GENESIS RESOURCE CONSULTING

LAND DEVELOPMENT & ENVIRONMENTAL SPECIALISTS

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MOX CHEHALIS INTERCHANGE
WETLAND DELINEATION REPORT
Parcel # 618051332004

McCLEARY, WASHINGTON GRAYS HARBOR COUNTY

PREPARED FOR:

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M&M Harbor Properties
P.O. Box 1492
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PREPARED BY:
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September 18, 2008

TABLE OF CONTENTS

Background 3

Resource Concerns 3

Wetland Delineation 3-5

Results and Discussion 5-9

Summary 9

Literature Cited 10

Sheet 1: Vicinity Map

Sheet 2: Parcel / Test Pit Location Map

Sheet 3: Wetland Location Map

Sheet 4: Soils Map

Sheet 5: National Wetland Inventory Map

Appendix A: Test Plot Data Forms

Appendix B: Wetland Rating Sheets

BACKGROUND

This 1.99 acre parcel is located near State Route 8 and the Mox Chehalis Road interchange, within the city Limits of McCleary, Washington Grays Harbor County. Tax parcel #618051332004, Section 13 Township 18N Range 05W.

The current use at the site is vacant land designated C-3 for commercial use.

RESOURCE CONCERNS

Mapped wetlands and streams can be environmentally sensitive areas with local State or Federal regulators. Genesis Resource Consulting (GRC) has reviewed existing maps, historical photos and mapping for this area as well as made a site reconnaissance to determine resource concerns for wetlands, streams or other environmental issues at or adjacent to this parcel.

WETLAND DELINEATION

Genesis Resource Consulting completed a field review of the project site and subsequent wetland delineation. The delineation occurred on September 10, 2008 in sunny, dry weather conditions.

WETLAND DELINEATION METHODOLOGY

Genesis Resource Consulting (GRC) completed the wetland delineation for M&M Harbor Properties. The delineation followed the Routine Determination Method described as per the U.S. Army Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and the Washington State Wetlands Identification and Delineation Manual (WSDOE 1997). According to the manuals, jurisdictional wetlands are defined as:

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

The Routine Determination Method uses three parameters to determine if wetlands exist in a given area: hydrophytic vegetation, hydric soils and wetland hydrology.

Except in certain situations defined in the manual, evidence of a minimum of one positive wetland indicator from two of the three parameters (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination.

Prior to evaluating the site, GRC reviewed existing information to assist with the determination of wetland occurrences on the project site. This review included the Grays Harbor County Soil Survey, National Wetland Inventory maps, USGS Topographic Quadrangle maps and aerial photographs.

In order to conduct the wetland delineation, GRC established numerous data observation points within the confines of the project area that corresponded with the terrain features, vegetation patterns, mapped soil areas, and hydrologic indicators. Of these data observation points four (4) locations were chosen as representative samples for data sheets.

GRC characterized the vegetation, soils, and hydrology at each of the observation points and used the information gathered as a basis for making the wetland determinations.

Vegetation on the site was compared to the National List of Plant Species that Occur in Wetlands: 1988 - Northwest (Region 9) (Reed 1988) to determine plant wetland indicator status. This list places plants into four categories:

Obligate wetland plants (OBL) -- plants likely to occur in wetlands greater than 99 percent of the time.

Facultative wetland plants (FACW) -- plants likely to occur in wetlands 67 to 99 percent of the time.

Facultative plants (FAC) -- plants equally likely to occur in wetland and non-wetland areas (34-66 percent of the time).

Facultative upland plants (FACU) -- plants that only occur in wetlands 1 to 33 percent of the time.

Hydrophytic vegetation are macrophytic plants that occur in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. The vegetation occurring in a wetland may consist of more than one plant community. Hydrophytic vegetation is present when more than 50 percent of the dominant species have an indicator status of OBL, FACW, and/or FAC.

Hydric soils are classified into two broad categories: organic and mineral. Organic soils (Histosols) develop under conditions of nearly continuous saturation and/or inundation. Organic hydric soils are commonly known as peats and mucks. All other hydric soils are mineral soils. Mineral soils have a wide range of textures (sandy to clayey) and colors (red to gray). Mineral hydric soils are those periodically saturated for sufficient duration to produce chemical and physical soil properties associated with a reducing environment. They are usually gray and/or mottled immediately below the surface horizon, or they have thick, dark-colored surface layers overlying gray or mottled subsurface horizons.

The project site was examined for areas of evident wetland hydrology characteristics. These include areas where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively. Such characteristics are usually present in areas that are inundated or have soils that are saturated to the surface for sufficient duration to develop hydric soils and support vegetation typically adapted for life in periodically anaerobic soil conditions.

RESULTS AND DISCUSSION

National Wetland Inventory Mapping indicates a stream (Senn Creek) and an emergent scrub shrub wetland is associated with this site. GIS mapping does not indicate a wetland but does indicate a stream channel through the parcel location.

SOILS

The Soil Survey of Grays Harbor County shows the only soil unit on the property to be Olympic Clay Loam. A brief soil description for this series follows.

Map Unit Description 106

The Olympic series consists of very deep, well drained soils formed in residuum and colluvium weathered from basic igneous rocks. Olympic soils are on stable summits of foothills and mountains and have slopes of 0 to 65 percent. The average annual precipitation is about 60 inches and the average annual air temperature is about 52 degrees F.

TAXONOMIC CLASS: Fine, mixed, active, mesic Xeric Palehumults

TYPICAL PEDON: Olympic silty clay loam, forest. (Colors are for moist soil unless otherwise stated. Entire profile was moist when described.)

A--0 to 6 inches; dark brown (7.5YR 3/2) silty clay loam, brown (7.5YR 5/2) dry; strong, very fine and fine subangular blocky and moderate fine granular structure; hard, friable, slightly sticky and plastic; many roots; many very fine irregular pores; 2 percent concretions; slightly acid (pH 6.2); clear smooth boundary. (4 to 7 inches thick)

ABc--6 to 13 inches; dark reddish brown (5YR 3/3) silty clay loam, brown (7.5YR 5/4) dry; strong very fine and fine subangular blocky structure; hard, friable, slightly sticky and plastic; many roots; many very fine irregular pores; 5 percent concretions; few faint clay films on faces of peds and in pores; moderately acid (pH 5.8); gradual smooth boundary. (5 to 10 inches thick)

Bt1--13 to 21 inches; dark reddish brown (5YR 3/4) silty clay loam, brown (7.5 YR 5/4) dry; moderate medium fine and very fine subangular blocky structure; hard, friable, slightly sticky and plastic; many roots; many very fine irregular and common very fine tubular pores; 2 percent concretions; common faint clay films on faces of peds and in pores; moderately acid (pH 5.8); gradual smooth boundary. (2 to 15 inches thick)

Bt2--21 to 34 inches; yellowish red (5YR 4/6) silty clay, reddish brown (5YR 5/4) dry; moderate coarse subangular blocky structure that parts to medium fine subangular blocky; hard, friable; slightly sticky and very plastic; common roots; common very fine tubular and irregular pores; many faint and distinct clay films on faces of peds and in pores; moderately acid (pH 5.8); gradual smooth boundary. (4 to 20 inches thick)

Bt3--34 to 53 inches; yellowish red (5YR 4/6) clay, moist and dry; moderate medium and fine subangular blocky structure; hard, friable, slightly sticky and plastic; common roots; many very fine and common fine tubular pores; many faint and distinct clay films on faces of peds and in pores; moderately acid (pH 5.6); gradual smooth boundary. (6 to 20 inches thick)

Bt4--53 to 65 inches; yellowish red (5YR 4/8) clay, yellowish red (5YR 4/6) dry; moderate medium and fine subangular and angular blocky structure; hard, firm, slightly sticky and plastic; few roots; common very fine and fine tubular pores; many faint and distinct clay films on faces of peds and in pores; 7 percent concretions; strongly acid (pH 5.3); gradual smooth boundary. (4 to 22 inches thick)

Bt5--65 to 100 inches; yellowish red (5YR 4/8) rubbed, dark red (2.5YR 3/6) (80 percent) and reddish brown (5YR 4/4) (20 percent) clay, yellowish red (5YR 4/6) rubbed, red (2.5YR 4/6) (80 percent), yellowish red (5YR 5/8) (20 percent) dry; moderate coarse and very coarse angular blocky that parts to medium and fine subangular and angular blocky structure; hard, firm, slightly sticky and plastic; few roots; common very fine tubular pores; many faint and distinct clay films on faces of peds and in pores; very strongly acid (pH 5.0); abrupt wavy boundary. (0 to 45 inches thick)

Cr--100 to 115 inches; strongly weathered basalt; very strongly acid (pH 4.8).

TYPE LOCATION: Lewis County, Washington; about 2 miles southwest of Adna; 200 feet north, 625 feet east of southwest corner, sec. 17, T. 13 N., R. 3 W.

RANGE IN CHARACTERISTICS: Average annual soil temperature at a depth of 20 inches ranges from 47 to 54 degrees F. Olympic soils are usually moist but are dry in all parts between depths of 4 and 12 inches for 45 to 60 consecutive days within the 3 months following the summer solstice. The solum thickness ranges from 60 to more than 100 inches. Hue is 7.5 YR or 5YR throughout the solum. The particle-size control section averages 15 to 25 percent sand coarser than very fine sand and 35 to 60 percent clay. Texture is clay loam, silty clay loam, silty clay, or clay. The ratio of calcium to magnesium in the particle-size control section is 2 to 4. Base saturation by sum of cations at 1.8 meters below the soil surface is less than 35 percent.

The A and AB horizons have value of 3 or 4 moist, 4 or 5 dry, and chroma of 2 or 3 moist, 2 to 4 dry. Texture is loam, silt loam, clay loam, or silty clay loam. Reaction ranges from slightly acid to very strongly acid.

The Bt horizon has value of 3 or 4 moist, 4 to 6 dry, and chroma of 4 to 8 moist or dry. It is clay loam, silty clay loam, silty clay or clay. Below the particle-size control section rock

fragments range from none to about 75 percent and clay ranges from 35 to 60 percent. Reaction is moderately acid to very strongly acid.

GEOGRAPHIC SETTING: Olympic soils are on stable summits of foothills and mountains at elevations of 200 to 2,000 feet. Slopes are 0 to 65 percent. The soils formed in residuum and colluvium weathered from basic igneous rocks. The climate is marine-type with cool, dry summers and mild, wet winters. Average annual precipitation is 40 to 70 inches. Mean January temperature is about 38 degrees F, mean July temperature is about 65 degrees F, average annual temperature is about 52 degrees F. The frost-free season is 150 to 200 days. The growing season (28 degrees F) is 175 to 240 days.

DRAINAGE AND PERMEABILITY: Well drained; slow to medium runoff; moderate permeability.

USE AND VEGETATION: Olympic soils are mostly in forests. Native vegetation is Douglas-fir, red alder, western hemlock, western redcedar, and bigleaf maple and an understory of salal, vine maple, western swordfern, Oregon-grape, western brackenfern, red huckleberry, trailing blackberry and Pacific trillium.

DISCUSSION

Soils identified during field sampling generally matched the Olympic series for the upland areas. The soils inside the delineated boundary did meet criteria for hydric soils and had major secondary indicators of long term saturation. During the delineation, the soils were verified with soil test plot data for hue and chroma. Test pits were dug to identify these characteristics.

Test pits were similar for most of the site. Test pits in the wetland revealed Colors of 10 YR 2/1 near the surface and 10 YR 3/2 with various 10 YR 4/6 and 5 YR 4/6 models. Hydrology indicators were present at the surface in all wetland test pits. Upland test pits showed color of 10 YR ¾ and 5 YR 3/3, with no primary or secondary indicators.

These soil sample test pits, along with the vegetation, were used to develop a wetland delineation boundary (Sheet3) that corresponds to the presence of primary and secondary wetland indicators for hydric soils.

PLANT SPECIES PRESENT

The plant community is moderately diverse with heavy inclusions of blackberry. A canopy of Alder occurring from previous disturbance is present on the SE boundary of the wetland.

Some of the species documented are as follows:

Slough sedge / water *(Carex obnupta* – OBL*)*
Himalayan Blackberry *(Rubus discolor – FACU-)*

Red Alder *(Alnus rubra – FAC)*
Buttercup (*Ranunculus repens – FACW*)
Cattail, Broad-Leaf (*Typha Latifolia*-OBL)
Soft Rush *(Juncus Effusus –FACW)*
Horse Tail *(Equisetum Arvense – FAC)*
Trailing Blackberry *(Rubus Ursinus – non indicator)*
Tall Fescue *(Festuca arundinacea – FAC)*
Reed canarygrass *(Phalaris arundinacea* – FACW)
Grass, Orchard (*Dactylis Glomerat*-FACU)
Dandelion *(Taraxacum officinale – FACU)*
Velvetgrass *(Holcus lanatus* – FAC*)*.
Pacific Willow (*Salix lucida – FACW+*)
Hardhack *(Spiraea douglasii - FACW)*
Bracken Fern *(Pteridium aquilinum – FACU)*
Salmonberry *(Rubus spectabilis, FAC+)*

The vegetation for this site does change from slope breaks onto the drainage flat. Vegetation on the top benches of the site appears to be exclusively upland plants.

WETLANDS

A wetland associated with Senn Creek has been flagged running through the North central portion of the parcel. This wetland scored 46 pints under the Washington State Wetland Rating System (See Appendix B) as a class III wetland. This wetland is a riverine wetland that scores high values for hydrology, water quality and moderate for habitat.

The City of McCleary regulates wetlands through the City Code Chapter 18.08; Critical Areas and Resource Lands. This regulation provides for Category III wetlands to receive a 50' buffer from the delineated wetland edge.

The identified wetland at this site would also be regulated by the U.S. Army Corps of Engineers, Seattle WA Office. Any activity to alter or divert this wetland or stream channel would require permits under the COE Regulatory Branch. Since this wetland is associated with a steam channel, a Hydraulic Project Approval (HPA) from the Washington State Department of Fish and Wildlife would be required

A mitigation proposal, if desired, could propose to reduce the buffers of the wetland or to average buffers to allow for road improvements or access to the proposed development area. This mitigation proposal could include the enhancement of the existing wetland in exchange for a reduced buffer setback. GRC recommends a buffer reduction strategy over a fill proposal for the wetland if possible.

To provide for reasonable use at this site while avoiding impacts to the stream and wetland, this site would likely need some alterations in City zoning to make development feasible. GRC recommends the pursuit of a zoning change while avoiding impacts to the critical areas of the site.

SUMMARY

GRC has completed a wetland delineation to determine wetland boundaries. A riverine wetland associated with Senn Creek has been identified on site. This wetland has been rated as a class III wetland with a minimum 50' buffer set back.

This wetland creates severe challenges to the development of this site for highway commercial use. To provide for reasonable use, a change in zoning should be applied for. A buffer reduction or averaging could be proposed to allow access without damage to the wetland or water quality.

Please note that these determinations are subject to approval by the regulatory authority (City of McCleary, COE, and DOE) and are intended to be the best possible representation of environmental concerns and wetlands associated with this property. While the field reconnaissance has been extensive, additional environmental issues may exist.

LITERATURE CITED

Department of the Army. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

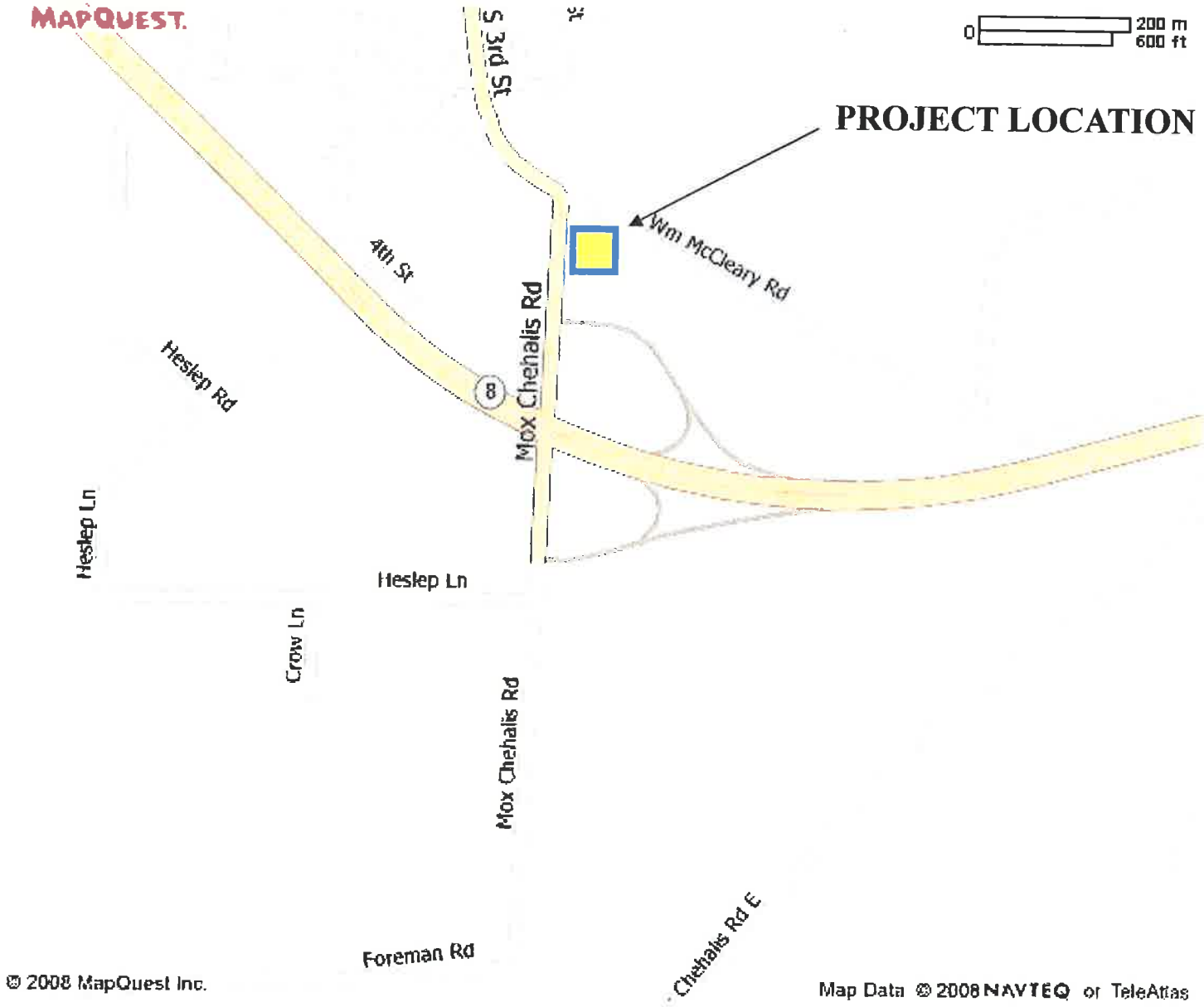
Soil Survey of Grays Harbor County Washington.
USDA soil Conservation Service.

Kollmorgen Instruments Corporation. 1990. Munsell Soil Color Charts. Macbeth Division of Kollmorgen Instruments Corporation, 2441 North Calvert Street, Baltimore, Maryland.

Reed, P.B., Jr. 1988. National List of Plant Species that Occur in Wetlands: Northwest (Region 9). U.S. Fish & Wildlife Service Biological Report 88(26.9). 89pp.

Hruby, T. 2004. Washington State Wetland Rating System for Western Washington. Publication # 04-06-025

City of McCleary Washington Municipal Code. Chapter 18.08.08 Critical Areas; Wetlands. February 27, 2008



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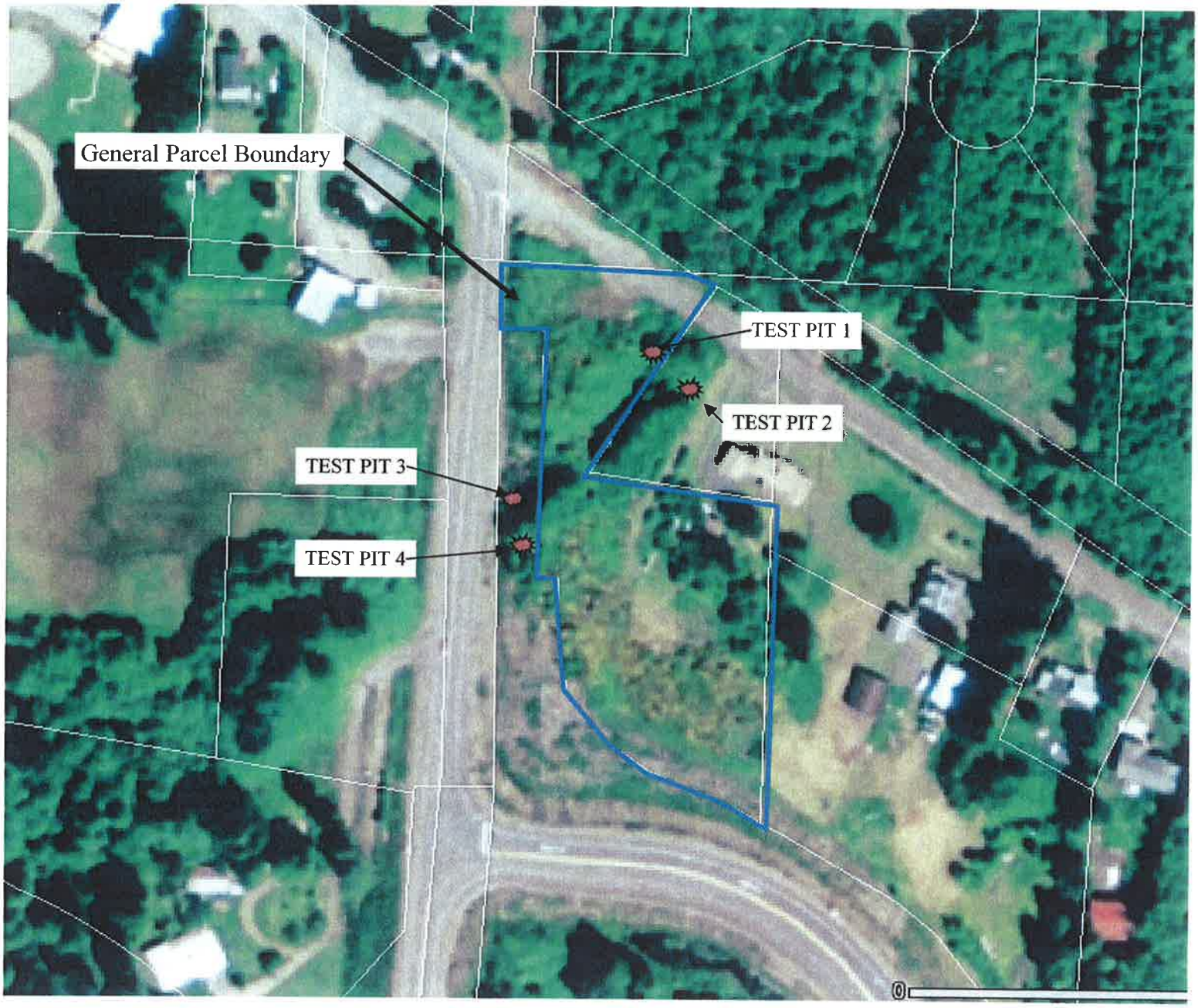
MOX CHEHALIS INTERCHANGE WETLAND DELINEATION

MARK DOYLE
McCLEARY WASHINGTON
GRAYS HARBOR COUNTY

SHEET 1



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WETLAND DELINEATION

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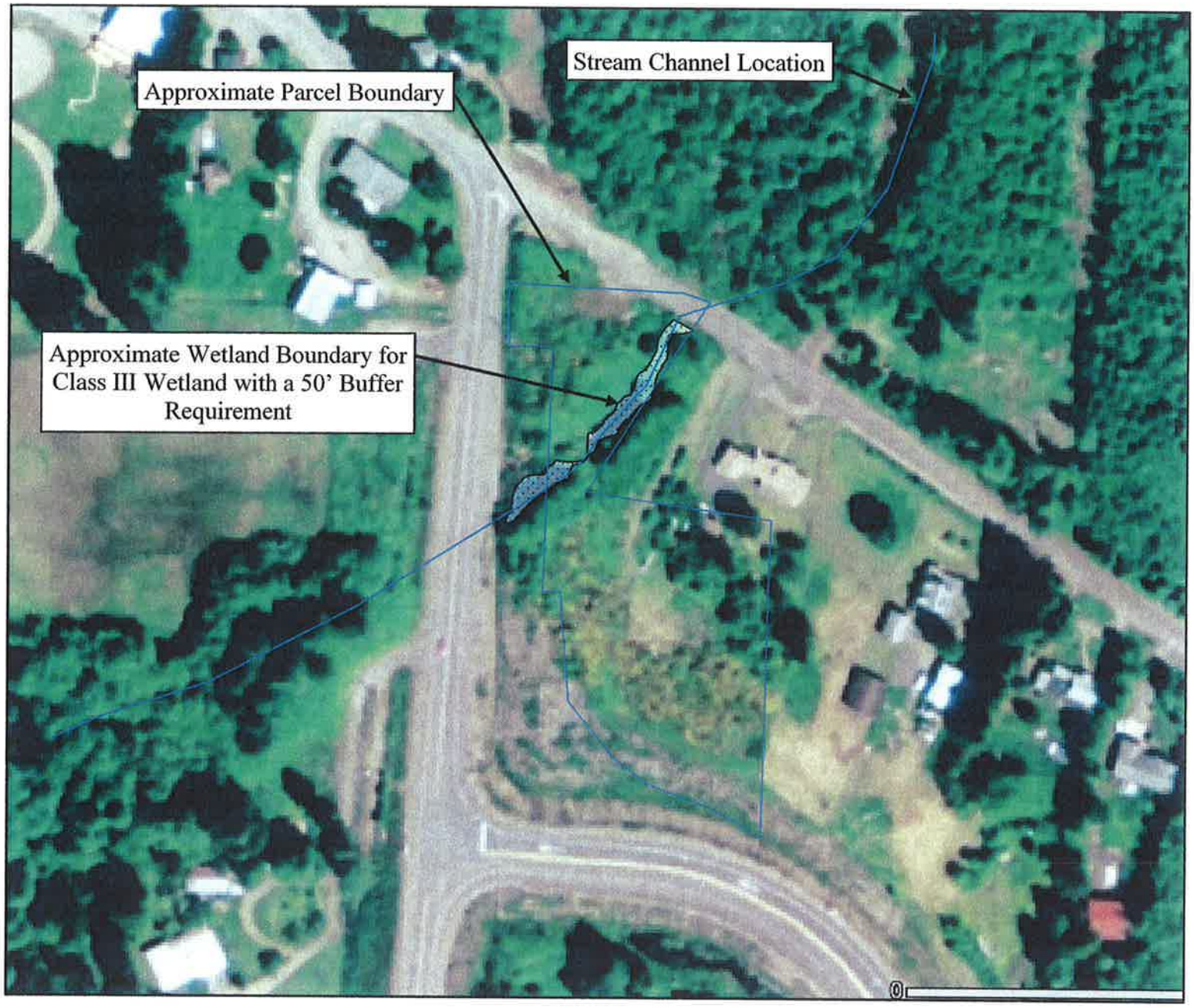
McCLEARY WASHINGTON
GRAYS HARBOR COUNTY

SHEET 2
PARCEL / TEST PIT MAP



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SHEET 3
WETLAND LOCATION MAP

Natural Resources Conservation Service

Web Soil Survey 2.0
National Cooperative Soil Survey

5/15/2006
Page 1 of 3

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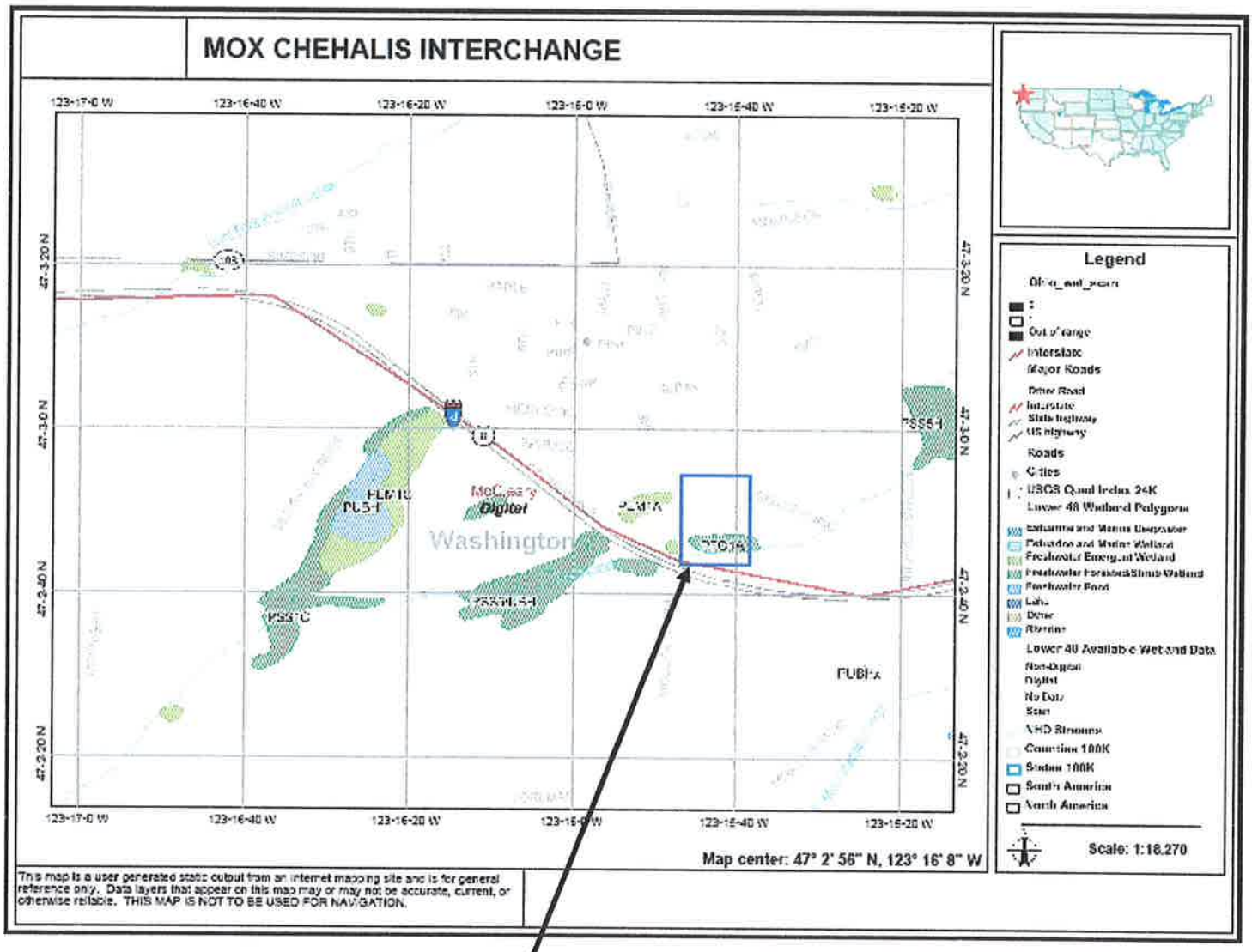
SHEET 4
SOILS MAP



Project area with identified stream and emergent scrub shrub wetland (wetland and stream location slightly miss mapped)

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SHEET 5
NATIONAL WETLANDS
INVENTORY MAP

WETLAND DELINEATION REPORT

APPENDIX A

TEST PLOT DATA FORMS

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Routine Onsite Determination

Project Name:	MOX CHEHALIS INTERCHANGE WETLAND DELINEATION	Fieldwork Date:	09/10/08
Site Location:	Hwy 8 & Mox Chehalis Rd	County:	GH State: WA
Applicant/Owner:	M&M Harbor Properties (See Report)	Investigator(s):	SB
Land Form:	Riverine	Plant Community	Emergent SS
Plot	TP 1 Location NE WETLAND		

Do normal conditions exist on site? Yes ☒ No ☐
Has site been significantly disturbed? Yes ☐ No ☒
Is this a potential problem site? Yes ☐ No ☒

Vegetation

Species/Indicator Status	Stratum	% Cover	Species/Indicator Status	Stratum	% Cover
Slough sedge / water *(Carex obnupta – OBL)*	H	40	Hardhack *(Spiraea douglasii - FACW)*	S	30
Pacific Willow *(Salix lucida – FACW+)*	S	10	Red Alder *(Alnus rubra – FAC)*	T	10
Salmonberry *(Rubus spectabilis, FAC+)*	S	10			

% Dominant (√) 100%

Is the 1987 Manual hydrophytic vegetation criterion met? Yes ☒ No ☐

Remarks:

Soil

Mapped Series Olympic Clay Loam Taxonomy Fine, mixed, active, mesic Xeric Palehumults

On hydric soil list? Yes ☐ No ☒ Confirmed map soil type or inclusion: Yes with inclusions

Horizon	Depth	Matrix Color	Redoximorphic Features	Texture, Other
A	0-9"	10YR 2/1		Organic
	9-12"	10 YR 3/2	10YR 4/6 Mottles	Silty clay

Hydric Soil Indicators Yes ☒ No ☐

- ☐ Histosol/Histic Epipedon
- ☐ On Hydric Soils List
- ☐ Gleyed
- ☐ Sulfidic Odor
- ☒ Reducing Conditions
- ☐ High Organic Content in Surface for Sandy Soils
- ☐ Concretions/Nodules within 3 inches
- ☐ Organic Pan/Streaking in Sandy Soils
- ☐ Other
- ☒ Redox. Features within 10 inches
- ☐ Regional Indicators

Is the 1987 Manual hydric Soil criterion met? Yes ☒ No ☐

Remarks:

Hydrology

Recorded Data

Recorded Data Available: ☐ Aerial Photos: ☐ Stream Gauge ☐ Other ☐

Field Data

Depth of Inundation: surface Depth to Saturation: surface Depth to Free Water: surface

Primary Hydrology Indicators:

- ☒ Inundated
- ☐ Drift Lines
- ☐ Saturated within 12 in.
- ☐ Sediment Deposits
- ☒ Wetland Drainage Pattern: Swale
- ☐ Water Stained Leaves

Secondary Hydrology Indicators:

- ☒ Oxidized Root Channels (upper 12 inches)
- ☒ FAC- Neutral Test
- ☐ Local Soil Survey
- ☐ Water Marks
- ☐ Other:

Growing Season: YES

Is the 1987 Manual hydrology criterion met? Yes ☒ No ☐

Remarks:

Determination

Wetland? Yes ☒ No ☐

Remarks:

Routine Onsite Determination

Project Name:	MOX CHEHALIS INTERCHANGE WETLAND DELINEATION	Fieldwork Date:	09/10/08
Site Location:	Hwy 8 & Mox Chehalis Rd	County:	GH State: WA
Applicant/Owner:	M&M Harbor Properties (See Report)	Investigator(s):	SB
Land Form:	Riverine	Plant Community	Emergent SS
Plot	TP 2 Location See Sheet 2 Test Pit Location Map		

Do normal conditions exist on site? Yes ☒ No ☐

Has site been significantly disturbed? Yes ☐ No ☒

Is this a potential problem site? Yes ☐ No ☒

Vegetation

Species/Indicator Status	Stratum	% Cover	Species/Indicator Status	Stratum	% Cover
Bracken Fern *(Pteridium aquilinum – FACU)*	H	10			
Himalayan Blackberry *(Rubus discolor – FACU-)*	V	80	Red Alder *(Alnus rubra – FAC)*	T	10

% Dominant (√) 10%

Is the 1987 Manual hydrophytic vegetation criterion met? Yes ☐ No ☒

Remarks:

Soil

Mapped Series Olympic Clay Loam Taxonomy Fine, mixed, active, mesic Xeric Palehumults

On hydric soil list? Yes ☐ No ☒ Confirmed map soil type or inclusion: Yes with inclusions

Horizon	Depth	Matrix Color	Redoximorphic Features	Texture, Other
A	0-12"	10YR 3/4		Silty Clay

Hydric Soil Indicators Yes ☐ No ☒

- ☐ Histosol/Histic Epipedon
- ☐ On Hydric Soils List
- ☐ Gleyed
- ☐ Sulfidic Odor
- ☐ Reducing Conditions
- ☐ High Organic Content in Surface for Sandy Soils
- ☐ Concretions/Nodules within 3 inches
- ☐ Organic Pan/Streaking in Sandy Soils
- ☐ Other
- ☐ Redox. Features within 10 inches
- ☐ Regional Indicators

Is the 1987 Manual hydric Soil criterion met? Yes ☐ No ☒

Remarks:

Hydrology

Recorded Data

Recorded Data Available: ☐ Aerial Photos: ☐ Stream Gauge ☐ Other ☐

Field Data

Depth of Inundation: None Depth to Saturation: None Depth to Free Water: None

Primary Hydrology Indicators:

- ☐ Inundated
- ☐ Drift Lines
- ☐ Saturated within 12 in.
- ☐ Sediment Deposits
- ☐ Wetland Drainage Pattern: Swale
- ☐ Water Stained Leaves

Secondary Hydrology Indicators:

- ☐ Oxidized Root Channels (upper 12 inches)
- ☐ FAC- Neutral Test
- ☐ Local Soil Survey
- ☐ Water Marks
- ☐ Other:

Growing Season: YES

Is the 1987 Manual hydrology criterion met? Yes ☐ No ☒

Remarks:

Determination

Wetland? Yes ☐ No ☒

Remarks:

Routine Onsite Determination

Project Name:	MOX CHEHALIS INTERCHANGE WETLAND DELINEATION	Fieldwork Date:	09/10/08
Site Location:	Hwy 8 & Mox Chehalis Rd	County:	GH State: WA
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Land Form:	Riverine	Plant Community	Emergent SS
Plot	TP 3 Location NE WETLAND		

Do normal conditions exist on site? Yes ☒ No ☐
Has site been significantly disturbed? Yes ☐ No ☒
Is this a potential problem site? Yes ☐ No ☒

Vegetation

Species/Indicator Status	Stratum	% Cover	Species/Indicator Status	Stratum	% Cover
Slough sedge / water *(Carex obnupta – OBL)*	H	40	Hardhack *(Spiraea douglasii - FACW)*	S	10
Pacific Willow (*Salix lucida – FACW+*)	S	10	Red Alder *(Alnus rubra – FAC)*	T	10
Soft Rush *(Juncus Effusus –FACW)*	H	10	Cattail, Broad-Leaf (*Typha Latifolia-OBL*)	EH	20

% Dominant (√) 100%

Is the 1987 Manual hydrophytic vegetation criterion met? Yes ☒ No ☐

Remarks:

Soil

Mapped Series Olympic Clay Loam Taxonomy Fine, mixed, active, mesic Xeric Palehumults

On hydric soil list? Yes ☐ No ☒ Confirmed map soil type or inclusion: Yes with inclusions

Horizon	Depth	Matrix Color	Redoximorphic Features	Texture, Other
A	0-9"	10YR 2/1		Organic
	9-12"	10 YR 3/2	5YR 3/4 Mottles	Silty clay

Hydric Soil Indicators Yes ☒ No ☐

- ☐ Histosol/Histic Epipedon
- ☐ On Hydric Soils List
- ☐ Gleyed
- ☐ Sulfidic Odor
- ☒ Reducing Conditions
- ☐ High Organic Content in Surface for Sandy Soils
- ☐ Concretions/Nodules within 3 inches
- ☐ Organic Pan/Streaking in Sandy Soils
- ☐ Other
- ☒ Redox. Features within 10 inches
- ☐ Regional Indicators

Is the 1987 Manual hydric Soil criterion met? Yes ☒ No ☐

Remarks:

Hydrology

Recorded Data

Recorded Data Available: ☐ Aerial Photos: ☐ Stream Gauge ☐ Other ☐

Field Data

Depth of Inundation: surface Depth to Saturation: surface Depth to Free Water: surface

Primary Hydrology Indicators:

- ☒ Inundated
- ☐ Drift Lines
- ☐ Saturated within 12 in.
- ☐ Sediment Deposits
- ☒ Wetland Drainage Pattern: Swale
- ☐ Water Stained Leaves

Secondary Hydrology Indicators:

- ☒ Oxidized Root Channels (upper 12 inches)
- ☒ FAC- Neutral Test
- ☐ Local Soil Survey
- ☐ Water Marks
- ☐ Other:

Growing Season: YES

Is the 1987 Manual hydrology criterion met? Yes ☒ No ☐

Remarks:

Determination

Wetland? Yes ☒ No ☐

Remarks:

Routine Onsite Determination

Project Name:	MOX CHEHALIS INTERCHANGE WETLAND DELINEATION	Fieldwork Date:	09/10/08
Site Location:	Hwy 8 & Mox Chehalis Rd	County:	GH State: WA
Applicant/Owner:	M&M Harbor Properties (See Report)	Investigator(s):	SB
Land Form:	Riverine	Plant Community	Emergent SS
Plot	TP 4 Location See Sheet 2 Test Pit Location Map		

Do normal conditions exist on site? Yes ☒ No ☐

Has site been significantly disturbed? Yes ☐ No ☒

Is this a potential problem site? Yes ☐ No ☒

Vegetation

Species/Indicator Status	Stratum	% Cover	Species/Indicator Status	Stratum	% Cover
Himalayan Blackberry *(Rubus discolor – FACU-)*	V	60	Red Alder *(Alnus rubra – FAC)*	T	40

% Dominant (√) 40%

Is the 1987 Manual hydrophytic vegetation criterion met? Yes ☐ No ☒

Remarks:

Soil

Mapped Series Olympic Clay Loam Taxonomy Fine, mixed, active, mesic Xeric Palehumults

On hydric soil list? Yes ☐ No ☒ Confirmed map soil type or inclusion: Yes with inclusions

Horizon	Depth	Matrix Color	Redoximorphic Features	Texture, Other
A	0-12"	5YR 3/3		Silty Clay

Hydric Soil Indicators Yes ☐ No ☒

- ☐ Histosol/Histic Epipedon
- ☐ On Hydric Soils List
- ☐ Gleyed
- ☐ Sulfidic Odor
- ☐ Reducing Conditions
- ☐ High Organic Content in Surface for Sandy Soils
- ☐ Concretions/Nodules within 3 inches
- ☐ Organic Pan/Streaking in Sandy Soils
- ☐ Other
- ☐ Redox. Features within 10 inches
- ☐ Regional Indicators

Is the 1987 Manual hydric Soil criterion met? Yes ☐ No ☒

Remarks:

Hydrology

Recorded Data

Recorded Data Available:	☐	Aerial Photos:	☐	Stream Gauge	☐	Other	☐

Field Data

Depth of Inundation: None Depth to Saturation: None Depth to Free Water: None

Primary Hydrology Indicators:

- ☐ Inundated
- ☐ Drift Lines
- ☐ Saturated within 12 in.
- ☐ Sediment Deposits
- ☐ Wetland Drainage Pattern: Swale
- ☐ Water Stained Leaves

Secondary Hydrology Indicators:

- ☐ Oxidized Root Channels (upper 12 inches)
- ☐ FAC- Neutral Test
- ☐ Local Soil Survey
- ☐ Water Marks
- ☐ Other:

Growing Season: YES

Is the 1987 Manual hydrology criterion met? Yes ☐ No ☒

Remarks:

Determination

Wetland? Yes ☐ No ☒

Remarks:

Genesis Resource Consulting
142 Lamprecht Rd Winlock, WA 98596 (360) 520-2847

WETLAND DELINEATION REPORT

APPENDIX B

WASHINGTON STATE
WETLAND RATING SYSTEM
WETLAND RATING FORM

GENESIS RESOURCE CONSULTING
LAND DEVELOPMENT &
ENVIRONMENTAL SPECIALISTS

142 Lamprecht Road Winlock, WA 98596
GRconsulting@juno.com
360-520-2847

Wetland Rating Form

Washington State Wetland Rating System for Western Washington

Rating Summary

Wetland Name or Designation	MOX CHEHALIS INTERCHANGE
Location (S,T,R)	S-13 T-18N R-05W
Completed by	Scott Brummer
Affiliation	Genesis Resource Consulting
Date of site visit	9/10/2008

Rating Based on Functions		Category III
Water Quality Function Score		16
Hydrologic Function Score		12
Habitat Function Score		18
	Total	**46**
Rating based on Special Characteristics		N/A
Final Rating		**Category III**

Special Wetland Type	N/A
HGM Class	Riverine
Rating Form Class	Riverine

Considerations for Special Protection	y/n
Has the wetland been documented as habitat for any Federally listed Threathened or Endangered species?	n
Has the wetland been documented as habitat for any State listed Threathened or Endangered species?	n
Are Priority Species listed by Washington Department of Fish and Wildlife present?	n
Is the wetland designated as a "Wetland of Local Significance" by the local jurisdication?	n

Riverine and Freshwater Tidal Fringe Wetlands		
Water Quality Functions		
R1. Does the wetland have the potential to improve water quality? (see p. 50)		
1.1 Area of Surface depressions within the riverine wetland that can trap sediments during a flooding event:		
No depressions present (0)		0
1.2 Characteristics of the vegetation in the wetland:		
Forest or shrub > 2/3 the area of the wetland (8)		8
R1 Subtotal		**8**
R2. Does the wetland have the opportunity to improve water quality? (see p. 53)		
Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants.		
Grazing in the wetland or within 150 ft.	☐	
Untreated stormwater discharges to wetland	☑	
Tilled fields or orchards within 150 ft. of wetland	☐	
A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging	☑	
Residential, urban areas, golf courses are within 150 ft. of wetland	☑	
Wetland is fed by groundwater high in phosphorus or nitrogen	☐	
Other (Note)	☐	
Multiplier		**2**
TOTAL for Water Quality Functions		**16**

Riverine and Freshwater Tidal Fringe Wetlands

Hydrologic Functions

R3. Does the wetland have the potential to reduce flooding and erosion? (see p. 54)

3.1 Characteristics of the overbank storage the wetland provides:

Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks).

Calculate the ratio: (width of wetland)/(width of channel)

If the ratio is 1 - < 5 (2)		2

3.2 Characteristics of the vegetation that slow down water velocities during floods:

Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.

Forest of shrub for > 1/10 are OR emergent plants > 1/3 area (4)		4
R3 Subtotal		**6**

R4. Does the wetland have the opportunity to to reduce flooding and erosion? (see p. 57)

Answer YES if the wetland is in a location in the watershed where flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows.

Note which of the following apply:

There are human structures or activites downstream (roads bridges, farms) that can be damaged by flooding.	☐	
There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding.	☑	
Other (Note)	☐	

(Answer NO if the major source of water to the wetland is controlled by a reservoir of the wetland is a tidal fringe along the sides of a dike)

Multiplier	**2**
TOTAL for Hydrologic Functions	**12**

All Wetlands

Habitat Functions

H1. Does the wetland have the potential to provide habitat for many species?

1.1 Vegetation structure (see p. 72):

Note all plant communities (Cowardin) that cover more than 10% of the wetland or 1/4 acre

Aquatic bed	☑	
Emergent plants	☑	
Scrub/Shrub (more than 30% shrub cover)	☑	
Forested (more than 30% tree cover)	☑	
Forested areas with at least 3 strata (canopy, sub-canopy, shrub, herb/forb, moss/groundcover)	☑	4

1.2 Hydroperiod (see p. 73):

Note the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4/ acre to count (refer to text for descriptions of water regimes)

Permanently flooded or inundated	☐	
Seasonally flooded or inundated	☑	
Occasionally flooded or inundated	☐	
Saturated only	☐	
Permanently flowing stream or river in, or adjacent to, the wetland	☑	
Seasonally flowing stream or river in, or adjacent to, the wetland	☐	
Lake-fringe wetland = 2 points	☐	
Freshwater tidal wetland = 2 points	☐	2

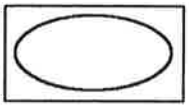
1.3 Richness of Plant Species (see p. 75):

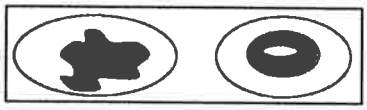
Count the number of plant species in the wetland that cover at least 10 sq. ft. Different patches of the same species can be combined to meet the size threshold.
Do not include eurasian milfoil, reed canarygrass, purple loosestrife, or Canadian thistle.

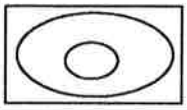
> 19 species	☐	
5 -19 species	☑	
< 5 species	☐	1

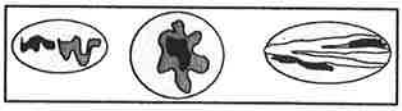
1.4 Interspersion of habitats (see p. 76):

Use the diagrams below to determine interspersion between vegetation types, or vegetation types and unvegetated areas (may include open water or mudflats).


None


Moderate


Low


High

Moderate (2)	▼	2

NOTE: If there are 4 or more vegetation types or 3 vegetation types and open water the score will be "High".

All Wetlands

Habitat Functions

1.5 Special habitat features (see p. 77):

Note all the habitat features that are present in the wetland.

Large, downed, woody debris (> 4 in. diameter and at least 6 ft. long)	☑	
Standing snags (diameter at the base > 4 in.)	☑	
Undercut banks are present for at least 6.6. ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream for at least 33 ft. (10m)	☑	
Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 deg. Slope) OR signs of recent beaver activity are present.	☐	
At least 1/4 acre of thin stemmed persistent vegetation or woody branched are present in areas that are permanently or seasonally inundated (structures for amphibian egg-laying)	☑	
Invasive pants cover less than 25% of the area in each stratum	☐	4
H1 Subtotal		**13**

H2. Does the wetland have the opportunity to provide habitat for many species?

2.1 Buffers (see p. 80):

Choose the description that best represents the condition of the wetland buffer. The highest scoring criterion that applies to the wetland is to be used in the rating. Refer to the text for the definition of "undisturbed".

100 m (330 ft.) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No developed areas within undisturbed part of the buffer (also no grazing).	☐	
100 m (330 ft.) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% of circumference.	☐	
50 m (170 ft.) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference.	☐	
100 m (330 ft.) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% of circumference.	☐	
50 m (170 ft.) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% of circumference.	☐	
If the buffer does not meet any of the criteria above		
No paved areas (except paved trails) or buildings within 25 m (80ft.) of wetland > 95% circumference. Light to moderate grazing or lawns OK.	☐	
No paved areas or buildings within 50 m (170ft.) of wetland > 50% circumference. Light to moderate grazing or lawns OK.	☐	
Heavy grazing in buffer	☐	
Vegetated buffers are < 2m (6.6 ft.) wide for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock to the edge of wetland).	☐	
Buffer does not meet any of the criteria above.	☑	1

All Wetlands		
Habitat Functions		
2.2 Corridors and connections (see p. 81):		
Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at lest 30% cover of shrubs, forest, or native undisturbed prairie, that connects to estuaries, other wetlands, or undisturbed uplands that are at least 250 acres in size *(dams in riparian corridors and heavily used gravel roads are considered breaks in the corridor)*?	☐	
Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at lest 30% cover of shrubs, forest, or native undisturbed prairie, that connects to estuaries, other wetlands, or undisturbed uplands that are at least 25 acres in size **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?	☐	
Is the wetland:		
within 5 mi. (8km) of a brackish or salt water estuary OR	☐	
within 3 mi. of a large field or pasture (>40 acres) OR	☐	
within 1 mi. of a lake of a greater than 20 acres?	☑	1
2.3 Near or adjacent to other priority habitats listed by WDFW *Note all PHS types that are within 330 ft. (100m) of the wetland.*		
Riparian	☐	
Aspen Stands	☐	
Cliffs	☐	
Old Growth Forest	☐	
Mature Forest	☐	
Prairies	☐	
Talus Slopes	☐	
Caves	☐	
Oregon White Oak Woodlands	☐	
Urban Natural Open Space	☐	
Estuary/Estuary-like	☐	
Marine/Estuarine Shorelines	☐	0
2.4 Wetland Landscape (see p. 84) *Choose the description below that best fits*		
There are at least 3 other wetlands within 1/2 mi. a, BUT the connections between them are disturbed. (3)		
		3
H2 Subtotal		**5**
TOTAL for Habitat Functions		**18**