Mercer Island Treehouse

LEVEL 1 DOWNSTREAM ANALYSIS

City of Mercer Island, Washington

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1 PROJECT OVERVIEW

The Mercer Island Treehouse project proposes to construct a single family residence on a 37,554 square foot lot. The project is located at 5637 East Mercer Way in Mercer Island Washington.

VICINITY MAP

(by King County iMap)

The lot is currently undeveloped and completely forested except for a concrete driveway and a short quarry spall access road. TRIAD staff made a visit to the site on June 19, 2015 to investigate the site's existing condition and downstream flow path. The information gained from the site visit supplements information acquired from the City of Mercer Island website

and GIS system, the King County website and site specific studies conducted by others. A wetland investigation was conducted by Sewall Wetland Consulting, Inc. and is summarized in their report titled *5637 Mercer Way – Revised Critical Areas Report* dated March 5, 2015. A geotechnical analysis of the site was conducted by GEO Group Northwest, Inc. The findings of this analysis are summarized in their report titled *Geotechnical Engineering Study Proposed Residence* dated March 12, 2015.

This report intends to summarize the information gathered to describe the onsite and downstream drainage conditions for the Mercer Island Treehouse project and will satisfy the Level 1 Downstream Analysis requirements as described in the 2009 King County Surface Water Design Manual (KCSWDM). This report will also provide design recommendations for the proposed development meant to mitigate for the observed onsite and downstream drainage issues.

1.1 Existing Site Conditions

The proposed development will occur on a 37,554 square foot lot which is currently undeveloped. In the existing condition the site is densely vegetated with a mature understory of bushes and ferns. There are several large evergreen and deciduous trees on the site. The lot has been previously platted and is a part of the Greg Newitt Short Plat. There is an existing single family residence on the parcel directly to the south of the site. This house (5645 East mercer Way) is accessed by a shared concrete paved driveway that crosses the project's parcel. There is a short length of rip-rapped covered ground, similar to a construction entrance that extends into the site approximately 10 feet. The majority of the site is covered by steep slopes ranging from 10-40%. An area of level (<10% slopes) ground can be found near the existing shared driveway.

1.2 Developed Condition

This description of proposed development is based on a conceptual site plan prepared by CHS Engineer, LLC. dated 11-14. This plan is attached to Appendix C of this report for reference. The proposed development includes a single family residence with a raised deck with an

approximate footprint of 2,800 square feet. A concrete driveway that connects to existing shared driveway is also proposed. In total the proposed development will add approximately 4,200 square feet of new impervious surfaces. There is minimal landscaping proposed around the new residence with most of the site proposed to be left in the pre-project, forested condition. Several rockeries or retaining walls will be required to achieve the desired final grades. Grading will be primarily cut with minimal imported fill anticipated.

2 Downstream Analysis

2.1 Task 1, Study Area Definition and Maps

This site drains to Lake Washington. The study area for this project includes the entire upstream and downstream tributary basin. The ultimate outfall for the site's tributary basin at Lake Washington has an approximate tributary area of 16.3 acres.

The Mercer Island GIS system provides a schematic description of the stormwater conveyance system downstream of the project. A printout of the Mercer Island stormwater conveyance inventory relating to this project is attached to Appendix A. This map has been annotated to show approximate upstream and downstream tributary areas.

2.2 Task 2, Resource Review

The following resources were reviewed for assisting with the offsite analysis:

2.2.1 Geotechnical Engineering Study

A geotechnical analysis of the site was performed by GEO Group Northwest, Inc. and is summarized in their report titled *Geotechnical Engineering Study Proposed Residence,* dated March 12, 2015. The geotechnical investigation included two boring investigations along with laboratory testing on soil samples taken from these borings and engineering design recommendations for the proposed residential construction. The boring logs found that the site is primarily underlain by outwash soils to a depth of 14-17 feet with denser till deposits below the outwash layer. Groundwater was observed near the surface of the borings and saturated soils were documented to depths of 20 feet. Groundwater seepage was noted at the base of the onsite steep slope areas. The report noted that the upper layers of outwash are susceptible to liquefaction. The report concluded that construction of a foundation on piles was feasible and that grading should be kept to a minimum to avoid impacting steep slopes.

2.2.2 Wetland Report

A wetland investigation of the site was conducted by Sewall Wetland Consulting, Inc. (Sewall) and is summarized in their report titled *5637 Mercer Way – Revised Critical Areas Report* dated March 5, 2015. This report identified an onsite wetlands and an onsite stream: 'Wetland A' which is a Category III wetland occurs over the north portion of the site. Wetland A was delineated by Sewall in 2004 and has a 50-foot buffer. This study also identified an onsite stream (referred to as Stream A) as listed by the City of Mercer Island to be a Type 2 watercourse and noted that it was a non-fish bearing stream with a 50-foot buffer. Proposed development would occur within the buffers of Wetland A and Stream A.

2.2.3 City of Mercer Island GIS Maps:

Online maps available from the City of Mercer Island website were analyzed, these maps are attached to the Appendix A.

Seismic Hazard Assessment Map: This map shows the site to be within a known or suspected seismic hazard area. A point indicating a "Miscellaneous Ground Effect of the 2001 Nisqually Earthquake" is shown near East Mercer Way to the north of the site.

Erosion Hazard Assessment Map: The project parcel is shown to be in a known or suspect Erosion hazard area, this map also shows the site in an area of high infiltration potential.

Landslide Hazards Assessment Map: The project parcel is shown to be in a known or suspect Landslide hazard area and also in a "Landslide and Mass Wasting Deposits; subaerial and subaqueous" area.

A "Geologic contact of coarse-grained deposits over fine-grained deposits where slopes >= 15%" delineation line runs to the east of the site through the downstream ravine to the east of the site. The site is also shown to be within an "Area where water less than 10 feet below ground surface based on limited data set".

This map shows one identified landslide location in the stream channel uphill of the site and five identified landslide locations downstream of the site.

Two "Areas of Rapid Stream Incision(vi)" points are located upstream of the site; one of these points appears to be identifying the onsite stream channel, the other point identifies a stream channel in the Parkwood open space, which is tributary to the onsite stream channel (Stream A). Another point is located in the Stream A channel downstream of the site, in the ravine to the east of East Mercer Way. This map also identifies a scarp directly uphill of the site and along the ravine downstream of the site, east of East Mercer Way.

Geologic Map of Mercer Island: This map shows the general soil classifications for Mercer Island. Data regarding on-site soils should be superseded by the geotechnical investigation of the site performed by GEO Group Northwest, Inc. This map shows the downstream soils to be various types of Pre-Olympia type outwash deposits, transitioning to Lake Deposits near the shore of Lake Washington.

King County iMap

The King County iMap system includes contours and elevation data. These contours were analyzed in combination with schematic storm drainage infrastructure information obtained from the City of Mercer Island to determine the general upstream and downstream tributary basin as well as the approximate slopes of the watershed, where more specific elevation information was not available. A King County iMap Exhibit Showing Contours for the site is attached to Appendix.

2.2.4 Drainage Complaints

A public records request was submitted to the City of Mercer Island on June 11, 2015 requesting a record of drainage complaints for the area surrounding the site. The public records request yielded 35 records which included drainage complaints and maintenance logs. These records were filed by street address. There were records for 8 separate addresses in the vicinity

of the site. These addresses are shown on the attached Drainage Complaints Exhibit. A summary of the drainage records are given below:

Drainage Complaint #1 (5/12/1998)

This complaint reported flooding of a yard during heavy rain. This complaint is outside of the project's tributary area and appears to be unrelated to the proposed development.

Drainage Complaint #2 (10/6/1998)

This complaint was a maintenance request by a resident for a roadside drainage. Maintenance was performed – debris were cleared, and this complaint was closed. This complaint appears to be outside of the project's tributary area and unrelated to the proposed development.

Drainage Complaint #3 5632 E Mercer Way (10/5/2009 - 3/31/2015)

This address is directly downstream of the project site along the stream which collects runoff from the project site. The address has 13 complaints on record.

Five of these complaints, between October 2009 and April 2014 are reports of a catch basin being clogged. Although not explicitly stated, the catch basin is likely the outlet of the small sediment pond (the Glenhome Pond) that collects Stream A, before the stream is conveyed to the Lake. On April 22, 2014 the outlet structure to the sediment pond was modified. The previously installed 6" diameter vertical standpipe was replaced with a 12" standpipe. This modification was intended to prevent fouling of the pond outlet by debris.

The other complaints were related to the removal of silt and sediment from the pond. Silt removal occurred 4 times between March 2014 and March 2015. The maintenance crew reported that an estimated 20 cubic yards of sediment was removed on March 31, 2015.

Drainage Complaint #4 5642 E Mercer Way (10/15/1998 – 11/16/2010)

This address had 6 records between October 1998 and November 2006. All of the records were maintenance logs on the Glenhome Pond. Maintenance included the removal of sediment and debris from the Glenhome Pond.

Drainage Complaint #5 5646 E Mercer Way (3/24/1997)

This complaint reported land movement along the south side of East Mercer Way. This would correspond to the hillside to the north of the project site. Although the complaint reported that the slope had dropped 8-10 inches and looked to be endangering East Mercer Way, the staff report noted "There's a little sluffing, nothing to worry about." No other actions were required/taken besides the inspection of the site by city staff.

Drainage Complaint #6 and 7: 5655 & 5565 E Mercer Way (9/2004 – 7/2014)

These drainage complaints detail the maintenance of a sediment pond near these two addresses. Sediment from this pond was removed 7 times in this time period. One of the records from September of 2007 indicate that the pond was removed, however there are subsequent records of pond maintenance. A maintenance note from July of 2014 indicates that this pond is upstream of the Glenhome neighborhood, but it is unclear if flows from this pond eventually reach the Glenhome Pond.

Drainage Complaint #8: 9208 SE 57th Place (6/5/2012)

This complaint reported a failing catch basin that was scheduled to be replaced in 2012. This drainage complaint appears to be out of the Project's tributary basin and unrelated to the proposed development.

2.3 Task 3, Field Inspection

Staff from Triad preformed a field visit on June 15, 2015 to inspect the site as well as the relevant drainage features upstream and downstream of the site. The weather was sunny during the site visit with sparse rainfall in the week leading up to the visit. A small amount of runoff was observed in the onsite stream and drainage systems during the site visit. The field

inspection began with a visual inspection of the site noting topographical features and likely drainage paths. The site visits, along with the aforementioned resources were used to perform the following analysis of the project's drainage basin.

See the downstream drainage maps located in Appendix A for maps of the downstream study area.

2.3.1 Onsite Basins

The project site is located within a ravine and receives stormwater flows from upstream areas. To determine the extent of the project's tributary basin, a topographical map obtained from the King County iMap program was analyzed, along with drainage infrastructure information obtained from the City of Mercer Island GIS database. The upstream edge of the project's tributary basin is well defined as a ridge that runs along Parkwood Ridge Road to the north of the site, 91st Avenue SE to the west of the site and SE 57th Street to the south of the site. In addition to this area, portions of SE 56th Street and SE 54th Street and adjacent lots drain to catch basins that discharge into the Parkwood Ridge Open Space. The upstream tributary basin is shown on the Upstream Drainage exhibit attached to the end of this section.

It was found that approximately 8.0 acres are tributary to the site. The majority of the upstream tributary area consists of undeveloped, forested hillside. Roadways and about 15 lots developed with single family residences are also upstream of the site. The upstream tributary area drains to a natural watercourse which runs through the project parcel. This watercourse was referred to as 'Stream A' in the Sewall Wetland Report.

Stream A is a natural stream which runs west to east across the northern portion of the project site. The main stream channels varies in width, depth and slope but, based on visual inspection and analysis of a site topographical survey, appears to be 10 feet wide and 5 feet deep in the portions that crosses the project site. The channel has steep side slopes, in the order of 1:1 in some portions. The stream channel is vegetated by a mature understory of ferns, and shrubs

and several large evergreen and deciduous trees. The stream channel has an approximate slope of 10% in the portion that crosses the site.

A planset entitled *Parkwood Trail and Subbasin 45B Watercourse Stabilization Project (WD 526C)* was obtained from the City of Mercer Island. A bid set of these plans are attached to Appendix C of this report. City staff have indicated that the project has been completed. The plans show stream channel stabilization measures to be installed within Stream A beginning at East Mercer way and continuing 400 feet upstream. The improvements include the installation of logs and natural debris, minor grading, the installation of a rockery and replanting of the stream channel side slopes. A sewer line was also installed within the stream channel, upstream of the project site. These improvements cover the portions of Stream A that pass through the project's parcel, as well as a portion of the channel upstream of the site.

During the site visit, the vegetation in the stream channel appeared to be well established. Many of the installed logs and the rockery were overgrown, indicating that the plantings conducted during the project had become established. The stream channel near the site displayed minimal visual signs of erosion. A pedestrian trail which runs parallel to the stream channel to the north of the project parcel appeared to be in good shape and showed no sign of sluffing towards the stream. The improvements to the stream channel appear to have been successful in limiting the erosion problems within the improved section of Stream A. It is likely that the noted erosion problems come from the unimproved sections of Stream A, downstream of the site.

Photo: Stream A observed from the pedestrian trail, approximately 50-feet west of East Meercer Way. Note the established vegetation on the stream bank.

Stream A appears to have formed a fork and a side channel that runs through the site parallel to the main channel. The side channel is shallower and weakly defined as compared to the main channel. The side channel forks to the south of the main channel and then rejoins the main channel as both channels combine within a closed depression at the edge of East Mercer Way.

A Type-2 catch basin with a beehive overflow grate collects Stream A within this depression and conveys the stream under East Mercer Way via a 16-ich HPDE pipe. This system discharges to the continuing stream channel to the east of East Mercer Way. An As-built drawing obtained from the City of Mercer Island titled *Schedule 'B' Culvert dated July 30, 2012* shows this system and is attached to Appendix B.

Photo: Type-2 catchbasin with beehive grate overflow conveys Stream A across and beneath East Mercer Way.

2.3.2 Downstream Basin

Flows leave the project site via the catch basin and culvert described above. Flows are discharged from this pipe into a natural stream channel which flows down a steep ravine. This stream channel and ravine are both densely vegetated by low lying plants as well as large trees. At this point the stream is flowing on private property (Parcel # 1924059343). The stream channel flattens and transitions from a densely vegetated natural channel to a landscaped, straight and flat, maintained channel section approximately 500 feet east of East Mercer Way. The channel at this point is approximately 10 feet wide and 4 feet deep with side slopes of approximately 2:1. The channel side is covered with landscaping bark and has been sparsely planted with ornamental plants. Photos of this channel and of the Glenhome Pond, taken from Google Streetview, are attached to Appendix A.

An area to the south of the project site drains to the project's downstream basin. This area contains portions of 92nd Avenue south of SE 57th Street, SE 57th Street, 93rd Place SE and

surrounding lots. This area drains to a natural stream course which is shown as entering a stormwater conveyance system within East Mercer Way to the south of the project. This conveyance system outfalls to Stream A, downstream of the project site, at the ravine due east of East Mercer Way. This basin drains and area of approximately 5.5 acres in size. Although this basin is partially at elevations higher than the project site, it is considered a downstream basin due to the fact that no stormwater from this basin enters the project site and rather connects to drainage basin downstream of the project site.

This channel section flows between two residences until it terminates in a manmade closed depression. This closed depression, referred to as the 'Glenhome Pond', is a circular pond, approximately 20 feet in diameter and approximately 4 feet deep. This pond is located to the west of a concrete paved private shared driveway and can be accessed for maintenance by a short length of gravel access road. The Glenhome Pond is drained via a catch basin with a beehive overflow grate located within the west edge of the pond. Flows from the Glenhome Pond leave through this catch basin and are piped under two residential driveways before emerging as a drainage ditch that outfalls to Lake Washington.

2.4 Task 4, Drainage System and Problem Description

The site is within an area where seismic, landslide and erosion hazard area have been documented. There are steep slopes upstream and downstream of the sites which, in combination with the surficial outwash-type soils have contributed to erosion problems downstream of the project. The Glenhome Pond, which receives all runoff flows from the project site and upstream areas, has a history of filling with sediment and requires frequent maintenance. This sediment collection within the Glenhome Pond indicates that sediment from the upstream ravine is being eroded and transported downstream. This erosion may lead to Stream A incising a deeper ravine possibly causing settlement and slope stability issues.

The documented drainage complaints for the Glenhome Pond deal mainly with erosion and maintenance issues; no flooding problems were reported for the Glenhome Pond or for any of the downstream conveyance systems. This suggests that the downstream conveyance systems are adequately sized. The scale of the proposed project's improvements is not anticipated to impact the capacity of these systems.

2.5 Task 5, Mitigation of Existing and Potential Problems

Although this project proposes a minimal area of new impervious surfaces, providing flow control should reduce the impact to the downstream watercourse. Flow control is intended to "minimize the creation and aggravation of many types of downstream drainage problems" including the sedimentation problems observed downstream of the project. Level 2 flow control is a standard where the flow rates and flow durations from a developed site are released at rates which mimic a forested land use. Per the KCSWDM:

"The Level 2 flow control standard assuming historic site conditions is intended to limit the amount of time that erosive flows are at work generating erosion and sedimentation within natural and constructed drainage systems. Such control is effective in preventing development-induced increases in natural erosion rates and reducing existing erosion rates where they may have been increased by past development of the site " . (p. 1-40)

Preliminary detention modeling performed by the Western Washington Hydraulic Model Version 3 (WWHM) was performed based on a proposed impervious footprint of 5,000 square foot. The model showed that a live storage volume of approximately 1,300 cubic feet would be required to provide level 2 flow control (matching developed discharge durations to predeveloped durations for the range of predeveloped discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow). The WWHM model outputs are attached to Appendix C.

APPENDIX A

Mercer Island Stormwater Conveyance Inventory Exhibit with Project Tributary Area

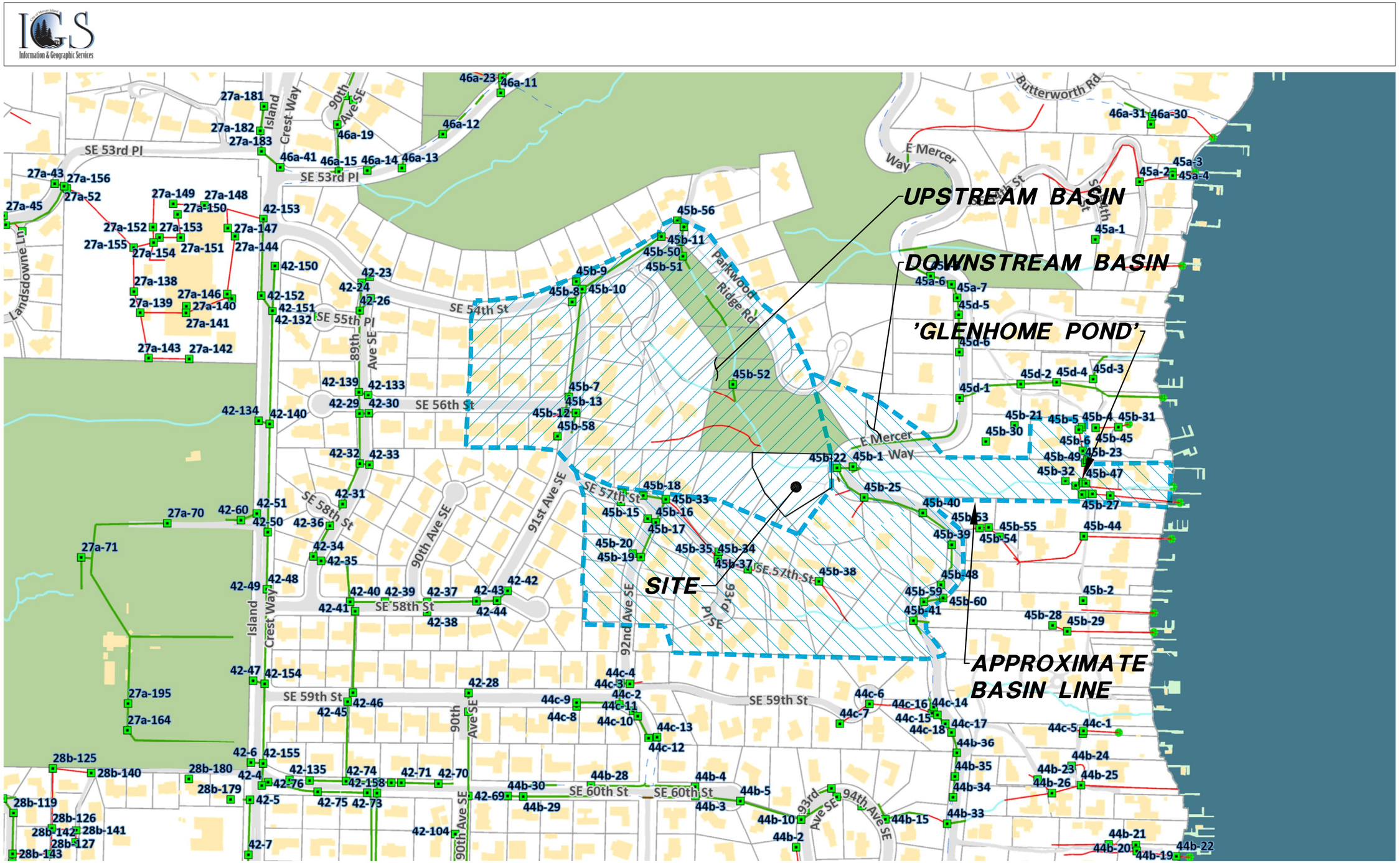
Downstream Flowpath and Glenhome Pond Photos

King County iMap Exhibit Showing Contours

Mercer Island Landslide Hazard Assessment Map

Mercer Island Erosion Hazard Assessment Map

Mercer Island Seismic Hazard Assessment Map



460.5 0 230.23 460.5 Feet

© City of Mercer Island Map Printed: June 17, 2015

BASIN AREA:

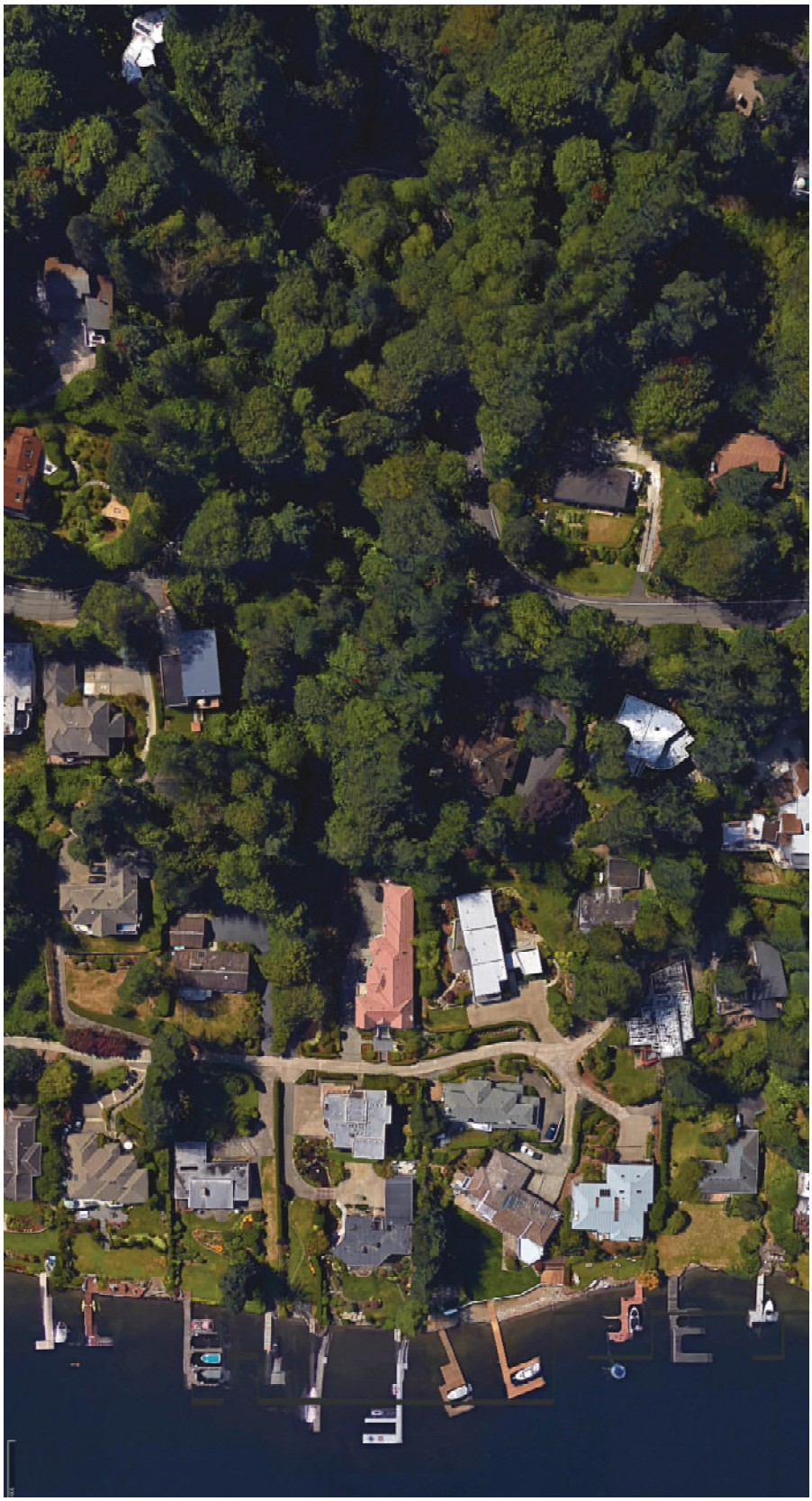
UPSTREAM: 8.0 ACRES

DOWNSTREAM: 8.3 ACRES

TOTAL: 16.3 ACRES

Notes

Downstream Photos



From the MI Treehouse Site, to Lake Washington

The Shared Driveway to the Left

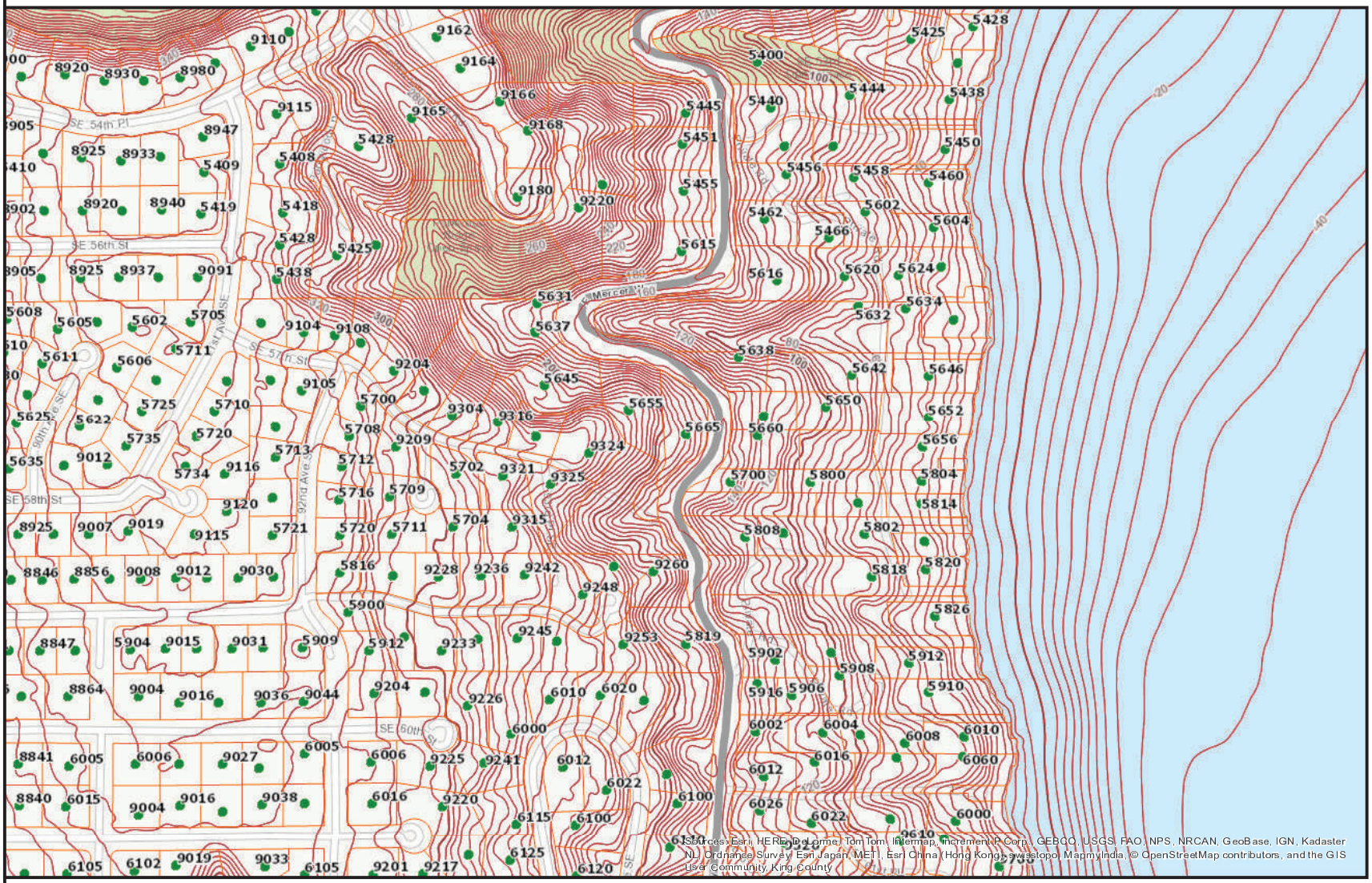
The Regional Trail to the Right

The Glenhome Sediment Pond

Downstream of the Glenhome Sediment Pond, to Lake Washington

(Images acquired from © Google and Google Street View)

King County iMap



Legend

Parcels

Date: 6/22/2015

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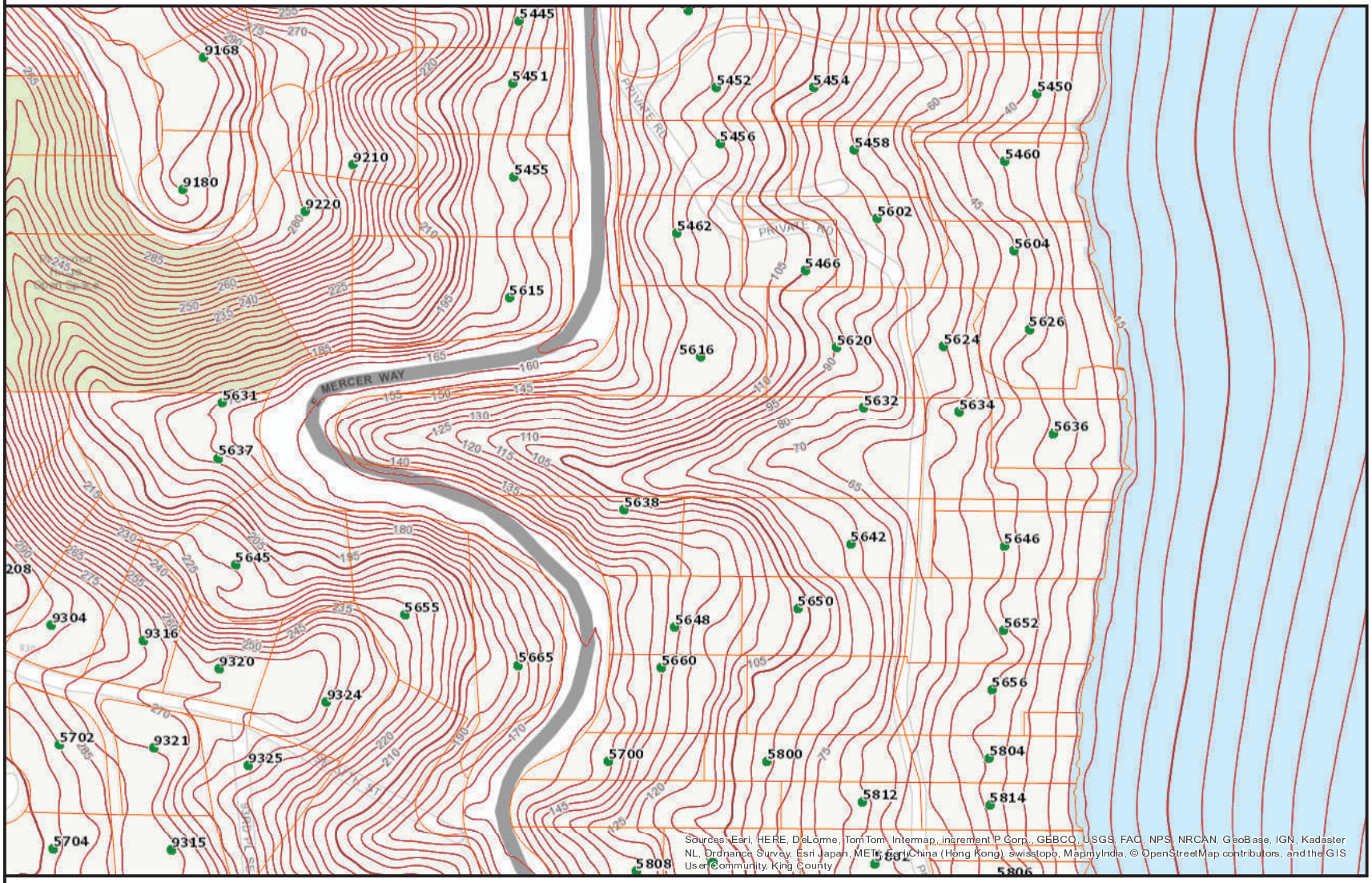
King County GIS Center

Notes:Mercer Island Treehouse Topography

King County iMap



Legend

Parcels

Date: 6/22/2015

N

King County GIS Center

Notes:Mercer Island Treehouse Topography

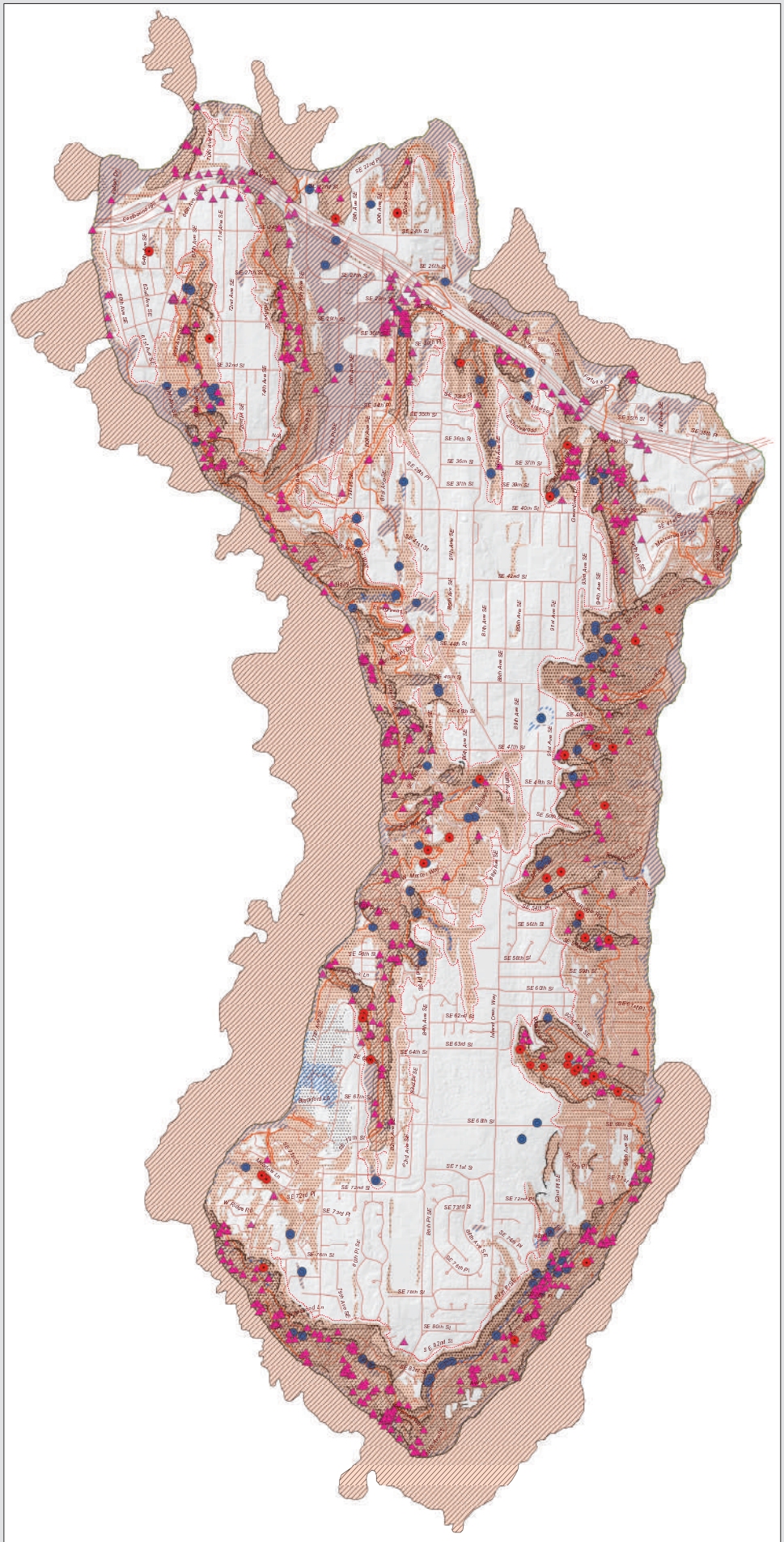
Mercer Island Landslide Hazard Assessment

by Kathy G. Troost & Aaron P. Wisher
April 2009

GeoMapNW
geomapnw.ess.washington.edu

0 0.5 1 Kilometers 1:12,000
0 0.5 1 Miles

N



LANDSLIDE HAZARD AREAS
(WAC 365-190-080 4d and MICC 19.16.010)

Landslide hazard areas include areas potentially subject to landslides based on a combination of geologic, topographic, and hydrologic factors. They include areas susceptible because of any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other factors.

Areas susceptible to landsliding on Mercer Island include:

i. Areas of historic failure or that have been documented on published maps; *See mapped known landslides below;*
ii. Slopes steeper than 15% intersecting a geologic contact of relatively permeable deposits over relatively impermeable deposits, and with springs or groundwater seepage; *See mapped potential slide areas below;*
iii. Areas that have shown movement during the Holocene epoch (last 10,000 years) or which are covered by Holocene-age mass wasting deposits; *See mapped known landslides below;*
iv. Slopes parallel or sub-parallel to planes of weakness (such as bedding planes, joint systems, and fault planes) in subsurface materials; *None identified on map, but may be locally present;*
v. Slopes having gradients steeper than 80% subject to rockfall during seismic shaking; *See slope classification below;*
vi. Areas potentially unstable as a result of rapid stream incision, stream bank erosion, and undercutting by wave action; *See mapped erosion locations below;*
vii. Areas that show evidence of, or are at risk from snow avalanche; *None identified on Mercer Island;*
viii. Areas located in a canyon or on an active alluvial fan, presently or potentially subject to inundation by debris flows or catastrophic flooding; *None identified on Mercer Island;*
ix. Any area with a slope of 40% or steeper and with a vertical relief of ten or more feet except where composed of consolidated rock; *See slope classification below.*

Landslide hazard areas include the following mapped areas:

Landslide Hazard
- Landslide Hazard Area (Known or Suspect)
- Landslide Hazard Assessment Setback

For all other areas hazard is unknown or unquantified

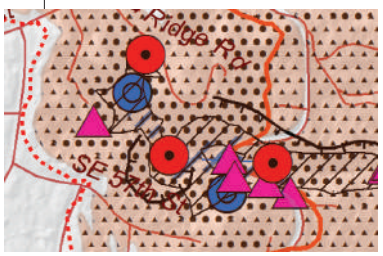
Supplemental Data

Known Landslides (i,iii)
- # Identified Landslide Location
- Scarp
- Landslide and Mass Wasting Deposits; subaerial and subaqueous

Slope (v) Class (ix)
- Slope 80% and higher
- Slope 40-79%

Potential Slide Area (ii)
- Slope 15% and higher, and
- Geologic contact of coarse-grained deposits over fine-grained deposits where slope >= 15%, and
- Area where water less than 10 feet below ground surface based on limited data set (other areas of shallow water present), or
- R Spring Locations, or
- Spring lines.

Areas of Rapid Stream Incision (vi)
- ! Areas of moderate to rapid stream incision/erosion; may result in unstable slopes and/or stream banks



Enlargement of Site

GENERAL NOTES FOR GEOLOGICAL HAZARDS MAPS

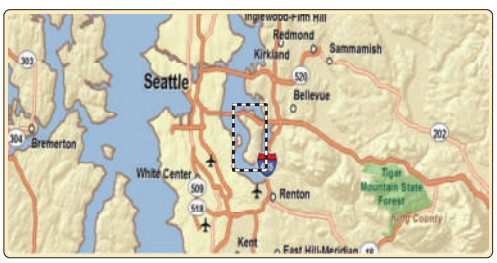
This map is one of a suite of revised Geological Hazard Maps for the City of Mercer Island. This suite includes maps showing Seismic Hazards, Landslide Hazards, and Erosion Hazards.

Other geological and/or natural hazards may exist and geological events may occur on Mercer Island that are not specifically identified on these maps. Examples of geologic hazards and hazardous events that are not identified on these maps include, but are not limited to, tsunamis and seiches in Lake Washington.

These maps are for the sole use of the staff of the City of Mercer Island's Development Services Group (DSG) for the purposes of permit application evaluation. These maps provide DSG staff a general assessment of known or suspect geological hazard areas for which the City will require site and project-specific evaluation by a Washington State-licensed engineer, geologist or engineering geologist prior to issuing a permit for site development. All areas have not been specifically evaluated for geologic hazards and there may be locations that are not correctly represented on these maps. It is the responsibility of individual property owners and map users to evaluate the risk associated with their proposed development. No site-specific assessment of risk is implied or otherwise indicated by the City of Mercer Island by these maps.

The City of Mercer Island is using guidance provided by the State of Washington regarding the definition of geologically hazardous areas in accordance with WAC 365-190-080 and the Growth Management Act. "Geologically hazardous areas", by State definition, "include areas susceptible to erosion, sliding, earthquake, or other geological events. They pose a threat to the health and safety of citizens when incompatible commercial, residential, or industrial development is sited in areas of significant hazard."

This new set of maps represents an update of the 2002 Geologic Hazard Map Series and is based on a review of Best Available Science for the Seattle Fault and related events, a new Geological Map of Mercer Island by Troost and Wisher (2006), and a geologic database of Mercer Island compiled by GeoMapNW at the University of Washington. Information about data used for the maps, references, and data limitations are all described in an associated "Read Me" document. The digital version of these maps is accompanied by a meta data file containing pertinent information about map construction. These data and maps are all available on the City of Mercer Island website.



Mercer Island Erosion Hazard Assessment

by Kathy G. Troost & Aaron P. Wisher
April 2009

geomapnw.ess.washington.edu

0 0.5 1 Kilometers 1:12,000
0 0.5 1 Miles

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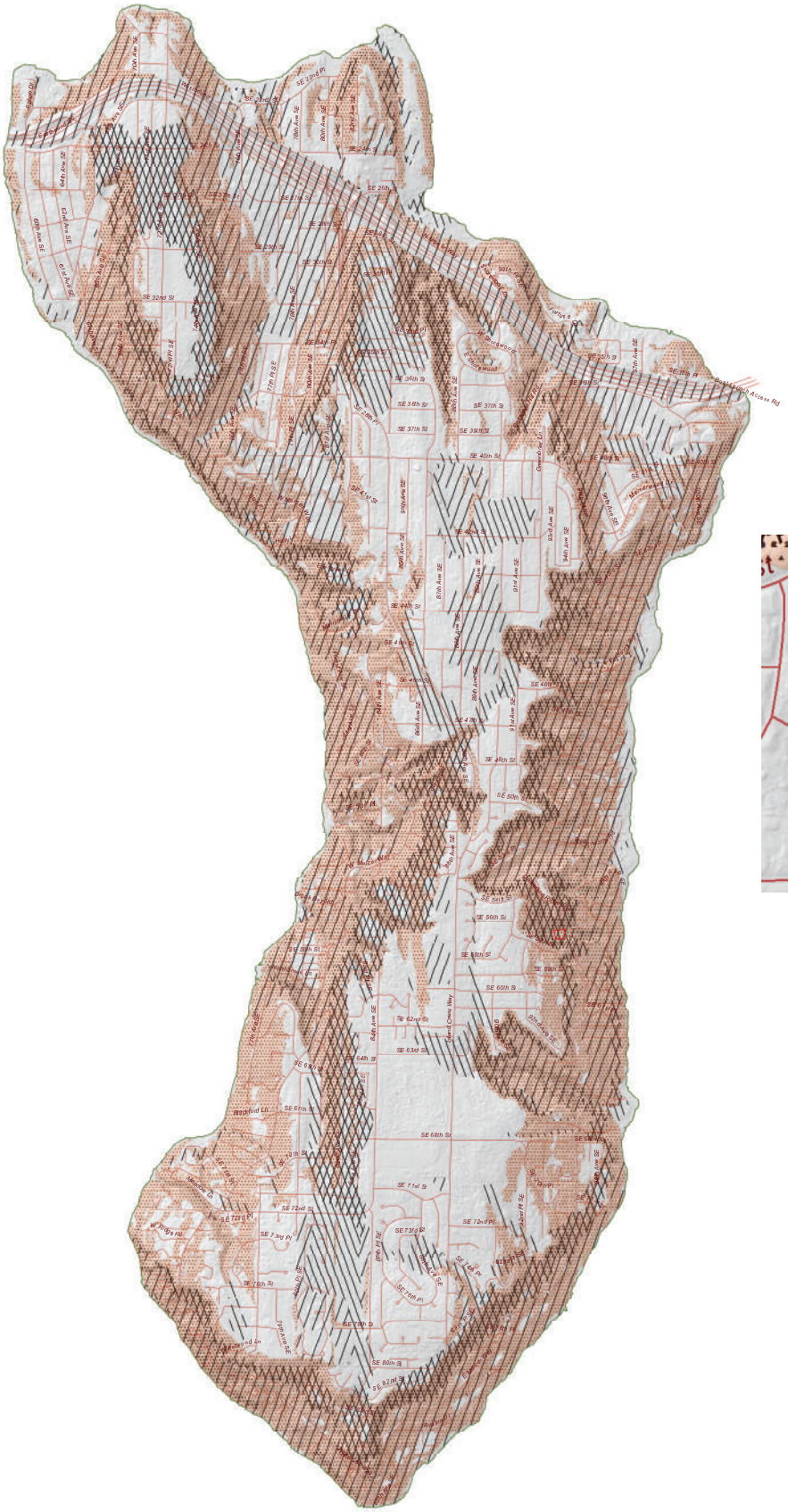


EROSION HAZARD AREAS (MICC 19.16.010)

Erosion hazards areas include those areas greater than 15% slope and subject to a severe risk of erosion due to wind, rain, water, slope and other natural agents including those soil types and/or areas identified by the U.S. Department of Agriculture's Natural Resource Conservation Service as having a "severe" or "very severe" rill and inter-rill erosion hazard.

Another factor in evaluating erosion potential is infiltration potential. If sandy material is present at the ground surface, rain water can infiltrate and loosen material for removal by erosion. Therefore the areas of sandy material have also been added to this hazard map for consideration along with the slope and erodible soils subclass.

Contributing factors not shown on the map include rainfall, areas of shallow groundwater, ground cover, wind, impervious surfaces, and changes to the ground surface. These factors and all the categories shown on the map should be used together to assess erosion potential. Individual areas less than 0.3 acres in size have been excluded.

Erosion Hazard

- Erosion Hazard Area (Known or Suspect)

For all other areas, hazard is unknown or unquantified

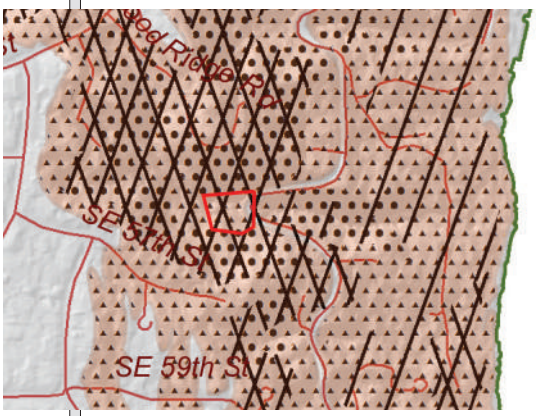
Supplemental Data

Infiltration Potential

- High - Coarse-grained deposits; e.g. gravel and clean sand
- Medium - Silty, sandy deposits
- Mixed - Interbedded or mixed fine and coarse-grained deposits

Slope Class

- Slope 80+%
- Slope 40-79%
- Slope 15-39%



Blow up of site

GENERAL NOTES FOR GEOLOGICAL HAZARDS MAPS

This map is one of a suite of revised Geological Hazard Maps for the City of Mercer Island. This suite includes maps showing Seismic Hazards, Landslide Hazards, and Erosion Hazards.

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These maps are for the sole use of the staff of the City of Mercer Island's Development Services Group (DSG) for the purposes of permit application evaluation. These maps provide DSG staff a general assessment of known or suspect geological hazard areas for which the City will require site and project-specific evaluation by a Washington State-licensed engineer, geologist or engineering geologist prior to issuing a permit for site development. All areas have not been specifically evaluated for geologic hazards and there may be locations that are not correctly represented on these maps. It is the responsibility of individual property owners and map users to evaluate the risk associated with their proposed development. No site-specific assessment of risk is implied or otherwise indicated by the City of Mercer Island by these maps.

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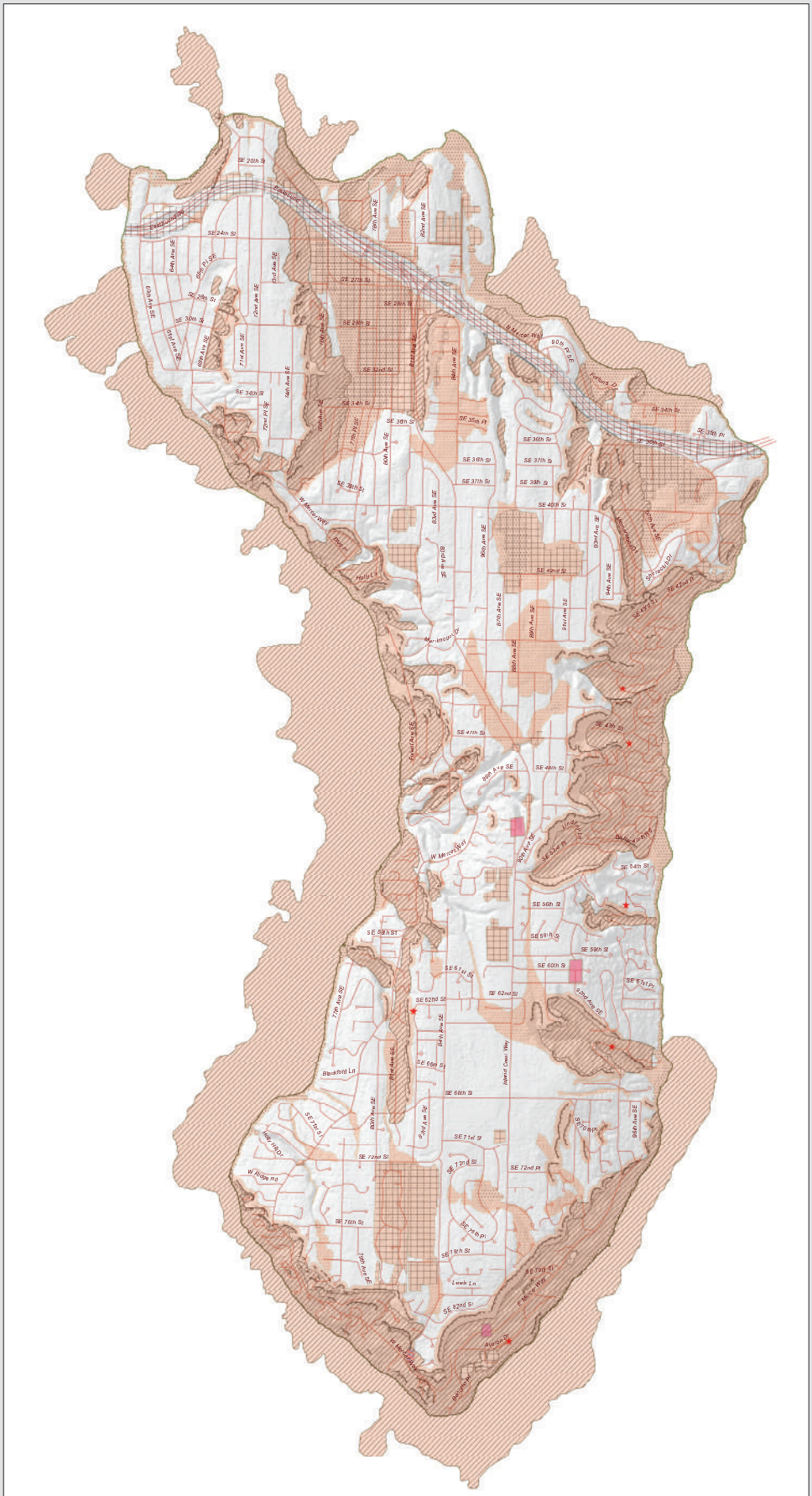
This new set of maps represents an update of the 2002 Geologic Hazard Map Series and is based on a review of Best Available Science for the Seattle Fault and related events, a new Geological Map of Mercer Island by Troost and Wisher (2006), and a geologic database of Mercer Island compiled by GeoMapNW at the University of Washington. Information about data used for the maps, references, and data limitations are all described in an associated "Read Me" document. The digital version of these maps is accompanied by a meta data file containing pertinent information about map construction. These data and maps are all available on the City of Mercer Island website.

Mercer Island Seismic Hazard Assessment

by Kathy G. Troost & Aaron P. Wisher
April 2009



0 0.5 1 Kilometers 1:12,000
0 0.5 1 Miles
TN

SEISMIC HAZARD AREAS (MICC 19.16.010)

Seismic Hazard areas are those areas subject to severe risk of damage as a result of earthquake-induced ground shaking, slope failure, settlement, soil liquefaction or surface faulting.

Seismic Hazard
- Seismic Hazard Area (Known or Suspect)

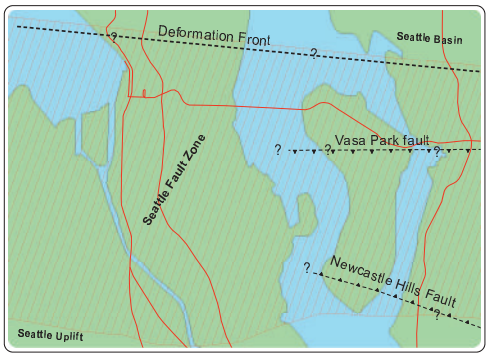
For all other areas risk is unknown or limited to ground shaking

Supplemental Data

Seismically Hazardous Areas
Potential for seismically induced ground failures including settlement, cracking, lateral spreading, liquefaction due to ground shaking.
Seismically hazardous areas include the following:
- High Potential for seismically induced ground failures (Poorly consolidated, see note below)
- Moderate Potential for seismically induced ground failures (Moderately consolidated, see note below)
- Scarp
- Landslide and Mass Wastage Deposits (subaerial & subaqueous)
- Modified land

Documented Earthquake Ground Effects
- Miscellaneous Ground Effects of the 2001 Nisqually Earthquake (Approx. Area)
- Ground Settlement from the 1965 Earthquake (Approx. Area)
- Miscellaneous Ground Effects of the 1949 Earthquake (Approx. Area)

ACTIVE FAULTS



Mercer Island falls within the Seattle fault zone and at least two stands of the Seattle fault cross the island. No direct evidence of surface fault rupture has yet been documented for Mercer Island (Troost and Wisher, 2006).

The Seattle Fault Zone is the area where several parallel strands of the Seattle fault have either broken the ground surface or caused deformation of geologic materials. Earthquakes of magnitude M7 or greater have occurred on some of these fault strands within the Holocene (last 10,000 years) and will likely occur again (Blakely, et al., 2002; Sherrod 2002, 2005). The Seattle Fault Zone is one of several active crustal faults zones in the Puget Lowland currently undergoing research.

On Mercer Island, evidence for movement along these fault strands consists of exposures of deformed sedimentary strata and geophysical images of folded and faulted strata (Troost and Wisher, 2006; Stephenson et al., 2007). Elsewhere in the Puget Sound lowland, evidence for movement on the fault strands consists of uplifted beach deposits, down-dropped tidal marshes, offset strata, fault scarps, and deformation such as sheared and tightly folded strata. Evidence of the Seattle fault zone in the subsurface consists of aeromagnetic, gravitational, and seismic reflection anomalies (Liberty and Pratt, 2008).

East of Mercer Island, the Vasa Park fault and Newcastle Hills fault each have surface expression in the form of fault scarps and subsurface expression in the form of magnetic and seismic linear anomalies (Liberty and Pratt, 2008; Sherrod, 2002). The magnetic and seismic anomalies may be continuous with similar features to the west of Lake Washington, but those continuities are not firmly established (Liberty and Pratt, 2008). The locations of these faults are not well defined on Mercer Island (Pratt, 2009, pers. comm.)

The Deformation Front is an east-west-trending, convex-upward fold in geologic strata, where those strata drape over the northern-most thrust fault in the Seattle Fault Zone. North of the Deformation Front is the Seattle Basin, where strata lie nearly flat; south of the Deformation Front the strata dip down toward the north beneath the Seattle Uplift (Pratt, 2009). The location of the Deformation Front was moved northward from previous interpretations (Brocher, et al. 2004) following detailed evaluation of seismic lines by Pratt (2009).

Notes: Degree of consolidation

Geologic materials were assessed then classified as either strongly, moderately, or poorly consolidated. Degree of consolidation is a direct translation of geologic unit based on geologic history and predominant lithology. Because considerable variability exists within each geologic unit, more detailed analysis is needed for site-specific evaluations or to evaluate the degree of consolidation at a larger scale than provided. Slope and degree of saturation also affect the degree of consolidation, but have not been factored into this map. This qualitative assessment should be used to evaluate and understand the character of the island as a whole. These data should not be used for purposes of site-specific land-use planning or site-specific geologic evaluations. The classification shown on the map does not account for the built environment and impervious surfaces.

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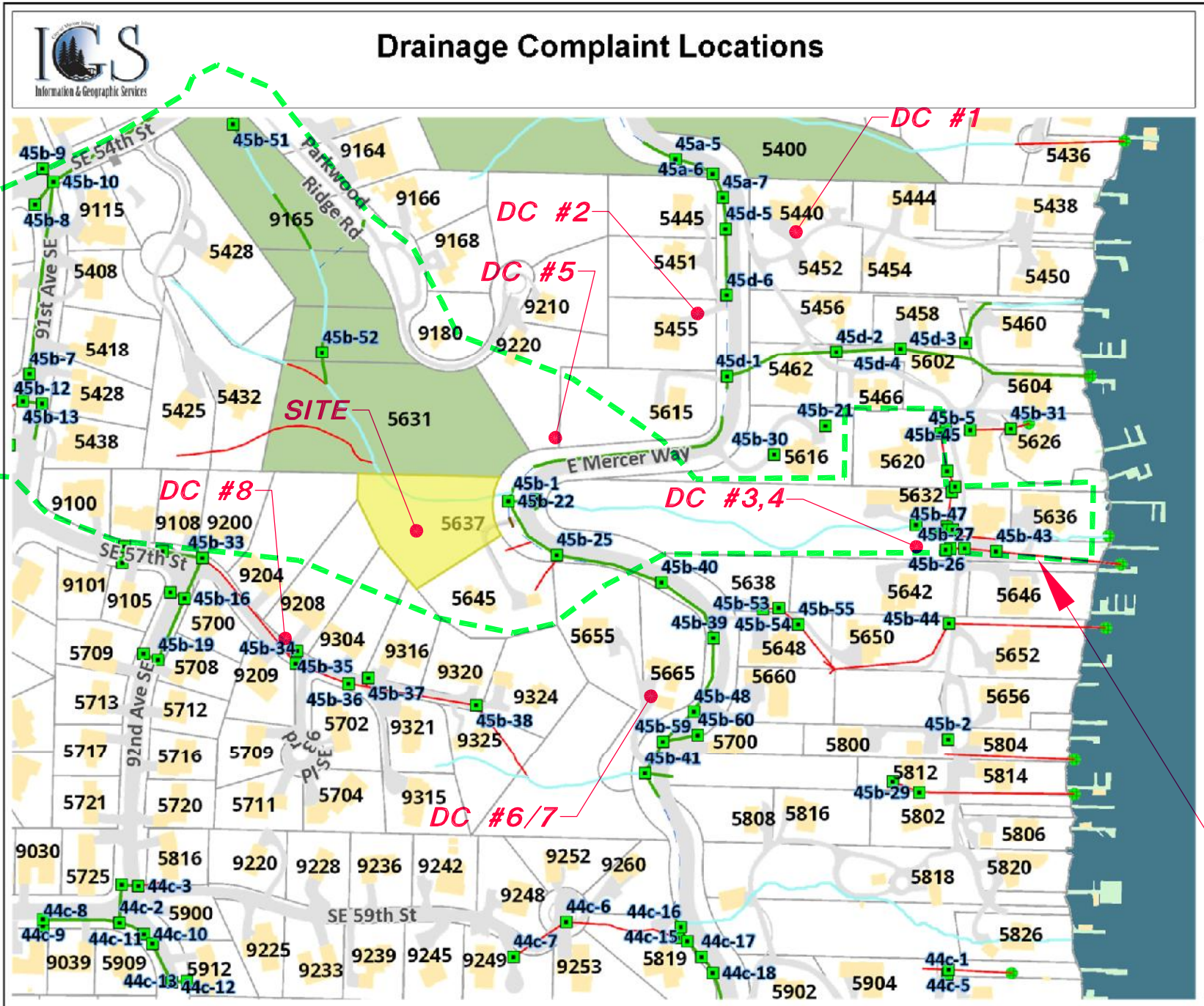
APPENDIX B

Drainage Complaints Map

Mercer Island Drainage Complaint Log

Schedule B Culvert As-Built by City of Mercer Island, dated July 30, 2012

Drainage Complaint Locations



Legend

- Storm Catchbasin
- Storm Main
  - Other
  - Culvert
  - Ditch
  - Pipe
  - Watercourse
- Storm Main - Private
- Storm Discharge Point
- Bridge
- Paved Road
- Streets
- SideWalk
- Paved Driveway
- Paved Parking Area
- Address
- Building
- Ownership Parcels
- Docks
- Parks
- King_co__Streets
- Water

1:3,055

509.2 0 254.60 509.2 Feet

Map Printed: June 17, 2015

Notes

DC 1

Work Order

6/16/2015
RE 2565.1

Location : 5440 E MERCER WAY Address
Permit :
Equipment :
Requester : JUDD JERRY
Serial # :
Contact : City Employee
PM Number :
Phone :

Request : DRAINAGE CONTROL
GRAVEL NEEDED NEAR MAIL BOXES, WATER GOING OVER BANK INTO BACK YARD.

Status :	COMP	Open Date :	5/12/1998	Procedure :	DRAINC
Priority :	3	Comp Date :	5/12/1998	Craft :	
Assigned :	Jolene Judd	Target Date :		Team :	UTIL

Actuals Hours (1.5) $39.12 Materials $25.42 Tools $0.00 Service $0.00 Total $64.54

Labour

Employee	Craft	Description	Hours
JUDJ			1
ROCB			0.5

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
	TRUCK #259		1	$17.00	$17.00
	5/8-0 GRAVEL $16.83/YRD. USED 1/2.		1	$8.42	$8.42

Comp Remark:
WORK COMPLETE - NO FURTHER ACTION REQUIRED
GRAVELED IN FRONT OF MAIL BOXES TO PREVENT WASH OUT DURING HEAVY RAIN.

[x] Complete	EQ Meter:	By: JUDJ	Date: 5/12/1998	Hours: 1.5

DC 1

Work Order

6/16/2015
RE 2948.1

Location :	5440 E MERCER WAY Address	Permit :	
Equipment :		Requester :	RICHARD N ELKINS
Serial # :		Contact :	RICHARD N ELKINS
PM Number :		Phone :	

Request : DRAINAGE CONTROL
ASPHALT WON'T DRAIN RUNOFF PROPERLY, STORM WATER FLOWING INTO YARD NEAR MAILBOXES FOR GLENN HOME SUBDIVISION.
ASSESSED - ASPHALT HAS HIGH SPOT, NEEDS TO CHANNEL WATER AWAY FROM RESIDENCE
PER JUDD 10/6 - DSG NEEDS TO REVIEW PROBLEM.

Status :	COMP	Open Date :	9/29/1998	Procedure :	DRAINC
Priority :	3	Comp Date :	10/19/1998	Craft :	
Assigned :	Jolene Judd	Target Date :		Team :	UTIL

Actuals Hours (7.5) $187.88 Materials $172.94 Tools $0.00 Service $0.00 Total $360.82

Labour

Employee	Craft	Description	Hours
FELJ			0.5
JUDJ			3
MAUW			0.5
ROCB			3
WILB			0.5

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
	HOT MIX		2	$31.22	$62.44
	TRUCK #259		3	$17.00	$51.00
	DUMP TRUCK #236		3	$17.00	$51.00
	SERVICE VAN #188		1	$8.50	$8.50

Comp Remark:
WORK COMPLETE - NO FURTHER ACTION REQUIRED
INSTALLED THICKENED EDGE & BERM IN FRONT OF GELNN HOME MAIL BOXES.

[x] Complete	EQ Meter:	By: JUDJ	Date: 10/19/1998	Hours: 7.5

DC 2

Work Order

6/16/2015
RE 2967.1

Location :	5455 E MERCER WAY Address	Permit :	
Equipment :		Requester :	DARRELL P JOHNSON
Serial # :		Contact :	JOANNE
PM Number :		Phone :	

Request : DRAINAGE CONTROL
STORM DRAIN DITCH IN FRONT OF RESIDENCE NEEDS CLEANING

Status :	COMP	Open Date :	9/29/1998	Procedure :	DRAINC
Priority :	3	Comp Date :	10/6/1998	Craft :	
Assigned :	Brian Rock	Target Date :		Team :	UTIL

Actuals Hours (3) $77.77 Materials $71.00 Tools $0.00 Service $0.00 Total $148.77

Labour

Employee	Craft	Description	Hours
JUDJ			1
ROCB			1
SEGJ			1

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
	DUMP TRUCK #246		1	$17.00	$17.00
	BACKHOE #187		1	$50.00	$50.00
	PICKUP #251		1	$4.00	$4.00

Comp Remark:
WORK COMPLETE - NO FURTHER ACTION REQUIRED
CLEANED UP DEBRIS IN DITCH.

[x] Complete	EQ Meter:	By: ROCB	Date: 10/6/1998	Hours: 3

DC 2

Work Order

6/16/2015
RE 3739.1

Location :	5455 E MERCER WAY	Address	Permit :	
Equipment :	RD-RO	Roadways	Requester :	DARRELL P JOHNSON
Serial # :			Contact :	DARRELL P JOHNSON
PM Number :			Phone :	

Request :	PATCH TEMPORARY PLEASE FIX POTHOLE IN ROW, NEAR DRIVEWAY APRON. ALSO PLEASE ASSESS SUNKEN ASPHALT ON EAST SIDE.

Status :	COMP	Open Date :	7/1/1999	Procedure :	PATEMP
Priority :	4	Comp Date :	9/1/1999	Craft :	
Assigned :	MANJ	Target Date :		Team :	ROW

Comp Remark:
WORK COMPLETE - NO FURTHER ACTION REQUIRED
COMPLETED PRIOR.

[x] Complete	EQ Meter:	By: MANJ	Date: 9/1/1999	Hours: 0

DC 2

Work Order

6/16/2015
REQ R-2878

Location :	5455 E MERCER WAY Address	Permit :	
Equipment :		Requester :	DARRELL P JOHNSON
Serial # :		Contact :	DARRELL P JOHNSON
PM Number :		Phone :	232-3119

Request :	Drainage Ditch Maint - SD FLOODING IN BACK YARD, ANYTHING WE CAN DO?				
Status :	COMP	Open Date :	2/8/1996	Procedure :	DRAINC
Priority :	2	Comp Date :	2/15/1996	Craft :	
Assigned :	Jolene Judd	Target Date :		Team :	UTIL
Comp Remark:					

[x] Complete	EQ Meter:	By: JUDJ	Date: 2/15/1996	Hours: 0

DC 3

Work Order

6/16/2015
RE 023334

Location :	5632 E MERCER WAY	Address		Permit :	
Equipment :	SD-DD	Storm System Drainage Ditch		Requester :	Terry Winkel
Serial # :				Contact :	Alisa London
PM Number :				Phone :	232-8955

Request : DRAINAGE ASSESS/INSPECT
C/B needs silt removal

Status :	COMP	Open Date :	9/21/2009	Procedure :	DRAINC
Priority :	3	Comp Date :	10/5/2009	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (4) $191.14 Materials $0.00 Tools $90.40 Service $0.00 Total $281.54

Labour

Employee	Craft	Description	Hours
CLIC	TM	Curtis Clifton	2
ROCB	GN	Brian Rock	2

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0246	Dump Truck Frtlnr 7 YD		2	$25.50	$51.00
FL-0305	Backhoe/Loader John Deere #310SE		2	$19.70	$39.40

Comp Remark:
WORK COMPLETED

[x] Complete	EQ Meter:	By: ROCB	Date: 10/5/2009	Hours: 4

DC 3

Work Order

6/16/2015
RE 023821

Location :	5632 E MERCER WAY	Address	Permit :	
Equipment :	SD-DD	Storm System Drainage Ditch	Requester :	Terry Winkel
Serial # :			Contact :	Alissa London
PM Number :			Phone :	2-8955/683-0655

Request : DRAINAGE ASSESS/INSPECT
Customer says the catch basin appears to be leaking, it's not flowing as usual. Please call 1st for additional info.

Status :	COMP	Open Date :	11/30/2009	Procedure :	DRAINC
Priority :	3	Comp Date :	12/11/2009	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (0.5) $25.52 Materials $0.00 Tools $8.25 Service $0.00 Total $33.77

Labour

Employee	Craft	Description	Hours
ROCB	GN	Brian Rock	0.5

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0359	Pickup Ford F150 4x4		0.5	$16.50	$8.25

Comp Remark:
WORK COMPLETED

[x] Complete	EQ Meter:	By: ROCB	Date: 12/11/2009	Hours: 0.5

DC 3

Work Order

6/16/2015
RE 027228

Location :	5632 E MERCER WAY	Address	Permit :	
Equipment :	SD-DD	Storm System Drainage Ditch	Requester :	Terry Winkel
Serial # :			Contact :	Alissa London
PM Number :			Phone :	2-8955/683-0655

Request : DRAINAGE ASSESS/INSPECT
Customer says the catch basin appears to be full of silt, not flowing as usual.

Status :	COMP	Open Date :	12/17/2010	Procedure :	DRAINC
Priority :	3	Comp Date :	12/21/2010	Craft :	Team Member
Assigned :	Curtis Clifton	Target Date :		Team :	ROW

Actuals Hours (1) $45.19 Materials $0.00 Tools $16.50 Service $0.00 Total $61.69

Labour

Employee	Craft	Description	Hours
CLIC	TM	Curtis Clifton	1

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0402	Truck Ford F350 1T		1	$16.50	$16.50

Comp Remark:
WORK COMPLETED
Broke up the obstruction in the stand pipe and we will be out to clean the pond in the next couple of days.

[x] Complete	EQ Meter:	By: CLIC	Date: 12/21/2010	Hours: 1

DC 3

Work Order

6/16/2015
RE 028183

Location :	5632 E MERCER WAY	Address	Permit :		
Equipment :	SD-CB	Storm System Catch Basin	Requester :	Terry Winkel	
Serial # :			Contact :	Alyssa London	
PM Number :			Phone :	232-8955	

Request : CLEAN/CLEAR
Customer says catch basin needs cleaned.
Customer also said the gravel area in the right-of-way is breaking down near the catch basin because of the big truck parking there to clean the catch basins. Customers wondering what can be done to protect against that.

Status :	COMP	Open Date :	4/19/2011	Procedure :	CLNCLR
Priority :	4	Comp Date :	4/21/2011	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (1) $52.99 Materials $0.00 Tools $16.50 Service $0.00 Total $69.49

Labour

Employee	Craft	Description	Hours
ROCB	GN	Brian Rock	1

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0359	Pickup Ford F150 4x4		1	$16.50	$16.50

Comp Remark:
WORK COMPLETED-Inlet pipe was plugged so water was going in the trash rack.Cleared pipe of debris with rod.

[x] Complete	EQ Meter:	By: ROCB	Date: 4/21/2011	Hours: 1

DC 3

Work Order

6/16/2015
RE 036457

Location :	5632 E MERCER WAY	Address	Permit :	
Equipment :	SD-DD	Storm System Drainage Ditch	Requester :	Asea Sandine
Serial # :			Contact :	LISA LONDON
PM Number :			Phone :	206-683-0655

Request : DRAINAGE ASSESS/INSPECT
CB THAT CATCHES WATER FROM EMW TO THE LAKE IS FULL OF WATER AND NEEDS TO BE CLEARED. CALLER SUSPECTS A CLOG.

Status :	COMP	Open Date :	1/7/2014	Procedure :	DRAINC
Priority :	4	Comp Date :	1/8/2014	Craft :	Technician
Assigned :	CHRIS KELLEY	Target Date :		Team :	CRT

Actuals Hours (1) $40.07 Materials $0.00 Tools $0.00 Service $0.00 Total $40.07

Labour

Employee	Craft	Description	Hours
KELC	TC	CHRIS KELLEY	1

Comp Remark:
WORK COMPLETED
Cleared debris from the trash rack and water is now flowing properly

[x] Complete	EQ Meter:	By: KELC	Date: 1/8/2014	Hours: 1

DC 3

Work Order

6/16/2015
RE 037032

Location :	5632 E MERCER WAY	Address	Permit :		
Equipment :	SD-DD	Storm System Drainage Ditch	Requester :	Asea Sandine	
Serial # :			Contact :	WILLARD SAMMS	
PM Number :			Phone :	206-236-1564	

Request : DRAINAGE ASSESS/INSPECT

CALLER REPORTS MUD AND SILT IN THE POND AT LOCATION. CALLER RESIDES AT 5634 EMW. HE SAID NORMALLY THE CITY IS DOWN TO CLEAN THE POND. HOWEVER, IT HAS NOT BEEN CLEANED OUT THIS YEAR AT ALL.
CONTACT ADVISED IF IT IS NOT CLEANED OUT WITHIN THE NEXT WEEK HE WILL CONTACT COUNCIL

Status :	COMP	Open Date :	3/18/2014	Procedure :	DRAINC
Priority :	4	Comp Date :	3/28/2014	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (9) $401.40 Materials $0.00 Tools $219.37 Service $0.00 Total $620.77

Labour

Employee	Craft	Description	Hours
HARV	TM	Brian Hartvigson	3
LUNM	TM	Mark Lund	3
ROCB	GN	Brian Rock	3

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0305	Backhoe/Loader John Deere #310SE		3	$19.70	$59.10
FL-0456	2013 5 YRD DUMP INTERNATIONAL 7400		3	$25.50	$83.77
FL-0457	2013 5yrd INT'L DUMP		3	$25.50	$76.50

Comp Remark:
WORK COMPLETED

[x] Complete	EQ Meter:	By: ROCB	Date: 3/28/2014	Hours: 9

DC 3

Work Order

6/16/2015
RE 037241

Location :	5632 E MERCER WAY	Address		Permit :	
Equipment :	SD-DD	Storm System Drainage Ditch		Requester :	Bill Sansbury
Serial # :				Contact :	
PM Number :				Phone :	

Request :	DRAINAGE ASSESS/INSPECT-replace 6" inlet pipe with 12"pipe				
Status :	COMP	Open Date :	4/21/2014	Procedure :	DRAINC
Priority :	4	Comp Date :	4/22/2014	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (8) $365.08 Materials $93.58 Tools $180.80 Service $0.00 Total $639.46

Labour

Employee	Craft	Description	Hours
ANDR	TM	Rodney Anderson	4
ROCB	GN	Brian Rock	4

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
COUPLING	12" CI X CI COUPLING FERNCO	EA	1	$34.42	$37.69
GR-CON-9163	CONCRETE, JETSET	EA	1	$18.20	$19.93
MJ KIT	12" MJ ACCESSORIES KIT	EA	1	$32.84	$35.96

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0305	Backhoe/Loader John Deere #310SE		4	$19.70	$78.80
FL-0457	2013 5yrd INT'L DUMP		4	$25.50	$102.00

Comp Remark:

WORK COMPLETED-replaced damaged 6" pvc stand pipe with 12" ductile iron pipe

[x] Complete	EQ Meter:	By: ROCB	Date: 4/22/2014	Hours: 8

DC 3

Work Order

6/16/2015
RE 037272

Location :	5632 E MERCER WAY	Address	Permit :	
Equipment :	SD-DD	Storm System Drainage Ditch	Requester :	Asea Sandine
Serial # :			Contact :	
PM Number :			Phone :	206-232-8955

Request : DRAINAGE ASSESS/INSPECT
LARGER CB JUST INSTALLED IS CLOGGED.

Status :	COMP	Open Date :	4/24/2014	Procedure :	DRAINC
Priority :	4	Comp Date :	5/8/2014	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (2) $85.06 Materials $0.00 Tools $16.50 Service $0.00 Total $101.56

Labour

Employee	Craft	Description	Hours
ANDR	TM	Rodney Anderson	1
HARV	TM	Brian Hartvigson	1

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0359	Pickup Ford F150 4x4		1	$16.50	$16.50

Comp Remark:
WORK COMPLETED-unclogged inlet pipe

[x] Complete	EQ Meter:	By: ROCB	Date: 5/8/2014	Hours: 2

DC 3

Work Order

6/16/2015
RE 037664

Location :	5632 E MERCER WAY	Address		Permit :	
Equipment :	SD-DD	Storm System Drainage Ditch		Requester :	Bill Sansbury
Serial # :				Contact :	
PM Number :				Phone :	

Request : DRAINAGE ASSESS/INSPECT-dig silt from Glenhome pond

Status :	COMP	Open Date :	4/18/2014	Procedure :	DRAINC
Priority :	4	Comp Date :	6/18/2014	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (6) $283.92 Materials $0.00 Tools $135.60 Service $0.00 Total $419.52

Labour

Employee	Craft	Description	Hours
ANDR	TM	Rodney Anderson	3
ROCB	GN	Brian Rock	3

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0305	Backhoe/Loader John Deere #310SE		3	$19.70	$59.10
FL-0457	2013 5yrd INT'L DUMP		3	$25.50	$76.50

Comp Remark:
WORK COMPLETED-Removed 8 yrds silt

[x] Complete	EQ Meter:	By: ROCB	Date: 6/18/2014	Hours: 6

DC 3

Work Order

6/16/2015
RE 038395

Location :	5632 E MERCER WAY	Address		Permit :	
Equipment :	SD-DD	Storm System Drainage Ditch		Requester :	Bill Sansbury
Serial # :				Contact :	
PM Number :				Phone :	

Request : DRAINAGE ASSESS/INSPECT-dig silt out of Glenhome pond

Status :	COMP	Open Date :	10/1/2014	Procedure :	DRAINC
Priority :	4	Comp Date :	10/14/2014	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (4) $189.28 Materials $0.00 Tools $90.40 Service $0.00 Total $279.68

Labour

Employee	Craft	Description	Hours
ANDR	TM	Rodney Anderson	2
ROCB	GN	Brian Rock	2

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0305	Backhoe/Loader John Deere #310SE		2	$19.70	$39.40
FL-0456	2013 5 YRD DUMP INTERNATIONAL 7400		2	$25.50	$51.00

Comp Remark:
WORK COMPLETED-removed approx.10 yds silt

[x] Complete	EQ Meter:	By: ROCB	Date: 10/14/2014	Hours: 4

DC 3

Work Order

6/16/2015
RE 038396

Location :	5632 E MERCER WAY	Address		Permit :	
Equipment :	SD-DD	Storm System Drainage Ditch		Requester :	Bill Sansbury
Serial # :				Contact :	
PM Number :				Phone :	

Request : DRAINAGE ASSESS/INSPECT-dig silt out of Glenhome pond

Status :	COMP	Open Date :	10/1/2014	Procedure :	DRAINC
Priority :	4	Comp Date :	10/1/2014	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (4) $202.16 Materials $0.00 Tools $90.40 Service $0.00 Total $292.56

Labour

Employee	Craft	Description	Hours
ROCB	GN	Brian Rock	2
ROCB	GN	Brian Rock	2

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0305	Backhoe/Loader John Deere #310SE		2	$19.70	$39.40
FL-0456	2013 5 YRD DUMP INTERNATIONAL 7400		2	$25.50	$51.00

Comp Remark:
WORK COMPLETED-removed apprx. 10 yds of silt from pond

[x] Complete	EQ Meter:	By: ROCB	Date: 10/1/2014	Hours: 4

DC 3

Work Order

6/16/2015
RE 039653

Location :	5632 E MERCER WAY	Address		Permit :	
Equipment :	SD-DD	Storm System Drainage Ditch		Requester :	Brian Rock
Serial # :				Contact :	
PM Number :				Phone :	

Request : DRAINAGE ASSESS/INSPECT-clean silt pond

Status :	COMP	Open Date :	3/31/2015	Procedure :	DRAINC
Priority :	4	Comp Date :	3/31/2015	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (5) $236.60 Materials $0.00 Tools $113.00 Service $0.00 Total $349.60

Labour

Employee	Craft	Description	Hours
LUNM	TM	Mark Lund	2.5
ROCB	GN	Brian Rock	2.5

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0305	Backhoe/Loader John Deere #310SE		2.5	$19.70	$49.25
FL-0437	Dump Truck International		2.5	$25.50	$63.75

Comp Remark:
WORK COMPLETED-removed approx. 12yrds silt

[x] Complete	EQ Meter:	By: ROCB	Date: 3/31/2015	Hours: 5

DC 3

Work Order

6/16/2015
RE 039654

Location : 5632 E MERCER WAY Address
Permit :
Equipment :
Requester : Brian Hartvigson
Serial # :
Contact :
PM Number :
Phone :

Request : CLEAN/CLEAR. Remove sediment from the Glenhome retention pond.

Status :	COMP	Open Date :	3/31/2015	Procedure :	CLNCLR
Priority :	4	Comp Date :	3/31/2015	Craft :	Team Member
Assigned :	Mark Lund	Target Date :		Team :	ROW

Actuals Hours (6) $283.92 Materials $0.00 Tools $148.48 Service $0.00 Total $432.40

Labour

Employee	Craft	Description	Hours
LUNM	TM	Mark Lund	3
ROCB	GN	Brian Rock	3

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0305	Backhoe/Loader John Deere #310SE		3	$19.70	$64.71
FL-0437	Dump Truck International		3	$25.50	$83.77

Comp Remark:
WORK COMPLETED. We removed an estimated 20 yds of sediment at the Glenhome retention pond.

[x] Complete	EQ Meter:	By: LUNM	Date: 3/31/2015	Hours: 6

DC 4

Work Order

6/16/2015
RE 002630

Location :	5642 E MERCER WAY	Address		Permit :	
Equipment :	SD-NP	Storm System Natural Pond		Requester :	Jolene Judd
Serial # :				Contact :	BLOHM RALPH W
PM Number :				Phone :	

Request : DRAINAGE CONTROL

Status :	COMP	Open Date :	4/14/2003	Procedure :	DRAINC
Priority :	4	Comp Date :	4/17/2003	Craft :	
Assigned :	Jolene Judd	Target Date :	5/15/2003	Team :	UTIL

Actuals Hours (1) $39.35 Materials $4.35 Tools $0.00 Service $0.00 Total $43.70

Labour

Employee	Craft	Description	Hours
JUDJ	GN	Jerry Judd	1

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
275			1	$4.00	$4.35

Comp Remark:
WORK COMPLETED pond was not full..could wait to be cleaned

[x] Complete	EQ Meter: 0	By: JUDJ	Date: 4/17/2003	Hours: 1

DC 4

Work Order

6/16/2015
RE 003587

Location :	5642 E MERCER WAY	Address		Permit :	
Equipment :	SD-DF-RP	Storm System Retention Pond		Requester :	
Serial # :				Contact :	BLOHM RALPH W
PM Number :				Phone :	

Request :	DRAINAGE CONTROL				
Status :	COMP	Open Date :	6/19/2003	Procedure :	DRAINC
Priority :	4	Comp Date :	6/19/2003	Craft :	
Assigned :	Jolene Judd	Target Date :	6/26/2003	Team :	UTIL

Actuals Hours (4) $146.68 Materials $158.84 Tools $0.00 Service $0.00 Total $305.52

Labour

Employee	Craft	Description	Hours
JUDJ	GN	Jerry Judd	2
MAUW		Wade Mauhl	2

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
236			2	$19.00	$41.34
305			2	$54.00	$117.50

Comp Remark:
WORK COMPLETED cleaned out setteling pond at glenn home

[x] Complete	EQ Meter: 0	By: JUDJ	Date: 6/19/2003	Hours: 4

DC 4

Work Order

6/16/2015
REQ 004896

Location : 5642 E MERCER WAY Address
Equipment :
Serial # :
PM Number :

Permit :
Requester : Jolene Judd
Contact : BLOHM RALPH W
Phone :

Request : DRAINAGE CONTROL setteling pond

Status :	COMP	Open Date :	12/4/2003	Procedure :	DRAINC
Priority :	4	Comp Date :	12/18/2003	Craft :	
Assigned :	Jolene Judd	Target Date :	12/18/2003	Team :	UTIL

Actuals Hours (4) $146.68 Materials $158.84 Tools $0.00 Service $0.00 Total $305.52

Labour

Employee	Craft	Description	Hours
JUDJ	GN	Jerry Judd	2
MAUW		Wade Mauhl	2

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
305			2	$54.00	$117.50
308			2	$19.00	$41.34

Comp Remark:
WORK COMPLETED dug out the setteling pond at glenn home.

[x] Complete	EQ Meter: 0	By: JUDJ	Date: 12/18/2003	Hours: 4

DC 4

Work Order

6/16/2015
RE 007608

Location : 5642 E MERCER WAY Address
Equipment :
Serial # :
PM Number :

Permit :
Requester : Jolene Judd
Contact : BLOHM RALPH W
Phone :

Request : CLEAN/CLEAR setteling ponds

Status :	COMP	Open Date :	10/1/2002	Procedure :	CLNCLR
Priority :	4	Comp Date :	11/17/2004	Craft :	
Assigned :	Wade Mauhl	Target Date :		Team :	UTIL

Actuals Hours (6) $121.02 Materials $219.00 Tools $0.00 Service $0.00 Total $340.02

Labour

Employee	Craft	Description	Hours
JUDJ	GN	Jerry Judd	3
MAUW	TM	Wade Mauhl	3

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
236	236 dump truck	HR	3	$19.00	$57.00
305	305 john deer backhoe	HR	3	$54.00	$162.00

Comp Remark:
WORK COMPLETED cleaned setteling ponds 8 to 10 yards of material

[x] Complete	EQ Meter: 0	By: MAUW	Date: 11/17/2004	Hours: 6

DC 4

Work Order

6/16/2015
RO 013545

Location :	5642 E MERCER WAY	Address		Permit :	
Equipment :	SD-DF-RP	Storm System Retention Pond		Requester :	Jolene Judd
Serial # :				Contact :	BLOHM RALPH W
PM Number :				Phone :	

Request : DRAINAGE ASSESS/INSPECT

Status :	COMP	Open Date :	11/16/2006	Procedure :	DRAINC
Priority :	4	Comp Date :	11/16/2006	Craft :	
Assigned :	Jolene Judd	Target Date :	11/16/2006	Team :	UTIL

Actuals Hours (4) $156.06 Materials $0.00 Tools $98.36 Service $0.00 Total $254.42

Labour

Employee	Craft	Description	Hours
JUDJ	GN	Jerry Judd	2
MAUW		Wade Mauhl	2

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0236	Dump Truck Frtlnr 7 YD		2	$25.50	$55.49
FL-0305	Backhoe/Loader John Deere #310SE		2	$19.70	$42.87

Comp Remark:
WORK COMPLETED cleaned setteling pond.10 yrds. of material

[x] Complete	EQ Meter: 0	By: JUDJ	Date: 11/16/2006	Hours: 4

DC 4

Work Order

6/16/2015
RE 2999.1

Location : 5642 E Address
MERCER WAY

Permit :

Equipment :

Requester : JUDD JERRY

Serial # :

Contact : City Employee

PM Number :

Phone :

Request : DRAINAGE CONTROL
DIG OUT SETTLING POND

Status :	COMP	Open Date :	10/15/1998	Procedure :	DRAINC
Priority :	3	Comp Date :	10/15/1998	Craft :	
Assigned :	Jolene Judd	Target Date :		Team :	UTIL

Actuals Hours (4) $103.78 Materials $134.00 Tools $0.00 Service $0.00 Total $237.78

Labour

Employee	Craft	Description	Hours
JUDJ			2
ROCB			2

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
	DUMP TRUCK #236		2	$17.00	$34.00
	BACKHOE #187		2	$50.00	$100.00

Comp Remark:
WORK COMPLETE - NO FURTHER ACTION REQUIRED
REMOVED SILT & DEBRIS

[x] Complete	EQ Meter:	By: JUDJ	Date: 10/15/1998	Hours: 4

DC 5

Work Order

6/16/2015
REQ R-6419

Location :	5646 E MERCER WAY Address	Permit :	
Equipment :		Requester :	TISCORNIA JOHN F
Serial # :		Contact :	TISCORNIA JOHN F
PM Number :		Phone :	232-5449

Request : DRAINAGE CONTROL
RESIDENT SAYS THAT AT THE SOUTH SIDE OF EMW AT THE 5600 BLOCK THERE APPEARS TO BE A SLIDE FORMING AS THE SIDE OF THE SLOPE HAS DROPPED 8-10". IF IT GOES IT WILL BLOCK EMW

Status :	COMP	Open Date :	3/20/1997	Procedure :	DRAINC
Priority :	2	Comp Date :	3/24/1997	Craft :	
Assigned :	Johnny Segle	Target Date :		Team :	CRT

Actuals Hours (0.5) $12.44 Materials $2.50 Tools $0.00 Service $0.00 Total $14.94

Labour

Employee	Craft	Description	Hours
SEGJ			0.5

Comp Remark:
WORK COMPLETE - NO FURTHER ACTION REQUIRED
THERES A LITTLE SLUFFING NOTHING TO WORRY ABOUT.

[x] Complete	EQ Meter:	By: SEGJ	Date: 3/24/1997	Hours: 0.5

DC 6

Work Order

6/16/2015
RE 007114

Location :	5655 E MERCER WAY	Address		Permit :	
Equipment :	SD-DF-RP	Storm System Retention Pond		Requester :	Wade Mauhl
Serial # :				Contact :	
PM Number :				Phone :	

Request :	CLEAN/CLEAR settling pond 5565 emw				
Status :	COMP	Open Date :	9/21/2004	Procedure :	CLNCLR
Priority :	4	Comp Date :	9/22/2004	Craft :	
Assigned :	Wade Mauhl	Target Date :	9/30/2005	Team :	UTIL

Actuals Hours (4) $150.38 Materials $146.00 Tools $0.00 Service $0.00 Total $296.38

Labour

Employee	Craft	Description	Hours
JUDJ	GN	Jerry Judd	2
MAUW		Wade Mauhl	2

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
236	dump truck 236	HR	2	$19.00	$38.00
305	305 john deer backhoe	HR	2	$54.00	$108.00

Comp Remark:

WORK COMPLETED cleaned out setteling pond dug out 12 yrds matiiral

[x] Complete	EQ Meter: 0	By: MAUW	Date: 9/22/2004	Hours: 4

DC 6

Work Order

6/16/2015
RE 007609

Location : 5655 E MERCER WAY Address
Permit :
Equipment :
Requester : Jolene Judd
Serial # :
Contact :
PM Number :
Phone :

Request : CLEAN/CLEAR SETTELING PONDS

Status :	COMP	Open Date :	10/5/2004	Procedure :	CLNCLR
Priority :	4	Comp Date :	10/5/2004	Craft :	
Assigned :	Wade Mauhl	Target Date :		Team :	UTIL

Actuals Hours (6) $225.57 Materials $224.02 Tools $0.00 Service $0.00 Total $449.59

Labour

Employee	Craft	Description	Hours
JUDJ	GN	Jerry Judd	3
MAUW		Wade Mauhl	3

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
236	236 dump truck	HR	3	$19.00	$62.02
305	305 john deer backhoe	HR	3	$54.00	$162.00

Comp Remark:
WORK COMPLETED dugeout setteling ponds 8 to 10 yards of material

[x] Complete	EQ Meter: 0	By: MAUW	Date: 10/5/2004	Hours: 6

DC 6

Work Order

6/16/2015
RE 010899

Location :	5655 E MERCER WAY	Address	Permit :		
Equipment :	SD-DF-RP	Storm System Retention Pond	Requester :	Jolene Judd	
Serial # :			Contact :	ANDERSON ERIK B+HE	
PM Number :			Phone :	223-8908	

Request : DRAINAGE ASSESS/INSPECT

Status :	COMP	Open Date :	1/24/2006	Procedure :	DRAINC
Priority :	4	Comp Date :	1/24/2006	Craft :	
Assigned :	Jolene Judd	Target Date :	1/24/2006	Team :	UTIL

Actuals Hours (4) $152.26 Materials $0.00 Tools $158.84 Service $0.00 Total $311.10

Labour

Employee	Craft	Description	Hours
JUDJ	GN	Jerry Judd	2
MAUW		Wade Mauhl	2

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0236	Dump Truck Frtlnr		2	$19.00	$41.34
FL-0305	Backhoe/Loader John Deere #310SE		2	$54.00	$117.50

Comp Remark:

WORK COMPLETED dug out setteling pond. Hauled out two loads of silt.

[x] Complete	EQ Meter: 0	By: JUDJ	Date: 1/24/2006	Hours: 4

DC 6

Work Order

6/16/2015
RO 013546

Location :	5655 E MERCER WAY	Address		Permit :	
Equipment :	SD-DF-RP	Storm System Retention Pond		Requester :	Jolene Judd
Serial # :				Contact :	ANDERSON ERIK B+HE
PM Number :				Phone :	223-8908

Request : DRAINAGE ASSESS/INSPECT

Status :	COMP	Open Date :	11/16/2006	Procedure :	DRAINC
Priority :	4	Comp Date :	11/16/2006	Craft :	
Assigned :	Jolene Judd	Target Date :	11/16/2006	Team :	UTIL

Actuals Hours (4) $156.06 Materials $0.00 Tools $98.36 Service $0.00 Total $254.42

Labour

Employee	Craft	Description	Hours
JUDJ	GN	Jerry Judd	2
MAUW		Wade Mauhl	2

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0236	Dump Truck Frtlnr 7 YD		2	$25.50	$55.49
FL-0305	Backhoe/Loader John Deere #310SE		2	$19.70	$42.87

Comp Remark:
WORK COMPLETED cleaned setteling pond.10yrds of material

[x] Complete	EQ Meter: 0	By: JUDJ	Date: 11/16/2006	Hours: 4

DC 6

Work Order

6/16/2015
RE 015607

Location :	5655 E MERCER WAY	Address	Permit :	
Equipment :	SD-WQ-SP	Storm System WQ Structure Settling Pond	Requester :	Bill Sansbury
Serial # :			Contact :	
PM Number :			Phone :	

Request :	CLEAN/CLEAR pond				
Status :	CANC	Open Date :	6/22/2007	Procedure :	CLNCLR
Priority :	4	Comp Date :	9/11/2007	Craft :	Generalist
Assigned :	Jolene Judd	Target Date :		Team :	ROW

Comp Remark:

WORK COMPLETED
The pond has removed by contractor working in the water course - per J Judd, 9/7/07.

[x] Complete	EQ Meter: 0	By: JUDJ	Date: 9/11/2007	Hours: 0

DC 7

Work Order

6/16/2015
RE 007152

Location :	5665 E MERCER WAY	Address		Permit :	
Equipment :	SD-NP	Storm System Natural Pond		Requester :	
Serial # :				Contact :	STEINITZ EDGAR S+G
PM Number :				Phone :	

Request :	DRAINAGE CONTROL				
Status :	COMP	Open Date :	9/23/2004	Procedure :	DRAINC
Priority :	4	Comp Date :	9/23/2004	Craft :	
Assigned :	Jolene Judd	Target Date :	9/23/2004	Team :	UTIL

Actuals Hours (4) $150.38 Materials $158.84 Tools $0.00 Service $0.00 Total $309.22

Labour

Employee	Craft	Description	Hours
JUDJ	GN	Jerry Judd	2
MAUW		Wade Mauhl	2

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
236			2	$19.00	$41.34
305			2	$54.00	$117.50

Comp Remark:
WORK COMPLETED cleaned out natural pond. Two loads

[x] Complete	EQ Meter: 0	By: JUDJ	Date: 9/23/2004	Hours: 4

DC 7

Work Order

6/16/2015
RO 014041

Location :	5665 E MERCER WAY	Address		Permit :	
Equipment :	SD-NP	Storm System Natural Pond		Requester :	Jolene Judd
Serial # :				Contact :	STEINITZ EDGAR S+G
PM Number :				Phone :	

Request : DRAINAGE ASSESS/INSPECT

Status :	COMP	Open Date :	1/22/2007	Procedure :	DRAINC
Priority :	4	Comp Date :	1/22/2007	Craft :	
Assigned :	Jolene Judd	Target Date :		Team :	UTIL

Actuals Hours (4) $162.50 Materials $0.00 Tools $98.36 Service $0.00 Total $260.86

Labour

Employee	Craft	Description	Hours
JUDJ	GN	Jerry Judd	2
MAUW		Wade Mauhl	2

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0246	Dump Truck Frtlnr 7 YD		2	$25.50	$55.49
FL-0305	Backhoe/Loader John Deere #310SE		2	$19.70	$42.87

Comp Remark:
WORK COMPLETED claned setteling pond

[x] Complete	EQ Meter: 0	By: JUDJ	Date: 1/22/2007	Hours: 4

DC 7

Work Order

6/16/2015
RE 037773

Location :	5665 E MERCER WAY	Address	Permit :	
Equipment :	SD-DF-RP	Storm System Retention Pond	Requester :	Bill Sansbury
Serial # :			Contact :	
PM Number :			Phone :	

Request : CLEAN/CLEAR Please coordinate this work. PLEASE NOTE: it is a requirement for this work to control the by-pass / de-watering pump flow as not to cause any erosion or downstream flooding and implement other BMP's to prevent downstream flooding or erosion. NOtify the citizen at Glenhome of this work.

Status :	COMP	Open Date :	7/7/2014	Procedure :	CLNCLR
Priority :	4	Comp Date :	7/22/2014	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (2) $101.08 Materials $0.00 Tools $33.00 Service $0.00 Total $134.08

Labour

Employee	Craft	Description	Hours
ROCB	GN	Brian Rock	2

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0459	F250 4X4 SUPER CAB		2	$16.50	$33.00

Comp Remark:
WORK COMPLETED-had Econo-vac vactor silt from pond

[x] Complete	EQ Meter:	By: ROCB	Date: 7/22/2014	Hours: 2

DC 8

Work Order

6/16/2015
RE 031822

Location :	9208 SE 57TH ST	Address		Permit :	
Equipment :	SD-DD	Storm System Drainage Ditch		Requester :	Asea Sandine
Serial # :				Contact :	WEBER J G
PM Number :				Phone :	206-232-1427

Request : DRAINAGE ASSESS/INSPECT
DRAIN HAS FAILED AND STREET IS COLAPSING AROUND THE DRAIN.

Status :	COMP	Open Date :	5/31/2012	Procedure :	DRAINC
Priority :	4	Comp Date :	6/5/2012	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (1) $52.99 Materials $0.00 Tools $0.00 Service $0.00 Total $52.99

Labour

Employee	Craft	Description	Hours
HARD	TC	CB on north side of rd is failing. a hole with brick exposed. Placed barricade on CB. The CB south side of the road needs asphalt cut out and resasphalt	1

Comp Remark:
WORK COMPLETED-work has been added to the project list for 2012

[x] Complete	EQ Meter:	By: ROCB	Date: 6/5/2012	Hours: 1

DC 8

Work Order

6/16/2015
RE 037018

Location :	9208 SE 57TH ST	Address		Permit :	
Equipment :	SD-DD	Storm System Drainage Ditch		Requester :	Bill Sansbury
Serial # :				Contact :	WEBER J G
PM Number :				Phone :	

Request : DRAINAGE ASSESS/INSPECT-raise and repair frame and grates

Status :	COMP	Open Date :	3/17/2014	Procedure :	DRAINC
Priority :	4	Comp Date :	3/20/2014	Craft :	Generalist
Assigned :	Brian Rock	Target Date :		Team :	ROW

Actuals Hours (4) $194.96 Materials $230.18 Tools $66.00 Service $0.00 Total $491.14

Labour

Employee	Craft	Description	Hours
ROCB	GN	Brian Rock	4

Materials

Item #	Description	Unit	Qty	$/Unit	Total $
GR-CON-9163	CONCRETE, JETSET	EA	5	$18.20	$99.65
GR-CON-9163	CONCRETE, JETSET	EA	4	$18.20	$79.72
GR-CON-9163	CONCRETE, JETSET	EA	1	$18.20	$19.93
WA-BLO-0120	BLOCKS 2" X 4" X 8" CONCRETE	EA	60	$0.47	$30.88

Tools

Equipment	Description	Unit	Qty	$/Unit	Total $
FL-0459	F250 4X4 SUPER CAB		4	$16.50	$66.00

Comp Remark:
WORK COMPLETED

[x] Complete	EQ Meter:	By: ROCB	Date: 3/20/2014	Hours: 4

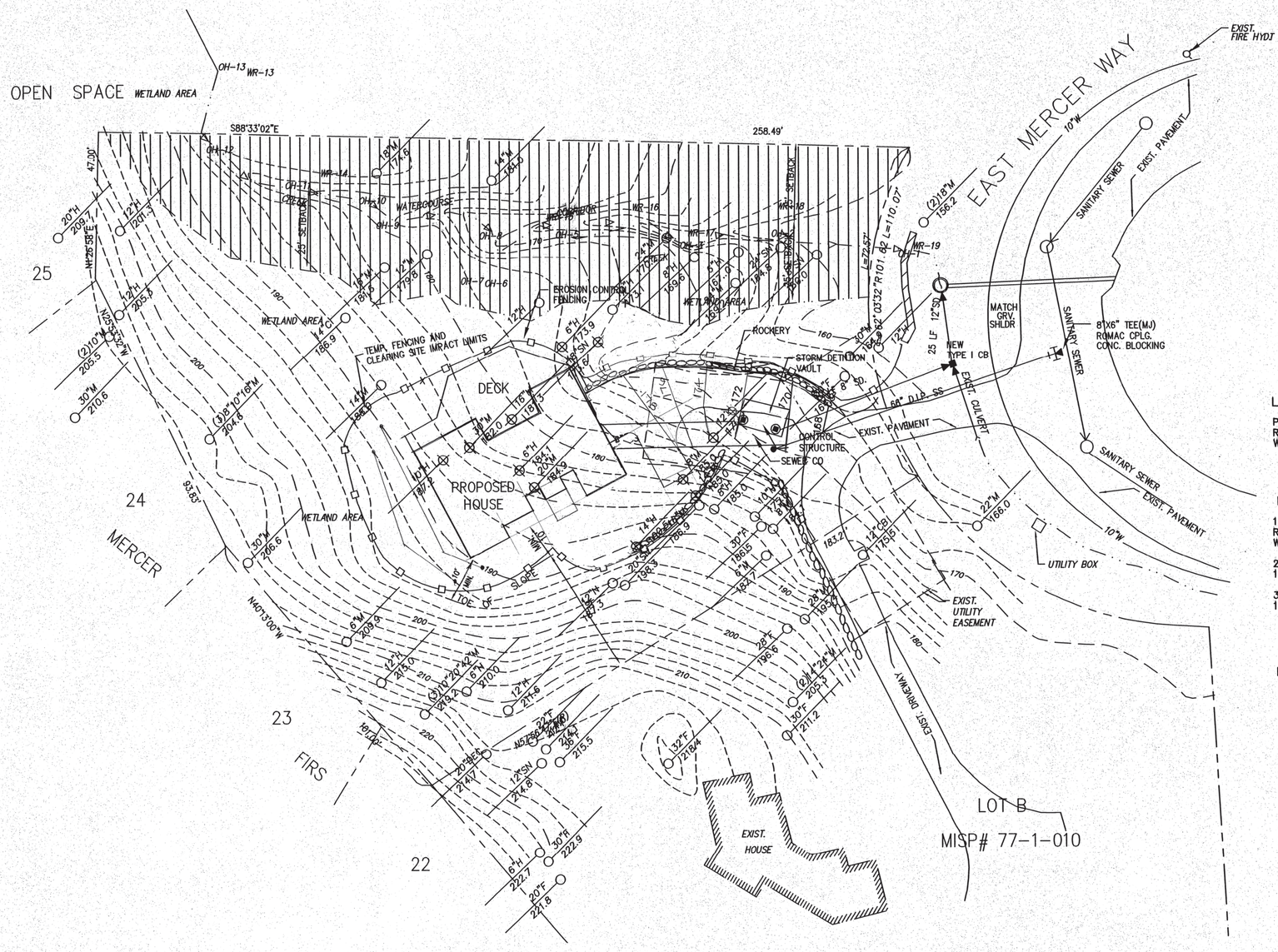
APPENDIX C

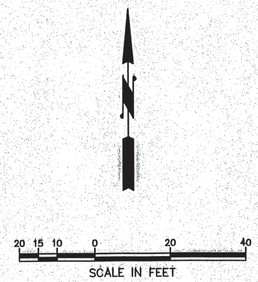
Conceptual Site Plan prepared by CHS Engineer, LLC. Dated 11-14

Parkwood Trail and Subbasin 45B Watercourse Stabilization Project (WD 526C)

WWHM Modeling Output for Conceptual Detention Sizing

A PORTION OF GOVERMENT LOT 3, OF SECTION 19, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON





SCALE 1" = 20'

BASIS OF BEARING:

WASHINGTON STATE PLANE COORDINATE SYSTEM (NORTH ZONE, NAD 83/91)

VERTICAL DATUM: NAVD 88

CONTOUR INTERVAL = 2'

LEGAL DESCRIPTION:

PARCEL A OF GREG NEWITT SHORT PLAT MISP NO. 77-1-010, AS RECORDED UNDER RECORDING NUMBER 197703310851, RECORDS OF KING COUNTY, STATE OF WASHINGTON.

REFERENCES:

1. PARCEL A OF GREG NEWITT SHORT PLAT MISP NO. 77-1-010, AS RECORDED UNDER RECORDING NUMBER 197703310851, RECORDS OF KING COUNTY, STATE OF WASHINGTON.

2. MERCER FIRS IN VOLUME 79 OF PLATS, PAGE 70, UNDER FILE NUMBER 19660421601863.

3. PARKWOOD RIDGE IN VOLUME 76 OF PLATS, PAGE 81, UNDER FILE NUMBER 196410275804212.

NOTES:

1. LEGAL DESCRIPTION, EASEMENTS, COVENANTS, CONDITIONS AND RESTRICTIONS WERE PROVIDED BY CLIENT. IT SHOULD BE NOTED THAT IN PREPARING THIS SURVEY MAP, CHS ENGINEERS, LLC HAS NOT CONDUCTED AN INDEPENDENT TITLE SEARCH NOR IS CHS AWARE OF ANY TITLE ISSUES AFFECTING THE PROPERTY OTHER THAN THOSE SHOWN ON THIS MAP. CHS HAS WHOLLY RELIED ON THE ABOVE REFERENCED TITLE REPORT TO PREPARE THIS SURVEY AND THEREFORE QUALIFIES THE MAP'S ACCURACY AND COMPLETENESS TO THAT EXTENT.

2. BASIS OF BEARING: WASHINGTON STATE PLANE COORDINATE SYSTEM (NORTH ZONE, NAD 83/91)

3. VERTICAL DATUM: NAVD 88 DATUM.

4. UTILITIES OTHER THAN THOSE SHOWN MAY EXIST ON THE SITE. UNDERGROUND UTILITY LOCATIONS SHOWN HEREON ARE TAKEN FROM A COMPILATION OF PUBLIC RECORDS AND VISIBLE FIELD EVIDENCE. WE ASSUME NO LIABILITY FOR THE ACCURACY OF THE PUBLIC RECORDS. UNDERGROUND UTILITY LOCATIONS ARE ONLY APPROXIMATE. UNDERGROUND CONNECTIONS ARE SHOWN AS STRAIGHT LINES BETWEEN VISIBLE SURFACE LOCATIONS BUT MAY CONTAIN BENDS OR CURVES NOT SHOWN. FIELD VERIFICATION IS NECESSARY PRIOR TO OR DURING ANY CONSTRUCTION.

SITE PLAN

SHEET #1

01-08-15

No.	Date	By	Ckd	Revision

BOUNDARY / TOPOGRAPHIC SURVEY

CHS ENGINEERS, LLC
12307 BEL-RED ROAD SUITE 101
BELLEVUE, WA 98005-2500
TEL (425) 637-3693 - FAX (425) 637-3694
www.chsengineers.com

Drawn / Date JPC 11-14

Designed / Date

Checked / Date

SUMMERS DEVELOPMENT

5637 EAST MERCER WAY
MERCER ISLAND, WA

Scale: Horiz. 1"=20' Vert. ____

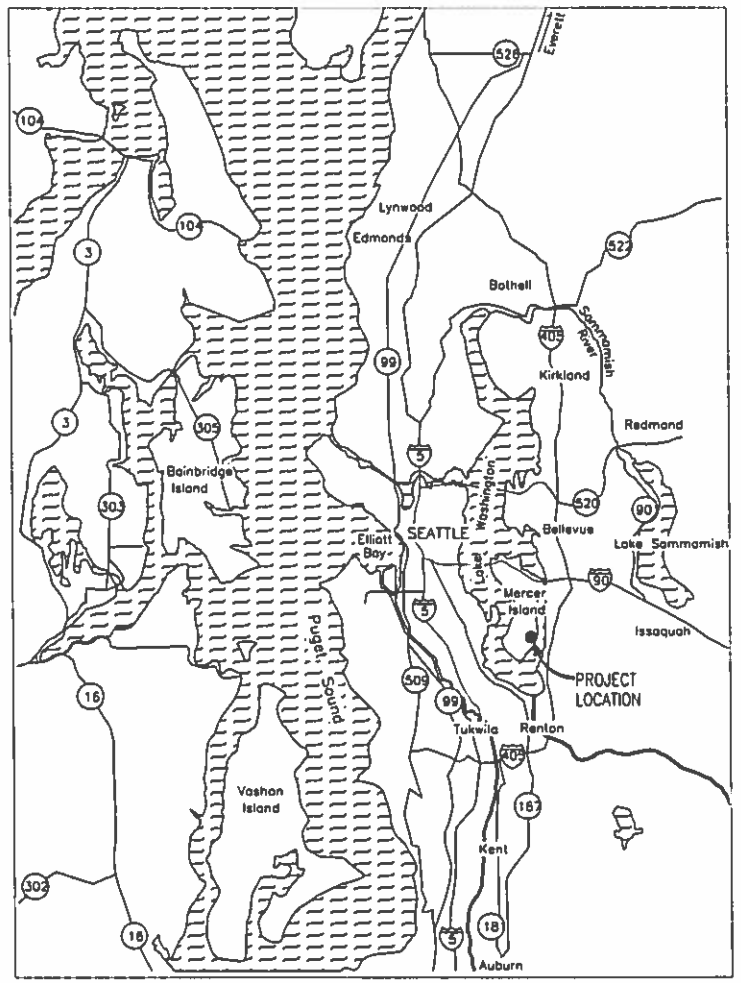
Sheet 1 of 1

Job No. 601411

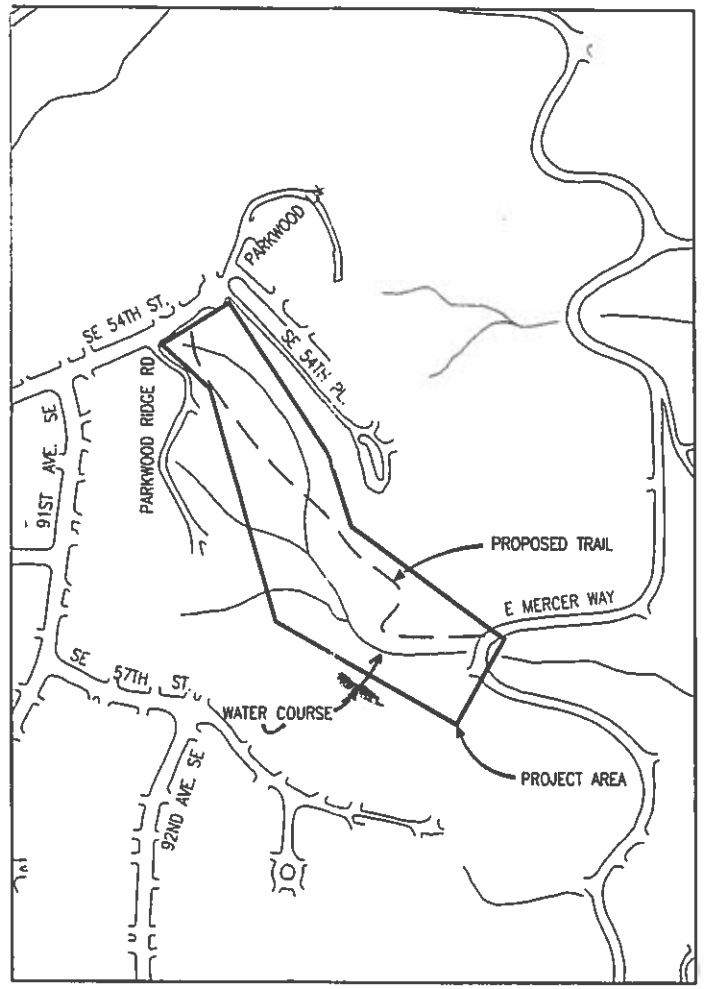
CITY OF MERCER ISLAND

PARKWOOD TRAIL & SUBBASIN 45B WATERCOURSE STABILIZATION PROJECT (WD 526C)

JUNE 2007



LOCATION MAP
SCALE: NTS



VICINITY MAP
SCALE: NTS

CITY OF MERCER ISLAND
WASHINGTON

SHEET INDEX

SHEET NO.	DRAWING NAME	TITLE
1	G-1	TITLE SHEET
2	G-2	LEGEND, ABBREVIATIONS AND NOTES
3	C-1	WATERCOURSE PLAN AND PROFILE - LOWER
4	C-2	WATERCOURSE PLAN AND PROFILE - UPPER
5	C-3	WATERCOURSE DETAILS - SHEET 1 OF 2
6	C-4	WATERCOURSE DETAILS - SHEET 2 OF 2
7	C-5	WATERCOURSE CROSS SECTIONS - SHEET 1 OF 2
8	C-6	WATERCOURSE CROSS SECTIONS - SHEET 2 OF 2
9	L-1	TRAIL DEVELOPMENT AND LANDSCAPE RESTORATION - SHEET 1
10	L-2	TRAIL DEVELOPMENT AND LANDSCAPE RESTORATION - SHEET 2
11	L-3	TRAIL AND LANDSCAPE DETAILS

DESIGNED: SBS
DRAWN: JF/PM
VERIFY SCALE BAR IS ONE INCH ON ANSI "D" DRAWING (0 — 1")

REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
0	6/15/07			ISSUED FOR BID

JACK C. BJORK — STATE OF WASHINGTON — 22128 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES 6-30-

R·W·BECK
R.W. Beck, Inc.
1001 Fourth Avenue, Suite 2500
Seattle, WA 98154-1004
(206) 695-4700

CITY OF MERCER ISLAND
PARKWOOD TRAIL AND SUBBASIN
45B WATERCOURSE STABILIZATION PROJECT

TITLE SHEET

PROJECT NUMBER: 11-01026-10000
SHT. 1 OF: 11
DRAWING NUMBER: G-1

GENERAL NOTES

1. FIELD SURVEY AND MAPPING PERFORMED BY CHS ENGINEERS, LLC.
2. APPROXIMATE LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES OR STRUCTURES SHOWN AND ANY OTHER UTILITIES OR STRUCTURES ON THE PROJECT SITE.
3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL LAWS. ALL WORK SHALL CONFORM TO THE STANDARD SPECIFICATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING UNDERGROUND UTILITIES. CALL UNDERGROUND UTILITY LOCATE SERVICE AT TELEPHONE NUMBER 1-800-424-5555 A MINIMUM OF TWO WORKING DAYS PRIOR TO ANY EXCAVATION.
5. OVERHEAD ELECTRICAL POWER, TELEPHONE, CABLE TV, AND OTHER OVERHEAD LINES ARE GENERALLY NOT SHOWN. DETERMINE THE EXTENT OF HAZARDS OR IMPACTS ON CONSTRUCTION ACTIVITIES CREATED BY OVERHEAD OR UNDERGROUND ELECTRICAL POWER, TELEPHONE, CABLE TV, AND OTHER LINES IN ALL AREAS, AND FOLLOW PROCEDURES DURING CONSTRUCTION AS REQUIRED BY LAW AND REGULATIONS. TAKE WHATEVER PRECAUTIONS AND REMEDIAL MEASURES THAT MAY BE REQUIRED TO PROTECT PERSONS AND PROPERTY AND TO AVOID DISRUPTION OF SERVICE.
6. MATERIALS REQUIRED FOR FILL, BACKFILL, AND OTHER WORK WILL BE SECURED BY THE CONTRACTOR FROM A SITE MEETING ALL OF THE REQUIREMENTS USED IN THE SPECIFICATIONS. THE SITE WILL MEET THE LOCAL, STATE, AND FEDERAL REGULATIONS REQUIRING HEALTH, SAFETY, AND THE PUBLIC WELFARE.
7. BYPASS FLOWS DURING THE CONSTRUCTION, AND DURING THE REPLACEMENT, MODIFICATION, OR RESTORATION OF EXISTING FACILITIES.
8. NO WORK SHALL COMMENCE PRIOR TO A PRE-CONSTRUCTION CONFERENCE AT THE CITY OF MERCER ISLAND.

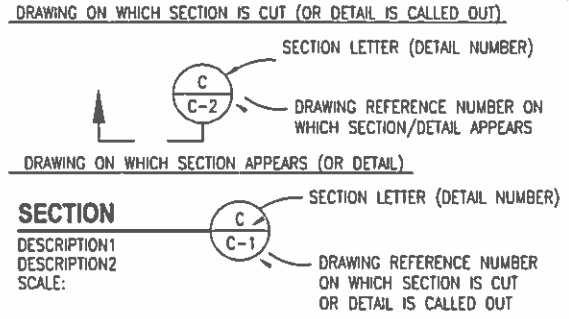
SURVEY INFORMATION

1. BASIS OF BEARINGS AND BOUNDARY CONTROL: PLAT OF PARKWOOD ESTATES, V.63, PG. 86-87; PLAT OF PARKWOOD RIDGE, V.76, PG. 81-82.
2. DATUM: NAVD 1929.
3. BENCHMARK: MI 1071 – BRASS NAIL WITH PUNCH IN CONCRETE IN MONUMENT CASE AT INTERSECTION OF ISLAND CREST WAY AND SE 54TH STREET.
4. BENCHMARK: 284-3-1 – NORTHEAST CORNER OF 4"x4" CONCRETE MONUMENT, 0.04+/- ABOVE BRASS, IN CASE AT INTERSECTION OF SE 54TH STREET AND 91ST AVE SE., ELEV 342.56

CONSTRUCTION NOTES

1. VERIFY THE LOCATIONS, ELEVATIONS, DIAMETERS, MATERIALS, AND OTHER PARAMETERS OF EXISTING FACILITIES TO WHICH NEW FACILITIES CONNECT BEFORE ORDERING MATERIALS.
2. IN-WATER WORK TO BE CONSTRUCTED DURING PERIOD IDENTIFIED IN HPA PERMIT (JUNE 16 TO SEPTEMBER 30).
3. MAINTAIN A MINIMUM ONE LANE OF TRAFFIC ACCESS AT ALL TIMES ON EAST MERCER WAY THROUGH PROJECT AREA DURING CONSTRUCTION. SEE SPECIFICATIONS FOR TRAFFIC CONTROL REQUIREMENTS.
4. GROUNDWATER WILL BE ENCOUNTERED DURING WORK.

SECTION INDICATOR AND DETAIL CONVENTION



TEMPORARY EROSION AND SEDIMENT CONTROL NOTES

1. THE IMPLEMENTATION OF THE TESC PLANS, AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, UPGRADING, AND REMOVAL OF THE TESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED AND THE SITE IS STABILIZED.
2. THE BOUNDARIES OF THE CONSTRUCTION LIMITS SHOWN ON THE PLANS SHALL BE CLEARLY FLAGGED PRIOR TO CONSTRUCTION. NO DISTURBANCE BEYOND THE CONSTRUCTION LIMITS IS ALLOWED. THE CLEARING LIMITS SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
3. THE TESC FACILITIES MUST BE CONSTRUCTED PRIOR TO, AND IN CONJUNCTION WITH, ALL WORK SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT IS MINIMIZED.
4. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR, AND MAINTAINED TO INSURE CONTINUED PROPER FUNCTIONING.
5. ANY AREAS OF EXPOSED SOILS, INCLUDING ROADWAY EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR SEVEN DAYS OR MORE, SHALL BE STABILIZED WITH APPROVED TESC METHODS (E.G., SEEDING, MULCHING, PLASTIC COVERING).
6. ANY AREA NEEDING TESC MEASURES THAT DO NOT REQUIRE ATTENTION SHALL BE ADDRESSED WITHIN SEVEN (7) DAYS.
7. THE TESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH, OR WITHIN FORTY-EIGHT (48) HOURS FOLLOWING A STORM EVENT.
8. AT NO TIME SHALL MORE THAN 3 FEET OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A SEDIMENT TRAP.
9. STABILIZED CONSTRUCTION ENTRANCES SHALL BE USED WHERE POSSIBLE WHERE VEHICLES WILL EXIT A CONSTRUCTION AREA ONTO PAVEMENT. STABILIZED CONSTRUCTION ENTRANCES SHALL BE IN ACCORDANCE WITH STANDARD PLAN I-14.
10. THE PAVEMENT SHALL BE CLEANED AT THE END OF EACH CONSTRUCTION DAY IF SEDIMENT IS DEPOSITED ONTO THE PAVEMENT DUE TO CONSTRUCTION ACTIVITY AND/OR VEHICLES.
11. WHERE STRAW MULCH FOR TEMPORARY EROSION CONTROL IS REQUIRED, IT SHALL BE APPLIED AT A MINIMUM THICKNESS OF 2 TO 3 INCHES.
12. UPON CONCLUSION OF CONSTRUCTION, THE CONSTRUCTION STAGING AREA SHALL BE RETURNED TO ITS PRE-CONSTRUCTION CONDITION AT A MINIMUM. ANY AREAS OF EXPOSED SOILS SHALL BE STABILIZED AND SEEDED.
13. REFUELING AND MAINTENANCE OF CONSTRUCTION EQUIPMENT SHALL OCCUR A MINIMUM OF 20 FEET AWAY FROM ANY STREAM.
14. SILT FENCES SHALL BE INSTALLED AT THE LOCATIONS INDICATED BY THE ENGINEER IN THE FIELD. SILT FENCES SHALL BE IN ACCORDANCE WITH STANDARD PLAN I-4, SILT FENCE.
15. INSTALL SEDIMENT TRAP AT THE DOWNSTREAM END OF THE STREAM CONSTRUCTION. SEDIMENT TRAP SHALL BE IN ACCORDANCE WITH STANDARD PLAN I-14. WATER COLLECTED IN THE SEDIMENT TRAP SHALL BE DISCHARGED OUT OF THE CONSTRUCTION AREA AT LESS THAN 50 NTU TURBIDITY. CONTRACTOR SHALL PREPARE A SEDIMENT TRAP DESIGN AND SUBMIT IT TO THE ENGINEER TO REVIEW. NO EARTH-DISTURBING ACTIVITY SHALL OCCUR PRIOR TO THE APPROVAL OF THE SEDIMENT POND PLAN.
16. TESC MEASURES (E.G., SEDIMENT TRAP, SILT FENCES, FLAGGING, STABILIZED CONSTRUCTION ENTRANCES) SHALL BE COMPLETELY REMOVED UPON COMPLETION OF THE CONSTRUCTION UNLESS INDICATED OTHERWISE BY THE ENGINEER.
17. TESC MEASURES SHALL BE USED WHERE APPROPRIATE IN THE CONSTRUCTION AREA. CONTRACTOR SHALL PREPARE AN EROSION AND SEDIMENT CONTROL PLAN, AND SUBMIT IT TO THE ENGINEER FOR APPROVAL. NO MATERIALS SHALL BE BROUGHT INTO THE SITE PRIOR TO APPROVAL OF THE TESC PLAN.

ABBREVIATIONS

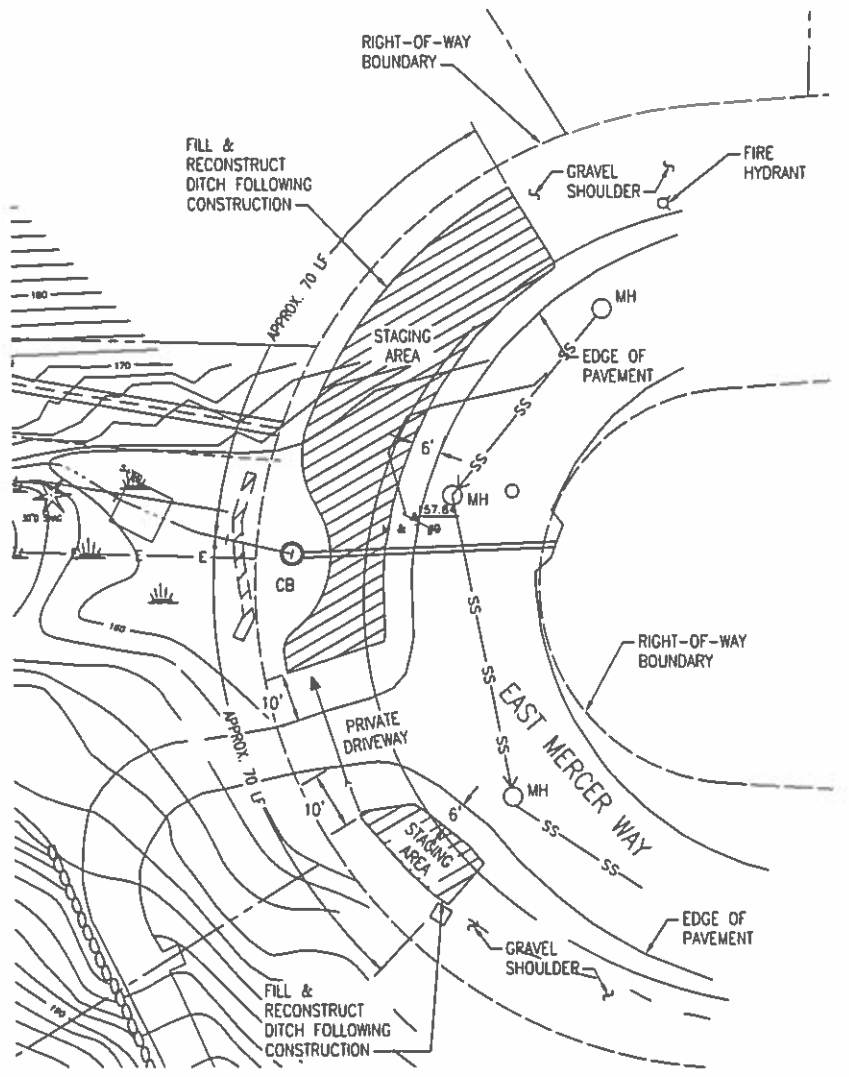
AC	ASBESTOS CEMENT
APPROX	APPROXIMATE
AVE	AVENUE
AVG	AVERAGE
BC	BOULDER CASCADE
C	CONIFEROUS TREE
CB	CATCH BASIN
CL	CENTERLINE
CONC	CONCRETE
CMP	CORRUGATED METAL PIPE
CY	CUBIC YARD
D	DECIDUOUS TREE
DIA, DIAM	DIAMETER
DWG	DRAWING
E	EAST
EL, ELEV	ELEVATION
ENGR	ENGINEER
EXIST, EX	EXISTING
FT	FEET
GC	GRADE CONTROL LOG
H&T	HUB AND TACK
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
IN	INCH
IE	INVERT ELEVATION
LWD	LARGE WOODY DEBRIS
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MON	MONUMENT
N	NORTH
NE	NORTHEAST
NO	NUMBER
NTS	NOT TO SCALE
PL	PLACE, PROPERTY LINE
PVC	POLYVINYL CHLORIDE
S	SOUTH, SLOPE
SD	STORM DRAIN
SE	SOUTHEAST
SF	SQUARE FEET
SS	SANITARY SEWER
STA	STATION
ST	STREET
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
TYP	TYPICAL
VERT	VERTICAL
W	WEST, WATER
WSEL	WATER SURFACE ELEVATION

LINE TYPES

- PERMANENT EASEMENT
- PROPERTY BOUNDARY
- WATERCOURSE CENTERLINE
- CONSTRUCTION LIMITS
- EDGE OF FILLED CHANNEL
- WETLAND BOUNDARY
- SANITARY SEWER (EXIST)
- SANITARY SEWER (NEW)

LEGEND

DESCRIPTION	SYMBOL
EXISTING LOG REUSED	
CONIFEROUS TREE	
DECIDUOUS TREE	
LOG AND NUMBER	
BOULDER	
WATERCOURSE STABILIZATION LIMITS	
ROOT WAD	
WETLAND	



STAGING PLAN
SCALE: 1"=20'

1"=20'-0" 20 0 20 40
Scale Feet

DESIGNED					
SBS					
DRAWN					
JF/PM					
VERIFY SCALE					90% SUBMITTAL
BAR IS ONE INCH ON ANSI "D" DRAWING	0	6/15/07			ISSUED FOR BID
0 1"	REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION

JACK C. BJORK STATE OF WASHINGTON 22129 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 6-30-

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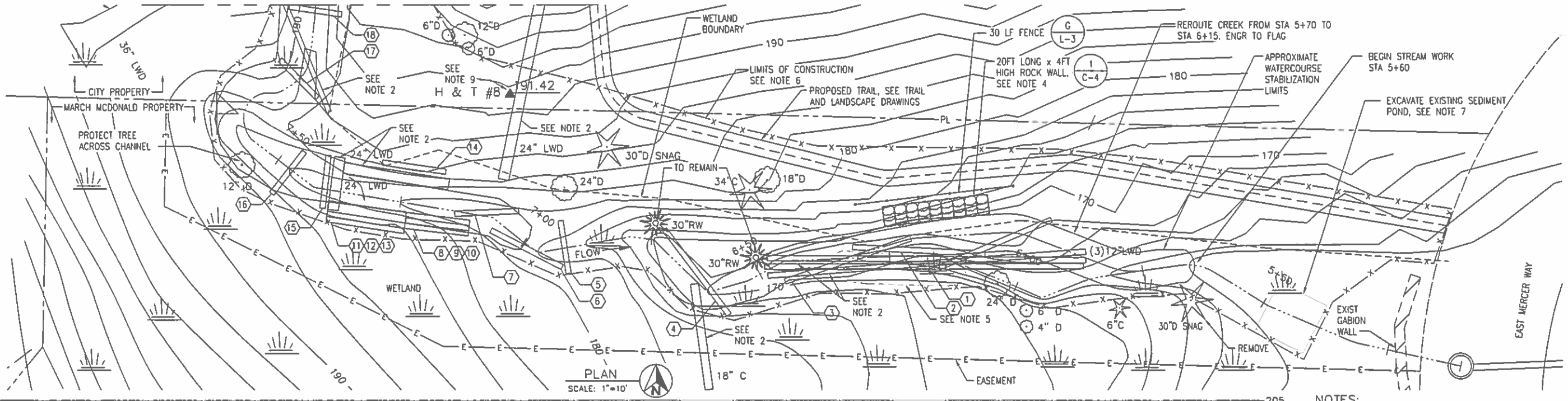
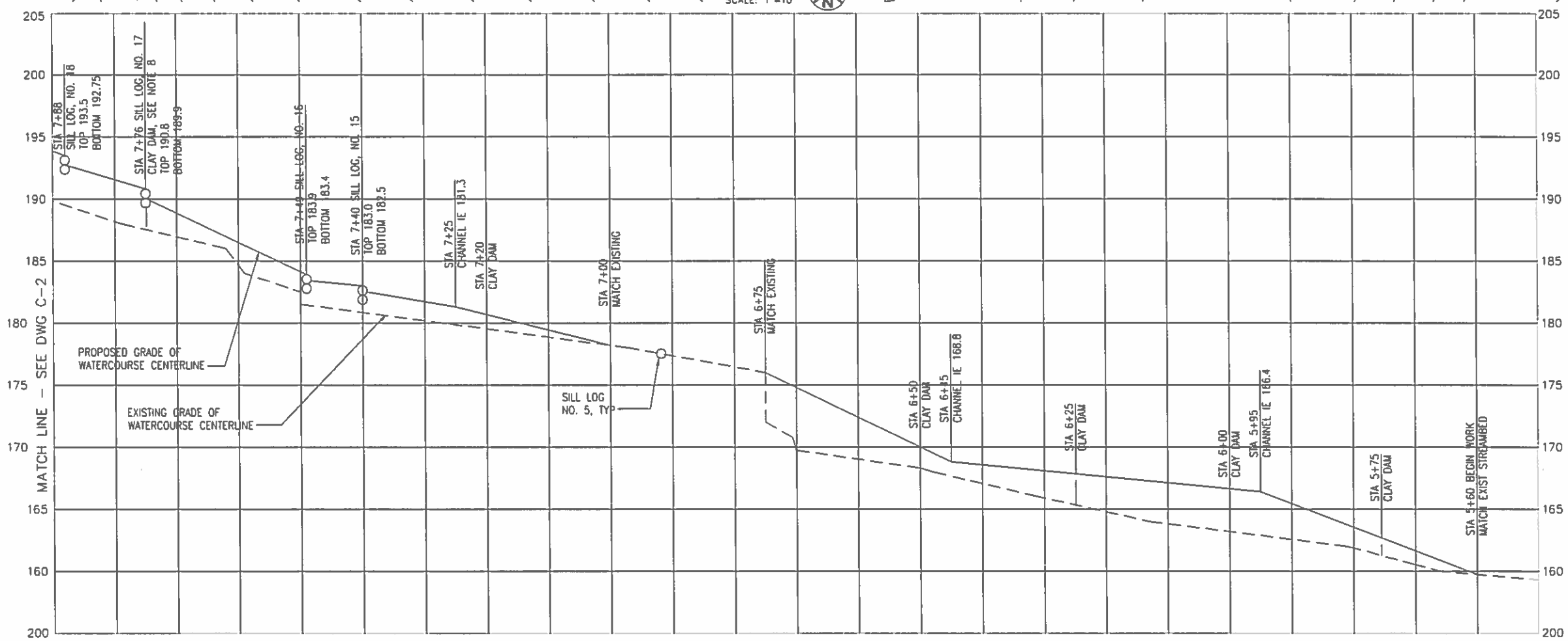
CITY OF MERCER ISLAND
PARKWOOD TRAIL AND SUBBASIN
45B WATERCOURSE STABILIZATION PROJECT

LEGEND, ABBREVATIONS AND NOTES

PROJECT NUMBER: 11-01026-10000
SHT. 2 OF: 11
DRAWING NUMBER: G-2





WATERCOURSE PROFILE
SCALE: HORIZ 1"=10'
VERT 1"=5'

NOTES:

1. ALL TREES TO BE PROTECTED AND REMAIN EXCEPT AS SPECIFICALLY CALLED OUT TO REMOVE.
2. EXISTING LWD (DOWNED LOGS) CAN BE REUSED. LOGS MAY BE OUTSIDE CONSTRUCTION LIMITS.
3. NO MECHANICAL EQUIPMENT ALLOWED ON WEST OR SOUTH SIDE OF WATERCOURSE
4. LOCATION OF ROCK WALL SHOWN IS APPROXIMATE AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION. FINAL LOCATION TO BE APPROVED BY ENGINEER. ROCKERY WILL BE INSTALLED AFTER EQUIPMENT IS NO LONGER NEEDED WEST OF THIS LOCATION. TEMPORARY FILL OR SUPPORT WILL BE NEEDED AT THIS LOCATION FOR UPSTREAM CONSTRUCTION.
5. CREEK FLOWS BENEATH EXIST LOGS AND TREE ROOTS HERE. REMOVE LOGS AND FILL VOID TO HEIGHT REQUIRED FOR CHANNEL RELOCATION.
6. LOCATION OF CONSTRUCTION LIMITS SHOWN IS APPROXIMATE AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
7. MAX SURFACE AREA OF SEDIMENT POND EXCAVATION IS ABOUT 100 SF. MAX DEPTH SHALL NOT EXCEED 3 FT.
8. PLACE CLAY BAGS BELOW LOGS OR INSTALL ADDITIONAL LOGS DOWN TO EXISTING STREAM BED.
9. PROTECT HUB AND TACK CONTROL POINTS.
10. EQUIPMENT WORKING IN STREAM SHALL BE NO WIDER THAN 6 FT AND LESS THAN 9,000 LBS UNLOADED. MATERIAL DELIVERY WILL BE VIA CREEKBED ONLY UPSTREAM OF STA 8+00.
11. ADDITIONAL ONSITE WOODY MATERIAL SMALLER THAN 6 IN DIAMETER WILL BE PLACED IN THE STREAM AS DIRECTED BY THE ENGINEER. PLACEMENT OF THIS MATERIAL IS INCIDENTAL.
12. CLEARED MATERIAL WILL BE DISPOSED ON CITY PROPERTY AT THIS SITE, AS DIRECTED BY ENGINEER.
13. LOG PLACEMENT AND ORIENTATION SHOWN IS APPROXIMATE. LOG LOCATIONS SHALL BE FLAGGED BY THE ENGINEER PRIOR TO PLACEMENT, THEN VERIFIED AND APPROVED BY THE ENGINEER AFTER PLACEMENT.

1"=10'-0" 10 5 0 10 20 Scale Feet

1"=5'-0" 5 0 5 10 Scale Feet

DESIGNED: SBS
DRAWN: JF/PM
VERIFY SCALE BAR IS ONE INCH ON ANSI "D" DRAWING 0 1"

REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
0	6/15/07			ISSUED FOR BID

JACK C. BJORK STATE OF WASHINGTON 22139 REGISTERED PROFESSIONAL ENGINEER EXPIRES 6-30-

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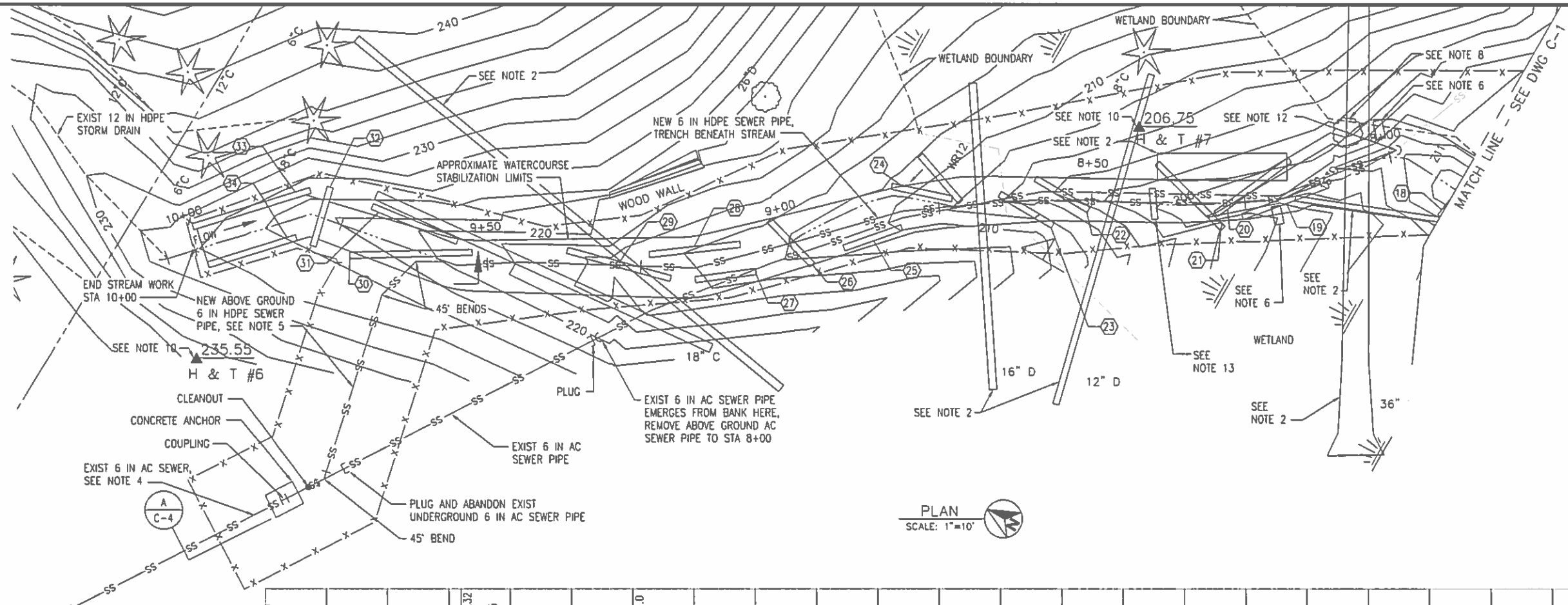
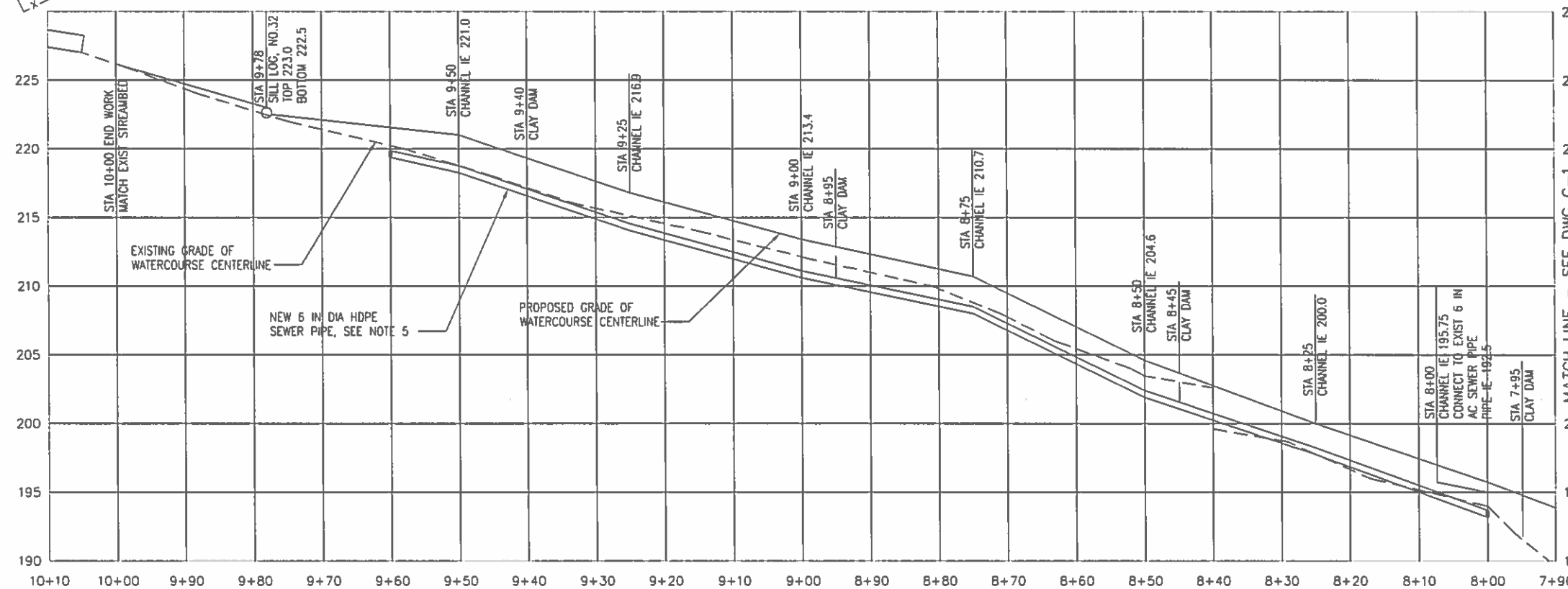
CITY OF MERCER ISLAND
PARKWOOD TRAIL AND SUBBASIN
458 WATERCOURSE STABILIZATION PROJECT

WATERCOURSE PLAN AND PROFILE
LOWER

PROJECT NUMBER: 11-01026-10000
SHT. 3 OF: 11
DRAWING NUMBER: C-1





WATERCOURSE PROFILE
SCALE: HORIZ 1"=10'
VERT 1"=5'

NOTES:

1. ALL TREES TO BE PROTECTED AND REMAIN EXCEPT AS SPECIFICALLY CALLED OUT TO REMOVE.
2. EXISTING LWD (DOWNED LOGS) CAN BE REUSED. LOGS MAY BE OUTSIDE CONSTRUCTION LIMITS.
3. NO MECHANICAL EQUIPMENT ALLOWED ON WEST OR SOUTH SIDE OF WATERCOURSE.
4. LOCATION OF BURIED SEWER IS APPROXIMATE. CONTRACTOR TO FIELD LOCATE.
5. PIPE MIN SLOPE 2%. MINIMUM BENDING RADIUS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
6. REMOVE ALL GABIONS IN STREAM BETWEEN STA 7+50 AND 9+00. NOT ALL ARE SHOWN. REMOVE WIRE OFFSITE.
7. FINAL WATERCOURSE ALIGNMENT WILL NOT FOLLOW DIRECT SEWER ALIGNMENT AS SHOWN. WATERCOURSE ALIGNMENT SHALL BE SINUOUS TO MIMIC EXIST ALIGNMENT AND SHALL BE STAKED IN-FIELD BY ENGINEER SUBSEQUENT TO INSTALLATION OF NEW SEWER PIPE.
8. CUT AND REMOVE SNAG. LEAVE STUMP. REUSE WOOD AS DIRECTED BY ENGINEER.
9. EQUIPMENT WORKING IN STREAM SHALL BE NO WIDER THAN 6 FT AND LESS THAN 9,000 LBS UNLOADED. MATERIAL DELIVERY WILL BE VIA CREEKBED ONLY UPSTREAM OF STA 8+00.
10. PROTECT HUB & TACK CONTROL POINTS.
11. LOG PLACEMENT AND ORIENTATION SHOWN IS APPROXIMATE. LOG LOCATIONS SHALL BE FLAGGED BY THE ENGINEER PRIOR TO PLACEMENT, THEN VERIFIED AND APPROVED BY THE ENGINEER AFTER PLACEMENT.
12. CONNECT NEW 6 IN HDPE SEWER PIPE TO EXIST 6 IN AC SEWER PIPE WITH ROMAC, TYPE 501 PIPE COUPLER.
13. REMOVE 3 FT HIGH LOG WEIR.

1"=10'-0" 10 5 0 10 20 Scale Feet

1"=5'-0" 5 0 5 10 Scale Feet

DESIGNED SBS
DRAWN JF/PM
VERIFY SCALE BAR IS ONE INCH ON ANSI "D" DRAWING 0 1"

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0	6/15/07			ISSUED FOR BID

JACK C BJORK STATE OF WASHINGTON 12179 REGISTERED PROFESSIONAL ENGINEER EXPIRES 6-30-

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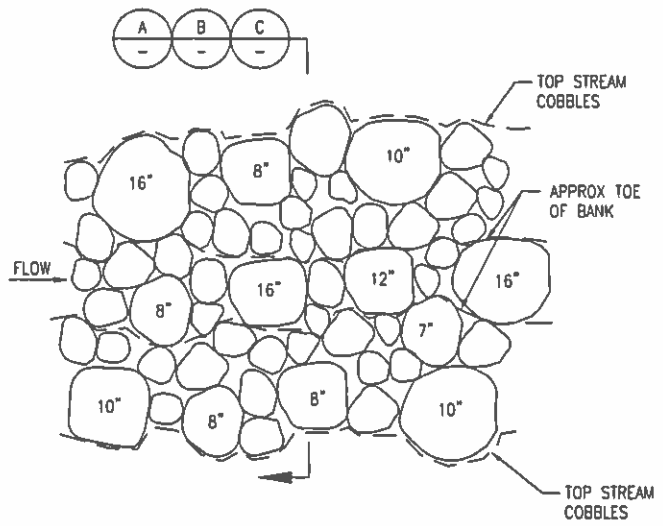
CITY OF MERCER ISLAND
PARKWOOD TRAIL AND SUBBASIN
45B WATERCOURSE STABILIZATION PROJECT

WATERCOURSE PLAN AND PROFILE
UPPER

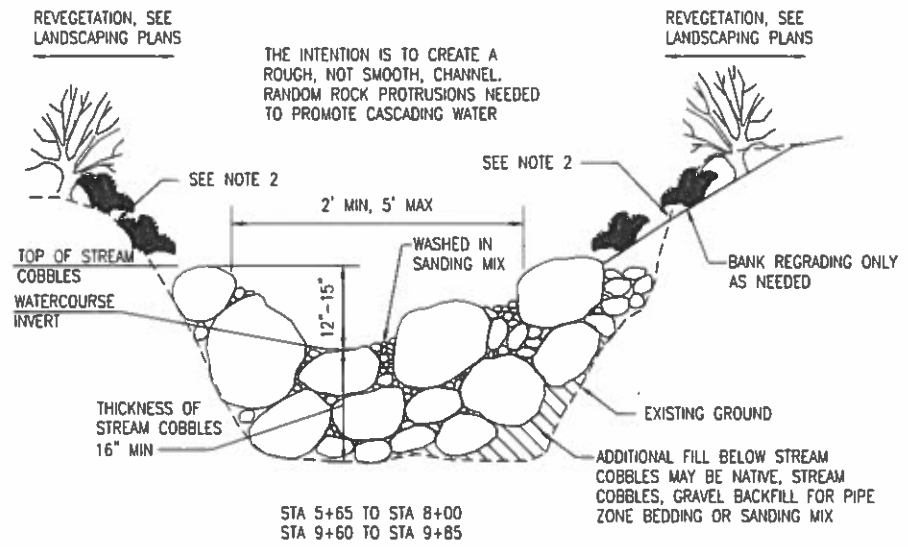
PROJECT NUMBER: 11-01026-10000
SHT. 4 OF 11
DRAWING NUMBER: C-2



NOTES:

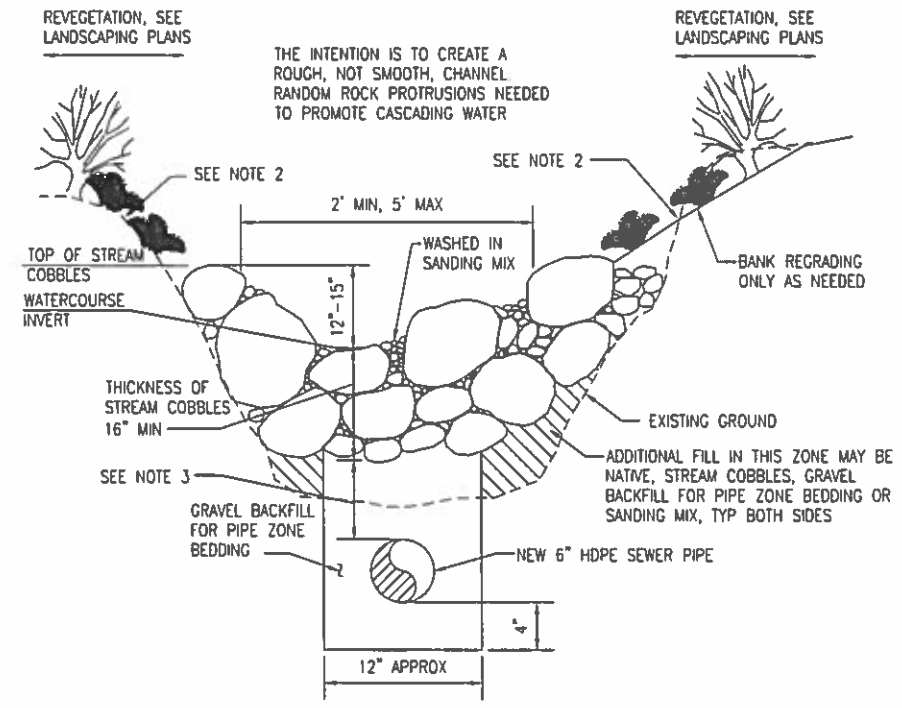
1. CONCEPTUAL DETAIL IS SHOWN IN 10 FT LENGTH. CONTRACTOR SHALL DUPLICATE CONFIGURATION TO MATCH LENGTH NEEDED.
2. INSTALL RANDOM ROCK PROTRUSION AND PLACEMENT TO PROMOTE CASCADING WATER.

TYPICAL PLAN OF ROCK PLACEMNT (1 / C-1) (1 / C-2)
WATER COURSE STABILIZATION
SCALE: NONE



STA 5+65 TO STA 8+00
STA 9+60 TO STA 9+85

TYPICAL SECTION (A / -) (A / C-5) (A / C-6)
WATER COURSE STABILIZATION
SCALE: NONE

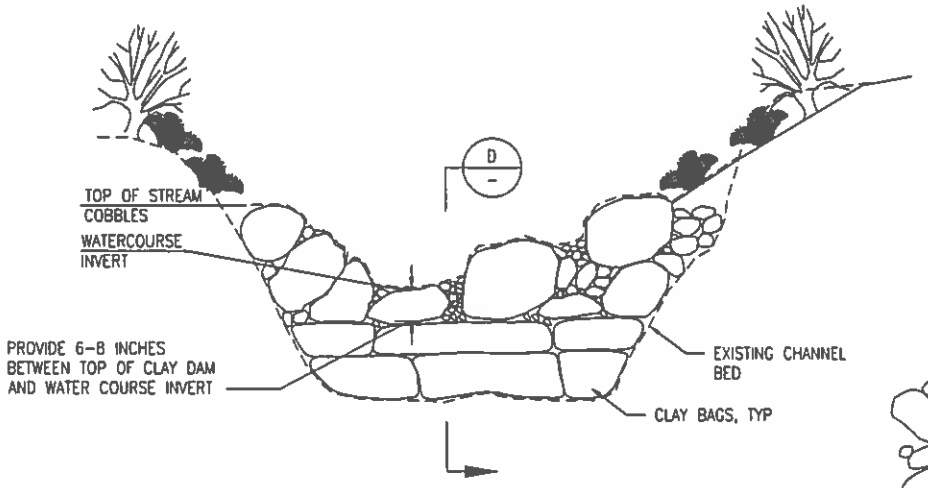


STA 8+00 TO STA 9+60

TYPICAL SECTION (B / -) (B / C-5) (B / C-6)
WATER COURSE STABILIZATION & PIPE TRENCH
SCALE: NONE

NOTES:

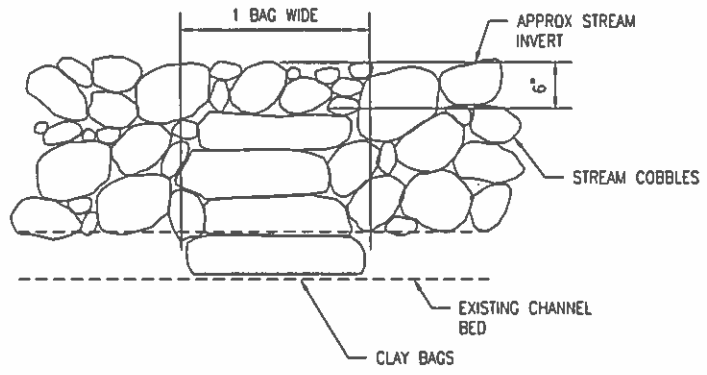
1. MATERIAL EXCAVATED FOR PIPE MAY BE REUSED FOR STREAM COBBLES OR SANDING MAX IF SPECIFICATIONS ARE MET.
2. INSTALL EROSION CONTROL MATTING IN LOCATION DIRECTED BY ENGINEER. STAKE IN ACCORDANCE WITH WSDOT STA PLAN I-13.
3. 1' OF COVER MUST BE PROVIDED DURING CONSTRUCTION TO AVOID DAMAGE TO PIPE.



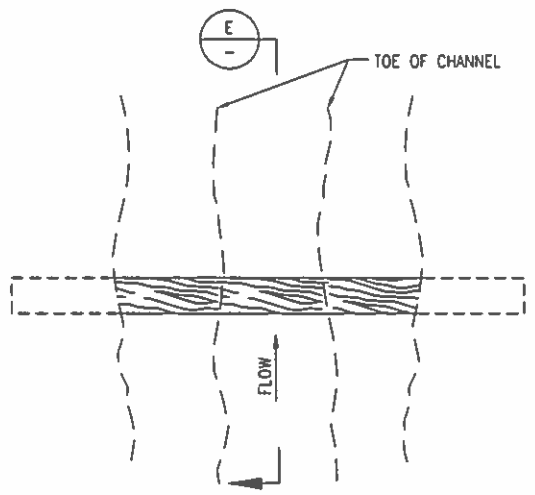
NOTES:

1. CONSTRUCT CLAY DAMS AT LOCATIONS SHOWN IN PROFILE.
2. PLACE CLAY BAGS LENGTHWISE ACROSS CHANNEL.

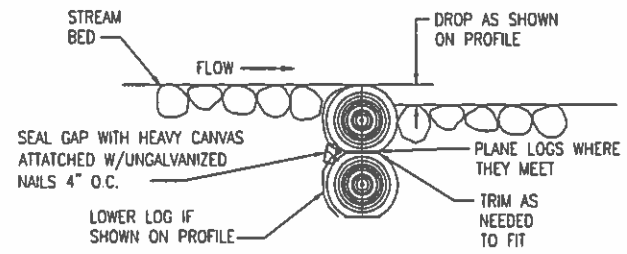
TYPICAL SECTION (C / -)
CLAY DAM
SCALE: NONE



SECTION (D / -)
CLAY DAM
SCALE: NONE



DETAIL (2 / C-1) (2 / C-2)
SILL LOG, TYP
SCALE: NONE



SECTION (E / -)
SILL LOG
SCALE: NONE

DESIGNED	REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
SBS					
DRAWN					
JF/PM					
VERIFY SCALE BAR IS ONE INCH ON ANSI "D" DRAWING 0 1"	0	6/15/07			ISSUED FOR BID

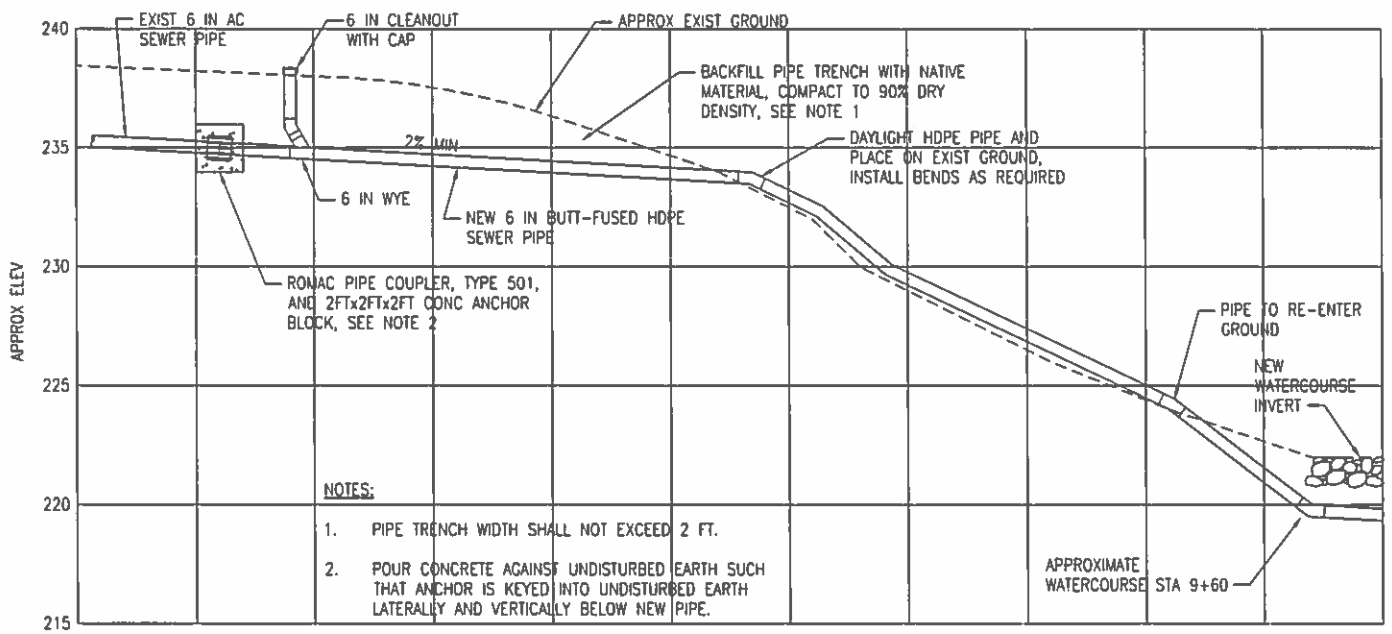
JACK C BJORK STATE OF WASHINGTON 12929 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 6-30-

R.W. Beck, Inc.
1001 Fourth Avenue, Suite 2500
Seattle, WA 98154-1004
(206) 695-4700

CITY OF MERCER ISLAND
PARKWOOD TRAIL AND SUBBASIN
45B WATERCOURSE STABILIZATION PROJECT

WATERCOURSE DETAILS
SHEET 1 OF 2

PROJECT NUMBER: 11-01026-10000
SHT. 5 OF: 11
DRAWING NUMBER: C-3

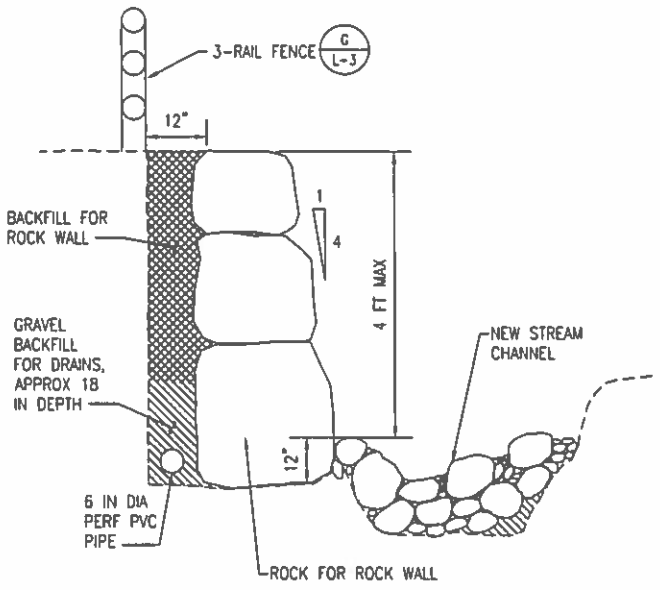


PROFILE (A / C-2)
NEW SEWER PIPE
SCALE: 1" = 4'

LWD TABLE			
#	TYPE	APPROX LENGTH (FT)	COMMENTS
1	LOG	20-25	1, 3
2	LOG	20-25	1
3	LOG	20-25	1
4	LOG	20-25	1
5	SILL LOG	10-12	SEE DET 2, SHT C-3
6	LOG	10-15	1
7	LOG	10-12	1, 3
8	LOG	10-12	2
9	LOG	10-12	2
10	LOG	10-12	2
11	LOG	12-15	2
12	LOG	12-15	2
13	LOG	12-15	2
14	LOG	10-12	1, 3
15	SILL LOG	10-12	SEE DET 2, SHT C-3
16	SILL LOG	10-12	SEE DET 2, SHT C-3
17	SILL LOG	10-12	SEE DET 2, SHT C-3
18	SILL LOG	10-12	SEE DET 2, SHT C-3
19	LOG	12-15	1
20	LOG	12-15	1
21	LOG	12-15	1
22	LOG	8-12	1
23	LOG	8-12	1
24	LOG	8-12	1
25	LOG	8-12	1
26	LOG	8-12	1, 3
27	LOG	8-12	1
28	LOG	12-15	1
29	LOG	15-18	1
30	LOG	18-20	1, 3
31	LOG	12-15	1
32	SILL LOG	9-12	SEE DET 2, SHT C-3
33	LOG	18-20	1
34	LOG	12-15	1

NOTES:

1. PLACE LOG IN STREAM CHANNEL AS SHOWN ON PLAN. LOG IS NOT ANCHORED. AT LEAST ONE END AND A SEGMENT OF LOG SHALL BE IN CONTINUOUS CONTACT WITH WATERCOURSE.
2. STACK LOGS ALONG RIGHT BANK AT 1H:1V SLOPE AS SHOW ON C-5, SECTION STA 7+25. PLANE LOG ● LOG-LOG INTERFACE.
3. PLACE SMALL WOODY DEBRIS ON UPSTREAM SIDE OF LOG AS DIRECTED BY ENGINEER.



DETAIL (1 / C-1)
ROCK WALL AT STA 6+20
SCALE: NONE

NOTES:

1. ROCKERY NOT SUITABLE FOR CONSTRUCTION EQUIPMENT LOADING.

DESIGNED: SBS					
DRAWN: JF/PM					
VERIFY SCALE BAR IS ONE INCH ON ANSI "D" DRAWING 0 — 1"	0	6/15/07			ISSUED FOR BID
	REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION

JACK C. BJORK — STATE OF WASHINGTON — 22109 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES 6-30-

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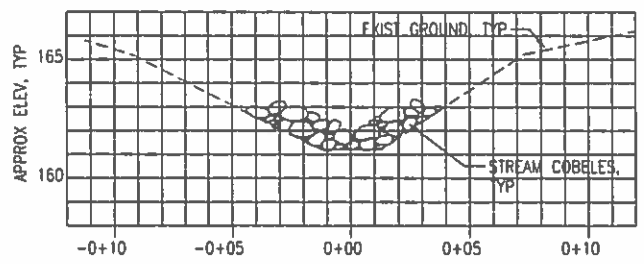
CITY OF MERCER ISLAND
PARKWOOD TRAIL AND SUBBASIN
45B WATERCOURSE STABILIZATION PROJECT

WATERCOURSE DETAILS
SHEET 2 OF 2

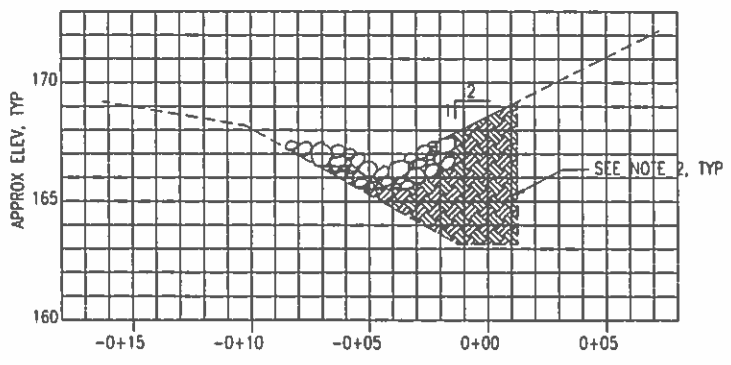
PROJECT NUMBER: 11-01026-10000
SHT. 6 OF: 11
DRAWING NUMBER: C-4

NOTES:

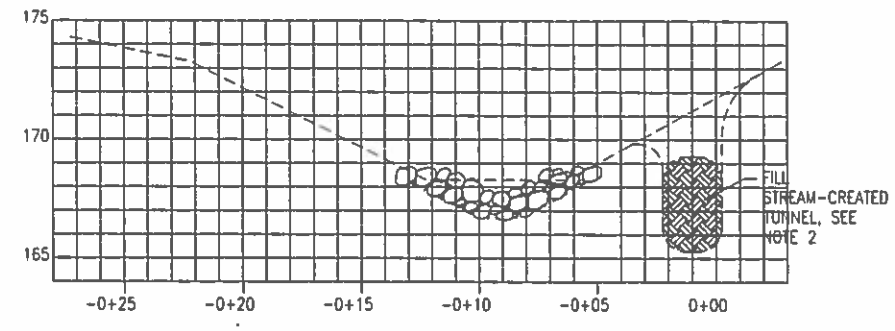
1. ELEVATIONS AND SECTIONS ARE APPROXIMATE AND BASED ON FIELD TAPE MEASUREMENTS.
2. FILL MAY BE NATIVE, STREAM COBBLES, GRAVEL BACKFILL FOR PIPE ZONE BEDDING, OR SANDING MIX.
3. SEE ALSO TYPICAL SECTIONS: A/B C-3
4. NEW/REUSED LWD NOT SHOWN.
5. ALL SECTIONS LOOKING DOWNSTREAM.
6. NO STREAMBED FILL REQUIRED BETWEEN STA 6+75 AND STA 7+00.



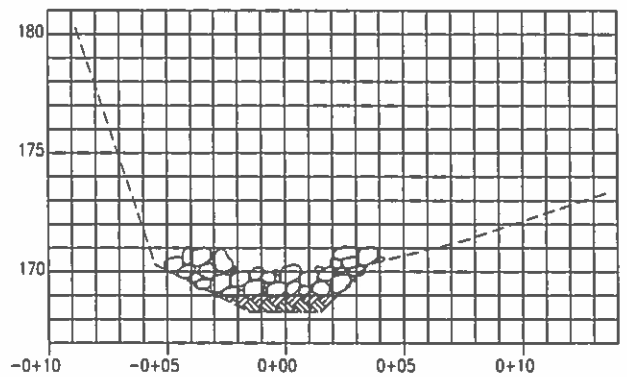
SECTION
CREEK STA 5+75
SCALE: 1"=4'



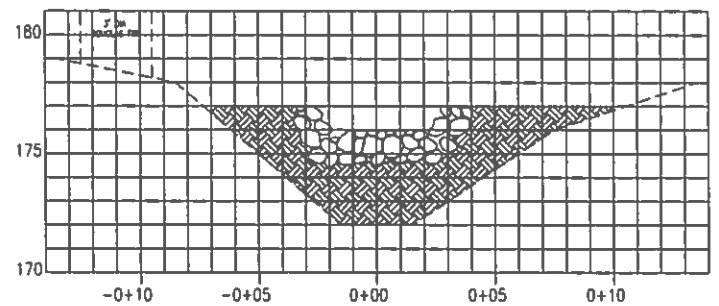
SECTION
CREEK STA 6+00
SCALE: 1"=4'



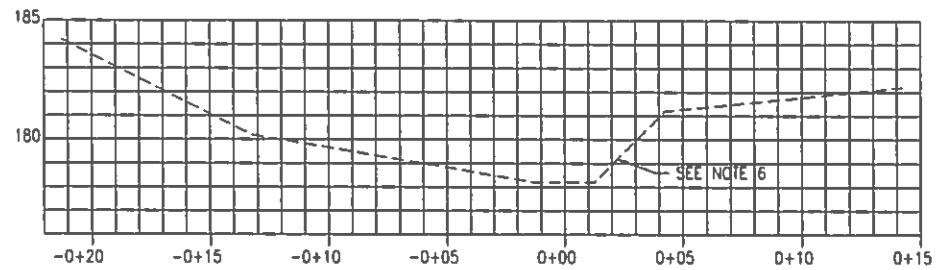
SECTION
CREEK STA 6+25
SCALE: 1"=4'



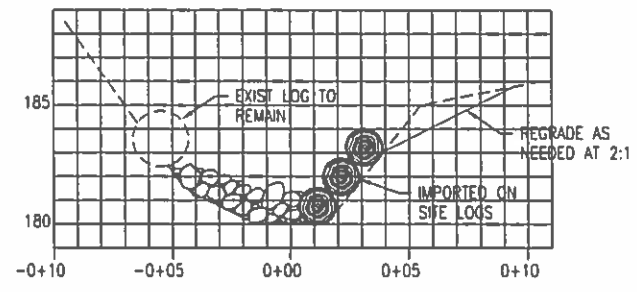
SECTION
CREEK STA 6+50
SCALE: 1"=4'



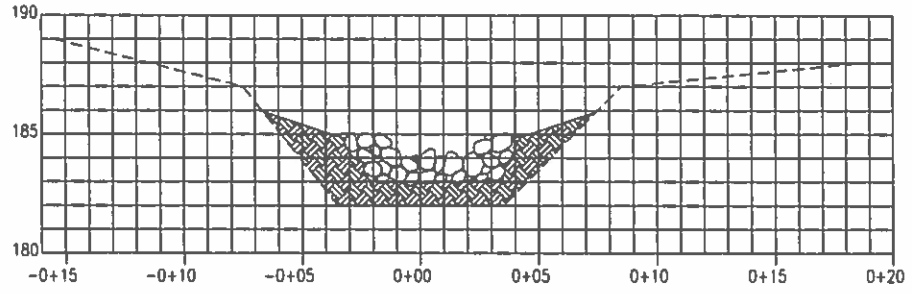
SECTION
CREEK STA 6+75
SCALE: 1"=4'



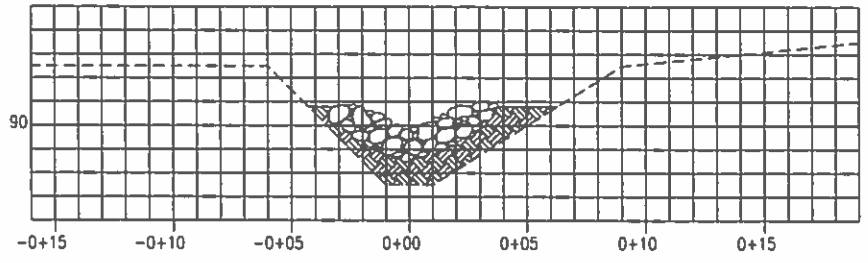
SECTION
CREEK STA 7+00
SCALE: 1"=4'



SECTION
CREEK STA 7+25
SCALE: 1"=4'



SECTION
CREEK STA 7+50
SCALE: 1"=4'



SECTION
CREEK STA 7+75
SCALE: 1"=4'

1"=4'-0" 4 2 0 4 8
Scale Feet

DESIGNED: SBS					
DRAWN: JF/PM					
VERIFY SCALE: BAR IS ONE INCH ON ANSI "D" DRAWING 0 1"	0	6/15/07			ISSUED FOR BID
	REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION

JACK C. BJORK STATE OF WASHINGTON 22120 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 6-30-

R·W·BECK

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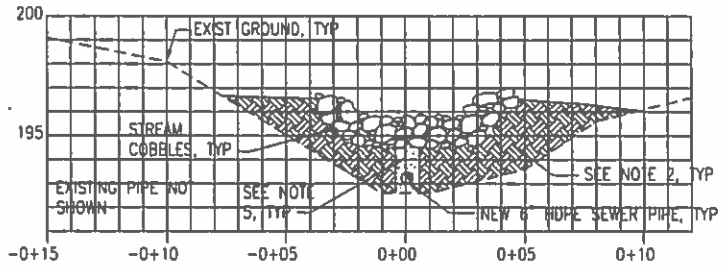
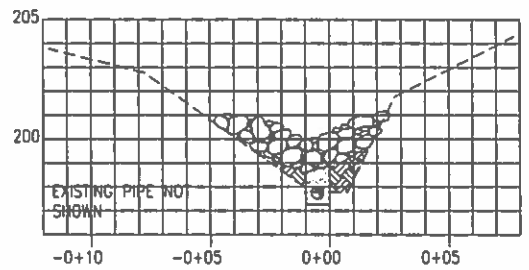
CITY OF MERCER ISLAND
PARKWOOD TRAIL AND SUBBASIN
45B WATERCOURSE STABILIZATION PROJECT

WATERCOURSE CROSS SECTIONS
SHEET 1 OF 2

PROJECT NUMBER: 11-01026-10000
SHT. 7 OF: 11
DRAWING NUMBER: C-5



SECTION
CREEK STA 8+05
SCALE: 1"=4'



SECTION
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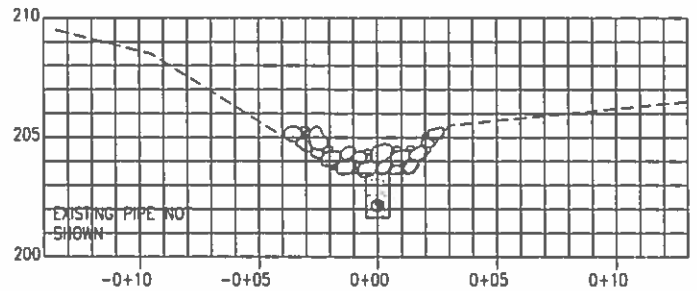
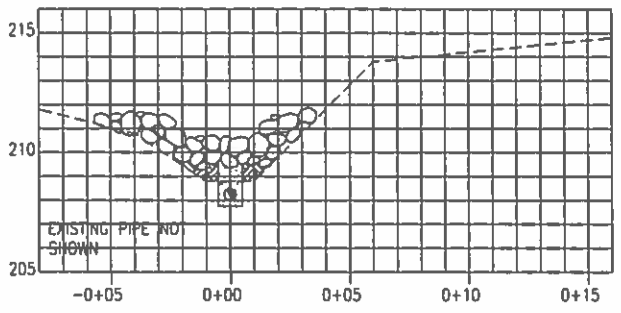


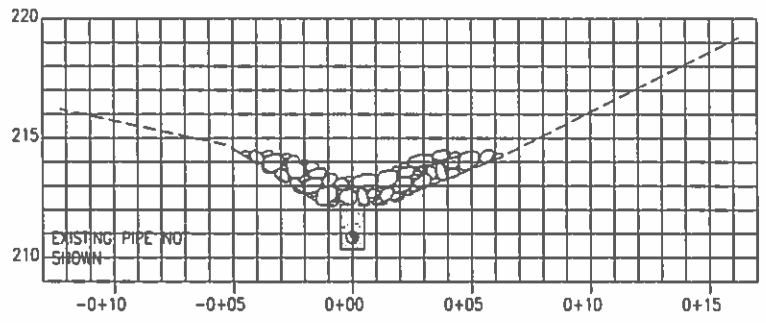
SECTION
CREEK STA 8+50
SCALE: 1"=4'

NOTES:

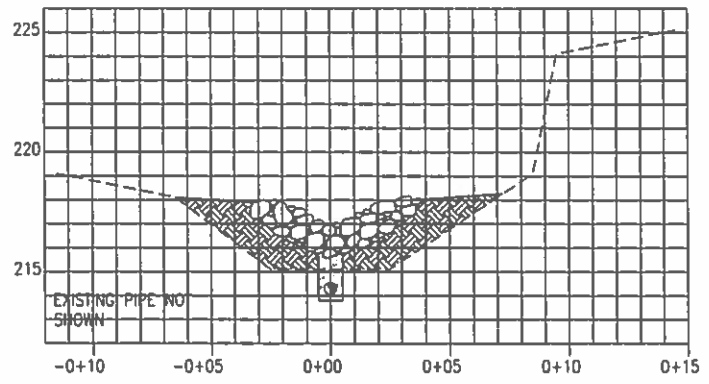
1. ELEVATIONS AND SECTIONS ARE APPROXIMATE AND BASED ON FIELD TAPE MEASUREMENTS.
2. FILL MAY BE NATIVE, STREAM COBBLES, GRAVEL BACKFILL FOR PIPE ZONE BEDDING, OR SANDING MIX.
3. SEE ALSO TYPICAL SECTIONS: A/B C-3
4. NEW/REUSED LWD NOT SHOWN.
5. GRAVEL BACKFILL FOR PIPE ZONE BEDDING.
6. ALL SECTIONS LOOKING DOWNSTREAM.



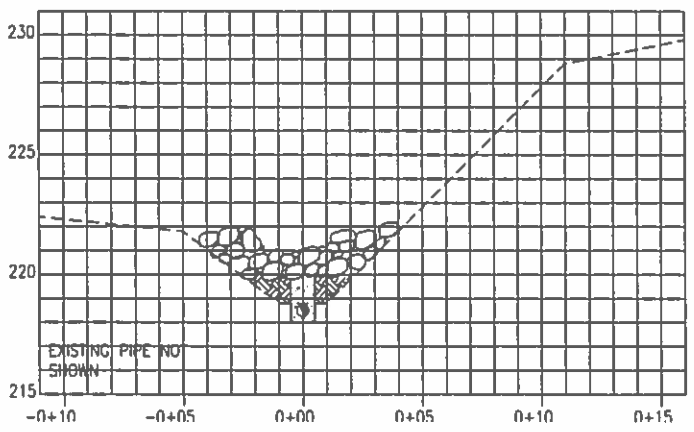
SECTION
CREEK STA 8+75
SCALE: 1"=4'



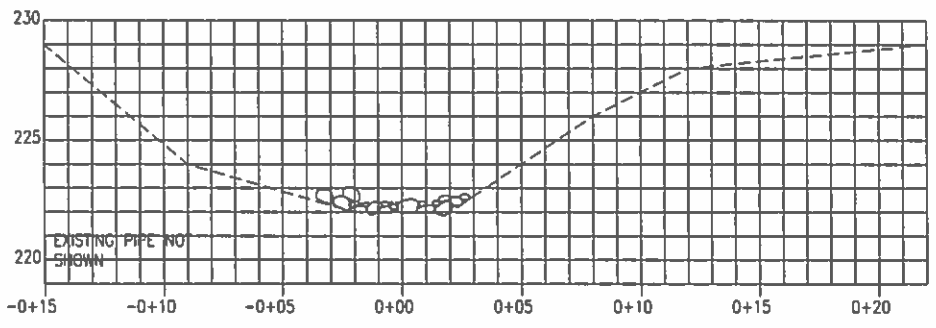
SECTION
CREEK STA 9+00
SCALE: 1"=4'



SECTION
CREEK STA 9+25
SCALE: 1"=4'



SECTION
CREEK STA 9+50
SCALE: 1"=4'



SECTION
CREEK STA 9+75
SCALE: 1"=4'

1"=4'-0" 4 2 0 4 8
Scale Feet

DESIGNED SBS					
DRAWN JF/PM					
VERIFY SCALE BAR IS ONE INCH ON ANSI "D" DRAWING 0 1"	0	6/15/07			ISSUED FOR BID
	REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION

JACK C. BJORK STATE OF WASHINGTON 22139 REGISTERED PROFESSIONAL ENGINEER EXPIRES 6-30-

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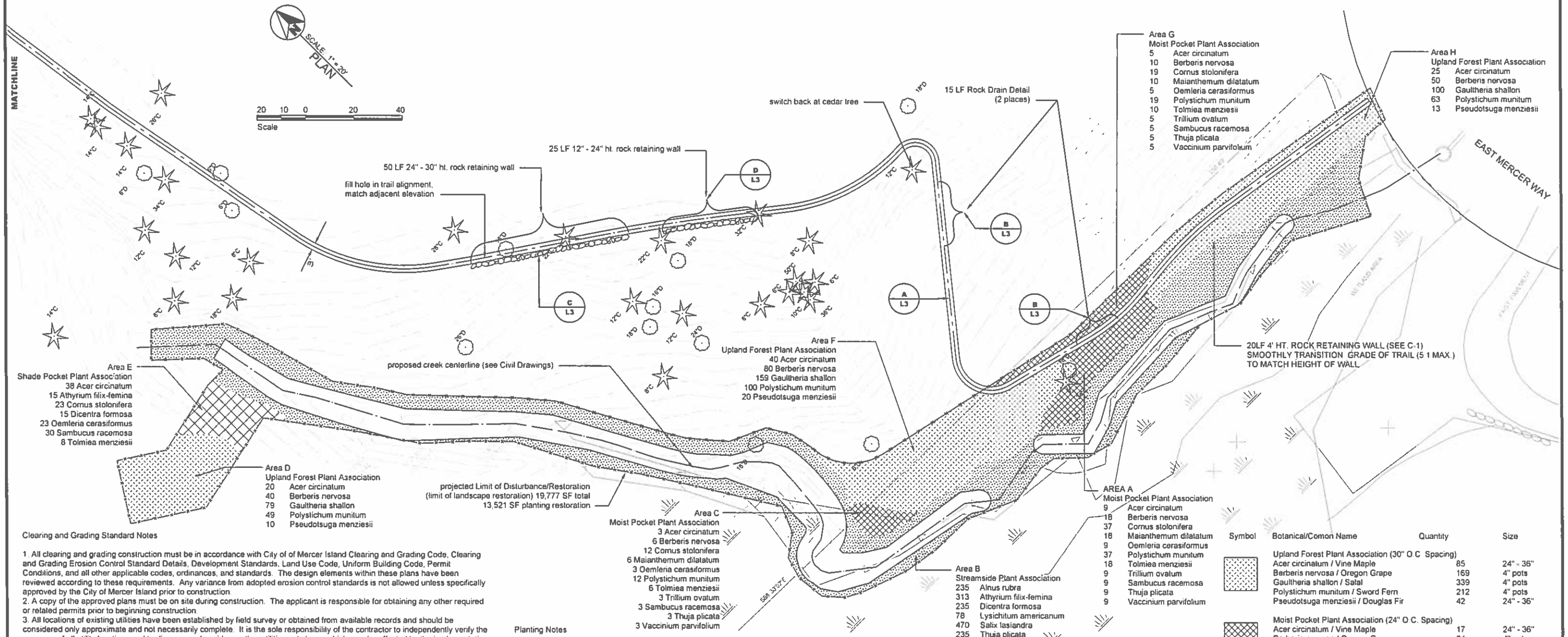
CITY OF MERCER ISLAND
PARKWOOD TRAIL AND SUBBASIN
45B WATERCOURSE STABILIZATION PROJECT

WATERCOURSE CROSS SECTIONS
SHEET 2 OF 2

PROJECT NUMBER: 11-01026-10000
SHT. 8 OF: 11
DRAWING NUMBER: C-6



Clearing and Grading Standard Notes

1. All clearing and grading construction must be in accordance with City of of Mercer Island Clearing and Grading Code, Clearing and Grading Erosion Control Standard Details, Development Standards, Land Use Code, Uniform Building Code, Permit Conditions, and all other applicable codes, ordinances, and standards. The design elements within these plans have been reviewed according to these requirements. Any variance from adopted erosion control standards is not allowed unless specifically approved by the City of Mercer Island prior to construction.
2. A copy of the approved plans must be on site during construction. The applicant is responsible for obtaining any other required or related permits prior to beginning construction.
3. All locations of existing utilities have been established by field survey or obtained from available records and should be considered only approximate and not necessarily complete. It is the sole responsibility of the contractor to independently verify the accuracy of all utility locations and to discover and avoid any other utilities not shown which may be affected by the implementation of this plan.
4. Clearing shall be limited to the area within the approved disturbance limits and trail corridor (typically seven feeet wide). Exposed soils must be covered at the end of each working day when working between October 1st and April 30th. From May 1st through September 30th exposed soils must be covered at the end of each construction week and also at the threat of rain.
5. To reduce the potential for erosion of exposed soils or when rainy season construction is permitted, the following Best Management Practices are required. Preserve natural vegetation for as long as possible. Protect exposed soil using plastic, straw, or mulch as directed by Engineer.
6. Any project that is subject to rainy season restrictions will not be allowed to perform clearing and grading activities without written approval from the PCD Director. The rainy season extends from November 1st through April 30th as defined in the clearing and grading code.

Site Preparation Notes

1. Protection of existing improvements include: Provide, erect, and maintain barricades, coverings, or other types of protection necessary to prevent damage to existing trees, planting areas, trails, or other site improvements.
2. Maintain vehicular and pedestrian traffic routes.
3. Do not close or obstruct streets without permission from authorities having jurisdiction.
4. Verify the trees to remove and areas to be cleared.
5. Tree work will conform to ANSI Z133 A300 as well as all applicable OSHA and WISHA requirements.
6. Cut all trees marked with pink ribbon down to stump height of 6 inches on the uphill side. Dead trees within clearing limits shall be felled to avoid damage to desirable trees, other plants, and property.
7. Dead trees and woody material within the area of work that are partially fallen and hung up in other trees or still standing will be cut down sectioned and dispersed on site at least 20 feet from the trail. Slash will be cut into lengths of 2 feet or less and placed to lie in ground contact. Slash must lie in between existing native vegetation.
8. Logs greater than 12 inches in diameter can be utilized in stabilization work and shall be cut not less than 8 feet in length.

Planting Notes

1. All plant material shall be nursery grown under climate conditions similar to or hardier than at the site and meet or exceed applicable standards.
2. Plants shall be of normal habit of growth, healthy, vigorous, and free of disease, insects, insect eggs and larva
3. Prune no plants prior to delivery to site.
4. Trees shall not be broken nor bark bruised, cut or removed in any manner.
5. Botanic and common names on drawings conform to industry standards.
6. Contractor shall verify all sources of supply to ensure that all plants of the species, size, and quality specified are available. It is the contractor's responsibility to locate plant materials.
7. Submit source of all plant material to the Engineer for acceptance one month prior to shipment to site. Samples or a nursery visit may be required.
8. All plant material shall be transported to plant locations with care to prevent damage. Tie back branches as necessary, and protect bark from chafing with burlap bags. Do not drag plant material along ground without proper protection of roots and branches.
9. Lift all trees by rootball only.
10. No bark scars will be accepted. Protect bark from cables and lines with burlap cover or rubber mat. Tie back branches as necessary to avoid breakage during installation.
11. Do not plant when ground is frozen or excessively wet.
12. Remove all plastic labels, materials, and synthetic burlap from planting pit after plant is in place. Remove from the site.
13. Plants shall meet or exceed size and quality indicated in the plant list.
14. Plants will be planted according to planting detail drawings.
15. Remove all inorganic burlap, container, wires or twine from plants prior to planting. Thoroughly water backfill soil and water as necessary to establish plants during warranty period.
16. Protect tree bark from abrasion due to installation.
17. Soil amendments and mulch shall be Groco®, Steerco® or approved equal per detail.
18. Contractor shall prepare all planting areas by fine grading and removing all deleterious material to plant growth, including all debris over 2 inches in any dimension, applying approved composted organic plant waste (compost), and thoroughly mixing, at the specified rates, with on-site soil to achieve finish grade

Symbol	Botanical/Comon Name	Quantity	Size
	Upland Forest Plant Association (30" O.C. Spacing)		
	Acer circinatum / Vine Maple	85	24" - 36"
	Berberis nervosa / Oregon Grape	169	4" pots
	Gaultheria shallon / Salal	339	4" pots
	Polystichum munitum / Sword Fern	212	4" pots
	Pseudotsuga menziesii / Douglas Fir	42	24" - 36"
	Moist Pocket Plant Association (24" O.C. Spacing)		
	Acer circinatum / Vine Maple	17	24" - 36"
	Berberis nervosa / Oregon Grape	34	4" pots
	Cornus stolonifera / Red Osier Dogwood	68	1 gal.
	Maianthemum dilatatum / False Lily-of-the-valley	34	1 gal.
	Oemleria cerasiformus / Indian Plum	17	1 gal.
	Polystichum munitum / Swordfern	68	4" pots
	Tolmiea menziesii / Pig-a-back	34	4" pots
	Trillium ovatum / Trillium	17	1 gal.
	Sambucus racemosa / Red Elderberry	17	1 gal.
	Thuja plicata / Western Red Cedar	17	24" - 36"
	Vaccinium parvifolium / Red Huckleberry	17	1 gal.
	Shade Pocket Plant Association (24" O.C. Spacing)		
	Acer circinatum / Vine Maple	38	24" - 36"
	Athyrium filix-femina / Lady-fern	15	4" pots
	Cornus stolonifera / Red Osier Dogwood	23	1 gal.
	Dicentra formosa / Pacific Bleedingheart	15	4" pots
	Oemleria cerasiformus / Indian Plum	23	1 gal.
	Sambucus racemosa / Red Elderberry	30	1 gal.
	Tolmiea menziesii / Pig-a-back	8	1 gal.
	Streamside Plant Association (24" O.C. Spacing)		
	Alnus rubra / Red Alder	235	1 gal.
	Athyrium filix-femina / Lady-fern	313	4" pots
	Dicentra formosa / Pacific Bleedingheart	235	4" pots
	Lysichitum americanum / Skunk Cabbage	78	1 gal.
	Salix lasiandra / Pacific Willow	470	whips
	Thuja plicata / Western Red Cedar	235	24" - 36"

State Of
Washington
Registered
Landscape Architect

Richard B. Van De Mark
Certificate No. 481

REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
1	5-23-07			

DESIGNED
DRAWN
VERIFY SCALE
BAR IS ONE INCH ON ANSI "D" DRAWING
0 1"

LANDSCAPE ARCHITECT
RVLA, inc., p.s.
33109 SE 110th street
Issaquah, WA 98027
phone - 425 222-7095
fax - 425 222-7012
e-mail - rvla@comcast.net

ENGINEER
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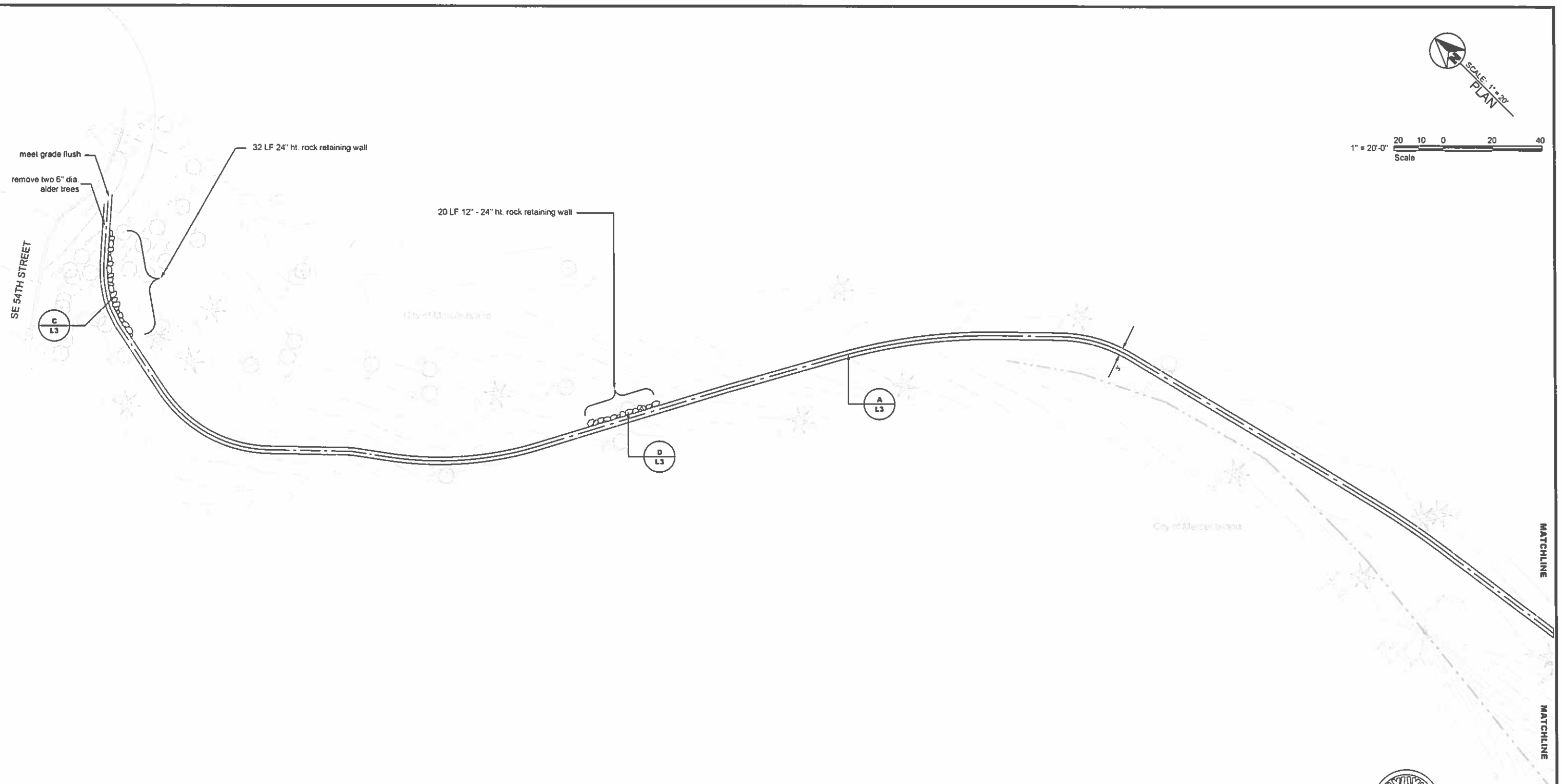
1001 Fourth Avenue, Suite 2500
Seattle, WA 98154-1004
(206) 695-4700

CITY OF MERCER ISLAND
PARKWOOD TRAIL AND SUBBASIN 45B
WATERCOURSE STABILIZATION PROJECT

TRAIL DEVELOPMENT & LANDSCAPE RESTORATION

SHEET 1

PROJECT NUMBER: 11-01026-10000
SHT. 9 OF: 11
DRAWING NUMBER: L - 1



REFER TO SHEET L-1 FOR CLEARING AND GRADING AND SITE PREPARATION STANDARD NOTES

State Of Washington
Registered
Landscape Architect

Richard B. Van De Mark
Certificate No. 481

REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
1	5-23-07			

DESIGNED

DRAWN

VERIFY SCALE
BAR IS ONE INCH ON ANSI "D" DRAWING
0 1"

LANDSCAPE ARCHITECT

RVLA, inc., p.s.
33105 SE 110th street
Issaquah, WA 98027
phone · 425 222-7015
fax · 425 222-7012
e-mail · rvlaecomcast.net

ENGINEER

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Seattle, WA 98154-1004
(206) 695-4700

CITY OF MERCER ISLAND
PARKWOOD TRAIL AND SUBBASIN 45B
WATERCOURSE STABILIZATION PROJECT

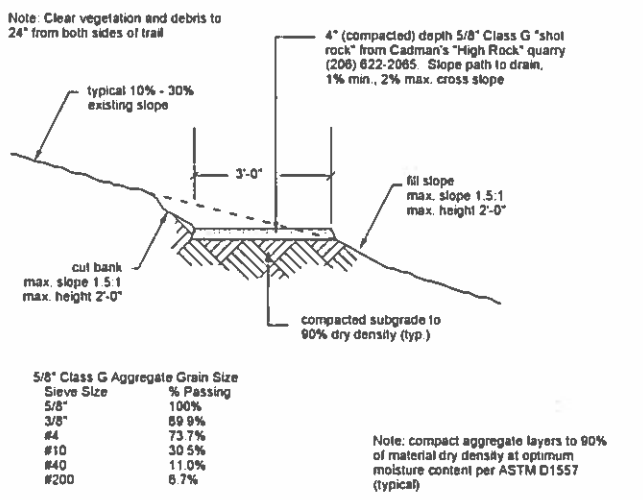
TRAIL DEVELOPMENT & LANDSCAPE RESTORATION

SHEET 2

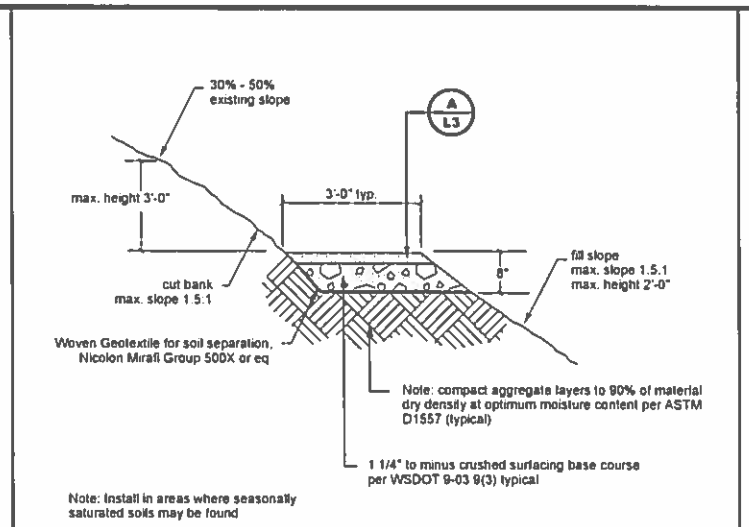
PROJECT NUMBER: 11-01026-10000

SHT. 10 OF: 11

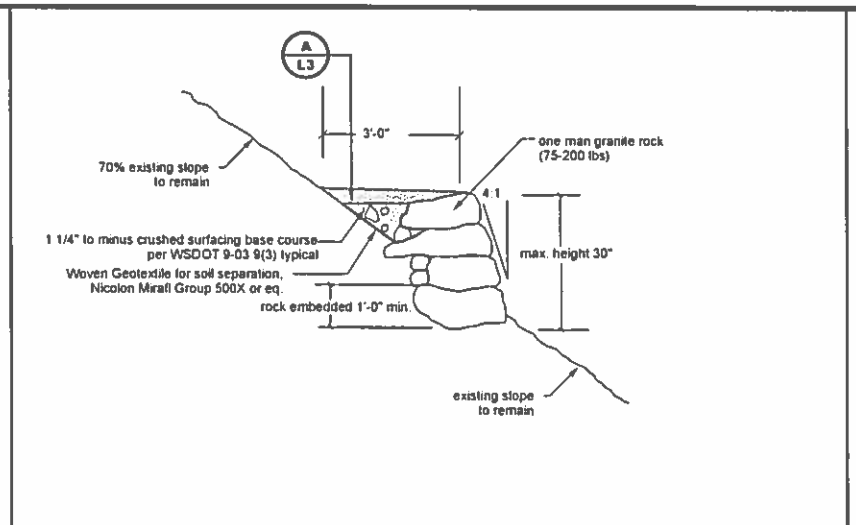
DRAWING NUMBER: L - 2



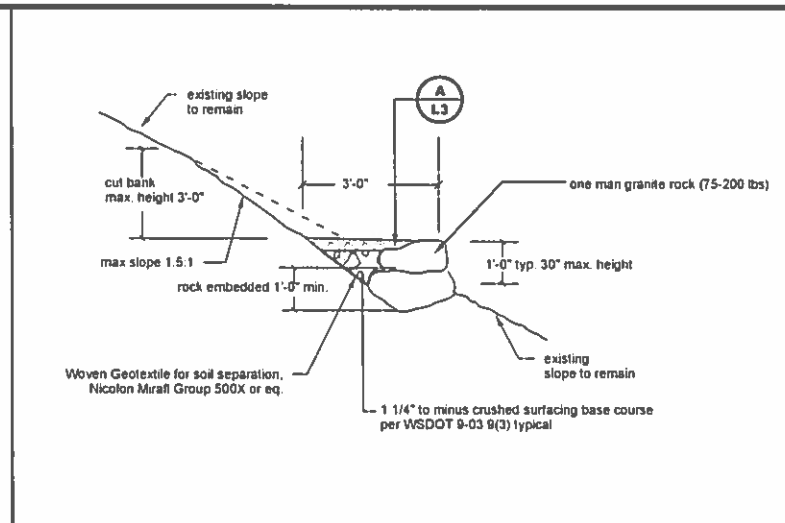
A Trail Way Section no scale



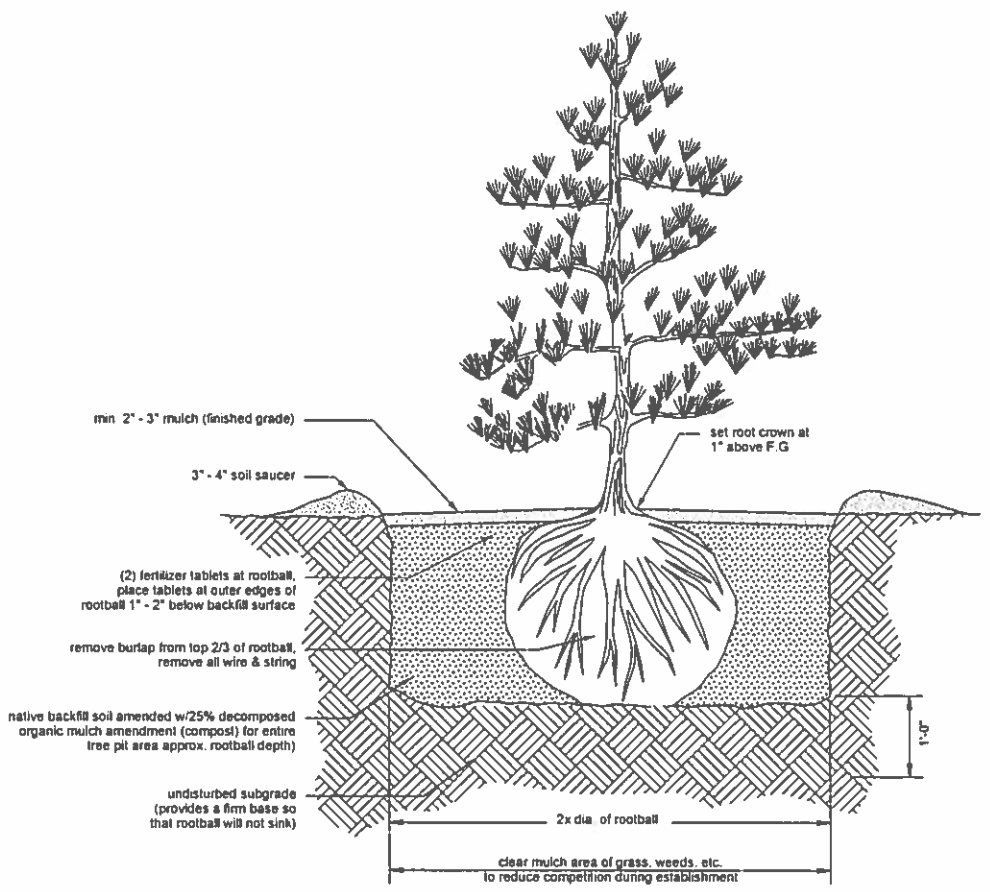
B Rock Drain Detail no scale



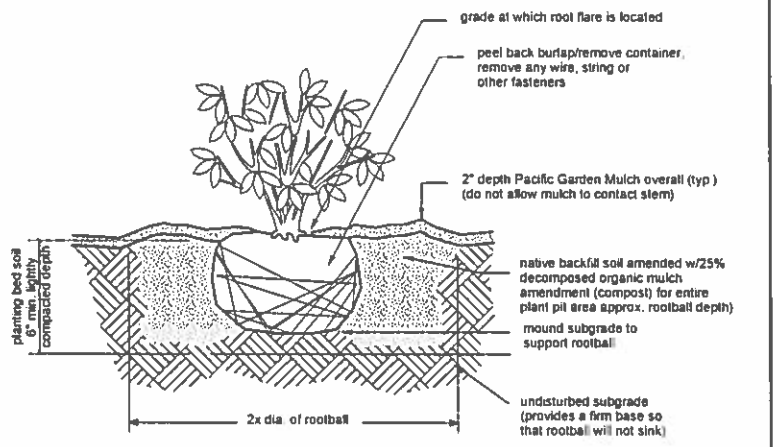
C 12" - 30" Rock Wall no scale



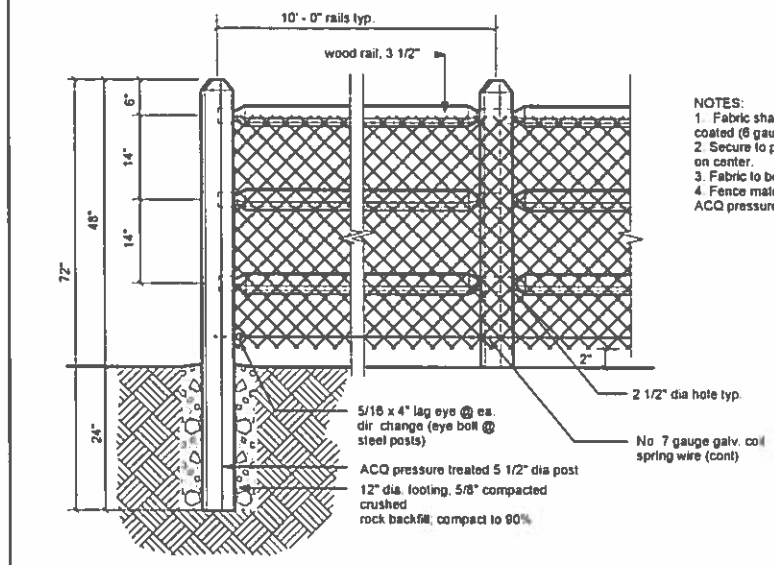
D 12" - 24" Rock Wall no scale



E Coniferous Tree Planting no scale



F Shrub/Groundcover Planting no scale



G 3-Rail Fence 3/4" = 1'-0"

State Of Washington
Registered
Landscape Architect

Richard B. Van De Mark
Certificate No. 481

REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
1	5-23-07			

DESIGNED

DRAWN

VERIFY SCALE
BAR IS ONE INCH ON ANSI "D" DRAWING
0 1"

LANDSCAPE ARCHITECT
RVLA, inc., p.s.
33105 SE 110th street
Issaquah, WA 98027
phone · 425 222-7015
fax · 425 222-7012
e-mail · rvla@comcast.net

ENGINEER
R.W. Beck, Inc.
1001 Fourth Avenue, Suite 2500
Seattle, WA 98154-1004
(206) 695-4700

CITY OF MERCER ISLAND
PARKWOOD TRAIL AND SUBBASIN 45B
WATERCOURSE STABILIZATION PROJECT

TRAIL & LANDSCAPE DETAILS

PROJECT NUMBER: 11-01026-10000
SHT. 11 OF 11
DRAWING NUMBER: L - 3

Western Washington Hydrology Model
PROJECT REPORT

Project Name: 150622
Site Address:
City :
Report Date : 6/22/2015
Gage : Seatac
Data Start : 1948/10/01
Data End : 1998/09/30
Precip Scale: 1.00
WWHM3 Version:

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	Acres
SAT, Forest, Mod	.115

Impervious Land Use	Acres

Element Flows To:

Surface	Interflow	Groundwater

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	Acres

Impervious Land Use	Acres
ROADS FLAT	0.115

Element Flows To:
Surface **Interflow** **Groundwater**
Vault 1, Vault 1,

Name : Vault 1
Width : 17.45 ft.
Length : 17.45 ft.
Depth: 5ft.
Discharge Structure
Riser Height: 4 ft.
Riser Diameter: 18 in.
Orifice 1 Diameter: 0.30603 in. **Elevation:** 0 ft.
Orifice 1 Diameter: 0.56 in. **Elevation:** 2.668 ft.
Orifice 1 Diameter: 0.33 in. **Elevation:** 3 ft.
(Volume = 17.45’ x 17.45’ x 4’= 1,218 cu. ft.)

Element Flows To:
Outlet 1 **Outlet 2**

Vault Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.007	0.000	0.000	0.000
0.056	0.007	0.000	0.001	0.000
0.111	0.007	0.001	0.001	0.000
0.167	0.007	0.001	0.001	0.000
0.222	0.007	0.002	0.001	0.000
0.278	0.007	0.002	0.001	0.000
0.333	0.007	0.002	0.001	0.000
0.389	0.007	0.003	0.002	0.000
0.444	0.007	0.003	0.002	0.000
0.500	0.007	0.003	0.002	0.000
0.556	0.007	0.004	0.002	0.000
0.611	0.007	0.004	0.002	0.000
0.667	0.007	0.005	0.002	0.000
0.722	0.007	0.005	0.002	0.000
0.778	0.007	0.005	0.002	0.000
0.833	0.007	0.006	0.002	0.000
0.889	0.007	0.006	0.002	0.000
0.944	0.007	0.007	0.002	0.000
1.000	0.007	0.007	0.002	0.000
1.056	0.007	0.007	0.003	0.000
1.111	0.007	0.008	0.003	0.000
1.167	0.007	0.008	0.003	0.000
1.222	0.007	0.009	0.003	0.000
1.278	0.007	0.009	0.003	0.000
1.333	0.007	0.009	0.003	0.000
1.389	0.007	0.010	0.003	0.000
1.444	0.007	0.010	0.003	0.000
1.500	0.007	0.010	0.003	0.000

1.556	0.007	0.011	0.003	0.000
1.611	0.007	0.011	0.003	0.000
1.667	0.007	0.012	0.003	0.000
1.722	0.007	0.012	0.003	0.000
1.778	0.007	0.012	0.003	0.000
1.833	0.007	0.013	0.003	0.000
1.889	0.007	0.013	0.003	0.000
1.944	0.007	0.014	0.003	0.000
2.000	0.007	0.014	0.003	0.000
2.056	0.007	0.014	0.004	0.000
2.111	0.007	0.015	0.004	0.000
2.167	0.007	0.015	0.004	0.000
2.222	0.007	0.016	0.004	0.000
2.278	0.007	0.016	0.004	0.000
2.333	0.007	0.016	0.004	0.000
2.389	0.007	0.017	0.004	0.000
2.444	0.007	0.017	0.004	0.000
2.500	0.007	0.017	0.004	0.000
2.556	0.007	0.018	0.004	0.000
2.611	0.007	0.018	0.004	0.000
2.667	0.007	0.019	0.004	0.000
2.722	0.007	0.019	0.006	0.000
2.778	0.007	0.019	0.007	0.000
2.833	0.007	0.020	0.007	0.000
2.889	0.007	0.020	0.008	0.000
2.944	0.007	0.021	0.009	0.000
3.000	0.007	0.021	0.009	0.000
3.056	0.007	0.021	0.010	0.000
3.111	0.007	0.022	0.011	0.000
3.167	0.007	0.022	0.011	0.000
3.222	0.007	0.023	0.012	0.000
3.278	0.007	0.023	0.012	0.000
3.333	0.007	0.023	0.013	0.000
3.389	0.007	0.024	0.013	0.000
3.444	0.007	0.024	0.014	0.000
3.500	0.007	0.024	0.014	0.000
3.556	0.007	0.025	0.015	0.000
3.611	0.007	0.025	0.015	0.000
3.667	0.007	0.026	0.015	0.000
3.722	0.007	0.026	0.016	0.000
3.778	0.007	0.026	0.016	0.000
3.833	0.007	0.027	0.016	0.000
3.889	0.007	0.027	0.017	0.000
3.944	0.007	0.028	0.017	0.000
4.000	0.007	0.028	0.017	0.000
4.056	0.007	0.028	0.209	0.000
4.111	0.007	0.029	0.559	0.000
4.167	0.007	0.029	1.012	0.000
4.222	0.007	0.030	1.549	0.000
4.278	0.007	0.030	2.157	0.000
4.333	0.007	0.030	2.830	0.000
4.389	0.007	0.031	3.562	0.000
4.444	0.007	0.031	4.348	0.000
4.500	0.007	0.031	5.185	0.000
4.556	0.007	0.032	6.069	0.000
4.611	0.007	0.032	6.999	0.000
4.667	0.007	0.033	7.973	0.000

4.722	0.007	0.033	8.987	0.000
4.778	0.007	0.033	10.04	0.000
4.833	0.007	0.034	11.13	0.000
4.889	0.007	0.034	12.26	0.000
4.944	0.007	0.035	13.43	0.000
5.000	0.007	0.035	14.63	0.000
5.056	0.007	0.035	15.86	0.000
5.111	0.000	0.000	17.13	0.000

MITIGATED LAND USE

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.007439
5 year	0.01555
10 year	0.020907
25 year	0.026992
50 year	0.030898
100 year	0.034267

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.004506
5 year	0.007561
10 year	0.010311
25 year	0.01481
50 year	0.019045
100 year	0.024168

Yearly Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1950	0.006	0.003
1951	0.026	0.004
1952	0.020	0.014
1953	0.004	0.003
1954	0.005	0.003
1955	0.010	0.004
1956	0.017	0.007
1957	0.016	0.004
1958	0.005	0.004
1959	0.010	0.004
1960	0.009	0.004
1961	0.015	0.013
1962	0.015	0.004
1963	0.000	0.003
1964	0.008	0.004
1965	0.012	0.004
1966	0.011	0.004
1967	0.005	0.003
1968	0.016	0.004
1969	0.004	0.003

1970	0.012	0.003
1971	0.005	0.004
1972	0.010	0.004
1973	0.023	0.011
1974	0.010	0.003
1975	0.009	0.004
1976	0.011	0.005
1977	0.011	0.004
1978	0.003	0.003
1979	0.004	0.004
1980	0.004	0.003
1981	0.002	0.011
1982	0.005	0.003
1983	0.012	0.015
1984	0.003	0.004
1985	0.012	0.003
1986	0.003	0.004
1987	0.002	0.013
1988	0.010	0.015
1989	0.000	0.003
1990	0.002	0.003
1991	0.007	0.016
1992	0.021	0.014
1993	0.004	0.003
1994	0.001	0.003
1995	0.000	0.003
1996	0.008	0.004
1997	0.021	0.013
1998	0.017	0.015
1999	0.008	0.004

Ranked Yearly Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.0261	0.0155
2	0.0232	0.0150
3	0.0214	0.0148
4	0.0205	0.0147
5	0.0199	0.0143
6	0.0172	0.0141
7	0.0170	0.0134
8	0.0162	0.0131
9	0.0162	0.0126
10	0.0149	0.0110
11	0.0146	0.0109
12	0.0125	0.0067
13	0.0124	0.0050
14	0.0122	0.0042
15	0.0116	0.0040
16	0.0112	0.0040
17	0.0106	0.0040
18	0.0106	0.0039
19	0.0105	0.0038
20	0.0103	0.0038
21	0.0102	0.0038
22	0.0099	0.0038
23	0.0096	0.0038

24	0.0088	0.0037
25	0.0087	0.0037
26	0.0082	0.0037
27	0.0082	0.0037
28	0.0081	0.0036
29	0.0070	0.0036
30	0.0058	0.0036
31	0.0052	0.0036
32	0.0049	0.0035
33	0.0049	0.0035
34	0.0048	0.0035
35	0.0047	0.0035
36	0.0042	0.0034
37	0.0040	0.0034
38	0.0037	0.0034
39	0.0036	0.0034
40	0.0035	0.0034
41	0.0034	0.0033
42	0.0033	0.0033
43	0.0027	0.0033
44	0.0022	0.0032
45	0.0022	0.0032
46	0.0015	0.0031
47	0.0012	0.0030
48	0.0004	0.0029
49	0.0002	0.0029
50	0.0002	0.0028

POC #1
The Facility PASSED

The Facility PASSED.

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail
0.0037	972	965	99	Pass
0.0040	877	390	44	Pass
0.0043	791	359	45	Pass
0.0045	727	348	47	Pass
0.0048	661	331	50	Pass
0.0051	611	320	52	Pass
0.0054	557	310	55	Pass
0.0056	508	299	58	Pass
0.0059	474	288	60	Pass
0.0062	427	280	65	Pass
0.0065	393	270	68	Pass
0.0067	363	261	71	Pass
0.0070	336	249	74	Pass
0.0073	307	238	77	Pass
0.0076	281	227	80	Pass
0.0078	255	212	83	Pass
0.0081	234	198	84	Pass
0.0084	223	184	82	Pass
0.0087	202	178	88	Pass
0.0089	185	165	89	Pass
0.0092	170	154	90	Pass
0.0095	158	148	93	Pass

0.0098	148	140	94	Pass
0.0100	132	134	101	Pass
0.0103	122	128	104	Pass
0.0106	111	115	103	Pass
0.0109	104	109	104	Pass
0.0111	94	99	105	Pass
0.0114	88	95	107	Pass
0.0117	80	84	104	Pass
0.0120	75	72	96	Pass
0.0122	67	65	97	Pass
0.0125	60	58	96	Pass
0.0128	58	47	81	Pass
0.0131	54	38	70	Pass
0.0133	52	32	61	Pass
0.0136	48	25	52	Pass
0.0139	43	19	44	Pass
0.0142	41	14	34	Pass
0.0144	38	11	28	Pass
0.0147	34	6	17	Pass
0.0150	31	2	6	Pass
0.0152	28	2	7	Pass
0.0155	26	1	3	Pass
0.0158	24	0	0	Pass
0.0161	24	0	0	Pass
0.0163	19	0	0	Pass
0.0166	18	0	0	Pass
0.0169	18	0	0	Pass
0.0172	15	0	0	Pass
0.0174	11	0	0	Pass
0.0177	9	0	0	Pass
0.0180	8	0	0	Pass
0.0183	8	0	0	Pass
0.0185	8	0	0	Pass
0.0188	8	0	0	Pass
0.0191	7	0	0	Pass
0.0194	7	0	0	Pass
0.0196	7	0	0	Pass
0.0199	6	0	0	Pass
0.0202	5	0	0	Pass
0.0205	5	0	0	Pass
0.0207	3	0	0	Pass
0.0210	3	0	0	Pass
0.0213	3	0	0	Pass
0.0216	2	0	0	Pass
0.0218	2	0	0	Pass
0.0221	2	0	0	Pass
0.0224	2	0	0	Pass
0.0227	2	0	0	Pass
0.0229	2	0	0	Pass
0.0232	1	0	0	Pass
0.0235	1	0	0	Pass
0.0238	1	0	0	Pass
0.0240	1	0	0	Pass
0.0243	1	0	0	Pass
0.0246	1	0	0	Pass
0.0249	1	0	0	Pass
0.0251	1	0	0	Pass

0.0254	1	0	0	Pass
0.0257	1	0	0	Pass
0.0260	1	0	0	Pass
0.0262	0	0	0	Pass
0.0265	0	0	0	Pass
0.0268	0	0	0	Pass
0.0271	0	0	0	Pass
0.0273	0	0	0	Pass
0.0276	0	0	0	Pass
0.0279	0	0	0	Pass
0.0282	0	0	0	Pass
0.0284	0	0	0	Pass
0.0287	0	0	0	Pass
0.0290	0	0	0	Pass
0.0293	0	0	0	Pass
0.0295	0	0	0	Pass
0.0298	0	0	0	Pass
0.0301	0	0	0	Pass
0.0303	0	0	0	Pass
0.0306	0	0	0	Pass
0.0309	0	0	0	Pass

Water Quality BMP Flow and Volume for POC 1.
On-line facility volume: 0 acre-feet
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

Perlnd and Implnd Changes

No changes have been made.
