior service that is responsive and cost justified*

**DEPARTMENT OF PUBLIC WORKS  
COUNTY SURVEYOR'S OFFICE**

**EXHIBIT " A "**  
**NE 179th STREET - CRP # 381122**  
**ALLEN PARCEL**  
**SERIAL No. 179185-000**

A parcel of land lying in the Southeast quarter of Section 2, Township 3 North, Range 1 East of the Willamette Meridian in Clark County, Washington, being more particularly described as follows:

All that portion of that parcel described in that Statutory Warranty Deed to Michael S. Allen and Pamela A. Allen, husband and wife, recorded March 31, 2000 under Auditor's File No. 3207184, records of Clark County, Washington, listed as Serial No. 179185-000, lying Easterly of a line drawn 315.50 feet Westerly of, when measured at right angles to, the Easterly line of the Southeast quarter of Section 2, Township 3 North, Range 1 East, of the Willamette Meridian, all in Clark County, Washington.

This description contains 2.00 Acres, more or less, as calculated by the double meridian distance method.



3.3.03

x107

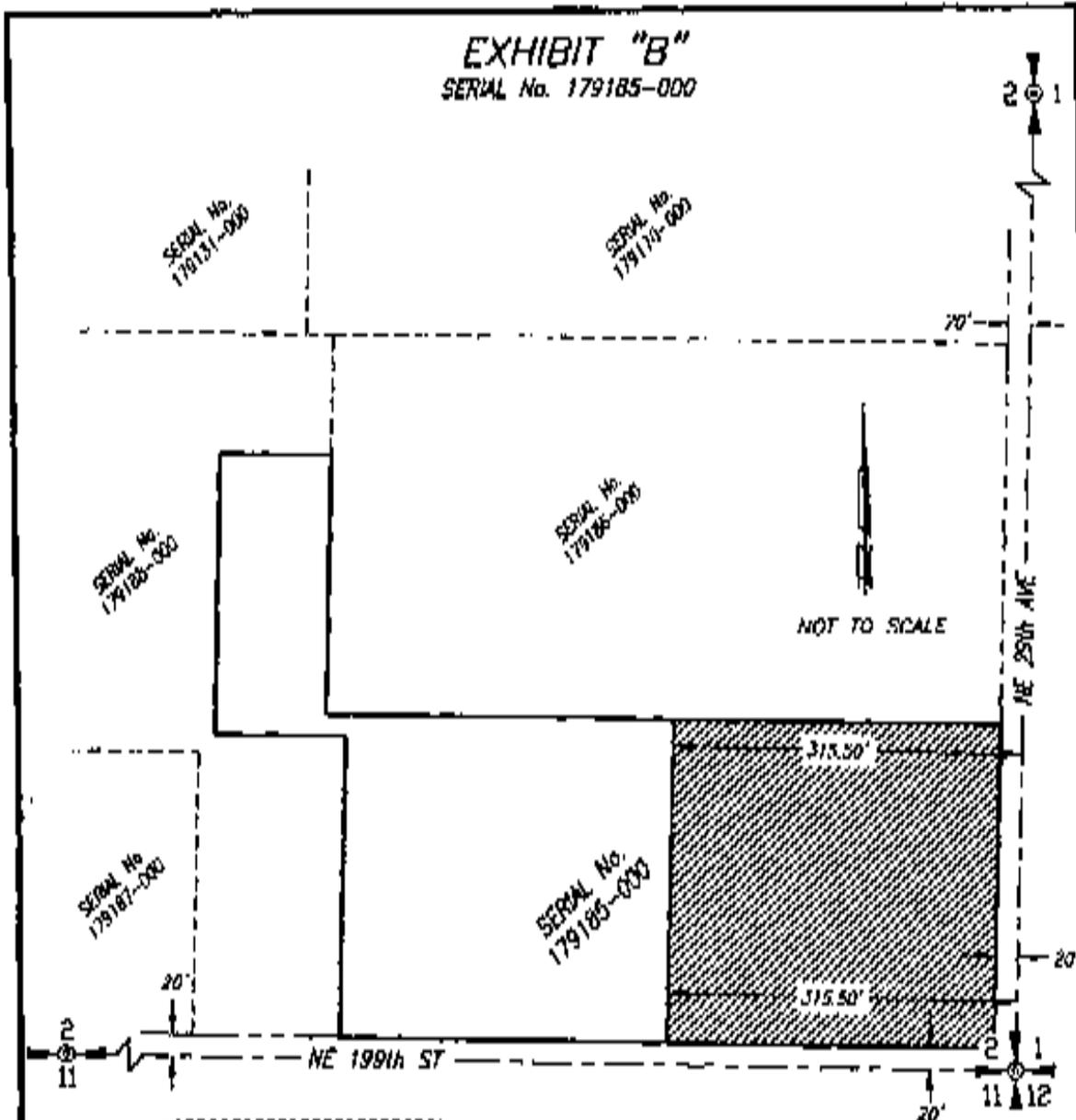


3729943

Page: 4 of 4  
10/06/2003 11:18A  
Clark County, WA

CLM, PROPERTY SERVICES 0 0.00

**EXHIBIT "B"**  
SERIAL No. 179185-000



3-3-03

Clark County Public Works Vancouver, Washington		
DESIGN & ENGINEERING DIVISION OFFICE OF THE COUNTY SURVEYOR		
SE 1/4 SECTION 2 T 3 N, R 1 E, W.M.		
SKETCH TO ACCOMPANY LEGAL DESCRIPTION		
DATE	SCALE	DRAWN BY
MARCH 2003	NOT TO SCALE	CJS

Recording requested by:  
Clark County Public Works  
Real Property Services  
P.O. Box 9810  
Vancouver, WA 98668-9810

Gas  
Excl  
Acres

Real Estate Excise Tax  
Ch. 11 Rev. Laws 1951

Att.# 52748 Date 9-15-03  
EXEMPT  
For Details of tax paid see

Document Title: Statutory Warranty Deed  
Reference Number of Related Documents:  
Grantor(s): STEVE R. WILSON and ANGELA R. WILSON  
Grantee: Clark County, Washington  
Legal Description: Sec. 2 73N R1E WM  
Additional Legal Description is attached as Exhibit "A"  
Serial #: 179168-000  
Project: NE 179th St (Wetlands Mitigation)  
CRP #: 381122

**STATUTORY WARRANTY DEED**

THE GRANTORS, STEVE R. WILSON and ANGELA R. WILSON, husband and wife, for and in consideration of valuable consideration as set out in part below, conveys and warrants to CLARK COUNTY, a political subdivision of the State of Washington, its heirs and assigns, the following described real estate situated in the County of Clark, State of Washington, to wit:

**SEE LEGAL DESCRIPTION ATTACHED HERETO, WHICH,  
BY THIS REFERENCE, IS INCORPORATED HEREIN**

The Grantor represents and warrants that they are not aware of any hazardous or toxic waste substance or material on or under the subject property.

NOTE: It is understood and agreed that the delivery of this deed is hereby tendered and the terms and obligations hereof shall not become binding upon Clark County, Washington, until this document is accepted and approved by the Clark County Board of County Commissioners.

CONSIDERATIONS: SIXTY NINE THOUSAND and NO/100 DOLLARS (\$69,000.00) FOR REAL PROPERTY.

582-3-1



Statutory Warranty Deed  
Serial #: 179186-000  
Project: NE 179th St (Wetlands Mitigation)  
GRP #: 381122

REAL PROPERTY SERVICES 0 0.00

Dated this 1 day of 4, 2003

Steve R. Wilson

Angela R. Wilson

ACCEPTED FOR RECORDING BY:  
BOARD OF COUNTY COMMISSIONERS  
CLARK COUNTY, WASHINGTON  
  
CRAIG A. PRIDEMORE, CLERK

BETTY SUE MORRIS, COMMISSIONER

JUDIE STANTON, COMMISSIONER

STATE OF WASHINGTON  
COUNTY OF CLARK

I hereby certify that I know or have satisfactory evidence that **STEVE R. WILSON** and **ANGELA R. WILSON** are the persons who appeared before me, and said persons acknowledged that they signed this instrument and acknowledged it to be their free and voluntary act for the uses and purposes mentioned in the instrument.

DATE:

Notary Public in and for the State of WA  
residing at   
My commission expires August 2004



3715877

Page: 3 of 4  
09/10/2003 09:10A  
Clark County, WA

REAL PROPERTY SERVICES

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**CLARK COUNTY**  
WASHINGTON

*Superior service that is responsive and cost justified*

**DEPARTMENT OF PUBLIC WORKS  
COUNTY SURVEYOR'S OFFICE**

**EXHIBIT " A "**  
**NE 179th STREET - CRP # 381122**  
**WILSON PARCEL**  
**SERIAL No. 179186-000**

A parcel of land lying in the Southeast quarter of Section 2, Township 3 North, Range 1 East of the Willamette Meridian in Clark County, Washington, being more particularly described as follows:

All that portion of that parcel described in that Bargain and Sale Deed to Steve R. Wilson and Angele R. Wilson, husband and wife, recorded July 31, 2001 under Auditor's File No. 3351268, records of Clark County, Washington, listed as Serial No. 179186-000, lying Easterly of a line drawn 398.00 feet Westerly of, when measured at right angles to, the Easterly line of the Southeast quarter of Section 2, Township 3 North, Range 1 East, of the Willamette Meridian, all in Clark County, Washington.

This description contains 3.00 Acres, more or less, as calculated by the double meridian distance method.



X102



3715677

Page: 4 of 4  
03/15/2003 09:100

REAL PROPERTY SERVICES

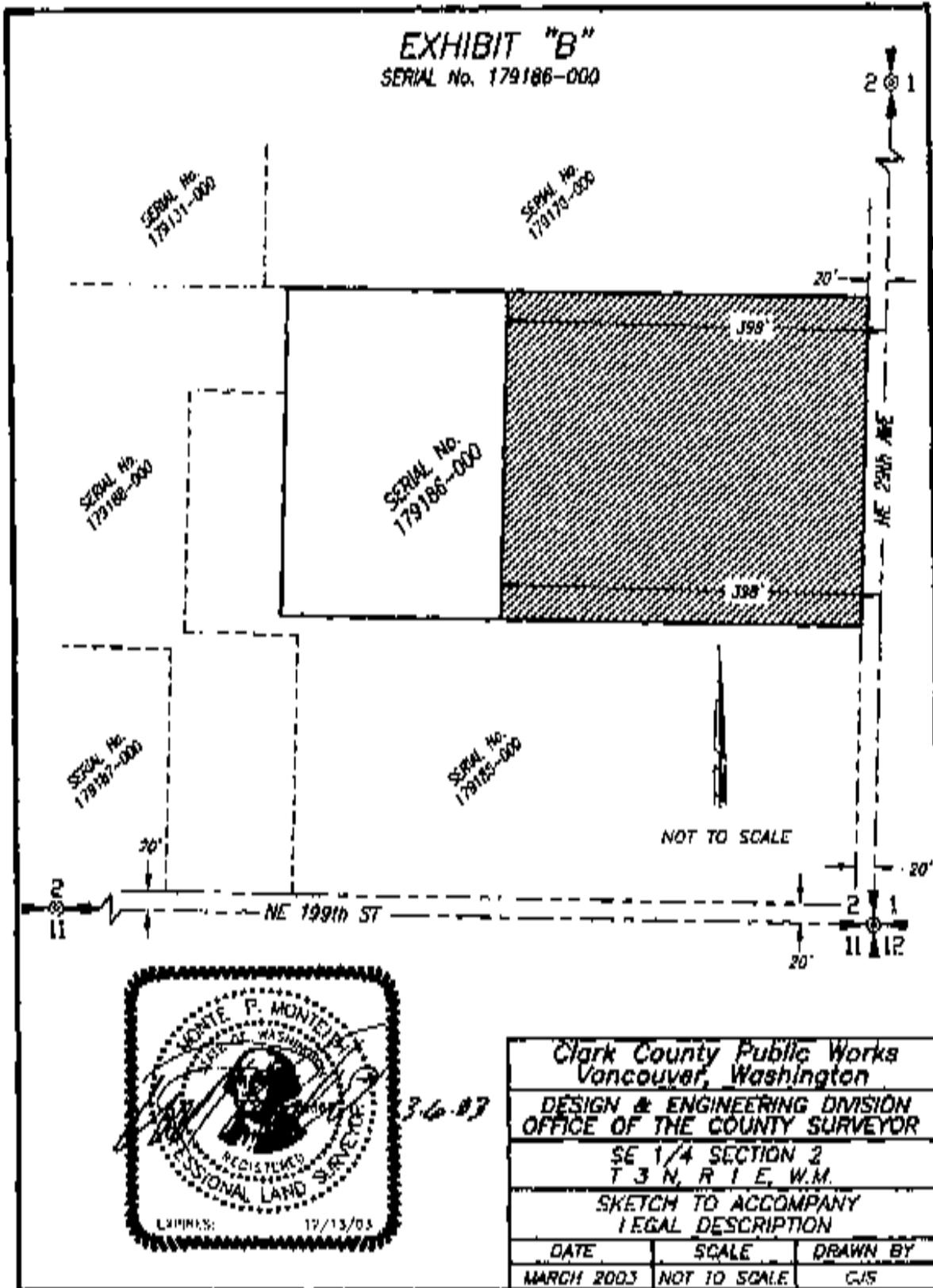
0

0.00

Clark County, WA

# EXHIBIT "B"

SERIAL No. 179186-000



Clark County Public Works Vancouver, Washington		
DESIGN & ENGINEERING DIVISION OFFICE OF THE COUNTY SURVEYOR		
SE 1/4 SECTION 2 T 3 N, R 1 E, W.M.		
SKETCH TO ACCOMPANY LEGAL DESCRIPTION		
DATE	SCALE	DRAWN BY
MARCH 2003	NOT TO SCALE	CJS



3518117  
Page: 1 of 3  
09/28/2002 10:10A  
Clark County, WA

Recording requested by:  
Clark County Public Works  
Real Property Services  
P.O. Box 8810  
Vancouver, WA 98680-8810

Real Estate Excise Tax  
Ch. 11 Rev. Laws 1951  
EXEMPT  
Affd. # 35503 Date 9/26/02  
For Details of tax paid see  
Affd. # \_\_\_\_\_  
By Doug Lasher  
Clark County Treasurer  
Deputy

Document Title: Statutory Warranty Deed  
Reference Number of Related Documents:  
Grantor(s): ALVIN J. BRANENBURG and PATRICIA M. BRANENBURG  
Grantee: Clark County, Washington  
Legal Description: Sec. 12 T3N R1E WM  
Additional Legal Description is attached as Exhibit "A"  
Serial #: 181462-000, 181474-000  
Project: NE 17th St (Wetlands Mitigation)  
CRP #: 381122

**STATUTORY WARRANTY DEED**

THE GRANTORS, ALVIN J. BRANENBURG and PATRICIA M. BRANENBURG, husband and wife, for and in consideration of valuable consideration as set out in part below, conveys and warrants to CLARK COUNTY, a political subdivision of the State of Washington, its heirs and assigns, the following described real estate situated in the County of Clark, State of Washington, to wit:

**SEE LEGAL DESCRIPTION ATTACHED HERETO, WHICH,  
BY THIS REFERENCE, IS INCORPORATED HEREIN**

The Grantor represents and warrants that they are not aware of any hazardous or toxic waste, substance or material on or under the subject property.

**NOTE:** It is understood and agreed that the delivery of this deed is hereby tendered and the terms and obligations hereof shall not become binding upon Clark County, Washington, until this document is accepted and approved by the Clark County Board of County Commissioners.

**CONSIDERATIONS:** Four Hundred Twenty One Thousand and 00/100 Dollars (\$421,000.00).

3518117



Statutory Warranty Deed  
Serial #: 181482-000, 181474-000  
Project: NE 179th St. (Wetlands Mitigation)  
CRP #: 381122

Dated this 11<sup>th</sup> day of Sept., 2002

Alvin J. Branenburg  
Alvin J. Branenburg

Patricia M. Branenburg  
Patricia M. Branenburg

ACCEPTED FOR RECORDING BY:  
BOARD OF COUNTY COMMISSIONERS  
CLARK COUNTY, WASHINGTON

Jodie Stanton  
JODIE STANTON, CHAIR  
CRAIG A. PRIDEMORE, COMMISSIONER

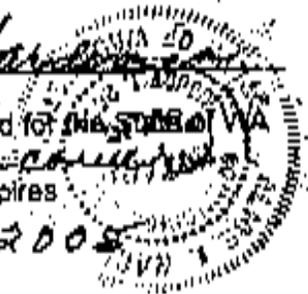
Betty Sue Morris  
BETTY SUE MORRIS, COMMISSIONER

STATE OF WASHINGTON  
COUNTY OF CLARK

I hereby certify that I know or have satisfactory evidence that **ALVIN J. BRANENBURG** and **PATRICIA M. BRANENBURG** are the persons who appeared before me, and said persons acknowledged that they signed this instrument and acknowledged it to be their free and voluntary act for the uses and purposes mentioned in the instrument.

DATE: 9-11-02

Charles J. Anderson  
Notary Public in and for the State of WA  
residing at Don Corbett Rd  
My commission expires August 2008



SER.#: 181462-000,  
181474-000  
PROJECT: NE 1/9TH ST.  
(WETLANDS)  
CRP#: 381122



3518117  
Page: 3 of 3  
09/25/2002 10:10A  
Clark County, WA

Exhibit A

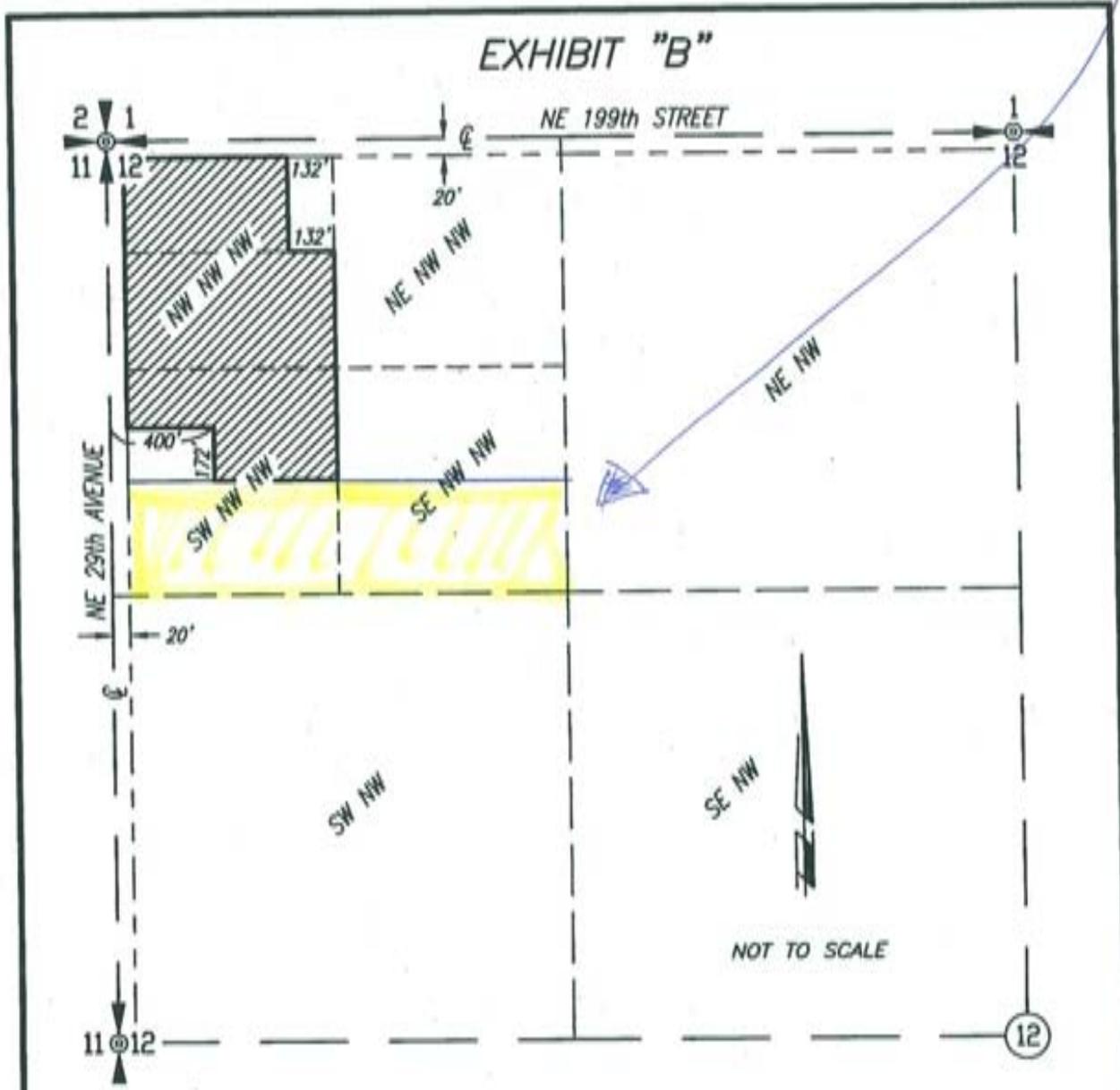
The South half of the Southwest quarter of the Northwest quarter of the Northwest quarter and the South half of the South half of the East half of the Northwest quarter of the Northwest quarter of Section 12, Township 3 North, Range 1 East of the Willamette Meridian, Clark County, Washington.

EXCEPT County Road.



3525172  
Page: 4 of 4  
10/11/2002 09:14A  
Clark County, WA  
35-18117

# EXHIBIT "B"



9-27-02

Clark County Public Works Vancouver, Washington		
DESIGN & ENGINEERING DIVISION OFFICE OF THE COUNTY SURVEYOR		
NW 1/4 SECTION 12 T 3 N, R 1 E, W.M.		
SKETCH TO ACCOMPANY LEGAL DESCRIPTION		
DATE	SCALE	DRAWN BY
SEPT 2002	NOT TO SCALE	GJS



3819943

Page: 1 of  
04/28/2004

REAL PROPERTY SERVICES

D

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Clark County

Recording requested by:  
Clark County Public Works  
Real Property Services  
P.O. Box 9810  
Vancouver, WA 98668-9810

Real Estate Excise Tax  
Ch. 11 Rev. Laws 1951

ARC# 540590 EXEMPT Date 4-28-04  
For Details of tax paid see  
ARC#

R2

Document Title: Statutory Warranty Deed  
Reference Number of Related Documents:  
Grantor(s): PETER SERKOV and IRINA V. SERKOV  
Grantee: Clark County, Washington  
Legal Description: Sec. 01 T3N R1E WM  
Additional Legal Description is attached as Exhibit "A"  
Serial #: 178846-000  
Project: NE 179th St. (Wetlands Mitigation)  
CRP #: 381122

### STATUTORY WARRANTY DEED

THE GRANTORS, PETER SERKOV and IRINA V. SERKOV, husband and wife, for and in consideration of valuable consideration as set out in part below, conveys and warrants to CLARK COUNTY, a political subdivision of the State of Washington, its heirs and assigns, the following described real estate situated in the County of Clark, State of Washington, to wit:

**SEE LEGAL DESCRIPTION ATTACHED HERETO, WHICH,  
BY THIS REFERENCE, IS INCORPORATED HEREIN**

The Grantor represents and warrants that they are not aware of any hazardous or toxic waste, substance or material on or under the subject property.

NOTE: It is understood and agreed that the delivery of this deed is hereby tendered and the terms and obligations hereof shall not become binding upon Clark County, Washington, until this document is accepted and approved by the Clark County Board of County Commissioners.

**CONSIDERATIONS: FORTY EIGHT THOUSAND SEVENTY AND NO/100 DOLLARS  
(\$48,070.00) FOR REAL PROPERTY.**



3819943

Page: 2 of 4  
04/28/2004 11:54A  
Clark County, WA

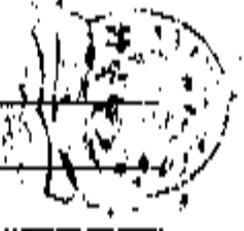
Statutory Warranty Deed  
Serial #: 178846-000  
Project: NE 179th St. (Wetlands Mitigation)  
CRP #: 381122

Dated this 27<sup>th</sup> day of May 2003

Peter Serkov  
Peter Serkov

IRINA V. SERKOV  
Irina V. Serkov

ACCEPTED FOR RECORDING BY:  
BOARD OF COUNTY COMMISSIONERS  
CLARK COUNTY, WASHINGTON  
Craig S. Fridmore  
CRAIG S. FRIDMORE, CHAIR



STATE OF WASHINGTON

BETTY BUE MORRIS, COMMISSIONER

COUNTY OF CLARK

JUDIE STANTON, COMMISSIONER

I hereby certify that I know or have satisfactory evidence that **PETER SERKOV and IRINA V. SERKOV** are the persons who appeared before me, and said persons acknowledged that they signed this instrument and acknowledged it to be their free and voluntary act for the uses and purposes mentioned in the instrument.

DATE: 5-27-03

Alice S. Luskman

Notary Public in and for the State of WA  
residing at Unassessed

My commission expires 01/01/04





3819943  
Page: 3 of 4  
04/28/2004 11:04A  
Clark County, WA

REAL PROPERTY SERVICES

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**CLARK COUNTY**  
WASHINGTON

*Superior service that is responsive and cost justified*

**COUNTY SURVEYOR'S OFFICE**

**DEPARTMENT OF PUBLIC WORKS**  
**COUNTY SURVEYOR'S OFFICE**

**EXHIBIT " A "**  
**N.E. 199th STREET RECONSTRUCTION**  
**SR-503 TO NE 142nd AVENUE**  
**SERKOV DESCRIPTION**

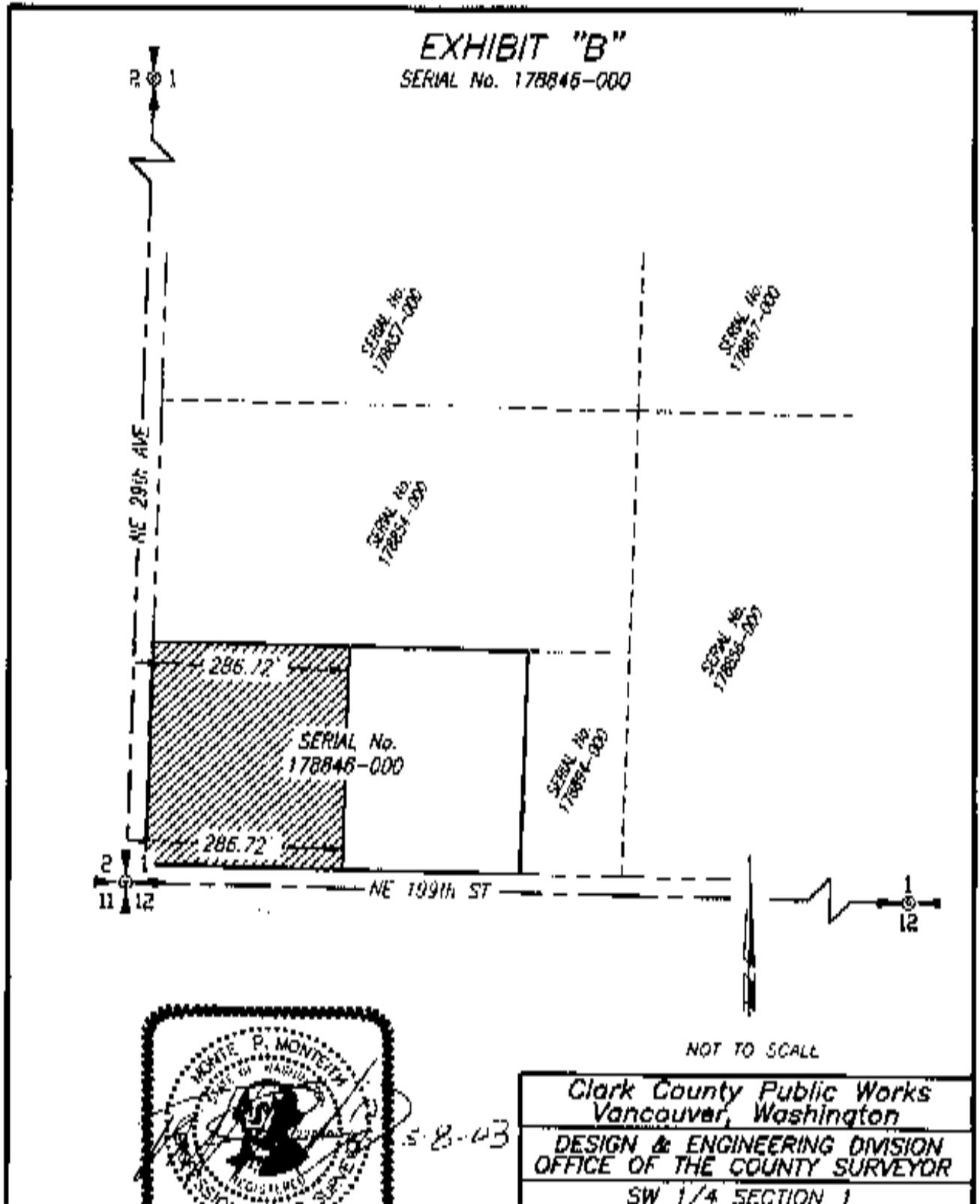
A parcel of land lying in the Southwest 1/4 of Section 1, Township 3 North, Range 1 East of the Willamette Meridian in Clark County, Washington, described as follows:

All that portion of the South half of the Southwest 1/4 of the Southwest 1/4 of the Southwest 1/4 of Section 1, Township 3 North, Range 1 East of the Willamette Meridian **except** the Easterly 135 feet thereof, and **except** that portion lying within the boundaries of Northeast 199th Street and Northeast 29th Avenue, lying Westerly of a line drawn 286.72 feet Easterly of, when measured at right angles or radial to, the Westerly line of said Southwest 1/4 of said Section 1, all in Clark County, Washington.

This description contains 1.90 Acres, more or less, as calculated by the double meridian distance method.



381994  
 Page: 4 of  
 04/28/2004  
 REAL PROPERTY SERVICES 0 0 00 Clark County



Recording requested by:  
Clark County Public Works  
Real Property Services  
P.O. Box 9810  
Vancouver, WA 98666-0810



Real Estate Excise Tax  
Ch. 11 Rev. Laws 1991  
EXEMPT  
Affd. # 518571 Date 5-12-03  
For Details of tax paid see  
Affd. # \_\_\_\_\_  
By Doug Lasher  
Clark County Treasurer *RZ*  
Deputy

Document Title: Statutory Warranty Deed  
Reference Number of Related Documents:  
Grantor(s): JAMES R. RODDA  
Grantee: Clark County, Washington  
Legal Description: Sec. 2, T3N, R1E, WM  
Additional Legal Description is attached as Exhibit "A"  
Serial #: 179170-000  
Project: NE 179th St. (Wetlands Mitigation)  
CRP #: 381122

### STATUTORY WARRANTY DEED

THE GRANTOR, JAMES R. RODDA, as his separate estate, for and in consideration of valuable consideration as set out in part below, conveys and warrants to CLARK COUNTY, a political subdivision of the State of Washington, its heirs and assigns, the following described real estate situated in the County of Clark, State of Washington, to wit:

The Northeast quarter of the Southeast quarter of the Southeast quarter of Section 2, Township 3 North, Range 1 East of the Willamette Meridian, in Clark County, Washington.

EXCEPT Public Roads

The Grantor herein reserves an easement for ingress and egress as described in Exhibits "A" and "B" attached hereto and made a part hereof.

The Grantor represents and warrants that he is not aware of any hazardous or toxic waste, substance or material on or under the subject property.

NOTE: It is understood and agreed that the delivery of this deed is hereby tendered and the terms and obligations hereof shall not become binding upon Clark County, Washington, until this document is accepted and approved by the Clark County Board of County Commissioners.



Statutory Warranty Deed  
 Serial #: 178170-000  
 Project: NE 179th St. (Wetlands Mitigation)  
 CRP #: 361122

Dated this 14 day of April, 2005

*James R. Rodda*  
 James R. Rodda

ACCEPTED FOR RECORDING BY  
 BOARD OF COUNTY COMMISSIONERS  
 CLARK COUNTY, WASHINGTON

*Craig A. Pridemore*  
 CRAIG A. PRIDEMORE, CHAIR

STATE OF WASHINGTON

BETTY JOE MORRIS, COMMISSIONER

COUNTY OF CLARK

JUDE STANTON, COMMISSIONER

I hereby certify that I know or have satisfactory evidence that JAMES R. RODDA is the person who appeared before me, and said person acknowledged that he signed this instrument and acknowledged it to be his free and voluntary act for the uses and purposes mentioned in the instrument.

DATE: 4-14-05

*Alison S. Johnston*

Notary Public In and for the State of WA  
 residing at *Chase*

My commission expires August, 2007





CLARK COUNTY  
WASHINGTON

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*Superior service that is responsive and cost justified*

DEPARTMENT OF PUBLIC WORKS  
COUNTY SURVEYOR'S OFFICE

**EXHIBIT " A "**  
**N.E. 179th STREET PROJECT**  
**CLARK COUNTY TO RODDA**  
**EASEMENT**

A strip of land 30 feet wide lying in the Southeast quarter of Southeast quarter of Section 2, Township 3 North, Range 1 East of the Willamette Meridian in Clark County, Washington, said 30 foot strip being 15 feet each side of the following described centerline:

Beginning at the Northeast corner of the Southeast quarter of the Southeast quarter of Section 2, Township 3 North, Range 1 East of the Willamette Meridian; thence along the east line of said Southeast quarter of the Southeast quarter South  $01^{\circ} 50' 20''$  East 119.71 feet to a point; thence North  $88^{\circ} 09' 40''$  West 20.00 feet to the **TRUE POINT OF BEGINNING**; thence North  $59^{\circ} 28' 55''$  West 37.07 feet to a point; thence North  $41^{\circ} 27' 46''$  West 26.48 feet to a point; thence North  $36^{\circ} 58' 25''$  West 104.22 to a point on the north line of the Southeast quarter of the Southeast Quarter and there terminating.

The side lines of said 30 foot easement to be extended or shortened to meet at angle points and to terminate at the easterly and northerly lines of the Northeast quarter of the Southeast quarter of the Southeast quarter.

This description contains 5,062 square feet, more or less, as calculated by the double meridian distance method.





3636032

Page: 4 of 4  
05/12/2007 10:35A

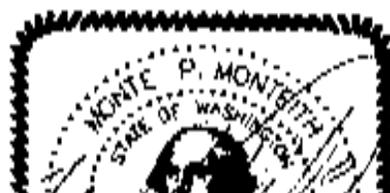
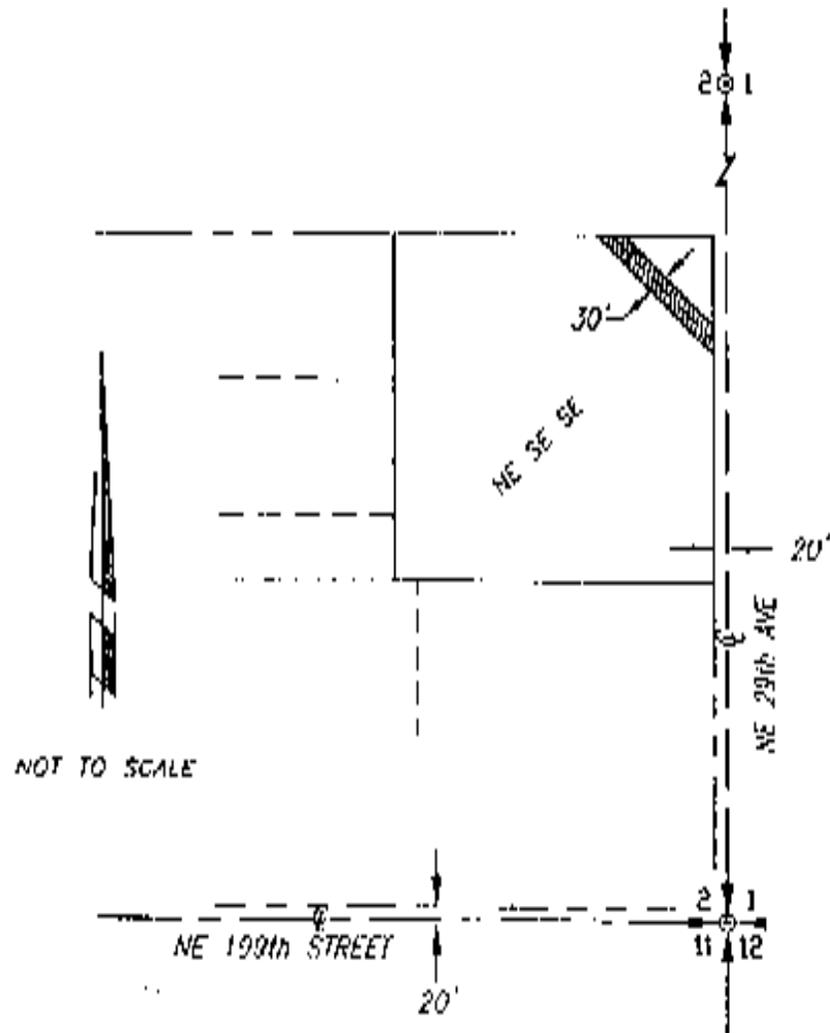
REAL PROPERTY SERVICES

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0.00

CLARK County, WA

### EXHIBIT "B" RODDA PARCEL



Clark County Public Works  
Vancouver, Washington

Recording requested by:  
Clark County Public Works  
Real Property Services  
P.O. Box 8810  
Vancouver, WA 98665 9810



Real Estate Excise Tax  
Ch 11 Rev. Laws 1951  
EXEMPT  
Affid. # 524957 Date 8-12-03  
For Details of tax paid see  
Affid. # X  
Doug English  
Clark County Treasurer  
By RS  
**524957**

Document Title: Statutory Warranty Deed  
Reference Number of Related Documents:  
Grantor(s): DALE SCHURMAN  
Grantee: Clark County, Washington  
Legal Description: Sec. 12, T3N, R1E, WM  
Additional Legal Description is attached as Exhibit "A"  
Serial #: 181445-000  
Project: NE 179th St. (Wetlands Mitigation)  
CRP #: 381122

### STATUTORY WARRANTY DEED

THE GRANTOR, DALE SCHURMAN, as his separate estate, for and in consideration of valuable consideration as set out in part below, conveys and warrants to CLARK COUNTY, a political subdivision of the State of Washington, its heirs and assigns, the following described real estate situated in the County of Clark, State of Washington, to wit:

**SEE LEGAL DESCRIPTION ATTACHED HERETO, WHICH,  
BY THIS REFERENCE, IS INCORPORATED HEREIN**

The Grantor represents and warrants that he is not aware of any hazardous or toxic waste substance or material on or under the subject property.

**NOTE:** It is understood and agreed that the delivery of this deed is hereby tendered and the terms and obligations hereof shall not become binding upon Clark County, Washington, until this document is accepted and approved by the Clark County Board of County Commissioners.

**CONSIDERATIONS: One Hundred Thirty Eight Thousand and No/100 Dollars (\$138,000.00) for Real Property and Six Thousand Eight Hundred and No/100 Dollars (\$6,800.00) for an irrigation well, for a total of One Hundred Forty Four Thousand Eight Hundred and No/100 Dollars (\$144,800.00).**



Statutory Warranty Deed  
 Serial #: 181446-000  
 Project: NE 179th St. (Wetlands Mitigation)  
 CRP #: 301122

Dated this 24 day of 6, 03

Dale E Schurman  
 Dale Schurman

ACCEPTED FOR RECORDING BY:  
 BOARD OF COUNTY COMMISSIONERS  
 CLARK COUNTY, WASHINGTON

Craig F. Pridemore  
 CRAIG F. PRIDEMORE, CHAIR

Betty Sue Morris  
 BETTY SUE MORRIS, COMMISSIONER

Jodie Stanton  
 JODIE STANTON, COMMISSIONER

STATE OF WASHINGTON

COUNTY OF CLARK

I hereby certify that I know or have satisfactory evidence that **DALE SCHURMAN** is the person who appeared before me, and said person acknowledged that he signed this instrument and acknowledged it to be his free and voluntary act for the uses and purposes mentioned in the instrument.

DATE: 6-24-03

David S. ...

Notary Public in and for the State of WA  
 residing at Vanessa  
 My commission expires  
August, 2005



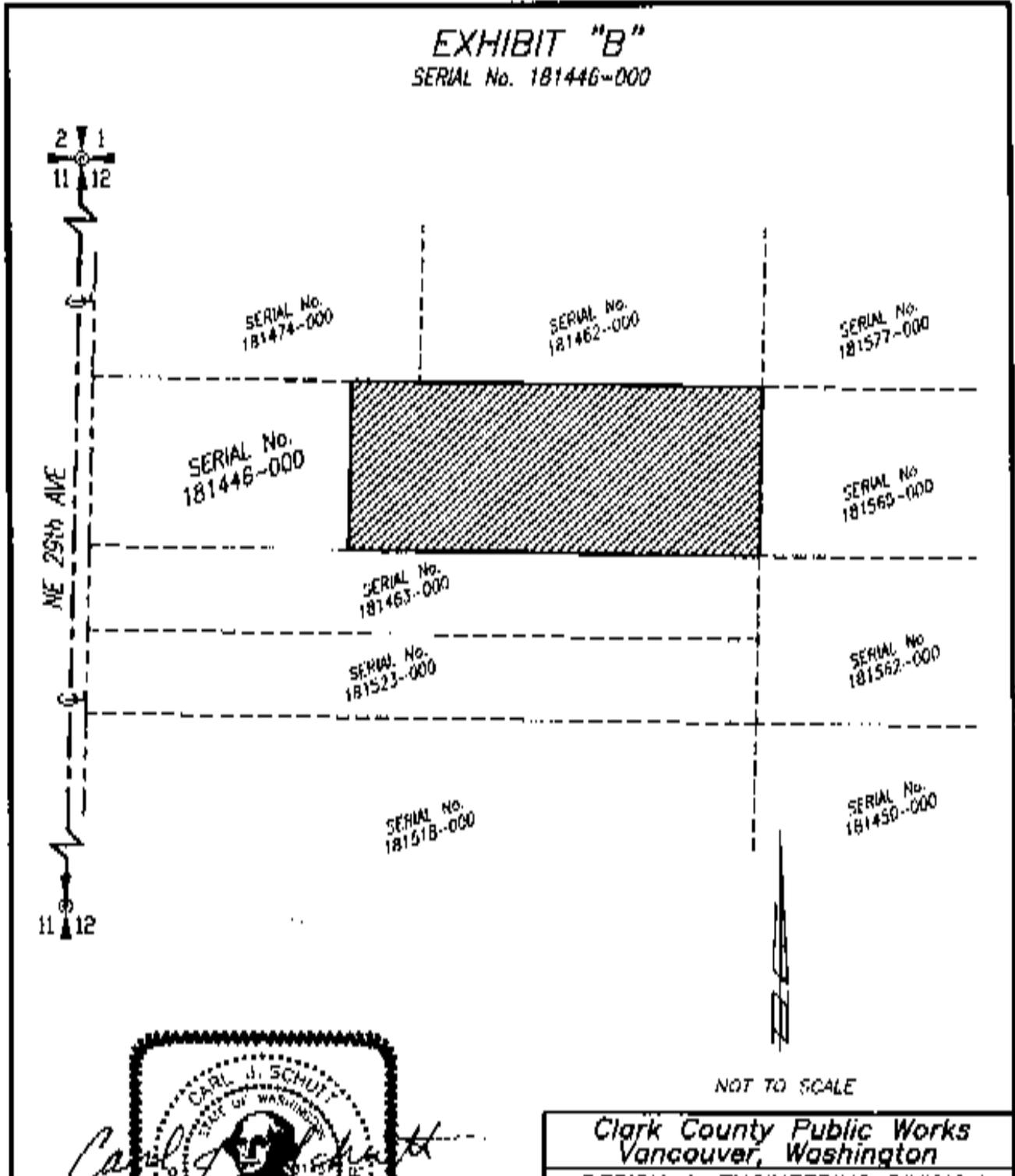
3694143

Page: 4 of 4  
08/12/2002 10:44A  
Clark County, WA

REAL PROPERTY SERVICES

0.00

**EXHIBIT "B"**  
SERIAL No. 181446-000



2 1  
11 12

NE 29th AVE

11 12



NOT TO SCALE

Clark County Public Works  
Vancouver, Washington



**CLARK COUNTY**  
WASHINGTON

*Superior service that is responsive and cost justified*

*proud past. promising future*



**DEPARTMENT OF PUBLIC WORKS**  
**COUNTY SURVEYOR'S OFFICE**

**EXHIBIT " A "**

**NE 179th STREET WETLANDS MITIGATION**

A parcel of land lying in the SW 1/4 of the NW 1/4 of Section 12, Township 3 North, Range 1 East of the Willamette Meridian in Clark County, Washington, being more particularly described as follows:

All the portion of the North 1/2 of the North 1/2 of the SW 1/4 of the NW 1/4 of said Section 12 described as follows:

Beginning at the Northeast corner of the SW 1/4 of the NW 1/4 of said Section 12; thence along the Northerly line thereof, North 89°03'30" West 791.52 feet; thence leaving said Northerly line South 1°27'15" West 330.33 feet to the Southerly line of the North 1/2 of the North 1/2 of the SW 1/4 of the NW 1/4 of said Section 12; thence along said Southerly line South 89°05'17" East 791.95 feet to the Easterly line of the SW 1/4 of the NW 1/4 of said Section 12; thence along said Easterly line North 1°27'49" East 329.91 feet to the point of beginning, all in Clark County, Washington. Except county roads. Subject to all easements and restrictions of record.

Bearings hereon used are based on the Washington State Plane Coordinate System, South Zone, NAD 83(91). The control scheme is on file at the Clark County Surveyor's office.

This description contains 6.00 acres, more or less, as calculated by the double meridian distance method.

  
CARL J. SCHULTE  
STATE OF WASHINGTON

Recording requested by:  
Clark County Public Works  
Real Property Services  
P.O. Box 9810  
Vancouver, WA 98666-9810



Real Estate Excise Tax  
Ch. 11 Rev. Laws 1951

EXEMPT

Affid. # 518835 Date 5-15-05  
For Details of tax paid see  
Affid. #  
Doug Leaser  
Clark County Treasurer  
By: \_\_\_\_\_ Deputy

Document Title: Statutory Warranty Deed  
Reference Number of Related Documents:  
Grantor(s): DONALD R. BERRY and CHERYL J. BERRY  
Grantee: Clark County, Washington  
Legal Description: Sec. 12 T3N R1E WM  
Additional Legal Description is attached as Exhibit "A"  
Serial #: 181491-000, 181478-000  
Project: NE 179th St (Wetlands Mitigation)  
CRP #: 381122

### STATUTORY WARRANTY DEED

THE GRANTORS, DONALD R. BERRY and CHERYL J. BERRY, husband and wife, for and in consideration of valuable consideration as set out in part below, conveys and warrants to CLARK COUNTY, a political subdivision of the State of Washington, its heirs and assigns, the following described real estate situated in the County of Clark, State of Washington, to wit:

**SEE LEGAL DESCRIPTION ATTACHED HERETO, WHICH,  
BY THIS REFERENCE, IS INCORPORATED HEREIN**

The Grantor represents and warrants they are not aware of any hazardous or toxic waste, substance or material on or under the subject property.

NOTE: It is understood and agreed that the delivery of this deed is hereby tendered and the terms and obligations hereof shall not become binding upon Clark County, Washington, until this document is accepted and approved by the Clark County Board of County Commissioners.

**CONSIDERATIONS:** SIXTY NINE THOUSAND AND NO/100 DOLLARS (\$69,000.00)

Statutory Warranty Deed  
Serial #: 181491-000, 181478-000  
Project: NE 175th St. (Wetlands Mitigation)  
CRP #: 381122



**3639084**  
Page: 2 of 4  
05/15/2003 02:11  
Clark County, WA

Dated this 29 day of April, 2003

Donald R. Berry  
Donald R. Berry

Cheryl J. Berry  
Cheryl J. Berry

ACCEPTED FOR RECORDING BY:  
BOARD OF COUNTY COMMISSIONERS  
CLARK COUNTY, WASHINGTON  
Cynthia Pridemore  
CYNTHIA PRIDEMORE, CHAIR

BETTY SUE MORRIS, COMMISSIONER

JUDIE STANTON, COMMISSIONER

STATE OF WASHINGTON

COUNTY OF CLARK

I hereby certify that I know or have satisfactory evidence that DONALD R. BERRY and CHERYL J. BERRY are the persons who appeared before me, and said persons acknowledged that they signed this instrument and acknowledged it to be their free and voluntary act for the uses and purposes mentioned in the instrument.

DATE: 4-29-03

Glenn S. Herdman

Notary Public in and for the State of WA  
residing at Wenatchee, WA  
My commission expires

August 2005



363908

Page: 3 of  
05/15/2003 02  
Clark County, WA

REAL PROPERTY SERVICES 0 0.00



*prond post, promising future*

**CLARK COUNTY**  
WASHINGTON

*Superior service that is responsive and cost justified*

**DEPARTMENT OF PUBLIC WORKS**  
**COUNTY SURVEYOR'S OFFICE**

**EXHIBIT " A "**  
**N.E. 179th STREET PROJECT**  
**BERRY PARCEL.**

A parcel of land lying in the Northwest quarter of Section 12, Township 3 North, Range 1 East of the Willamette Meridian in Clark County, Washington, being more particularly described as follows;

All that portion of that parcel described in that Statutory Warranty Deed to Donald R. Berry and Cheryl J. Berry, husband and wife, recorded October 3, 1984 under Auditor's file 8410030039, records of Clark County, Washington, lying Southerly of a line drawn 559.00 feet Northerly of, when measured at right angles or radial to the Southerly line of said parcel, all in Clark County, Washington.

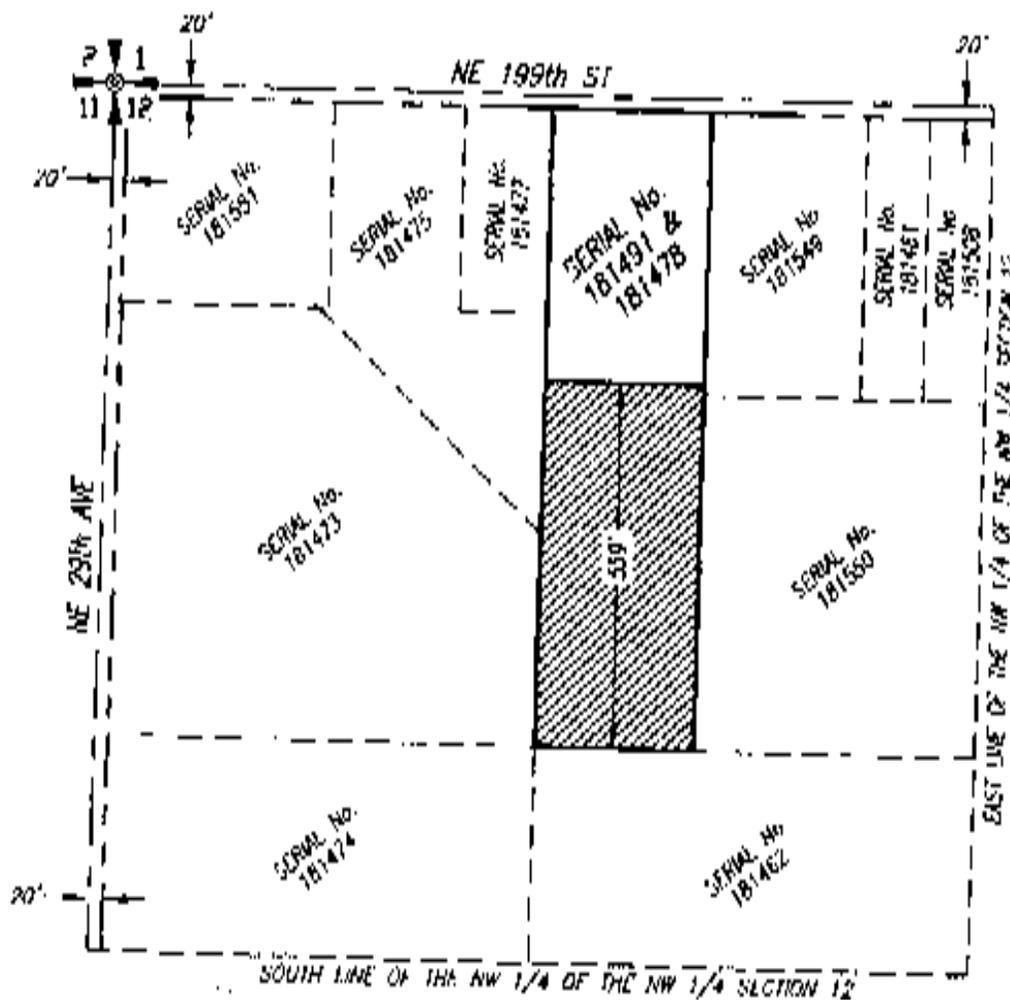
This description contains 3.00 acres, more or less, as calculated by the double meridian distance method.



2003-03

3639084  
 Page 4 of 4  
 86/18/2803 02  
 REAL PROPERTY SERVICES 0 0.00 Clark County, WA

**EXHIBIT "B"**  
 SERIAL No.'S 181491 & 181478



NOT TO SCALE  
 Clark County Public Works  
 Vancouver, Washington  
 REGIONAL & ENGINEERING DIVISION



After recording return to:  
 Clark County Public Works  
 Real Property Services  
 P.O. Box 9810  
 Vancouver, WA 98666-0810

Real Estate Excise Tax  
 Ch. 11 Rev. Laws 1981  
**EXEMPT**  
 Amt # 453297  
 For a total of tax p. 2  
 REL # \_\_\_\_\_  
 \_\_\_\_\_  
 Clark County Treasurer  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Deputy Date

Excel  
 GSW

Document Title: Statutory Warranty Deed  
 Reference Number of Related Documents:  
 Grantor(s): LINCOLN TRUST COMPANY, WINN, WILLIAM D. & CAROL,  
 ORBEN, DARLENE D. & NATHEIL S.  
 Grantee: Clark County, Washington  
 Legal Description: #104, #108, #12, #14, #107 REC & T2N N2EWM  
 Additional Legal Description is attached as Exhibit "A"  
 Serial #: 156284, 156288, 156185, 168196, 156287  
 CRP# 331922 Padden Parkway-Wauna

STATUTORY WARRANTY DEED

THE GRANTORS(s), LINCOLN TRUST COMPANY, as custodian for the benefit of LAWRENCE H. HANSEN as to the extent of a 95% interest and WILLIAM D. WINN and CAROL WINN as to the extent of a 4% interest and DARLENE D. ORBEN and NATHEIL S. ORBEN to the extent of a 1% interest for and in consideration of valuable consideration as set out in part below, conveys and warrants to CLARK COUNTY, WASHINGTON, a municipal corporation, its heirs and assigns, the following described real estate situated in the County of Clark, State of Washington, to wit:

**SEE LEGAL DESCRIPTION ATTACHED HERETO, WHICH,  
 BY THIS REFERENCE, IS INCORPORATED HEREIN**

The Grantor represents and warrants that he/she/they is/are not aware of any hazardous or toxic waste, substance or material on or under the subject property.

NOTE: It is understood and agreed that the delivery of this deed is hereby tendered and the terms and obligations hereof shall not become binding upon Clark County, Washington, until this document is accepted and approved by the Clark County Board of County Commissioners.

CONSIDERATIONS: FIVE HUNDRED TWENTY SEVEN THOUSAND SEVEN HUNDRED AND NO/100 DOLLARS (\$527,700.00)

ACCEPTED FOR RECORDING BY:  
 BOARD OF COUNTY COMMISSIONERS  
 CLARK COUNTY, WASHINGTON

Julie Stanton  
 JULIE STANTON, CHAIR  
 \_\_\_\_\_  
 CRAIG A. PRIDEMORE, COMMISSIONER  
 \_\_\_\_\_  
 BETTY ANN MORRIS, COMMISSIONER  
 \_\_\_\_\_

6/2 6-2-2-

3149193

Statutory Warranty Deed  
Serial # 156284, 156288, 156195, 156196, 156287  
Page 3 of 6

STATE OF ~~CALIFORNIA~~ **ARKANSAS**  
COUNTY OF ~~Miller~~ **Miller**

I hereby certify that I know or have satisfactory evidence that **DARLENE D. ORBEN** and **NATHEIL S. ORBEN** are the persons who appeared before me, and said persons acknowledged that they signed this instrument and acknowledged it to be their free and voluntary act for the uses and purposes mentioned in the instrument.

DATED: **02-19-1997**

*Shelley Dickerson*  
Notary Public in and for the State of **ARK**  
residing at **2800 N. State Ave**  
My commission expires  
**NOTARY PUBLIC**  
**Shelley Dickerson**  
My Commission Expires **3/27/2000**

STATE OF CALIFORNIA  
COUNTY OF

~~I certify that I know or have satisfactory evidence that  
is the person who appeared before me and said person acknowledged that he/she/they signed this  
instrument, on oath stated that he/she/they was/were authorized to execute the instrument and  
acknowledged it as the Trustee of the **LINCOLN TRUST COMPANY**, to be the free and voluntary  
act of such party for the uses and purposes mentioned in the instrument, and further states that as  
of the date herein said trust has not been revoked.~~

DATED: \_\_\_\_\_

*See attached*

Notary Public in and for the state of  
Residing at  
My commission expires



### CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California  
County of ORANGE } ss.

On 12/7/99 before me, KRISTY L. BALLARD NOTARY PUBLIC  
Name and Title of Officer (e.g., Notary Public)  
personally appeared DR. LAWRENCE HANSEN  
Name(s) of Signer(s)

personally known to me  
 proved to me on the basis of satisfactory evidence



to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(ies), and that by his/~~her/their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument

WITNESS my hand and official seal.  
Kristy L. Ballard  
Signature of Notary Public

Place Notary Seal Above

#### OPTIONAL

*Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.*

#### Description of Attached Document

Title or Type of Document: \_\_\_\_\_

Document Date: \_\_\_\_\_ Number of Pages: \_\_\_\_\_

Signer(s) Other Than Named Above: \_\_\_\_\_

#### Capacity(ies) Claimed by Signer

- Signer's Name: \_\_\_\_\_
- Individual
- Corporate Officer --- Title(s): \_\_\_\_\_
- Partner ---  Limited  General
- Attorney in Fact
- Trustee
- Guardian or Conservator
- Other: \_\_\_\_\_



Signer is Representing: \_\_\_\_\_

**CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT**

State of California  
 County of ORANGE } ss.

On 10/9/99 Date, before me, KRISTY L. BALLARD, Notary Public  
Name and Title of Officer (e.g., "Jane Q. Notary Public")  
 personally appeared DR. LAWRENCE HANSEN  
Name(s) of Signer(s)

personally known to me  
 proved to me on the basis of satisfactory evidence



to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Kristy L. Ballard  
Signature of Notary Public

Place Notary Seal Above

**OPTIONAL**

*Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.*

**Description of Attached Document**

Title or Type of Document: \_\_\_\_\_

Document Date: \_\_\_\_\_ Number of Pages: \_\_\_\_\_

Signer(s) Other Than Named Above: \_\_\_\_\_

**Capacity(ies) Claimed by Signer**

Signer's Name: \_\_\_\_\_

- Individual
- Corporate Officer --- Title(s): \_\_\_\_\_
- Partner ---  Limited  General
- Attorney in Fact
- Trustee
- Guardian or Conservator
- Other: \_\_\_\_\_

Signer Is Representing: \_\_\_\_\_





Statutory Warranty Deed  
Serial #: 158204, 158288, 158108, 158196, 158287

LINCOLN TRUST COMPANY, as  
custodian for the benefit  
of LAWRENCE H. HANSEN

Dated this 29th day of January, 1999

By: [Signature]

By: [Signature]  
Lawrence H. Hansen  
Beneficiary

[Signature]  
William D. Winn

[Signature]  
Carol Winn

[Signature]  
Darlene D. Orben

[Signature]  
Nathaniel S. Orben

STATE: ~~ARKANSAS~~  
COUNTY: ~~MILLER~~ --see next page  
Subscribed before me this 19th day of  
February 1999.

[Signature]  
Notary ~~Shelby Hickerson~~

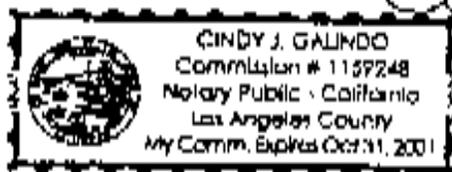
NOTARY PUBLIC  
Shelby Hickerson  
My Commission Expires 3/27/2002

STATE OF CALIFORNIA  
COUNTY OF Los Angeles

I hereby certify that I know or have satisfactory evidence that WILLIAM D. WINN and CAROL WINN are the persons who appeared before me, and said persons acknowledged that they signed this instrument and acknowledged it to be their free and voluntary act for the uses and purposes mentioned in the instrument.

DATE: 2-11-99

[Signature]  
Notary Public in and for the State of  
residing at San Diego  
My commission expires 07/31/2001  
[Signature]



Statutory Warranty Deed  
Serial#s 156284, 156288, 156195, 156186, 156287

NOTARIAL ACKNOWLEDGMENT

STATE OF COLORADO  
COUNTY OF Arapahoe

I certify that I know or have satisfactory evidence that Barry Coon is the person who appeared before me, and said person acknowledged that he/she is/are authorized to execute the instrument and acknowledged it as the manager of Lincoln Trust Company as custodian for Lawrence H. Hansen, to be the free and voluntary act and deed of such party for the uses and purposes therein mentioned in the instrument.

DATED: March 19, 1999

Susan Lewis

Notary Public in and for the State of CO residing at  
My commission expires:



My Commission Expires 07/27/2002



## Exhibit "A"

## PARCEL I:

That portion of the South half of Section 6, Township 2 North, Range 2 East of the Willamette Meridian in Clark County, Washington, described as follows:

BEGINNING at the quarter corner between Sections 6 and 7, Township 2 North, Range 2 East of the Willamette Meridian; thence East along the South line of said Section 6, a distance of 399 feet to the True point of beginning; thence continuing along the South line of said Section 6, a distance of 120 feet, more or less, to the Southwest corner of that tract of land being conveyed to N.E. 78th Limited Partnership by contract recorded under Auditor's File No. G 590896; thence North along the West line of said N.E. 78th Limited Partnership tract 250 feet to the Northwest corner thereof; thence East along the North line of said tract, a distance of 1171.84 feet to the West line of that tract conveyed to Clark County by deed recorded under Auditor's File No. G 815645; thence North along the West line of said Clark County tract 329.5 feet to the South line of that tract conveyed to Edmond M. Bellisle, et ux, by deed recorded under Auditor's File No. G 249254; thence West along the South line of said Bellisle tract and the Westerly extension of said South line 1292 feet, more or less, to a point due North of the True point of beginning; thence South 875.5 feet, more or less, to the True point of beginning.

EXCEPT that portion thereof, lying within N.E. 78th Street as conveyed to Clark County, Washington, by deed recorded under Auditor's File No. G 293486.

ALSO EXCEPT the East 889.12 feet thereof as measured along the North line of said tract.

## PARCEL II:

The East 889.12 feet as measured along the North line thereof of that portion of the South half of Section 6, Township 2 North, Range 2 East of the Willamette Meridian in Clark County, Washington, described as follows:

BEGINNING at the quarter corner between Sections 6 and 7, Township 2 North, Range 2 East of the Willamette Meridian; thence East along the South line of said Section 6, a distance of 399 feet to the True point of beginning; thence continuing along the South line of said Section 6, a distance of 120 feet, more or less, to the Southwest corner of that tract of land being conveyed to N.E. 78th Limited Partnership by contract recorded under Auditor's File No. G 590896; thence North along the West line of said N.E. 78th Limited Partnership tract 250 feet to the Northwest corner thereof; thence East along the North



Exhibit "A" Continued

line of said tract, a distance of 1171.84 feet to the West line of that tract conveyed to Clark County by deed recorded under Auditor's File No. G 515645; thence North along the West line of said Clark County tract 325.5 feet to the South line of that tract conveyed to Edmond M. Bellisle, et ux, by deed recorded under Auditor's File No. G 249254; thence West along the South line of said Bellisle tract and the Westerly extension of said South line 1282 feet, more or less, to a point due North of the True point of beginning; thence South 575.5 feet, more or less, to the True point of beginning.

PARCEL III:

That portion of the South half of Section 6, Township 2 North, Range 2 East of the Willamette Meridian in Clark County, Washington, described as follows:

BEGINNING at the quarter corner between Sections 6 and 7, Township 2 North, Range 2 East of the Willamette Meridian, Clark County, Washington; thence East along the South line of said Section 6, a distance of 179.45 feet to the Southeast corner of that tract conveyed to Clyde J. Christensen, et ux, by deed recorded under Auditor's File No. G 327047 and the True point of beginning of the tract herein described; thence continuing East along the South line of said Section 6, a distance of 330 feet, more or less, to the Southwest corner of that tract of land being conveyed to N.E. 78th Limited Partnership by contract recorded under Auditor's File No. G 589895; thence North along the West line of said N.E. 78th Limited Partnership tract 250 feet to the Northwest corner thereof; thence East along the North line of said tract, a distance of 1171.84 feet to the West line of that tract conveyed to Clark County by deed recorded under Auditor's File No. G 515645; thence North along the West line of said Clark County tract 325.5 feet to the South line of that tract conveyed to Edmond M. Bellisle, et ux, by deed recorded under Auditor's File No. G 249254; thence West along the South line of said Bellisle tract 586.75 feet to the Southwest corner thereof; thence North along the West line of said Bellisle tract 450 feet to the South line of that certain other tract conveyed to Clark County, Washington by deed recorded under Auditor's File No. G 542307; thence West along the South line of said Clark County tract, a distance of 1515 feet, more or less, to a point 750 feet East of the Northerly extension of the East line of that tract conveyed to Katie E. Padden by quit claim deed recorded in Book 86 at page 443, deed records of Clark County; thence Southeasterly 730 feet, more or less, to the Northeast corner of that tract of land being conveyed to McLoughlin Heights Baptist Church by contract recorded under Auditor's File No. 7805230058; thence South 1°31' East along the East line of said Church tract and the Southerly extension of said East line, a distance of 548.5 feet, more or less, to the True point of beginning.

Exhibit "A" Continued  
Order No. 54136  
Page 3 of 3

EXCEPT that portion of the South half of Section 6, Township 2 North, Range 2 East of the Willamette Meridian in Clark County, Washington, described as follows:

BEGINNING at the quarter corner between Sections 6 and 7, Township 2 North, Range 2 East of the Willamette Meridian; thence East along the South line of said Section 6, a distance of 399 feet to the True point of beginning; thence continuing along the South line of said Section 6, a distance of 120 feet, more or less, to the Southwest corner of that tract of land being conveyed to N.E. 78th Limited Partnership by contract recorded under Auditor's File No. G 899895; thence North along the West line of said N.E. 78th Limited Partnership tract 250 feet to the Northwest corner thereof; thence East along the North line of said tract, a distance of 1171.84 feet to the West line of that tract conveyed to Clark County by deed recorded under Auditor's File No. G 516645; thence North along the West line of said Clark County tract 325.5 feet to the South line of that tract conveyed to Edmond M. Bellisle, et ux, by deed recorded under Auditor's File No. G 249254; thence West along the South line of said Bellisle tract and the Westerly extension of said South line 1292 feet, more or less, to a point due North of the True point of beginning; thence South 578.5 feet, more or less, to the True point of beginning.

EXCEPT that portion thereof, lying within N.E. 78th Street as conveyed to Clark County, Washington, by deed recorded under Auditor's File No. G 293496.





3179726

Page: 3 of 3  
12/17/1999 12:38P  
Clark County, WA



DEPARTMENT OF  
PUBLIC WORKS

Superior service that is responsive and cost-justified.

DESIGN & ENGINEERING  
COUNTY SURVEYOR'S OFFICE

FORD PARCEL

A parcel of land lying in the Southeast 1/4 of Section 9, Township 3 North, Range 1 East of the Willamette Meridian, said parcel being more particularly described as follows:

Beginning at a point on the East line of said Section 9, said point being the Northeast 1/4 of said Southeast 1/4 bearing S01°28'10"W 1318.52 feet from the East 1/4 corner of said Section 9; thence N09°39'02"W 30.00 feet to a point on the Westerly right-of-way line of N.W. 11<sup>th</sup> Avenue and the True Point of Beginning of this parcel; thence along said Westerly line S01°28'10"W 659.23 feet to a 5/8" iron rod set on the Southerly line of the North 1/2 of the Southeast 1/4 of said Southeast 1/4 of said Section 9; thence along said Southerly line N89°35'58"W 1274.91 feet to a point on the West line of said Southeast 1/4 of the Southeast 1/4 of said Section 9; thence along said West line N01°31'30"E 650.11 feet to a point on the North line of the South 1/2 of said Southeast 1/4 of said Section 9; thence along said North line N89°39'02"W 20.81 feet to the Southwest corner of that certain parcel described in Auditor's file # 3109068 recorded 5/21/99, Deed Records of Clark County, Washington; thence along the West line of said parcel N01°55'17"E 858.51 feet to a 5/8" iron rod; thence S89°07'15"E 55.38 feet; thence S87°27'35"E 404.68 feet to a 5/8" iron rod; thence S01°59'08"W 705.11 feet to a point on the South line of the Northeast 1/4 of said Southeast 1/4 of said Section 9; thence along said South line S89°39'02"E 861.61 feet to the True Point of Beginning, all in Clark County, Washington.

This parcel contains 27.15 acres, more or less, based on calculations using the double meridian distance method.

Bearings herein used are grid, based on the countywide GPS control survey on file in the County Surveyor's Office.



*[Handwritten signature]*

11-8-99

1300 157<sup>th</sup> STREET • P.O. BOX 9810 • VANCOUVER WA 98666-9810 • www.co.clark.wa.us

(360) 397-6100 • EXTENSION 4720 • FAX (360) 397-6053 • TDD (360) 397-6057



3039734

Page: 3 of 4  
12/09/1988 02:33P  
11.08 Clark County, WA

PUBLIC WORKS REAL PROPERTY D



DEPARTMENT OF  
PUBLIC WORKS

EXHIBIT " A "  
VEATCH PARCEL

A parcel of land lying in the East half of the Southeast quarter of the Southwest quarter of Section 20, Township 3 North, Range 2 East of the Willamette Meridian in Clark County, Washington, being more particularly described as follows:

All that portion of that parcel as described in that Statutory Warranty Deed to Steven P. Veatch and Lauri R. Veatch, husband and wife, recorded April 1, 1998 under Auditor's file No. 9804010043, Records of Clark County Washington, lying westerly of the following described line:

Beginning at a point on the Northerly right-of-way line of Northeast 139th Avenue, said point being 30.00 feet Northerly of, when measured at right angles or radial to, the centerline of Northeast 139th, also being North 75° 54' 09" West 135.23 feet of the South quarter corner of Section 20; thence leaving said right-of-way line North 00° 45' 30" East 444.40 feet to a point; thence North 89° 14' 30" West 37.16 feet to a point; thence North 00° 11' 19" West 94.42 feet to a point on the north line of said parcel and there terminating, all in Clark County Washington.

Bearing hereon are based on the south line of the Southwest quarter of Section 20 as being North 88° 43' 13" West.

This description contains 282,681 square feet as calculated by the double meridian distance method.

*SV*  
\_\_\_\_\_  
Initial

*[Signature]*  
\_\_\_\_\_  
Initial



3039734

Page: 1 of 4  
12/09/1998 02:33P  
11.00 Clark County, WA

Real Estate Transfer Tax  
Ch. 11 Rev. Laws 1981

EXEMPT

Alt. # 44046 Date 12-9-98  
for Details of tax paid to:

After recording return to:

Clark County Public Works  
Real Property Services  
P. O. Box 9810  
Vancouver, WA 98666-9810

Alt. # 0  
Doug Lasher  
Clark County Treasurer  
By [Signature]  
Deputy

Document Title: Statutory Warranty Deed  
Reference Number of Related Documents:  
Grantor(s): STEVEN P. VEATCH AND LAURI R. VEATCH  
Grantee: Clark County, Washington  
Legal Description: #7 SEC 20 T3N R2EWM  
Additional Legal Description is attached as Exhibit "A"  
Serial #: 196431  
Project: Wetland Mitigation  
WO #: 11212

STATUTORY WARRANTY DEED

THE GRANTOR(S), STEVEN P. VEATCH AND LAURI R. VEATCH, husband and wife, for and in consideration of valuable consideration as set out in part below, conveys and warrants to CLARK COUNTY, WASHINGTON, a municipal corporation, its heirs and assigns, the following described real estate situated in the County of Clark, State of Washington, to wit:

SEE LEGAL DESCRIPTION ATTACHED HERETO, WHICH,  
BY THIS REFERENCE, IS INCORPORATED HEREIN

The Grantor represents and warrants that he/she/they is/are not aware of any hazardous or toxic waste, substance or material on or under the subject property.

NOTE: It is understood and agreed that the delivery of this deed is hereby tendered and the terms and obligations hereof shall not become binding upon Clark County, Washington, until this document is accepted and approved by the Clark County Board of County Commissioners.

CONSIDERATIONS: Thirty Four Thousand Six Hundred Twenty Five  
AND 00/100 Dollars (\$34,625.00)



3634510 ✓

Page: 1 of 3  
09/07/2003 04:23P

REAL PROPERTY

0

6 00 Clark County, WA

Recording requested by:  
Clark County Public Works  
Real Property Services  
P.O. Box 9810  
Vancouver, WA 98666-9810

*Excel ✓  
GIS ✓  
Acquire ✓*

Real Estate Excise Tax  
Ch. 11 Rev Laws 1991

EXEMPT

Affd. # 518358 Date 5-7-03

For Details of tax paid see

Affd. # \_\_\_\_\_

Doug Lasher  
Clark County Treasurer

By \_\_\_\_\_ *Sgt*

Document Title: Statutory Warranty Deed  
Reference Number of Related Documents:  
Grantor(s): JOSEPH D. GRIMM and CAROLYN M. GRIMM  
Grantee: Clark County, Washington  
Legal Description:  
Additional Legal Description is attached as Exhibit "A"  
Serial #: 156231-000, 156244-000  
Project: NE 72<sup>nd</sup> Ave. (S of 89<sup>th</sup> St.-St. Johns Rd.) &  
NE St. Johns Rd. (NE 50th Ave-NE 110th St.)  
CRP #: 310122 & 301422 Fed Aid #: STPUL 4347(004)

**STATUTORY WARRANTY DEED**

THE GRANTORS, JOSEPH D. GRIMM and CAROLYN M. GRIMM, husband and wife, for and in consideration of valuable consideration as set out in part below, conveys and warrants to CLARK COUNTY, a political subdivision of the State of Washington, its heirs and assigns, the following described real estate situated in the County of Clark, State of Washington, to wit:

**SEE LEGAL DESCRIPTION ATTACHED HERETO, WHICH,  
BY THIS REFERENCE, IS INCORPORATED HEREIN**

The Grantor represents and warrants that they are not aware of any hazardous or toxic waste, substance or material on or under the subject property.

NOTE: It is understood and agreed that the delivery of this deed is hereby tendered and the terms and obligations hereof shall not become binding upon Clark County, Washington, until this document is accepted and approved by the Clark County Board of County Commissioners.

**CONSIDERATIONS:** THREE HUNDRED TWENTY-FIVE THOUSAND AND 00/100 DOLLARS (\$325,000.00) for real property.

*NE 6-2-2*



3634510

Page: 2 of 3  
05/07/2003 04:33P  
Clark County, WA

REAL PROPERTY

D

0.00

Statutory Warranty Deed  
Serial #: 156231-000, 166244-000  
Project: NE 72<sup>nd</sup> Ave. (S of 98<sup>th</sup> St-St Johns Rd.) &  
NE St Johns Rd.(NE 50th Ave-NE 119th St)  
CRP #: 310122 & 301422 Fed Aid #: STPUL 4347(004)

Dated this 27 day of Jan. 2003

Joseph D. Grimm

Carolyn M. Grimm

ACCEPTED FOR RECORDING BY  
BOARD OF COUNTY COMMISSIONERS  
CLARK COUNTY, WASHINGTON

\_\_\_\_\_  
CRAIG A. BRIDEMORE, CHAIR

STATE OF

\_\_\_\_\_  
BETTY BUE MORRIS, COMMISSIONER

COUNTY OF

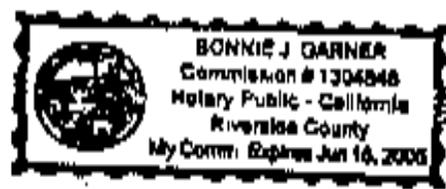
\_\_\_\_\_  
JODIE STANTON, COMMISSIONER

I hereby certify that I know or have satisfactory evidence that JOSEPH D. GRIMM and CAROLYN M. GRIMM are the persons who appeared before me, and said persons acknowledged that they signed this instrument and acknowledged it to be their free and voluntary act for the uses and purposes mentioned in the instrument.

DATE: 1/27/03

\_\_\_\_\_  
Bonnie J. Garner

Notary Public in and for the State of  
residing at  
My commission expires





3634510

Page: 3 of 3  
08/07/2003 04:33P  
Clark County, WA

REAL PROPERTY

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0 00

NE 72nd Ave. (S of 99th St-  
St. Johns Rd.)  
CRP 310122  
Ser.# 156231-000,  
156244-000

**Exhibit A**

**PARCEL I**

The following described real property situated in the County of Clark, State of Washington:

Part of the North half of the Northeast quarter of Section 6, Township 2 North, Range 2 East of the Willamette Meridian, Clark County, Washington, described as follows:

**BEGINNING** at a point 330 feet South and 771 feet West of the Northeast corner of said Section, said point being the most Northerly Northeast corner of that tract of land sold to A.E. Pauley and Oneta Pauley, husband and wife, as deeded under Auditor's File No. G 398615 and the True Point of Beginning; thence East 633 feet, more or less, to the Northwest corner of that tract of land sold to the Clark County Public Utility District No.1 under Auditor's File No. G 288419; thence South along the West line of said Clark County tract 185 feet to the Southwest corner thereof; thence East along the South line of said Clark County tract 175 feet to the West line of NE 72nd Avenue; thence South along the West line of NE 72nd Avenue 278.77 feet, more or less, to the Northeast corner of the tract conveyed to Alex Kling and wife, by deed recorded in Volume 554, page 48, under Auditor's File No. G 108715, records of Clark County, Washington; thence West 495 feet, more or less, to the Northwest corner of said Kling tract; thence Northeasterly 550 feet, more or less, to the True Point of Beginning.

**EXCEPT** Public Roads.

**PARCEL II**

That portion of the Northeast quarter of Section 6, Township 2 North, Range 2 East of the Willamette Meridian, Clark County, Washington, described as follows:

**BEGINNING** at a point 350 feet West of the Northeast corner of said Section 6; thence West along the North line of said Section, 838 feet; thence South 330 feet; thence East 1168 feet to the East line of Section 6; thence North along the East side of said Section, 210 feet; thence West 350 feet; thence North 120 feet to the True Point of Beginning.

**EXCEPT** the East 20 feet thereof lying within Jaggy Road.

**EXCEPT** County Roads.