



DEVELOPMENT SERVICES DEPARTMENT  
 ENVIRONMENTAL COORDINATOR  
 450 100<sup>th</sup> Ave NE., P.O. BOX 90012  
 BELLEVUE, WA 98009-9012

## DETERMINATION OF NON-SIGNIFICANCE

**PROPONENT:** Stephen Noeske, Bellevue Utilities Department

**LOCATION OF PROPOSAL:** 4445 152<sup>nd</sup> Place SE (Generally)

**NAME & DESCRIPTION OF PROPOSAL:**

Horizon Heights Open Space/Upper Vasa Creek Check Dam Repair and Habitat Improvements

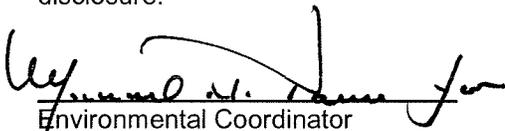
Application for critical areas land use permit to authorize repair of previously installed rock check dams as a stabilization measure and installation of large woody debris within the stream channel as a habitat improvement project.

**FILE NUMBER:** 10-120843-LO

The Environmental Coordinator of the City of Bellevue has determined that this proposal does not have a probable significant adverse impact upon the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030(2)(C). This decision was made after the Bellevue Environmental Coordinator reviewed the completed environmental checklist and information filed with the Land Use Division of the Development Services Department. This information is available to the public on request.

- There is no comment period for this DNS. There is a 14-day appeal period. Only persons who submitted written comments before the DNS was issued may appeal the decision. A written appeal must be filed in the City Clerk's office by 5:00 p.m. on \_\_\_\_\_.
- This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS. There is a 14-day appeal period. Only persons who submitted written comments before the DNS was issued may appeal the decision. A written appeal must be filed in the City Clerk's Office by 5 p.m. on **November 18, 2010**.
- This DNS is issued under WAC 197-11-340(2) and is subject to a 14-day comment period from the date below. Comments must be submitted by 5 p.m. on \_\_\_\_\_. This DNS is also subject to appeal. A written appeal must be filed in the City Clerk's Office by 5 p.m. on \_\_\_\_\_.

This DNS may be withdrawn at any time if the proposal is modified so that it is likely to have significant adverse environmental impacts; if there is significant new information indicating, or on, a proposals probable significant adverse environmental impacts (unless a non-exempt license has been issued if the proposal is a private project); or if the DNS was procured by misrepresentation or lack of material disclosure.

  
 Environmental Coordinator

November 4, 2010  
 Date

**OTHERS TO RECEIVE THIS DOCUMENT:**

- State Department of Fish and Wildlife
- State Department of Ecology,
- Army Corps of Engineers
- Attorney General
- Muckleshoot Indian Tribe



**City of Bellevue  
Development Services Department  
Land Use Staff Report**

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**Proposal Name:** Horizon Heights Open Space/Upper Vasa Creek Check Dam Repair and Habitat Improvements

**Proposal Address:** 4445 152<sup>nd</sup> Place SE

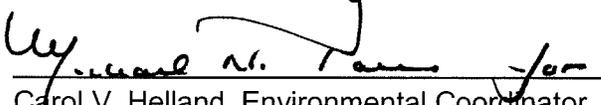
**Proposal Description:** Application for critical areas land use permit to authorize repair of previously installed rock check dams as a stabilization measure and installation of large woody debris within the stream channel as a habitat improvement project.

**File Number:** 10-120843-LO

**Applicant:** Stephen Noeske, City of Bellevue Utilities Department

**Decisions Included:** Critical Areas Land Use Permit  
(Process II. LUC 20.30P)

**Planner:** David Pyle, Planner

**State Environmental Policy Act  
Threshold Determination:** **Determination of Non-Significance**  
  
Carol V. Helland, Environmental Coordinator  
Development Services Department

**Director's Decision:** **Approval with Conditions**  
  
Carol V. Helland, Land Use Director  
Development Services Department

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Application Date:	August 18, 2010
Notice of Application Publication Date:	September 9, 2010
Decision Publication Date:	November 4, 2010
Project/SEPA Appeal Deadline:	November 18, 2010

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For information on how to appeal a proposal, visit Development Services Center at City Hall or call (425) 452-6800. Comments on State Environmental Policy Act (SEPA) Determinations can be made with or without appealing the proposal within the noted comment period for a SEPA Determination. Appeal of the Decision must be received in the City's Clerk's Office by 5 PM on the date noted for appeal of the decision.

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### **Attachments**

1. Project Plans
2. Critical Areas Report and Restoration Plan
3. Public Comment Letter
4. City Response to Public Comment
5. Environmental Checklist

## I. Proposal Description

This is an application for approval to repair a series of rock check dams installed in 2001 within the main channel of Vasa Creek that were damaged during extremely high stream flows following heavy precipitation in 2007. The rock check dams were designed and installed to stabilize the stream bed which is prone to erosion due to both its location in a steep ravine and the stormwater flows that are conveyed by the channel and influenced by the large amount of impervious surface upstream of the project area. In 2008, interim repairs were applied to the three of the check dams that were badly damaged. The interim repairs prevented further damage from occurring until the City of Bellevue Utilities Department could design repairs for all the check dams and acquire the necessary permits, solicit bids, award a contract, and construct the repairs. This is an application to permit the repair of all of the damaged check dams and stabilize the stream to prevent further erosion.

The proposed project will improve the design of the check dams to withstand higher flows than the previous design. Repairs will be done through the placement of approximately 80 to 90 cubic yards of rock (i.e., riprap and quarry spalls) in accordance with the engineering design developed for the project. The project will also include the placement of 35 pieces of large woody debris anchored by cable and ballast to enhance in-stream habitat conditions. Funding for the check dam repair portion of the project is provided by FEMA. Funding for the placement of large woody debris is provided by the City of Bellevue Capital Improvement Program. Project plans are included as **Attachment I**.

The repair work will be located within the channel of Vasa Creek and mobilization will temporarily impact the stream's riparian areas and associated wetland systems. Due to the presence of stream and wetland critical areas, this project is regulated by the city of Bellevue Land Use Code (LUC) Critical Areas Overlay District requirements found in LUC 20.25H. The proposed check dam repair work is considered a stabilization measure and is allowed by LUC 20.25H.055.B subject to compliance with applicable performance standards. The placement of large woody debris is considered a habitat improvement project and is also allowed under LUC 20.25H.055.B subject to compliance with applicable performance standards.

The in-stream work, including repairs to existing weirs and the installation of large woody debris, constitute modifications of the stream channel. Typically, modification of a stream channel is not permitted except as allowed under LUC 20.25H.080.B which specifies that the stream channel may be only be modified through a critical areas report in conjunction with a stream stabilization measure or a habitat improvement project where there is a net benefit in ecological function. In response to this requirement, the applicant has obtained the services of a qualified professional who has prepared a critical areas report and has identified how habitat improvements can be achieved. The critical areas report contains a complete project summary and outlines potential impacts and actions being taken to avoid or when unavoidable provide mitigation as abatement. The project critical areas report is included as **Attachment 2**.

## II. Site Description, Zoning, Land Use and Critical Areas

### A. Site Description

The project extends from the culvert outlet at SE 46th Street downstream to the culvert inlet at SE 45th Street. The project is located primarily within property owned by the City of Bellevue Parks Department, in the Horizon Heights Open Space (parcel #: #3459400500, 1424059099, 3459420200, and 9346920520). A small portion of the project will take place on private property (see project plans – Attachment 1). The project is located within the southwest ¼ of Section 14, Township 24 North, Range 6 East.

Vasa Creek flows through a steep, forested ravine in the project area. Residential homes are located at the tops of steep slopes that confine the ravine. The watershed of Vasa Creek upstream of the project area is heavily developed. Stormwater from the watershed is conveyed through streets, city and county stormwater infrastructure, residential stormwater diversions, and direct runoff to Vasa Creek. Storm events result in the discharge of large volumes of stormwater to the channel, with very little synchronization between the storms and runoff. Therefore, storm flows are high and have a very flashy hydroperiod in which stream levels rise rapidly during storm events and fall quickly once rain has subsided. The result is maximum erosion rates during storms, very little base-flow between storms, and reduced opportunities for the establishment of a stable stream bed and riparian vegetation. These erosive conditions in Vasa Creek were addressed with the original check dam project in 2001, the emergency repairs following the 2007 flood, and the current proposed project. A complete description of the project area and project history is available in the project critical areas report included as **Attachment 2**.

The buffer of Vasa Creek contains forested, scrub-shrub, and emergent wetlands, as well as mature forested uplands. Dominant vegetation is composed of red alder (*Alnus rubra*), western red cedar (*Thuja plicata*), big-leaf maple (*Acer macrophyllum*), salmonberry (*Rubus spectabilis*), and red-osier dogwood (*Cornus sericea*). The riparian buffer provides shading and is generally of high quality. Residential areas occur along the top of the ravine, which reduce buffer quality by the noise and lighting disturbance, discharge of stormwater and yard waste into buffer, and presence of domesticated animals (cats and dogs). A trail runs through the buffer, which introduces human and pet disturbances to the buffer. A complete description of the conditions of Vasa Creek is available in the project critical areas report included as **Attachment 2**.

Buffers surrounding the project area wetlands generally consist of native mixed coniferous-deciduous forest with shrub and herbaceous understory. Existing buffers provide moderate to high wildlife habitat and moderate water quality functions. Nearby houses, road networks, and recreational trails limit the areas habitat functions due to traffic and human disturbances. A complete description of the wetland conditions with the project area is available in the project critical areas report included as **Attachment 2**.



mitigate the impacts of urbanization. Healthy riparian areas support healthy stream conditions.

Upland and wetland riparian areas retain sediments, nutrients, pesticides, pathogens, and other pollutants that may be present in runoff, protecting water quality in streams. The roots of riparian plants also hold soil and prevent erosion and sedimentation that may affect spawning success or other behaviors, such as feeding.

Both upland and wetland riparian areas reduce the effects of flood flows. Riparian areas and wetlands reduce and desynchronize peak crests and flow rates of floods. Upland and wetland areas can infiltrate floodflows, which in turn, are released to the stream as baseflow.

Vegetated riparian areas also provide a source of large woody debris that helps create and maintain diverse in-stream habitat, as well as create woody debris jams that store sediments and moderate flood velocities.

b. Existing Stream conditions:

Vasa Creek in the project area provides flow support to downstream sections of the stream. The lower portions of the stream support a variety of native fish species, including anadromous salmonids. The stream in the project area also provides some food sources to aquatic species downstream. These include macroinvertebrates, leaf litter, and other organic inputs. The existing channel provides some water velocity reductions (hydrologic function) and sediment processing (water quality function). A complete description of the conditions of Vasa Creek is available in the project critical areas report included as **Attachment 2**.

c. Stream Impacts:

Permanent and temporary impacts to Vasa Creek and the adjacent riparian area resulting from construction have been identified on the project plans (**Attachment 1**) and are identified Table 1 below. These temporary impacts will be restored as part of the project in accordance with an approved restoration plan. Existing vegetation that will be disturbed as temporary disturbance is primarily salmonberry and creeping buttercup. This vegetation will be salvaged and retained on site for replanting following repair work. In addition to temporary impacts, permanent impacts to Vasa Creek have also been identified as a result the import of rock material to repair the check dam structures. Originally, the check dam structures were designed to enhance stream functions in Vasa Creek by stabilizing the channel, reducing the risk of severe erosion, and thereby enhancing the potential for the establishment of riparian vegetation. The original design will be maintained, although larger rock material will be used to reduce the potential of damage by flood waters from the upland urban environment. No

new permanent impacts are expected. All permanent impacts identified are related to the repair of existing check dam structures. To mitigate existing impacts, the applicant has included habitat improvement features that call for the installation of large woody debris to provide additional habitat complexity and organic material input and in accordance with preference of stream mitigation actions (LUC 20.25H.085), impacts to Vasa Creek will be mitigated on-site by adding habitat structure to the channel in the form of wood.

All stream impacts will be mitigated such that functions are replaced at a minimum ratio of one-to-one. To limit temporary impacts to downstream resources, the channel will be dewatered during construction, and all flow will be bypassed directly to the downstream outlet culvert. Therefore no permanent effects to downstream resources are expected.

**Table 1 – Impacts To Project Area Stream Resources**

Resource	Temporary Impacts (square feet)	Permanent Impacts (square feet)
Total Vasa Creek channel impacts (i.e., impacts below OHWM)	9, 776	560

A complete summary of potential impacts to Vasa Creek including mitigation measures is available in the project critical areas report included as **Attachment 2**.

**ii. Wetlands**

a. Wetland Functions:

Wetlands provide important functions and values for both the human and biological environment—these functions include flood control, water quality improvement, and nutrient production. The benefits provided depend on their size and location within a basin, as well as their diversity and quality. While Bellevue’s wetlands provide various beneficial functions, not all wetlands perform all functions, nor do they perform all functions equally well. However, the combined effect of functional processes of wetlands within basins provides benefits to both natural and human environments. For example, wetlands provide significant stormwater control, even if they are degraded and comprise only a small percentage of area within a basin.

b. Existing Wetland Conditions:

Project biologists identified and delineated six wetlands in the project area listed as wetlands A through F (Table 2 below). The location of project area wetland resources is mapped in the project plan set included as **Attachment 1**. Detailed descriptions of the wetlands are provided in the Critical Areas Report (**Attachment 2**).

**Table 2 – Project Area Wetland Resources**

Wetland Name	Water Quality Functions – Qualitative Rating <sup>a</sup> (numerical score in parentheses)		Hydrologic Functions – Qualitative Rating <sup>a</sup> (numerical score in parentheses)		Habitat Functions – Qualitative Rating <sup>a</sup> (numerical score in parentheses)		Total Score	Department of Ecology Rating Category <sup>b</sup>
	Potential	Opportunity	Potential	Opportunity	Potential	Opportunity		
A	Low (3)	Yes	Low (4)	Yes	Low (4)	Moderate (13)	31	III
B	Moderate (7)	Yes	Low (2)	Yes	Low (3)	Moderate (13)	34	III
C	Low (0)	Yes	Low (0)	Yes	Low (2)	Moderate (13)	15	IV
D	Low (4)	Yes	Low (5)	Yes	Moderate (10)	Moderate (13)	41	III
E	Moderate (8)	Yes	Moderate (8)	Yes	Low (2)	Moderate (13)	47	III
F	Moderate (10)	Yes	Moderate (9)	Yes	Moderate (12)	Moderate (13)	57	II

<sup>a</sup> Qualitative ratings are based on the Department of Ecology “Using the Wetland Rating System in Compensatory Mitigation” focus sheet (Ecology 2008a)

<sup>b</sup> Wetland category is based on the Department of Ecology rating system (Hruby 2004).

Wetlands A through D provide low levels of water quality and hydrologic functions, primarily due to their small size, minimal structure, and sloped nature. Habitat functions are low for Wetlands A through C due to the small size and lack of habitat features. Wetland D is larger, has a forested component, and therefore provides more habitat functions. Wetland E, despite its small size, provides moderate water quality and hydrology functions due to its location within the ordinary high water mark of Vasa Creek and therefore its close interaction with stream base flow and flood waters. Habitat functions for Wetland E are low due to the small size and lack of habitat features. Wetland F provides moderate functions in all categories due to its larger size, interaction with Vasa Creek (on both banks) and variety of habitat features. A complete description of the project areas wetland conditions is available in the project critical areas report included as **Attachment 2**.

#### c. Wetland Impacts

There are no permanent impacts identified to project area wetlands as part of the proposed project. There are, however, temporary impacts associated with construction access and mobilization. Temporary impacts to wetland resources are allowed if restored pursuant to an approved restoration plan. Impacts to project area wetland resources are identified in Table 3 below. In accordance with preference of wetland mitigation actions (LUC 20.25H.105), temporary impacts to wetland buffers will be mitigated on-site by restoring native vegetation.

**Table 3 – Impacts To Project Area Wetland Resources**

Resource	Temporary Impacts (square feet)	Permanent Impacts (square feet)
Total Wetland Impacts	3,446	0
Wetland A	0	0
Wetland B	0	0
Wetland C	0	0
Wetland D	365	0
Wetland E	375	0
Wetland F	2,706	0

A complete description of potential impacts to project area wetland conditions including mitigation measures is available in the project critical areas report included as **Attachment 2**.

**iii. Geologic Hazard Areas**

a. Geologic Hazard Area Functions:

Geologic hazards pose a threat to the health and safety of citizens when development is inappropriately sited in areas of significant hazard. Some geologic hazards can be reduced or mitigated by engineering, design, or modified construction practices. When technology cannot reduce risks to acceptable levels, building in geologically hazardous areas is best avoided.

Steep slopes may serve several other functions and possess other values for the City and its residents. Some of Bellevue’s remaining large blocks of forest are located in steep slope areas, providing habitat for a variety of wildlife species and important linkages between habitat areas in the City. These steep slope areas also act as conduits for groundwater, which drains from hillsides to provide a water source for the City’s wetlands and stream systems. Vegetated steep slopes also provide a visual amenity in the City, providing a “green” backdrop for urbanized areas enhancing property values and buffering urban development.

b. Existing Geologic Hazard Area Conditions:

The proposed project is located at the bottom of a steep ravine, with slopes in excess of 40 percent and some sections nearly vertical due to slumping. The area is characterized by features designated as steep slopes, landslide hazards, and erosion hazards as defined by LUC 20.25H.120.

c. Impacts To Geologic Hazard Areas:

All work will occur in the channel and there will be no disturbance to the vegetation or soils on the steep slopes. The project goal is to stabilize the channel, which will reduce the ongoing toe slope erosion evident at the site. Geotechnical analyses of the project area performed with the original check

dam project confirmed that the proposed work will enhance the stability of the steep slopes and landslide hazard areas by reducing toe-of slope erosion. Therefore, the project will have no negative effect on geologic hazards, and will reduce risks to these hazards by reducing channel and slope erosion in the long-term.

#### **iv. Habitat Associated With Species of Local Importance**

##### **a. Habitat Functions:**

Urbanization, the increase in human settlement density and associated intensification of land use, has a profound and lasting effect on the natural environment and wildlife habitat (McKinney 2002, Blair 2004, Marzluff 2005 Munns 2006), is a major cause of native species local extinctions (Czech et al 2000), and is likely to become the primary cause of extinctions in the coming century (Marzluff et al. 2001a).

Cities are typically located along rivers, on coastlines, or near large bodies of water. The associated floodplains and riparian systems make up a relatively small percentage of land cover in the western United States, yet they provide habitat for rich wildlife communities (Knopf et al. 1988), which in turn provide a source for urban habitat patches or reserves. Consequently, urban areas can support rich wildlife communities. In fact, species richness peaks for some groups, including songbirds, at an intermediate level of development (Blair 1999, Marzluff 2005).

Protected wild areas alone cannot be depended on to conserve wildlife species. Impacts from catastrophic events, environmental changes, and evolutionary processes (genetic drift, inbreeding, colonization) can be magnified when a taxonomic group or unit is confined to a specific area, and no one area or group of areas is likely to support the biological processes necessary to maintain biodiversity over a range of geographic scales (Shaughnessy and O'Neil 2001). As well, typological approaches to taxonomy or the use of indicators present the risk that evolutionary potential will be lost when depending on reserves for preservation (Rojas 2007). Urban habitat is a vital link in the process of wildlife conservation in the U.S.

##### **b. Existing Habitat Features**

To evaluate habitat conditions in the project area and vicinity, the applicant consulted with biologists who surveyed the area to identify dominant species, forest maturity, concentrations of native and invasive plant populations, other habitat features (e.g., snags, logs), and habitat potential to support protected wildlife species and indications of use by these species. Information provided by WDFW's Priority Habitats and Species (PHS) Program (WDFW 2010), fish usage information from the Salmonscape mapping program (WDFW 2010b), and fish survey data collected in 2001 (Watershed Company 2001) was also reviewed. There

are no PHS areas or documented occurrences of protected species in the project vicinity. Fish usage is restricted to the portion of Vasa Creek downstream of the culvert under Interstate 90 (about 1/2 mile downstream). No anadromous or resident fish occur in the section of Vasa Creek proposed for restoration. Project biologists identified the following species as possible due to the presence of suitable habitat:

- Bat species: There is good habitat for the protected bat species (western big-eared bat, Keen's Myotis, long-legged Myotis, and long-eared Myotis). These species roost in cavities in large trees and snags which are present and forage over a variety of habitats for prey (insects).
- Vaux's swift: There is potential nesting habitat for Vaux's swifts in hollows of snags at the site.
- Pileated woodpecker: There is good habitat for pileated woodpeckers and it is assumed that breeding habitat is present as well due to the presence of suitably sized trees and observations of adults with fledglings during site visits in May 2010.

During project review information was received from the Muckleshoot Indian Tribe Fisheries Division that the section of stream under review may contain fish habitat that meets fish habitat definitions of WAC 222-16-031 (3). Currently, there is no fish access to the project area. Migratory fish are blocked by a long culvert under Interstate 90. Resident fish are precluded by summer drying of the channel. Fish surveys conducted in this section of Vasa Creek confirm these conditions (Watershed Company 2001).

Review of the definitions referenced by the commenter indicated that the portion of the channel where work is proposed may include features and characteristics that meet the definition of fish habitat regardless of access obstructions downstream. In response to this comment and the potential presence of fish habitat, the project scope was analyzed for potential impact to fish habitat features and characteristics. As a repair, the proposed actions will not expand existing check dam structures. No new check dam structures are proposed. Impacts to in-stream fish habitat associated with the proposed addition of large woody debris was also considered. Generally, the addition of large woody debris to urban streams is considered beneficial to fish habitat and is seen as an indicator of salmon habitat (Fox and Bolton, 2007). In this case the addition of large woody debris is considered as a habitat improvement.

c. Impacts to Habitat Features:

There will be no direct impacts to the habitat features identified above. No habitat trees or standing snags will be removed. The only vegetation removal (temporary) will be restricted to trees, shrubs, ferns, emergents,

and herbs along narrow construction access routes adjacent to the existing trail and the stream. All temporarily disturbed vegetation will be restored following construction. Work will occur in the summer, after pileated woodpecker breeding is complete. The addition of LWD as part of the project will enhance pileated woodpecker foraging habitat, as downed logs are a common feeding location for this species. Noise impacts from the project are not expected to be of sufficient magnitude or duration to disturb wildlife species. Sensitive species may move away from construction activity during active work periods, but are expected to return once work is completed. During construction the channel will be dewatered and all flow bypassed to the outlet culvert. After construction, water quality will be monitored and turbid water will be discharged to the sewer. Only after turbidity has been reduced to meet water quality standards will the flow be directed to downstream receiving waters. Therefore no effect on downstream water quality will occur.

### **III. Consistency with Land Use Code Requirements:**

#### **A. Zoning District Dimensional Requirements:**

This is a proposal to repair in stream rock check dams and install large woody debris to improve stream habitat. Standard single family district development standards do not apply.

#### **B. Consistency with Critical Areas Performance Standards LUC 20.25H:**

##### **i. Performance Standards for Construction Staging LUC 20.25H.055.C.1**

Construction staging associated with an allowed use is considered an allowed activity in critical areas, critical area buffers, or critical area structure setbacks provided the applicable performance standards are adhered to.

The work shall be consistent with all applicable City of Bellevue codes and standards. The work includes the construction of a temporary access route along Vasa creek over a City Parks Department trail to take access off of SE 45<sup>th</sup> Street. The applicant is required to apply for and obtain a Right-of-Way Use Permit for the mobilization and use of this access point. The applicant is also required to apply for and obtain a Clearing and Grading Permit to address temporary erosion and sedimentation control associated with the access route and the temporary construction impacts associated with the instream work. This permit also includes review and approval of a stream dewatering plan and turbidity monitoring during the course of the project. Because these permits must be applied for and obtained prior to the commencement of any construction activities, the applicable review department will ensure that all applicable codes and standards are being met.

The removal of significant trees is prohibited. The project is not proposing to remove any significant trees.

All areas of temporary disturbance associated with the work shall be restored to pre-project conditions, pursuant to a restoration plan meeting the requirements of

LUC 20.25H.210. A restoration plan has been prepared that seeks to restore all areas of temporary disturbance.

**ii. Performance Standards for Stabilization Measures LUC 20.25H.055.C.3.M**

Proposed stabilization measures within a critical area or critical area buffer to protect against stream erosion may be approved in accordance with this subsection.

New or enlarged stabilization measures shall be allowed only to protect existing infrastructure. Stabilization measures shall be allowed only where avoidance measures are not technically feasible. Based on the existing location of the community assets, including nearby roadways, schools, and sewer main, the extraordinary cost of relocating these assets, and the high likelihood that storm water flows in Vasa Creek will continue to be as strong or stronger than historic flows due to impervious surface percentages in the basin, there is no technically feasible alternative to stabilizing this section of the stream to prevent a catastrophic failure and a repeat of past flood events.

When stabilization is allowed, soft stabilization measures shall be used, unless the applicant demonstrates that soft stabilization measures are not technically feasible. The applicant has proposed a mixture of soft stabilization and hard stabilization measures that will result in net improvement in ecological function of the critical area and critical area buffer.

The soft stabilization measures include the use of logs and root wads to stabilize the stream banks. The applicant is also proposing the use of vegetative enhancements along the banks to increase the plant species diversity and to establish more desirable bank stabilizing species in the area.

The hard stabilization measures in the project area include the repair of some segments of existing rock check dams. No expansion to these check dams is proposed although a larger size rock will be used to better withstand the erosive forces of stormwater in this section of stream.

**iii. Performance Standards for Habitat Improvement Projects LUC 20.25H.055.C.3.j**

The project is also classified as a habitat improvement project. It is classified as such because it has been approved by the Director in accordance with the provisions of an approved Critical Areas Report. The primary habitat improvement is the addition of large woody debris to the stream channel to improve habitat diversity and incorporate a source of organic material to improve overall long term stream conditions.

**iv. Performance Standards for Stream Critical Areas LUC 20.25H.080.B**

The proposed project has met the criteria of an "allowed use" under LUC 20.25H.055. It includes activities consistent with the uses of a habitat improvement project and in-stream structures. An approved Critical Areas Report has been prepared and submitted to support the design of the project and its desired objectives.

**v. Performance Standards for Wetland Critical Areas LUC 20.25H.100**

The following applicable performance standards have been considered and

incorporated into the design of proposed project.

There is no current or additional lighting associated with the project that will affect stream or wetlands. The project is not proposing the creation of any noise generating activities other than those temporary noises associated with the construction activity. There will be no new impervious surface as part of the project. The wetland area that will be temporarily disturbed will be planted with dense vegetation to limit pet or human use. The site will be actively monitored and maintained for a period of 3 years to ensure success of the restoration effort. The use of pesticides, insecticides and fertilizers within 150 feet of the edge of the stream buffer shall be in accordance with the City of Bellevue's "Environmental Best Management Practices," now or as hereafter amended.

**C. Consistency with Critical Areas Report LUC 20.25.230:**

The applicant supplied a complete critical areas report prepared by a qualified professional. The report met the minimum requirements in LUC 20.25H.250.

**D. Consistency with Critical Areas Report – Additional provisions LUC 20.25H.090:**

Additional provisions required in a critical areas report for streams are required when the applicant is proposing to reduce the regulatory critical area buffer for the stream. The proposal includes no request to reduce or modify the prescribed critical area buffer or structure setback from Vasa Creek.

**E. Consistency with Critical Areas Report – Additional provisions LUC 20.25H.110:**

The Land Use Code specifies additional provisions for critical areas reports for wetlands. This information includes an analysis of wetlands and wetland buffers that may occur within 300 feet of the project area. This section requires a discussion of avoidance and minimization measures, which is included in the applicant's critical areas report.

#### **IV. Public Notice and Comment**

Application Date: August 18, 2010  
Public Notice (500 feet): September 9, 2010  
Minimum Comment Period: September 23, 2010

The Notice of Application for this project was published in the City of Bellevue weekly permit bulletin on August 18, 2010. It was mailed to agencies, tribes, and property owners within 500 feet of the project site. One public comment letter was received from the Muckleshoot Indian Tribe Fisheries Division. The letter included several technical questions and comments related to the following issues:

- Questions related to the typing of the stream as a "Type N" stream and the design of the repairs with regards to fish habitat;
- Suggestions related to the quantity of wood being placed in the stream as a habitat improvement;
- Comment on the type of planting proposed to restore staging areas and temporary

impacts

- Suggestions that stormwater improvements and removal of the public sewer main be considered as an alternative to the continued use of check dams to abate the flood conditions.

The comment letter is included as **Attachment 3**. Staff response to the comments is included as **Attachment 4**. No changes to the project design were made as a result of the comment received.

## **V. Summary of Technical Reviews**

### **Clearing and Grading:**

The Clearing and Grading Division of the Development Services Department has reviewed the proposed development for compliance with Clearing and Grading codes and standards. The Clearing and Grading staff found no issues with the proposed development.

### **Transportation:**

A representative of the Transportation Department was notified of the project proposal. Their review determined that a Right-of-Way Use Permit is required for the use of the public right-of-way for construction staging and access. This permit must be obtained prior to commencement of project activity.

## **VI. State Environmental Policy Act (SEPA)**

The environmental review indicates no probability of significant adverse environmental impacts occurring as a result of the proposal. The Environmental Checklist submitted with the application adequately discloses expected environmental impacts associated with the project. The City codes and requirements, including the Clear and Grade Code, Utility Code, Land Use Code, Noise Ordinance, Building Code and other construction codes are expected to mitigate potential environmental impacts. Therefore, issuance of a Determination of Non-Significance (DNS) is the appropriate threshold determination under the State Environmental Policy Act (SEPA) requirements.

### **A. Earth and Water**

A temporary erosion and sedimentation control plan is included in the project plans, and addresses all requirements for restoring the site to its current condition as well as erosion and sedimentation management practices. Erosion and sediment control best management practices include the use of a dewatering plan to dry out as much as feasible during the proposed construction activity. The proposal also includes the installation of silt fencing around the work area and covering exposed soils to prevent migration of soils to the adjacent stream and wetland. Final approval of the temporary erosion and sedimentation control plan will happen with the required Clearing and Grading Permit. The applicant will also be required to submit information regarding the

use of pesticides, insecticides, and fertilizers to avoid impacts to water resources. See Section IX for related conditions of approval.

**B. Animals**

The project site is located around and within a regulated stream and is part of a habitat corridor. The proposed repair of the existing rock weirs is not expected to negatively impact habitat functions as no change to the height of water drop is proposed. To improve in stream habitat, the applicant is proposing to place large woody debris in the stream channel to improve habitat complexity and improve organic compound inputs. The mature vegetation on the site may provide habitat to several species listed in the critical areas report. However, no impacts are anticipated since no significant trees will be removed. The restoration plan for areas of temporary disturbance has been designed to further enhance the vegetation structure on the site, which is expected to have a positive impact on the wildlife resource.

**C. Plants**

Mitigation for temporary and permanent disturbance will be approved pursuant to an approved re-vegetation and monitoring plan. A complete restoration plan with monitoring performance standards and contingency plan has been submitted as part of the critical areas report (**Attachment 2**). It will be implemented as a condition of the subsequent clearing and grading permit. See Section IX for related conditions of approval.

**D. Noise**

The site is adjacent to single-family residences whose residents are most sensitive to disturbance from noise during evening, late night and weekend hours when they are likely to be at home. Construction noise will be limited by the City's Noise Ordinance (Chapter 9.18 BCC) which regulates construction hours and noise levels. See Section IX for a related condition of approval.

**VII. Decision Criteria**

**A. Critical Areas Report Decision Criteria- General Criteria LUC 20.25H.255**

The Director may approve, or approve with modifications, the proposed modification where the applicant demonstrates:

- 1. The modifications and performance standards included in the proposal lead to levels of protection of critical area functions and values at least as protective as application of the regulations and standards of this code;**

**Finding:** The applicant has provided a complete critical areas report that demonstrates that the proposal leads to levels of protection of critical area functions and values that area at least as protective as the regulations and standards of this code.

The applicable regulation and standards of the code prohibit all clearing and grading in the stream, the riparian zone or disturbance in the wetland. Through the critical areas report process, it is clear that habitat functions will likely be improved, the riparian functions will improve in the long term through the incorporation of additional native plants. The inclusion of large woody debris will enhance the Instream habitat in the project reach.

**2. Adequate resources to ensure completion of any required mitigation and monitoring efforts;**

**Finding:** The applicant, the City of Bellevue, has adequate resources to complete the required mitigation and monitoring efforts and the project is funded in part by FEMA as an emergency repair.

**3. The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site; and**

**Finding:** The proposal complies with all of the applicable performance standards for streams and wetlands and includes an appropriate mitigation and restoration plan to offset identified short and long term impacts.

**4. The resulting development is compatible with other uses and development in the same land use district.**

**Finding:** The construction of the stream work is consistent with the surrounding land uses. There is no change in use on the site or any of the adjacent sites.

**B. Critical Areas Land Use Permit Decision Criteria 20.30P**

The Director may approve or approve with modifications an application for a critical areas land use permit if:

**1. The proposal obtains all other permits required by the Land Use Code;**

**Finding:** The proposed activity is required to obtain a clearing and grading permit and right-of-way use permit from the City of Bellevue. The activity is also required to obtain permission from the Washington State Departments of Ecology and Fish & Wildlife, as well as the Army Corps of Engineers.

**2. The proposal utilizes to the maximum extent possible the best available construction, design and development techniques which result in the least impact on the critical area and critical area buffer;**

**Finding:** The proposal has been designed by qualified professionals from Herrera

Environmental Consultants with consultation with City of Bellevue and Washington Department of Fish and Wildlife Habitat Biologists, in order to ensure the best available design and techniques have been incorporated.

**3. The proposal incorporates the performance standards of Part 20.25H to the maximum extent applicable, and ;**

**Finding:** Section III above discusses how, the proposal incorporates the applicable performance standards.

**4. The proposal will be served by adequate public facilities including street, fire protection, and utilities; and;**

**Finding:** The area is adequately serviced by public facilities. The proposal will not change the need for public facilities.

**5. The proposal includes a mitigation or restoration plan consistent with the requirements of LUC Section 20.25H.210; and**

**Finding:** A mitigation and restoration plan consistent with the requirement of LUC 20.25H.210 has been prepared and submitted along with the project's critical areas report.

**6. The proposal complies with other applicable requirements of this code.**

**Finding:** As discussed in Section IV & V of this report, the proposal complies with all other applicable requirements of the Land Use Code.

## **VIII. Conclusion and Decision**

After conducting the various administrative reviews associated with this proposal, including Land Use Code consistency, SEPA, City Code and Standard compliance reviews, the Development Services Director does hereby **approve with conditions** the proposal to repair previously installed rock check dams as a stabilization measure and install large woody debris within the stream channel as a habitat improvement project.

**Note- Expiration of Approval:** In accordance with LUC 20.30P.150 a Critical Areas Land Use Permit automatically expires and is void if the applicant fails to file for a Clearing and Grading Permit or other necessary development permits within one year of the effective date of the approval.

## **IX. Conditions of Approval**

The applicant shall comply with all applicable Bellevue City Codes and Ordinances

including but not limited to:

<u>Applicable Ordinances</u>	<u>Contact Person</u>
Clearing and Grading Code- BCC 23.76	Savina Uzunow, 425-452-7860
Land Use Code- BCC 20.25H	David Pyle, 425-452-2973
Noise Control- BCC 9.18	David Pyle, 425-452-2973
Transportation Code	Rohini Nair, 425-452-2569

**The following conditions are imposed under the Bellevue City Code or SEPA authority referenced:**

- 1. Clearing and Grading Permit:** Before commencing any construction activity the applicant must apply for and obtain a Clearing and Grading Permit. On-going turbidity monitoring and submittal of turbidity monitoring data sheets will be required as part of the clearing and grading permit inspection process.

Authority: Bellevue City Code Section 23.76.025  
 Reviewer: Savina Uzunow, Clear and Grade

- 2. Restoration for Areas of Temporary Disturbance:** A restoration plan for all areas of temporary disturbance is required to be submitted for review and approval by the City of Bellevue prior to the issuance of the Clearing and Grading Permit. The plan shall include the documentation of existing site conditions and shall identify the restoration measures to return the site to its existing conditions per LUC 20.25H.220.H.

Authority: Land Use Code 20.25H.220.H  
 Reviewer: David Pyle, Development Services Department

- 3. Rainy Season restrictions:** Due to the proximity to Vasa Creek, no clearing and grading activity may occur during the rainy season, which is defined as November 1 through April 30 without written authorization of the Development Services Department. Should approval be granted for work during the rainy season, increased erosion and sedimentation measures, representing the best available technology must be implemented prior to beginning or resuming site work.

Authority: Bellevue City Code 23.76.093.A,  
 Reviewer: Savina Uzunow, Development Services Department

- 4. Pesticides, Insecticides, and Fertilizers:** The applicant must submit as part of the required Clearing and Grading Permit information regarding the use of pesticides, insecticides, and fertilizers in accordance with the City of Bellevue’s “Environmental Best Management Practices”.

Authority: Land Use Code 20.25H.220.H

Reviewer: David Pyle, Development Services Department

- 5. Noise Control:** Noise related to construction is exempt from the provisions of BCC 9.18 between the hours of 7 am to 6 pm Monday through Friday and 9 am to 6 pm on Saturdays, except for Federal holidays and as further defined by the Bellevue City Code. Noise emanating from construction is prohibited on Sundays or legal holidays unless expanded hours of operation are specifically authorized in advance. Requests for construction hour extension must be done in advance with submittal of a construction noise expanded exempt hours permit.

Authority: Bellevue City Code 9.18

Reviewer: David Pyle, Development Services Department

- 6. Right-of-Way Use:** The proposed project will likely require the use of a portion of the right-of-way adjacent to the subject property, specifically as a haul route for excavated material and imported fill and materials. If required, a right-of-way use permit from the Transportation Department should be obtained.

Authority: Bellevue City Code 14.30

Reviewer: Rohini Nair, Transportation Department

- 7. Obtain All Other Applicable State and/or Federal Permits:** Before work can be allowed to proceed, all applicable state and federal permits must be presented to the Development Services Department.

Authority: Land Use Code 20.25H.180.C.2

Reviewer: David Pyle, Development Services Department

- 8. Storm Water Pollution Prevention Plan:** A Storm Water Pollution Prevention Plan shall be approved by the Clearing and Grading Division prior to commencement of construction activities. The storm water pollution prevention plan shall also include a turbidity monitoring plan.

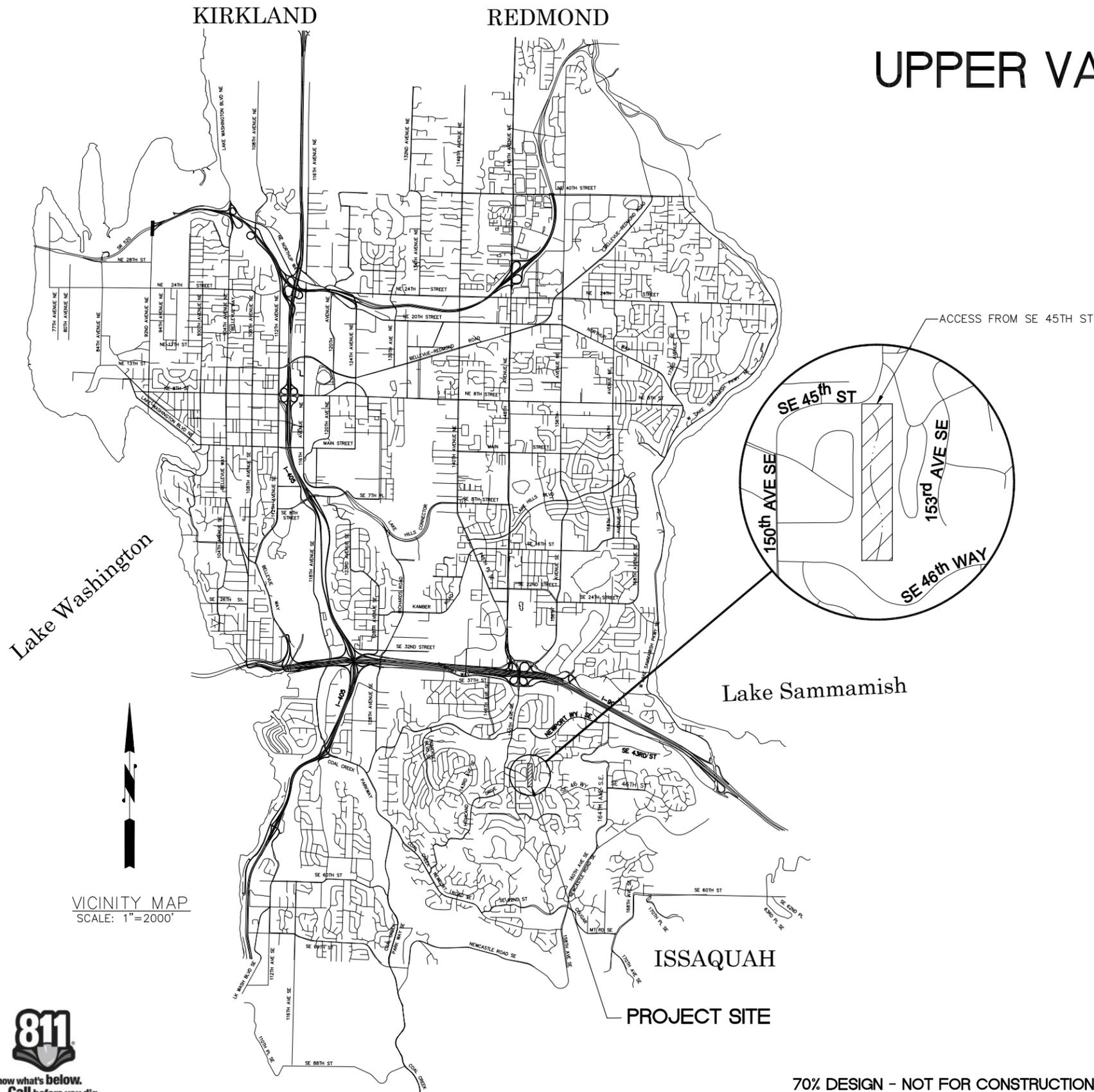
Authority: Clearing and Grading Code BCC 23.76

Reviewer: Savina Uzunow, Development Services Department

# CITY OF BELLEVUE

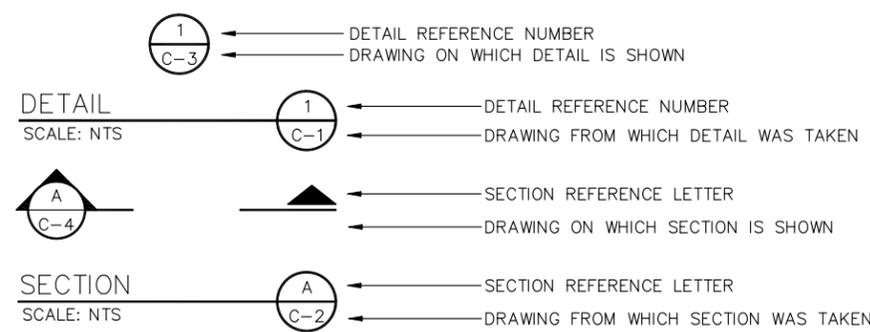
## UPPER VASA CREEK CHECK DAM REPAIR, PHASE 2

(S.E. 46th WAY TO S.E. 45th ST.)  
BELLEVUE, WASHINGTON  
S-32 / D-59



SHEET INDEX		
SHT NO.	DWG NO.	SHEET DESCRIPTION
1	G-1	VICINITY MAP AND SHEET INDEX
2	G-2	GENERAL NOTES
3	C-1	SITE PLAN - SHEET 1 OF 3
4	C-2	SITE PLAN - SHEET 2 OF 3
5	C-3	SITE PLAN - SHEET 3 OF 3
6	C-4	CHECK DAM DETAILS - SHEET 1 OF 3
7	C-5	CHECK DAM DETAILS/PHOTOS - SHEET 2 OF 3
8	C-6	CHECK DAM DETAILS/PHOTOS - SHEET 3 OF 3
9	C-7	LOG STRUCTURE DETAILS - SHEET 1 OF 2
10	C-8	LOG STRUCTURE DETAILS - SHEET 2 OF 2
11	ES-1	TESC PLAN
12	L-1	PLANTING PLAN - SHEET 1 OF 3
13	L-2	PLANTING PLAN - SHEET 2 OF 3
14	L-3	PLANTING PLAN - SHEET 3 OF 3
15	L-4	PLANT MATERIAL SCHEDULE

VICINITY MAP  
SCALE: 1"=2000'



**NOTE AND DETAIL/SECTION REFERENCING**

70% DESIGN - NOT FOR CONSTRUCTION

Path: O:\proj\2008\08-03987-000\CADD\dwgs\G-1.dwg  
Plot Date: 8/10/2010 7:54 AM  
Cad User: Laura Turnidge



**HERRERA**  
ENVIRONMENTAL  
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Suite 1100  
Seattle, Washington  
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206-441-9080  
206-441-9108 FAX

**UPPER VASA CREEK  
CHECK DAM REPAIR  
PHASE 2**

**Approved By**

DESIGN MANAGER \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT MANAGER \_\_\_\_\_ DATE \_\_\_\_\_

M. FONTAINE 08/2010  
DESIGNED BY DATE  
L. TURNIDGE 08/2010  
DRAWN BY DATE  
M. EWBANK 08/2010  
CHECKED BY DATE

**City of  
Bellevue**  
UTILITIES

VICINITY MAP AND SHEET INDEX	
DRAWING G-1	SHT 1 OF 15



ONE INCH  
↑  
AT FULL SIZE, IF NOT ONE  
INCH SCALE ACCORDINGLY



**STORM DRAINAGE GENERAL NOTES**

- ALL WORK SHALL CONFORM TO THE CURRENT EDITION OF THE CITY OF BELLEVUE UTILITIES DEPARTMENT ENGINEERING STANDARDS.
- THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN HEREON HAVE BEEN ESTABLISHED BY FIELD SURVEY OR OBTAINED FROM AVAILABLE RECORDS AND SHOULD THEREFORE BE CONSIDERED APPROXIMATE ONLY AND NOT NECESSARILY COMPLETE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO INDEPENDENTLY VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS SHOWN, AND TO FURTHER DISCOVER AND AVOID ANY OTHER UTILITIES NOT SHOWN HEREON WHICH MAY BE AFFECTED BY THE IMPLEMENTATION OF THIS PLAN.
- ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS AND STREAMFLOW DIVERSION SYSTEM SHALL BE INSTALLED, MONITORED, AND MAINTAINED IN ACCORDANCE WITH THE PROJECT SPECIFIC STORMWATER POLLUTION PREVENTION PLAN THAT HAS BEEN APPROVED BY THE CITY, PRIOR TO THE START OF WORK.
- PRIOR TO FINAL INSPECTION AND ACCEPTANCE OF STORM DRAINAGE WORK, PIPES AND STORM DRAIN STRUCTURES SHALL BE CLEANED AND FLUSHED. ANY OBSTRUCTIONS TO FLOW WITHIN THE STORM DRAIN SYSTEM, (SUCH AS RUBBLE, MORTAR AND WEDGED DEBRIS), SHALL BE REMOVED AT THE NEAREST STRUCTURE. WASH WATER OF ANY SORT SHALL NOT BE DISCHARGED TO THE STORM DRAIN SYSTEM OR SURFACE WATERS.
- PAVEMENT MARKERS AND MARKINGS DAMAGED BY CONTRACTOR'S ACTIVITIES SHALL BE REPLACED WITH TEMPORARY REFLECTIVE TAPE PER SECTION 8-23 OF THE STANDARD SPECIFICATIONS.
- PAVEMENT REPAIR SHALL BE IN ACCORDANCE WITH THE RIGHT-OF-WAY USE PERMIT. CONTRACTOR SHALL USE CLASS B AC FOR TRENCH PAVING. THE TOP TWO (2) INCHES MUST BE MACHINE PLACED. SEE CONTRACT SPECIFICATIONS FOR PERMIT REQUIREMENTS.
- TURBID WATER SHALL NOT BE DISCHARGED FROM THE SITE. IN THE EVENT THAT DOE TURBIDITY LIMITS CANNOT BE MET, THE CONTRACTOR MAY PUMP TURBID WATER TO THE SANITARY SEWER PARALLELING THE SITE. CONSULT CITY ENGINEER REGARDING SPECIFIC PUMPING AND DISCHARGE LOCATIONS.
- ALL AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS WHICH ARE OUTSIDE THE CLEARING, GRUBBING, OR CONSTRUCTION ACCESS LIMITS SHALL BE RESTORED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY.
- A PERMANENT DIVERSION PIPE WAS INSTALLED IN A SHALLOW TRENCH ALONG THE ORIGINAL CHANNEL BOTTOM FROM THE UPSTREAM END OF THE PROJECT TO CHECK DAM #4. USE THIS PIPE AS NECESSARY FOR BYPASSING FLOWS.
- FISH ARE NOT KNOWN TO BE PRESENT WITHIN THE WORK AREA. THE CONTRACTOR WILL NOTIFY THE ENGINEER IF FISH ARE SEEN AND THE CITY WILL TAKE APPROPRIATE ACTION.

**CONSTRUCTION REQUIREMENTS**

- ALL MATERIALS CLEARED AND GRUBBED FROM THE CHANNEL AREA SHALL BE STOCKPILED AND REUSED AS FILL IN THE CHANNEL AND WOODY DEBRIS ON COMPLETED DAM FACES.
- CHECK DAMS WILL BE REPAIRED FROM UPSTREAM TO DOWNSTREAM. HOG FUEL OR OTHER SPECIFIED EROSION CONTROL MULCH WILL BE SPREAD ON ALL DISTURBED AREAS ABOVE THE PLACED ROCK OR OHWM.
- EXISTING ACCESS TRAIL IS APPROXIMATELY 4 FT WIDE AT ITS NARROWEST POINT.
- QUARRY SPALLS MAY BE PLACED ADJACENT TO EXISTING ACCESS TRAIL WHERE TRAIL IS NOT SUFFICIENTLY WIDE OR FLAT AND TO PROVIDE ACCESS TO CHECK DAMS FOR REPAIR.
- ACCESS TO UPSTREAM END OF CHECK DAMS #6, #9, #11, #12, AND #13 REQUIRES LITTLE OR NO CLEARING OR GRADING OF EXISTING GROUND FROM EXISTING ACCESS TRAIL.
- SALVAGE AND REPLACE ANY VEGETATION THAT IS DISTURBED IN ACCESSING CHECK DAMS #6, #9, #11, #12, AND #13.
- REMOVE ANY QUARRY SPALLS PLACED FOR ACCESS DURING CHECK DAM REPAIR AND INCORPORATE INTO CHECK DAMS OR REMOVE FROM SITE.
- STOCKPILE AND REPLACE ANY WOODY DEBRIS REMOVED FROM CHECK DAMS DURING REPAIR ACTIVITIES.
- REMOVE AND STOCKPILE ANY ROUNDED ALLUVIAL MATERIAL WITHIN CHECK DAMS WHERE LIGHT LOOSE RIPRAP OR QUARRY SPALLS ARE PLACED. PLACE STOCKPILED ALLUVIAL MATERIAL ON CHECK DAM FACES FOLLOWING REPAIR.
- CONTRACTOR SHALL UNCOVER/LOCATE FLOW BYPASS PIPE INLET AND OUTLET.
- EXISTING TREE SURVEY SHOWN ON PLANS BASED ON 2000 CONSTRUCTION SURVEY. CONTRACTOR SHALL VERIFY TREE LOCATIONS AND EXTENTS IN THE FIELD.

**CLEARING AND GRADING STANDARD NOTES**

- ALL CLEARING & GRADING CONSTRUCTION MUST BE IN ACCORDANCE WITH CITY OF BELLEVUE (COB) CLEARING & GRADING CODE, CLEARING & GRADING DEVELOPMENT STANDARDS, LAND USE CODE, INTERNATIONAL 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 BELLEVUE DEVELOPMENT SERVICES (DSD) PRIOR TO CONSTRUCTION.  
  
IT SHALL BE THE SOLE RESPONSIBILITY OF THE PROFESSIONAL CIVIL ENGINEER TO CORRECT ANY ERROR, OMISSION, OR VARIATION FROM THE ABOVE REQUIREMENTS FOUND IN THESE PLANS. ALL CORRECTIONS SHALL BE AT NO ADDITIONAL COST OR LIABILITY TO THE COB.
- APPROVAL OF THIS EROSION/SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G.. SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).
- 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.
- THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
- THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT ENTER THE CREEK DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.
- THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO INSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
- ALL LOCATIONS OF EXISTING UTILITIES HAVE BEEN ESTABLISHED BY FIELD SURVEY OR OBTAINED FROM AVAILABLE RECORDS AND SHOULD, THEREFORE, 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.
- THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
- CLEARING SHALL BE LIMITED TO THE AREAS WITHIN THE APPROVED DISTURBANCE LIMITS. EXPOSED SOILS MUST BE COVERED AT THE END OF EACH WORKING DAY WHEN WORKING FROM OCTOBER 1ST THROUGH 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.
- AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A TRAPPED CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER INTO THE DOWNSTREAM SYSTEM.
- A STABILIZED CONSTRUCTION EXIT SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT.
- THE CONTRACTOR MUST MAINTAIN A SWEEPER ON SITE DURING EARTHWORK AND IMMEDIATELY REMOVE SOIL THAT HAS BEEN TRACKED ONTO PAVED AREAS AS RESULT OF CONSTRUCTION.
- THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTION.
- ANY EXCAVATED MATERIAL REMOVED FROM THE CONSTRUCTION SITE AND DEPOSITED ON PROPERTY WITHIN THE CITY LIMITS MUST BE DONE IN COMPLIANCE WITH A VALID CLEARING & GRADING PERMIT. LOCATIONS FOR THE MOBILIZATION AREA AND STOCKPILED MATERIAL MUST BE APPROVED BY THE CLEARING AND GRADING INSPECTOR AT LEAST 24 HOURS IN ADVANCE OF ANY STOCKPILING.
- THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 48 HOURS FOLLOWING A MAJOR STORM EVENT.
- FINAL SITE GRADING MUST DIRECT DRAINAGE AWAY FROM ALL BUILDING STRUCTURES AT A MINIMUM 5% SLOPE, PER THE INTERNATIONAL RESIDENTIAL CODE (IRC) R401.3.

**CONSTRUCTION NOISE STANDARD NOTES**

- CONSTRUCTION NOISE OUTSIDE THE ALLOWABLE HOURS IS PROHIBITED PER BCC 9.18.040. TO BE CONSIDERED A VIOLATION, THE CONSTRUCTION-RELATED NOISE MUST BE AUDIBLE ACROSS A PROPERTY LINE OR AT LEAST 75 FEET FROM THE SOURCE. ANY VIOLATION IS A CIVIL INFRACTION AND THE CITY MAY ASSESS A MONETARY PENALTY TO THE INDIVIDUAL CREATING THE NOISE. THE PENALTIES ARE:
    - A WARNING WILL BE ISSUED IF NO CONSTRUCTION NOISE VIOLATION HAS BEEN COMMITTED BY THE SAME PERSON WITHIN THE PREVIOUS TWO YEARS AT ANY LOCATION WITHIN THE CITY.
    - A CITATION WILL BE ISSUED AND A \$125 FINE IMPOSED IF ONE PREVIOUS VIOLATION HAS BEEN COMMITTED BY THE SAME PERSON WITHIN THE PREVIOUS TWO YEARS AT ANY LOCATION WITHIN THE CITY.
    - A CITATION WILL BE ISSUED AND A \$250 FINE IMPOSED IF TWO OR MORE PREVIOUS VIOLATIONS HAVE BEEN COMMITTED BY THE SAME PERSON WITHIN THE PREVIOUS TWO YEARS AT ANY LOCATION WITHIN THE CITY.
- CONSTRUCTION-RELATED NOISE IS NOT ALLOWED:
- OUTSIDE OF ALLOWABLE HOURS
  - LEGAL HOLIDAYS
  - SUNDAYS

**MOBILIZATION/STOCKPILE AREA NOTES:**

- ANY EXCAVATED MATERIAL REMOVED FROM THE CONSTRUCTION SITE AND DEPOSITED ON PROPERTY WITHIN THE CITY LIMITS MUST BE DONE IN COMPLIANCE WITH A VALID CLEARING & GRADING PERMIT. LOCATIONS FOR THE MOBILIZATION AREA AND STOCKPILED MATERIAL MUST BE APPROVED BY THE PCD INSPECTOR AT LEAST 24 HOURS IN ADVANCE OF ANY DUMPING.

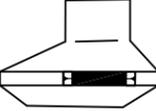
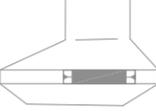
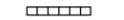
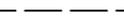
**STREET SWEEPING NOTE**

- CONTRACTOR SHALL IMMEDIATELY SWEEP THE PAVED CITY RIGHT-OF-WAY WHEN DIRT OR OTHER CONSTRUCTION RELATED DEBRIS IS DEPOSITED.

**DUST SUPPRESSION**

- DUST FROM CLEARING, GRADING, AND OTHER CONSTRUCTION ACTIVITIES SHALL BE MINIMIZED AT ALL TIMES. ANY DUST SUPPRESSANTS USED SHALL BE APPROVED BY THE DIRECTOR. PETROCHEMICAL DUST SUPPRESSANTS ARE PROHIBITED. WATERING THE SITE TO SUPPRESS DUST IS ALSO PROHIBITED UNLESS IT CAN BE DONE IN A WAY THAT KEEPS SEDIMENT OUT OF THE CREEK AND PUBLIC DRAINAGE SYSTEM.

**LEGEND**

	EXISTING ACCESS		EXISTING MAPLE
	EXISTING WETLAND		EXISTING CEDAR
	TEMPORARY CREEK CROSSING		EXISTING DECIDUOUS TREE
	STAGING AREA		EXISTING EVERGREEN TREE
	TEMPORARY CONSTRUCTION EXIT		EXISTING ROCK
	CHECK DAM (REPAIRS REQUIRED)		PROPOSED ROCK
	CHECK DAM (NO REPAIRS)	 -560-	EXISTING CONTOUR
	LOG (PLAN VIEW)		CREEK ALIGNMENT
	HIGH VISIBILITY FENCE		ORDINARY HIGH WATER MARK
	SILT FENCE		PARCEL BOUNDARY
	TEMPORARY SANDBAG BYPASS DAM		RIGHT OF WAY
	TEMPORARY BYPASS PIPE		EXISTING FENCE
			EXISTING SANITARY SEWER
			LIMITS OF DISTURBANCE
		<b>2</b>	PLAT NUMBER
		<b>4425</b>	ADDRESS NUMBER

70% DESIGN - NOT FOR CONSTRUCTION

Path: O:\proj\2008\08-03987-000\CADD\dwg\G-2.dwg  
Plot Date: 8/10/2010 7:54 AM  
Laura Turnidge  
Cad User:



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http://www.herrerainc.com

UPPER VASA CREEK  
CHECK DAM REPAIR  
PHASE 2

Approved By	
DESIGN MANAGER	DATE
PROJECT MANAGER	DATE

**City of Bellevue**  
UTILITIES

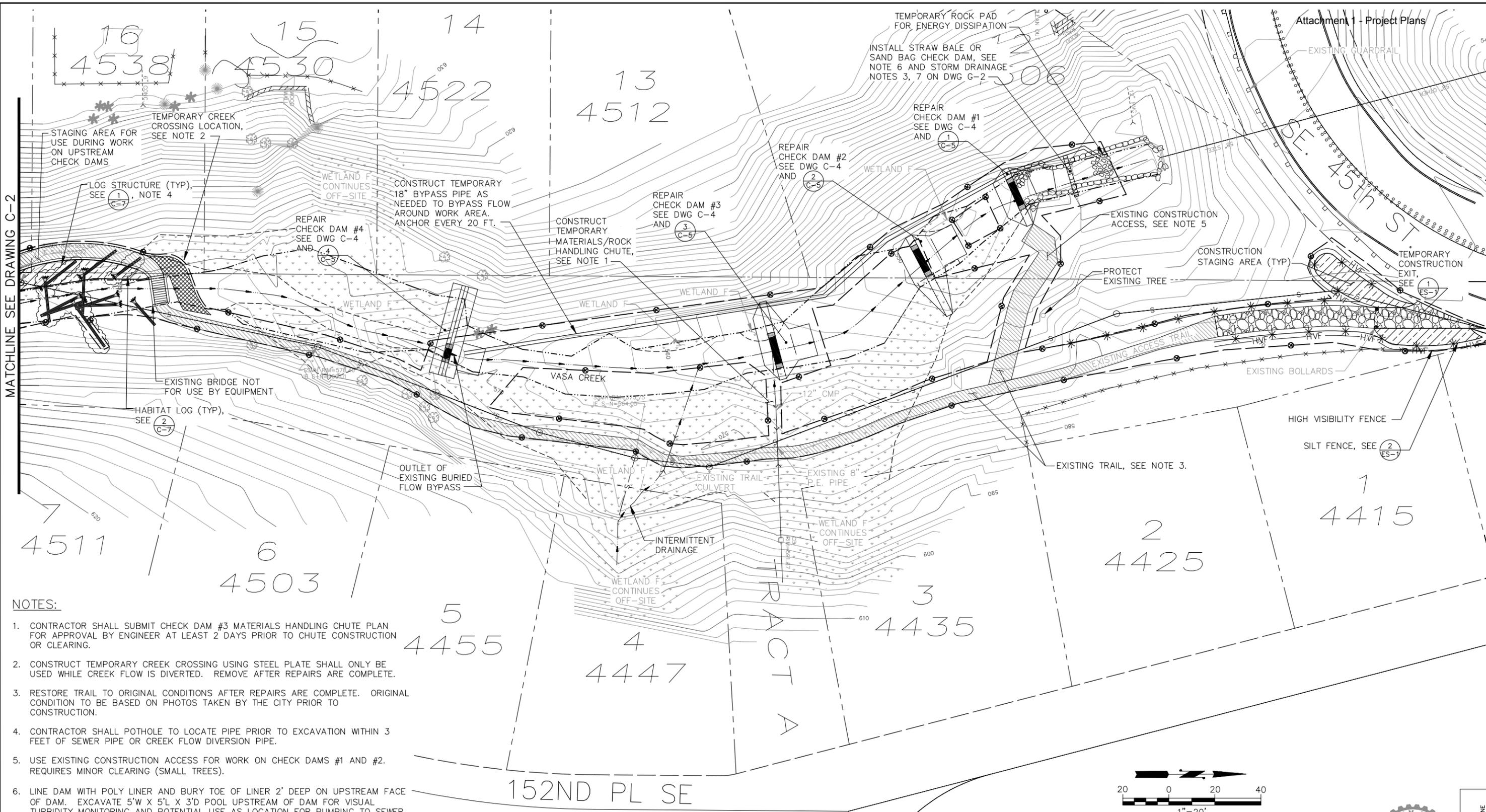
M. FONTAINE	08/2010
DESIGNED BY	DATE
L. TURNIDGE	08/2010
DRAWN BY	DATE
M. EWBANK	08/2010
CHECKED BY	DATE

GENERAL NOTES	
DRAWING G-2	SHT 2 OF 15



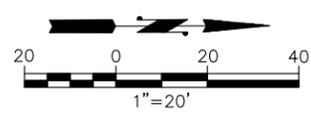
ONE INCH  
↑  
AT FULL SIZE, IF NOT ONE  
INCH SCALE ACCORDINGLY





MATCHLINE SEE DRAWING C-2

- NOTES:**
- CONTRACTOR SHALL SUBMIT CHECK DAM #3 MATERIALS HANDLING CHUTE PLAN FOR APPROVAL BY ENGINEER AT LEAST 2 DAYS PRIOR TO CHUTE CONSTRUCTION OR CLEARING.
  - CONSTRUCT TEMPORARY CREEK CROSSING USING STEEL PLATE SHALL ONLY BE USED WHILE CREEK FLOW IS DIVERTED. REMOVE AFTER REPAIRS ARE COMPLETE.
  - RESTORE TRAIL TO ORIGINAL CONDITIONS AFTER REPAIRS ARE COMPLETE. ORIGINAL CONDITION TO BE BASED ON PHOTOS TAKEN BY THE CITY PRIOR TO CONSTRUCTION.
  - CONTRACTOR SHALL POT HOLE TO LOCATE PIPE PRIOR TO EXCAVATION WITHIN 3 FEET OF SEWER PIPE OR CREEK FLOW DIVERSION PIPE.
  - USE EXISTING CONSTRUCTION ACCESS FOR WORK ON CHECK DAMS #1 AND #2. REQUIRES MINOR CLEARING (SMALL TREES).
  - LINE DAM WITH POLY LINER AND BURY TOE OF LINER 2' DEEP ON UPSTREAM FACE OF DAM. EXCAVATE 5'W X 5'L X 3'D POOL UPSTREAM OF DAM FOR VISUAL TURBIDITY MONITORING AND POTENTIAL USE AS LOCATION FOR PUMPING TO SEWER.



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**UPPER VASA CREEK  
CHECK DAM REPAIR  
PHASE 2**

**Approved By**

DESIGN MANAGER \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT MANAGER \_\_\_\_\_ DATE \_\_\_\_\_

M. FONTAINE 08/2010  
DESIGNED BY DATE  
L. TURNIDGE 08/2010  
DRAWN BY DATE  
M. EWANK 08/2010  
CHECKED BY DATE

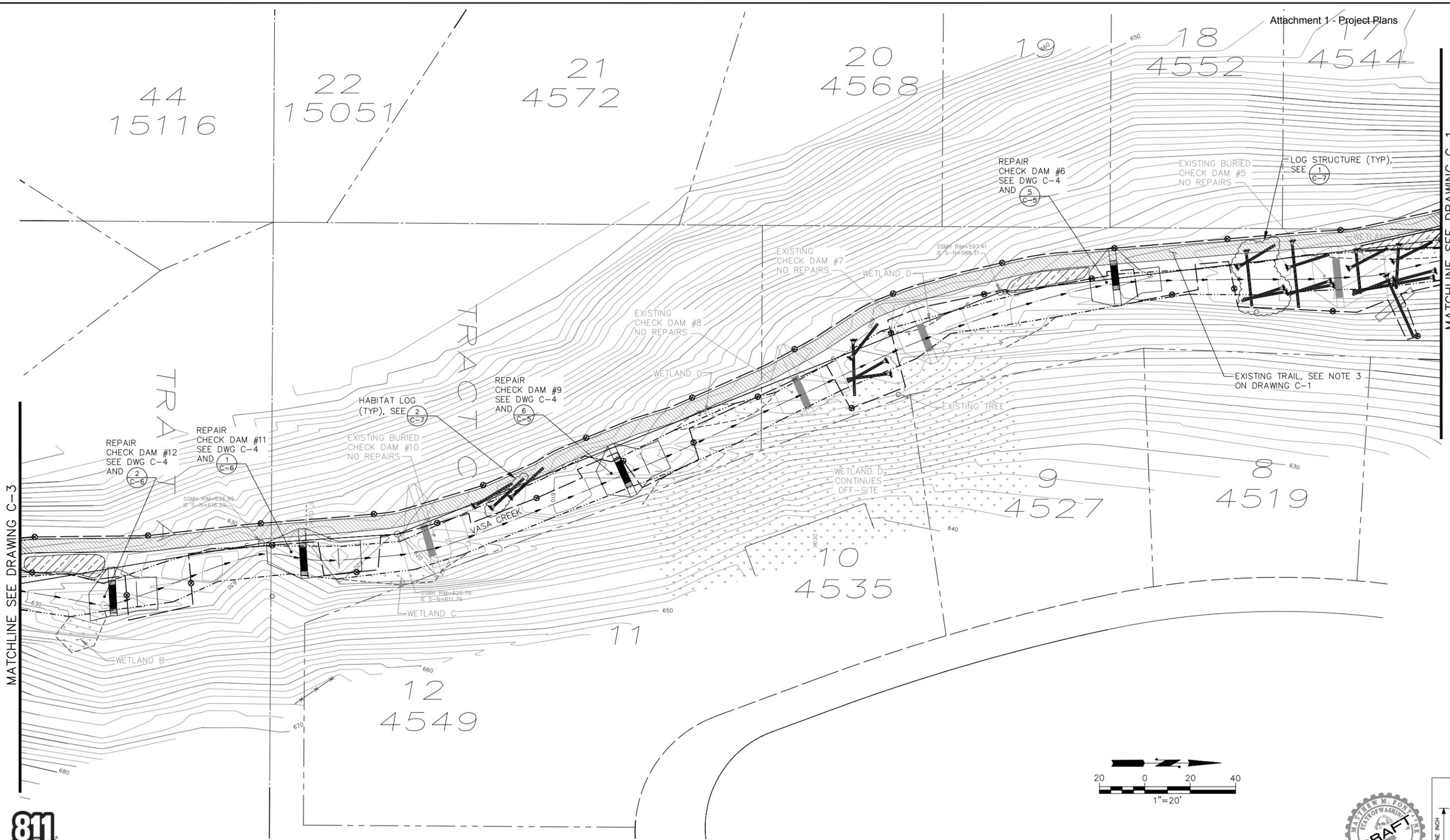
**City of Bellevue**  
UTILITIES

**SITE PLAN - SHEET 1 OF 3**

DRAWING C-1    SHT 3 OF 15

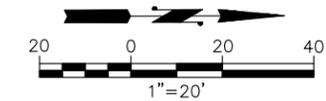
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MATCHLINE SEE DRAWING C-3

MATCHLINE SEE DRAWING C-1



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**UPPER VASA CREEK  
CHECK DAM REPAIR  
PHASE 2**

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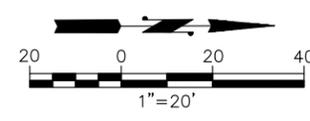
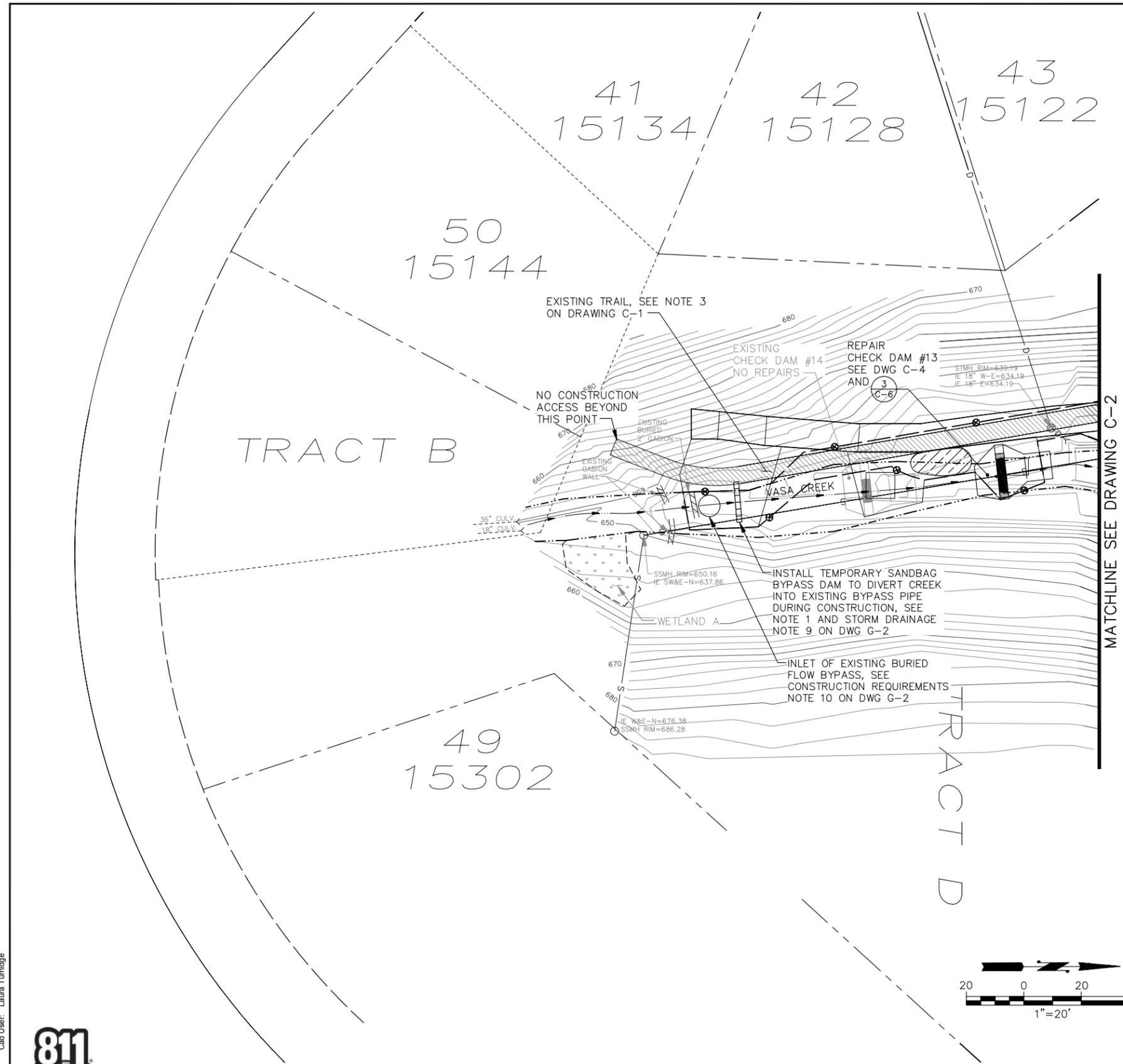
**SITE PLAN - SHEET 2 OF 3**

DRAWING C-2    SHT 4 OF 15



NOTES:

- BURIED FLOW BYPASS INTAKE IS LOCATED APPROXIMATELY 20 FEET DOWNSTREAM FROM EXISTING GABION WALL. CONTRACTOR SHALL EXCAVATE AND CONSTRUCT TEMPORARY SANDBAG DAM TO DIVERT FLOW.



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**UPPER VASA CREEK  
 CHECK DAM REPAIR  
 PHASE 2**

**Approved By**

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PROJECT MANAGER \_\_\_\_\_ DATE \_\_\_\_\_

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**City of Bellevue**  
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**SITE PLAN - SHEET 3 OF 3**

DRAWING C-3 SHT 5 OF 15

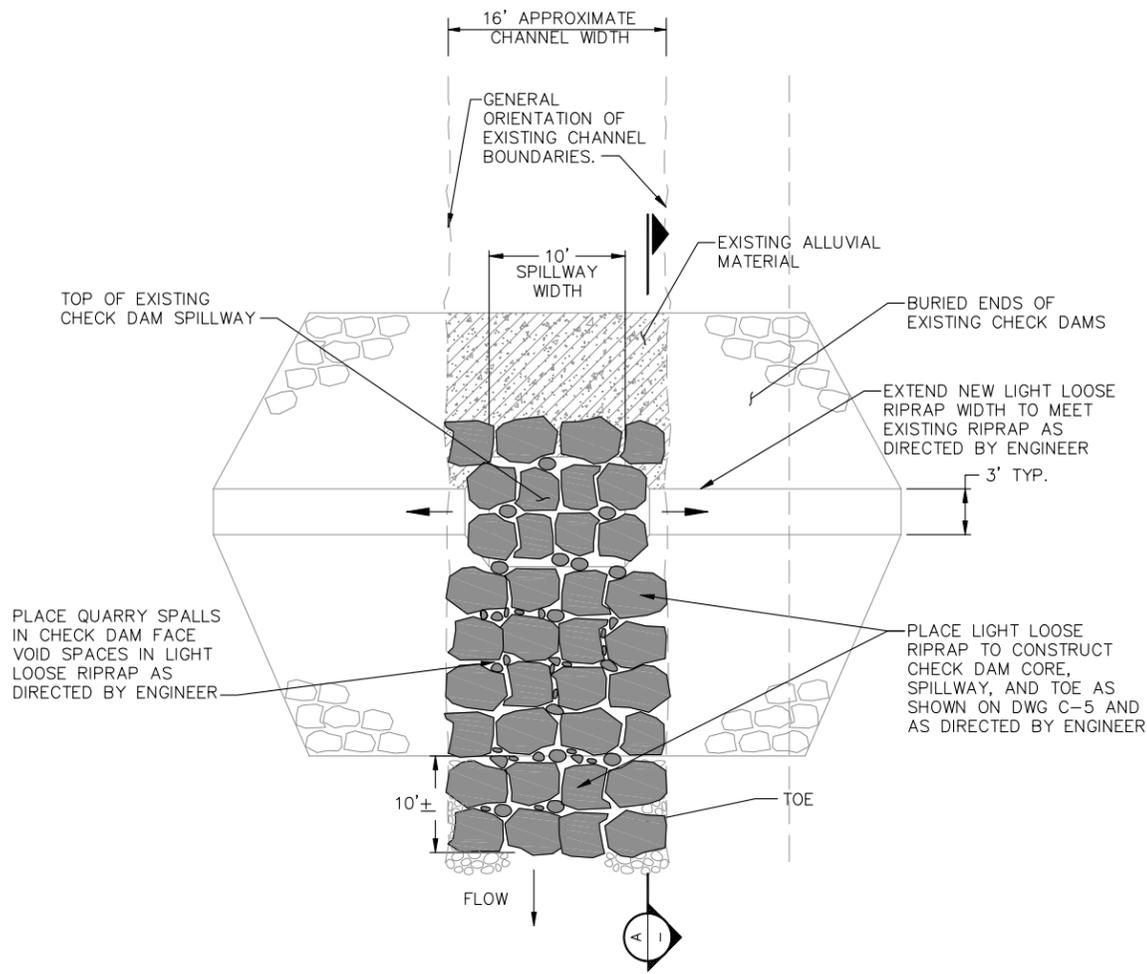


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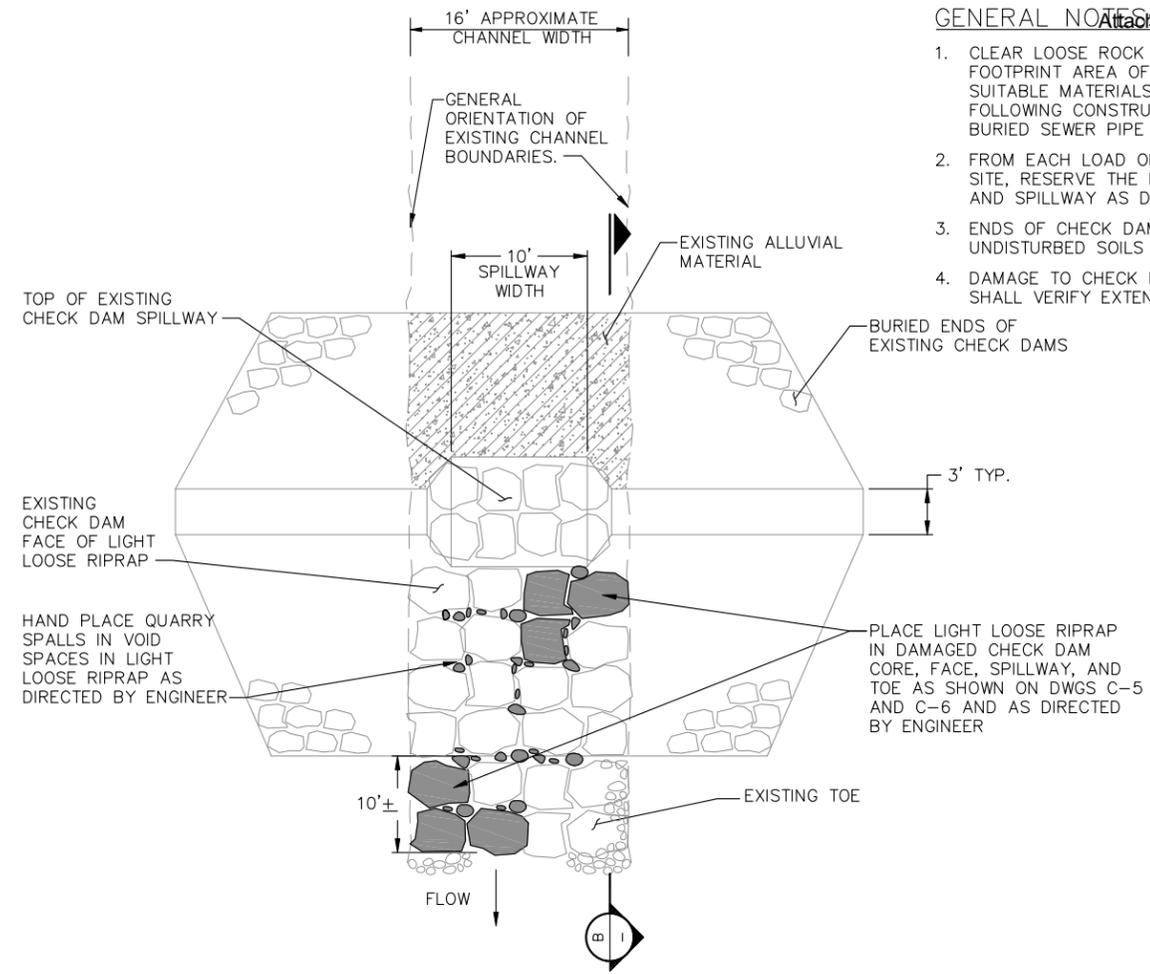


Attachment 1 - Project Plans

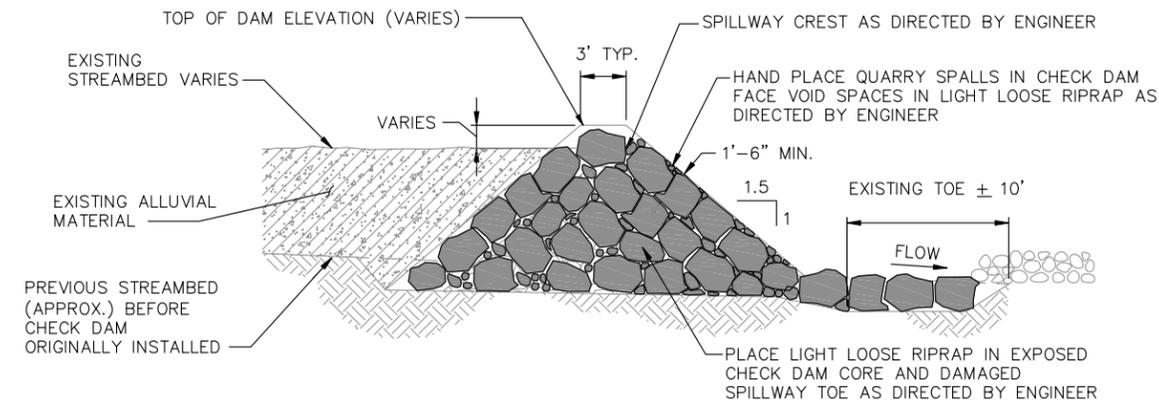
1. CLEAR LOOSE ROCK AND ORGANIC DEBRIS FROM FOOTPRINT AREA OF DAMAGED CHECK DAM. STOCKPILE SUITABLE MATERIALS ON SITE FOR REINCORPORATION FOLLOWING CONSTRUCTION. WORK CAREFULLY NEAR BURIED SEWER PIPE AND STREAMFLOW BYPASS PIPE.
2. FROM EACH LOAD OF RIPRAP DELIVERED TO EACH DAM SITE, RESERVE THE LARGER ROCKS FOR THE DAM CORE AND SPILLWAY AS DIRECTED BY ENGINEER.
3. ENDS OF CHECK DAMS SHALL BE TOED INTO FIRM, UNDISTURBED SOILS ON NATIVE SLOPES.
4. DAMAGE TO CHECK DAM CORE VARIES. CONTRACTOR SHALL VERIFY EXTENTS IN FIELD.



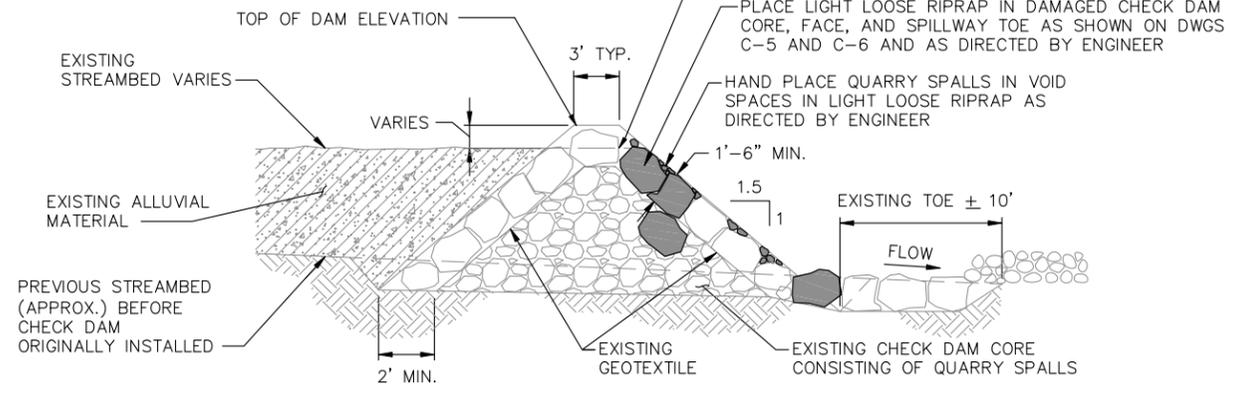
PLAN - CHECK DAM #1  
SCALE: NTS



TYPICAL PLAN - CHECK DAMS #2, #3, #4, #6, #9, #11, #12, AND #13  
SCALE: NTS



SECTION - CHECK DAM #1  
SCALE: NTS



TYPICAL SECTION - CHECK DAMS #2, #3, #4, #6, #9, #11, #12, AND #13  
SCALE: NTS



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UPPER VASA CREEK  
CHECK DAM REPAIR  
PHASE 2

Approved By

DESIGN MANAGER \_\_\_\_\_ DATE \_\_\_\_\_  
PROJECT MANAGER \_\_\_\_\_ DATE \_\_\_\_\_

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DESIGNED BY DATE  
L. TURNIDGE 08/2010  
DRAWN BY DATE  
M. EWBANK 08/2010  
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CHECK DAM DETAILS - SHEET 1 OF 3

DRAWING C-4 SHT 6 OF 15



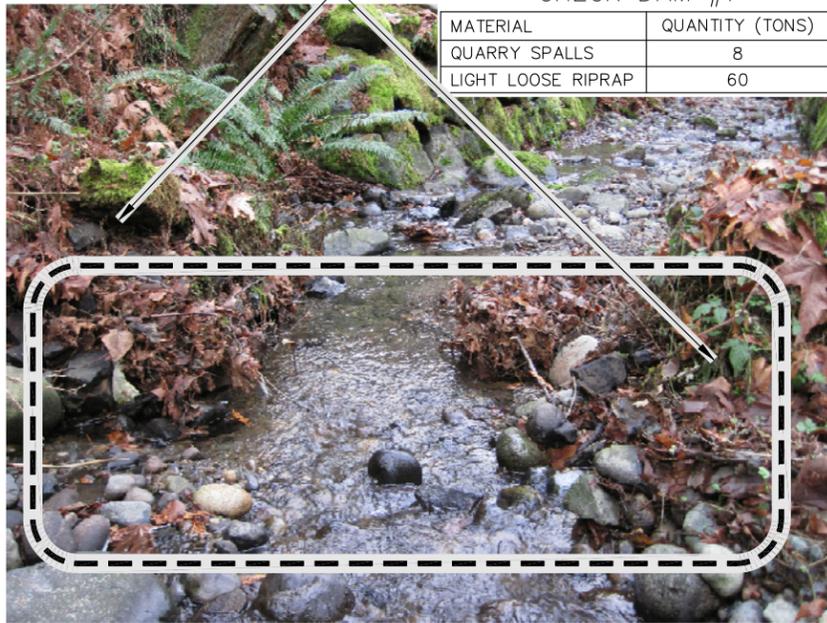
ONE INCH  
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INCH SCALE ACCORDINGLY



REMOVE DAMAGED GABIONS PRIOR TO CONSTRUCTING CHECK DAM

CHECK DAM #1

MATERIAL	QUANTITY (TONS)
QUARRY SPALLS	8
LIGHT LOOSE RIPRAP	60



CHECK DAM #1  
SCALE: NTS



CHECK DAM #2

MATERIAL	QUANTITY (TONS)
QUARRY SPALLS	1
LIGHT LOOSE RIPRAP	10



CHECK DAM #2  
SCALE: NTS



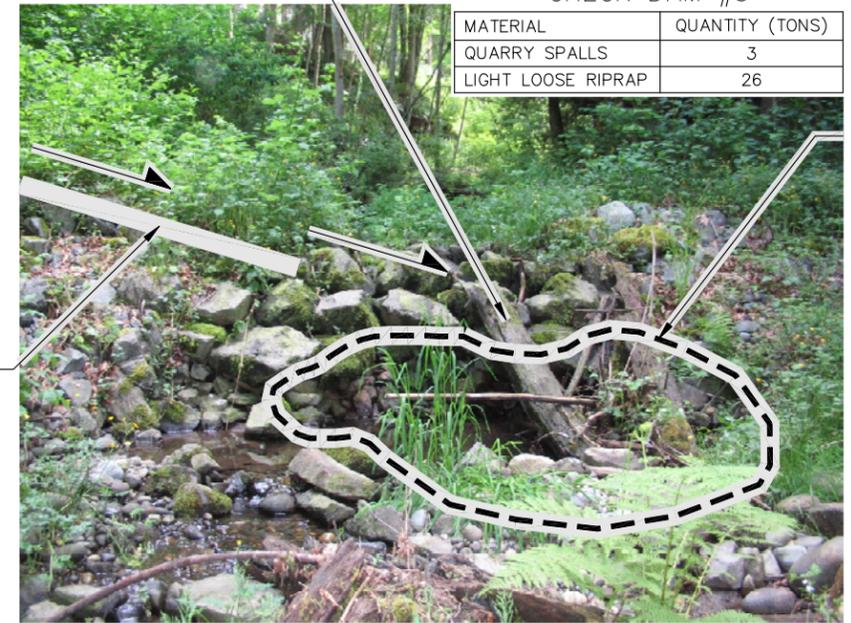
SALVAGE EXISTING WOOD DEBRIS FOR REPLACEMENT FOLLOWING REPAIR

Attachment 1 - Project Plans  
CHECK DAM #3

MATERIAL	QUANTITY (TONS)
QUARRY SPALLS	3
LIGHT LOOSE RIPRAP	26

INSTALL TEMPORARY MATERIALS CHUTE ON EXISTING GRADE, SEE NOTE 1 DWG C-1

REPAIR DOWNSTREAM FACE OF CHECK DAM

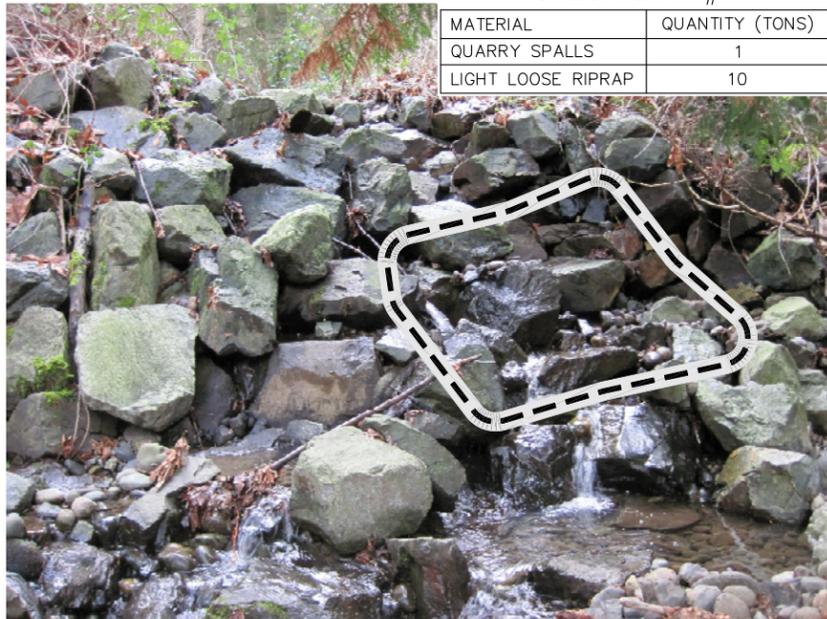


CHECK DAM #3  
SCALE: NTS



CHECK DAM #4

MATERIAL	QUANTITY (TONS)
QUARRY SPALLS	1
LIGHT LOOSE RIPRAP	10



CHECK DAM #4  
SCALE: NTS



CHECK DAM #6

MATERIAL	QUANTITY (TONS)
QUARRY SPALLS	1
LIGHT LOOSE RIPRAP	6

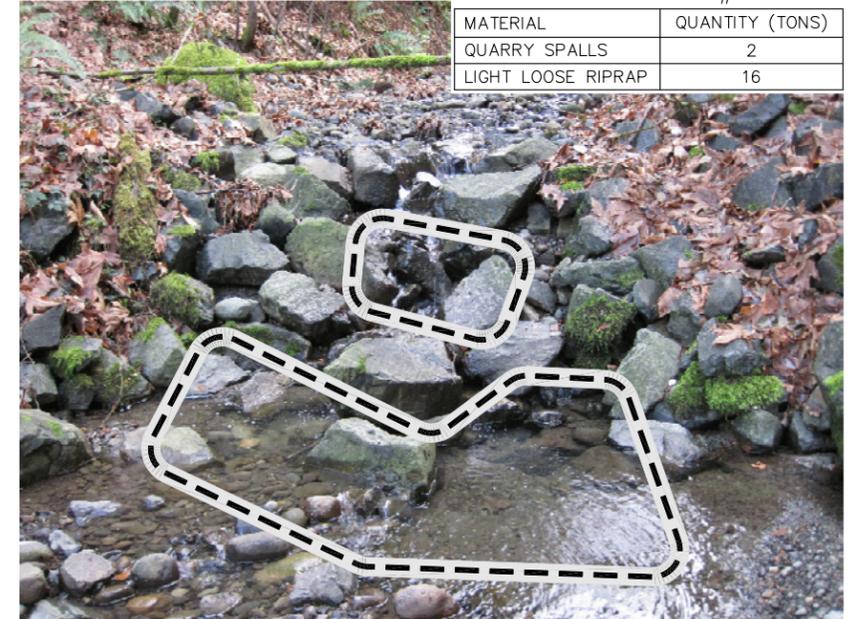


CHECK DAM #6  
SCALE: NTS



CHECK DAM #9

MATERIAL	QUANTITY (TONS)
QUARRY SPALLS	2
LIGHT LOOSE RIPRAP	16



CHECK DAM #9  
SCALE: NTS



NOTES:

- ALL PHOTOS TAKEN FACING UPSTREAM TOWARDS DAMAGED CHECK DAMS, EXCEPT CHECK DAM #1.
- REPAIR EXTENTS SHOWN ARE APPROXIMATE AND MAY VARY AT TIME OF CONSTRUCTION.



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UPPER VASA CREEK  
CHECK DAM REPAIR  
PHASE 2

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PROJECT MANAGER \_\_\_\_\_ DATE \_\_\_\_\_

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DESIGNED BY DATE  
L. TURNIDGE 08/2010  
DRAWN BY DATE  
M. EWANK 08/2010  
CHECKED BY DATE



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CHECK DAM DETAILS/PHOTOS -  
SHEET 2 OF 3

DRAWING C-5 SHT 7 OF 15



CHECK DAM #11

MATERIAL	QUANTITY (TONS)
QUARRY SPALLS	2
LIGHT LOOSE RIPRAP	12

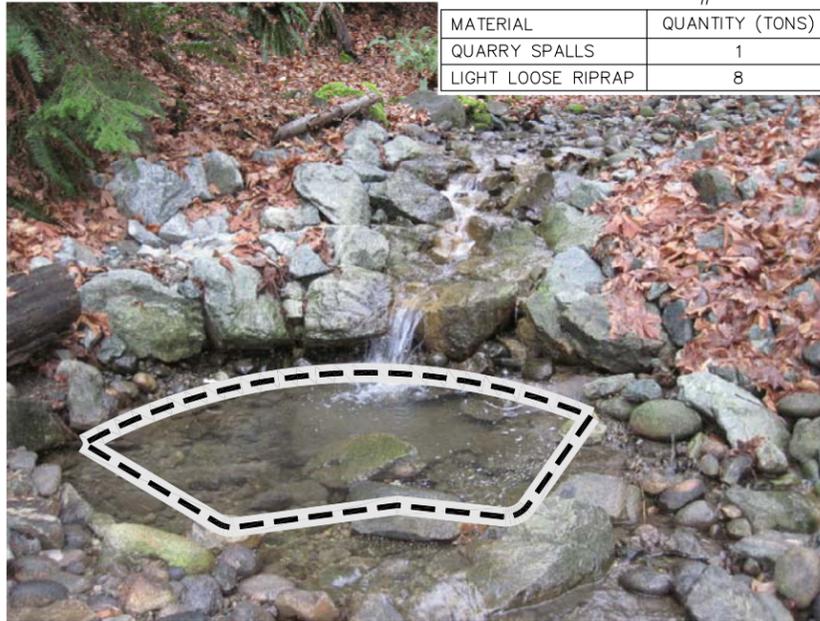


CHECK DAM #11  
SCALE: NTS



CHECK DAM #12

MATERIAL	QUANTITY (TONS)
QUARRY SPALLS	1
LIGHT LOOSE RIPRAP	8

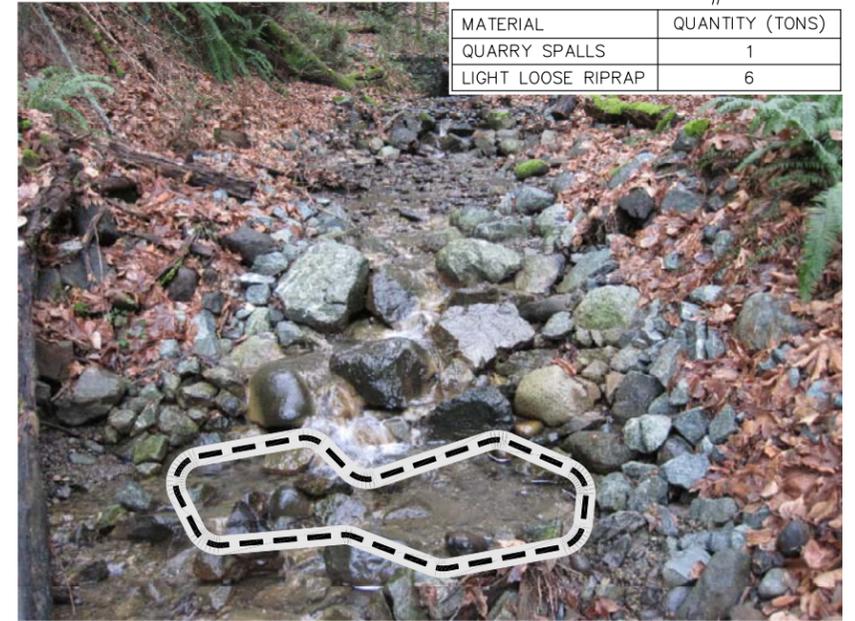


CHECK DAM #12  
SCALE: NTS



Attachment 1 - Project Plans  
CHECK DAM #13

MATERIAL	QUANTITY (TONS)
QUARRY SPALLS	1
LIGHT LOOSE RIPRAP	6



CHECK DAM #13  
SCALE: NTS



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CHECK DAM REPAIR  
PHASE 2

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L. TURNIDGE 08/2010  
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CHECKED BY DATE



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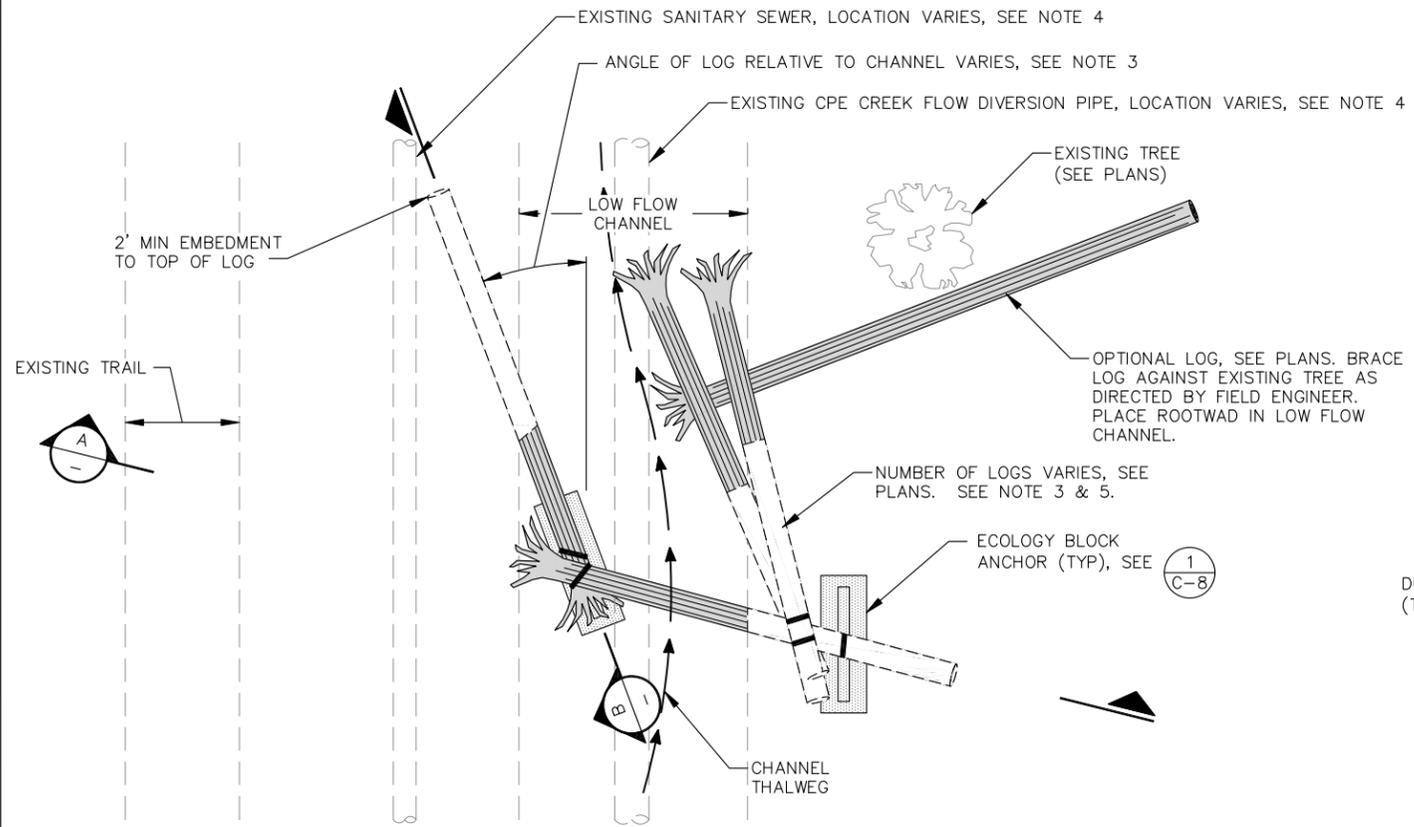
CHECK DAM DETAILS/PHOTOS -  
SHEET 3 OF 3

DRAWING C-6 SHT 8 OF 15

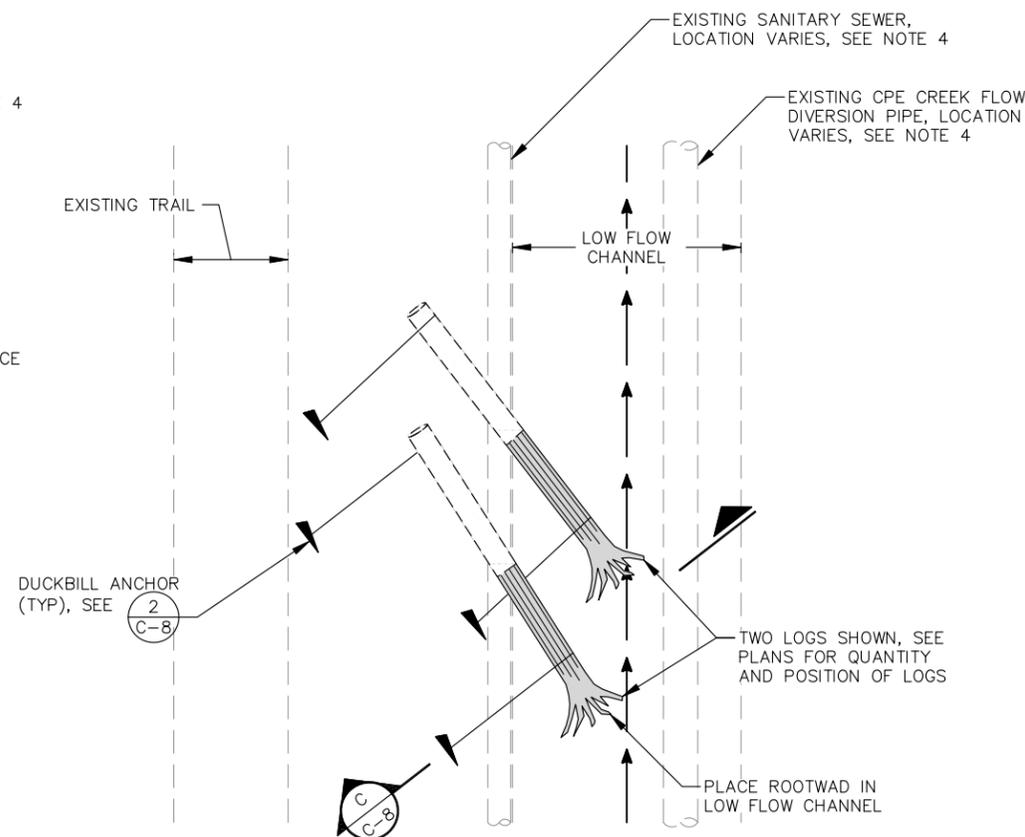


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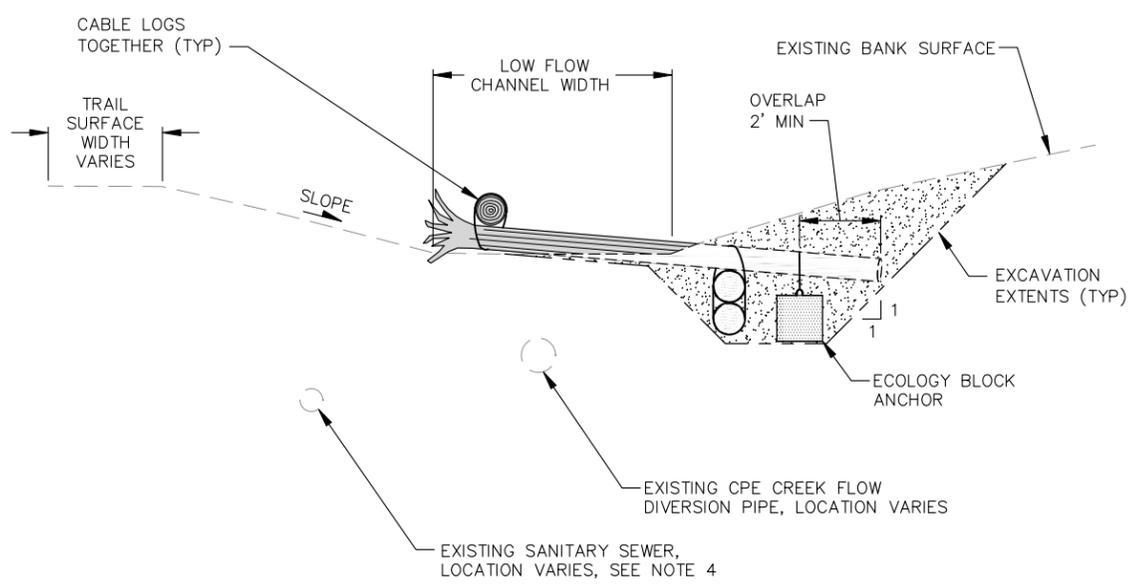
PLAN - LOG STRUCTURE  
 SCALE: 1"=4'  
 1 VAR



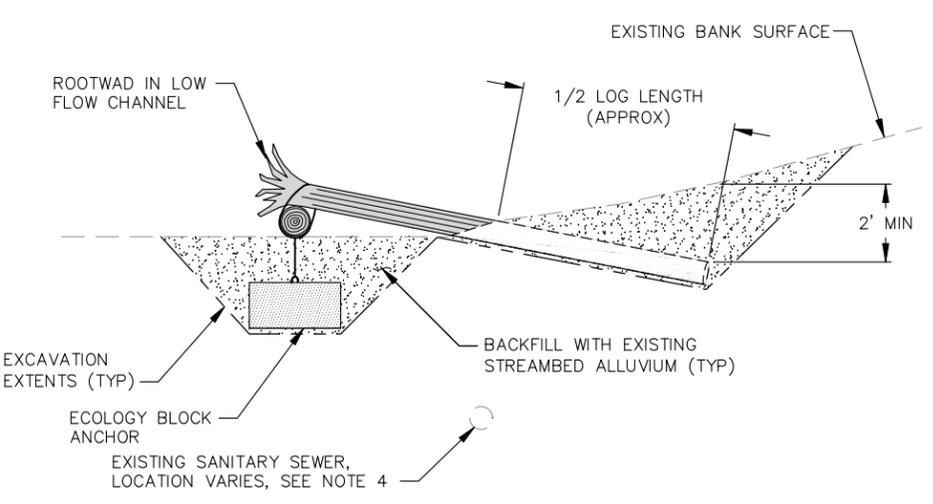
PLAN - HABITAT LOG  
 SCALE: 1"=4'  
 2 VAR

NOTES:

1. BACKFILL ALL EXCAVATIONS WITH EXISTING STREAMBED GRAVEL AND COBBLES. PLACE EXCESS MATERIAL ADJACENT TO LOG STRUCTURES AS DIRECTED BY ENGINEER.
2. LOG IDENTIFICATION NUMBERS REFLECT POTENTIAL CONSTRUCTION SEQUENCING AND LOG PLACEMENT SEQUENCING. SEE DRAWING C-8 FOR LOG MATERIAL SCHEDULE.
3. ENGINEER SHALL STAKE ALL LOG STRUCTURE LOCATIONS PRIOR TO EXCAVATION.
4. CONTRACTOR TO POTHOLE FOR LOG PLACEMENTS NEAR SEWER PIPE TO VERIFY LOCATIONS. MINIMUM 3' CLEARANCE BETWEEN SEWER PIPE AND LOGS, ANCHOR, OR CABLES. NO MINIMUM CLEARANCE FOR CPE DIVERSION PIPE.
5. VARY LOG PLACEMENT BASED ON PIPE LOCATIONS.

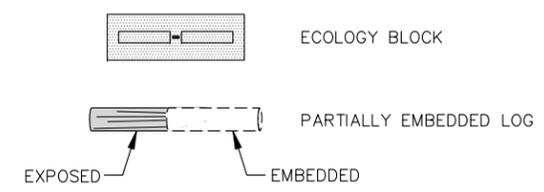


SECTION - LOG STRUCTURE  
 SCALE: 1"=4'  
 A



SECTION - HABITAT LOG  
 SCALE: 1"=4'  
 B

LEGEND



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UPPER VASA CREEK  
 CHECK DAM REPAIR  
 PHASE 2

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DESIGN MANAGER	DATE
PROJECT MANAGER	DATE

**CITY OF BELLEVUE**  
 WASHINGTON

**City of Bellevue**  
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LOG STRUCTURE DETAILS - SHEET 1 OF 2  
 DRAWING C-7 SHT 9 OF 15

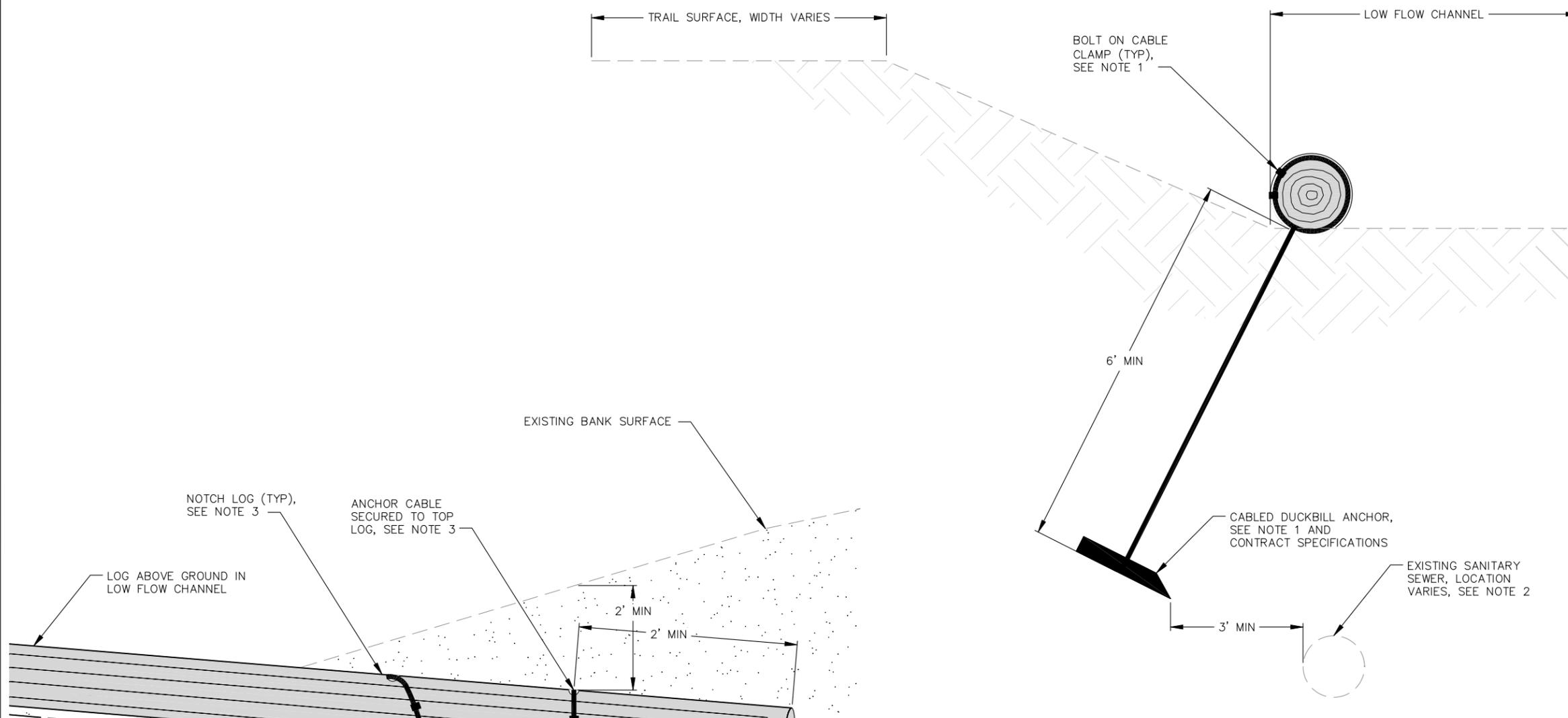


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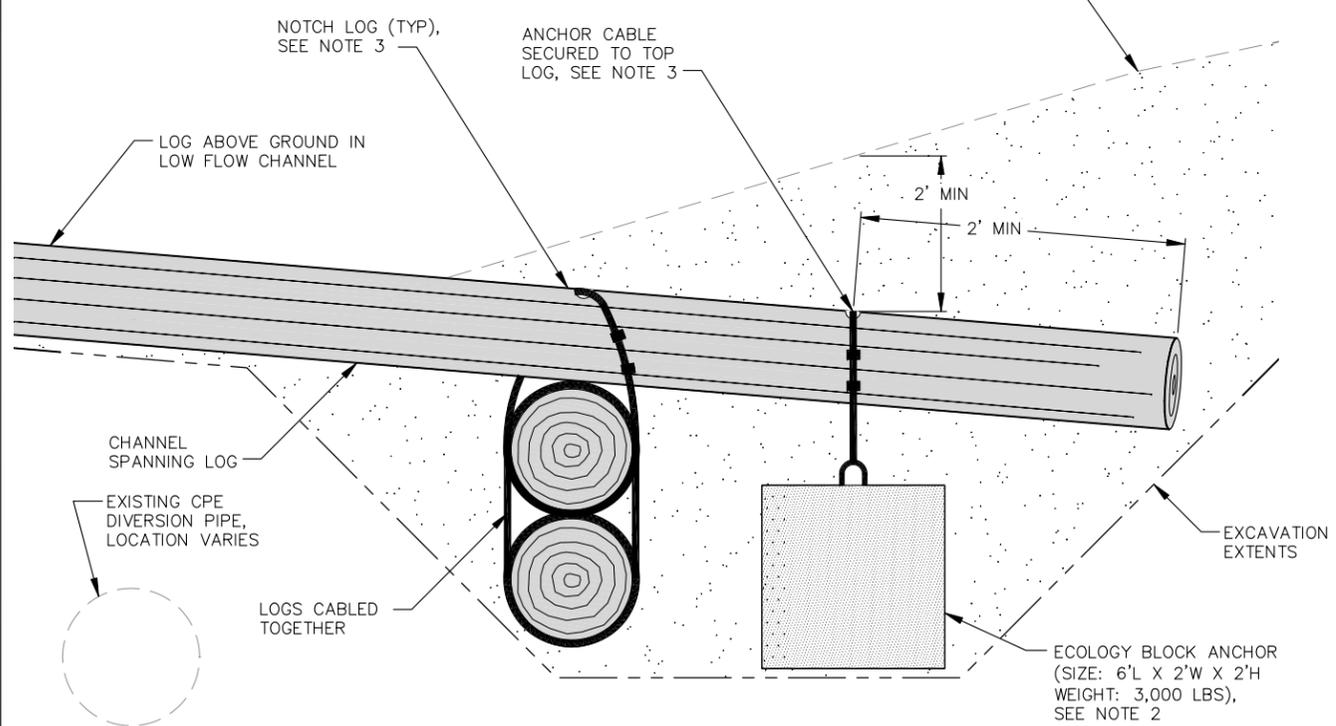


TABLE - LOG SCHEDULE:

LOG #	DIA. (IN)	LENGTH (FT)	ROOTWAD	INSTALLATION TYPE
1				
2				
3				
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33				
34				
35				



SECTION - HABITAT LOG DUCKBILL ANCHOR  
SCALE: 1"=1' C  
C-7



DETAIL - ECOLOGY BLOCK ANCHOR  
SCALE: 1"=1' 1  
C-7

NOTES:

1. SECURE ALL ANCHOR CABLES USING MIN 2 BOLT-ON CABLE CLAMPS.
2. CONTRACTOR TO POTHOLE FOR LOG AND ANCHOR PLACEMENTS NEAR SEWER PIPE TO VERIFY LOCATIONS. MINIMUM 3' CLEARANCE BETWEEN SEWER PIPE AND LOGS, ANCHOR, OR CABLES. NO MINIMUM CLEARANCE FOR DIVERSION PIPE.
3. NOTCH LOG 1" MIN DEPTH. SECURE CABLE IN NOTCH.

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CHECK DAM REPAIR  
PHASE 2

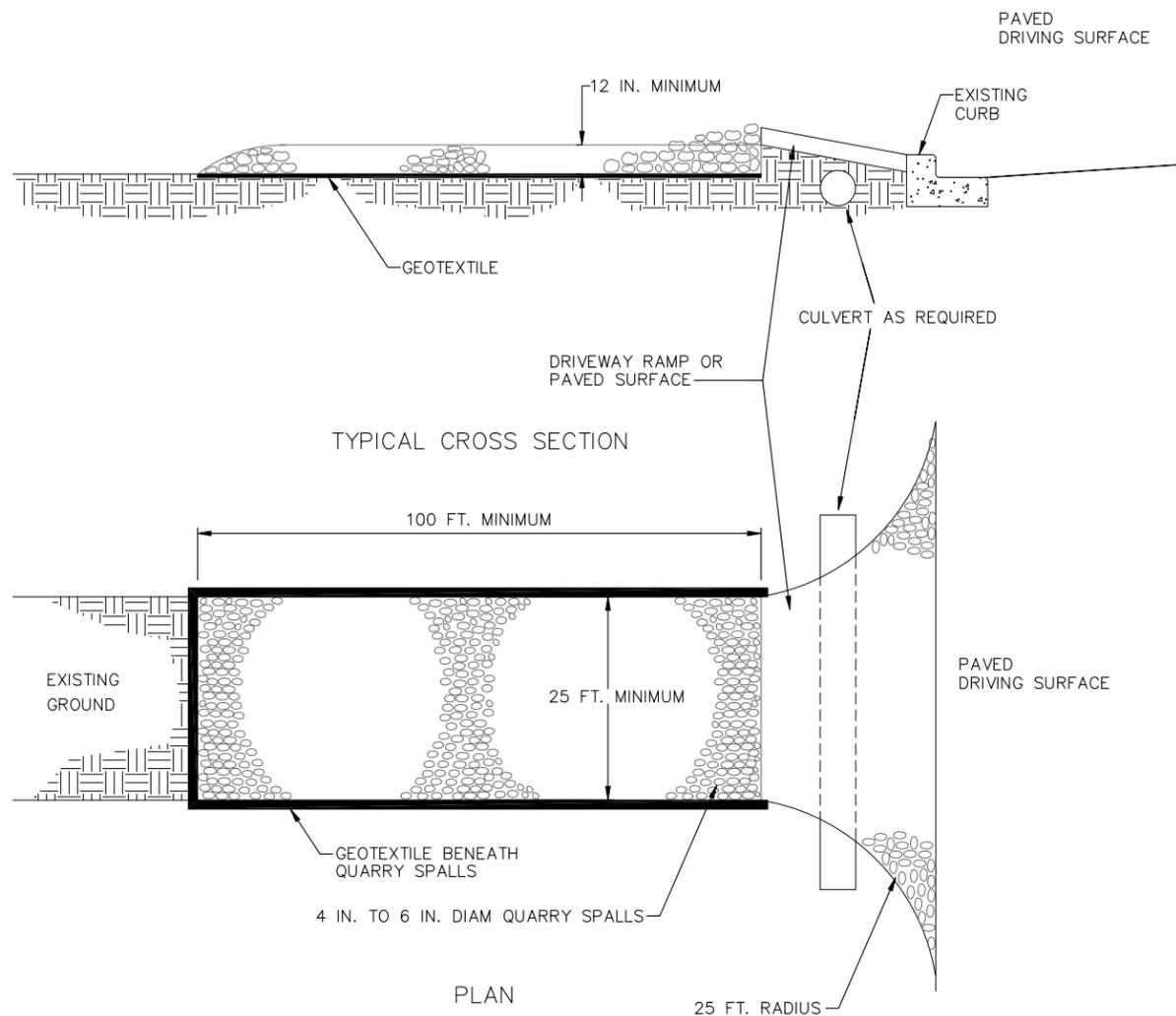
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LOG STRUCTURE DETAILS - SHEET 2  
OF 2  
DRAWING C-8 SHT 10 OF 15

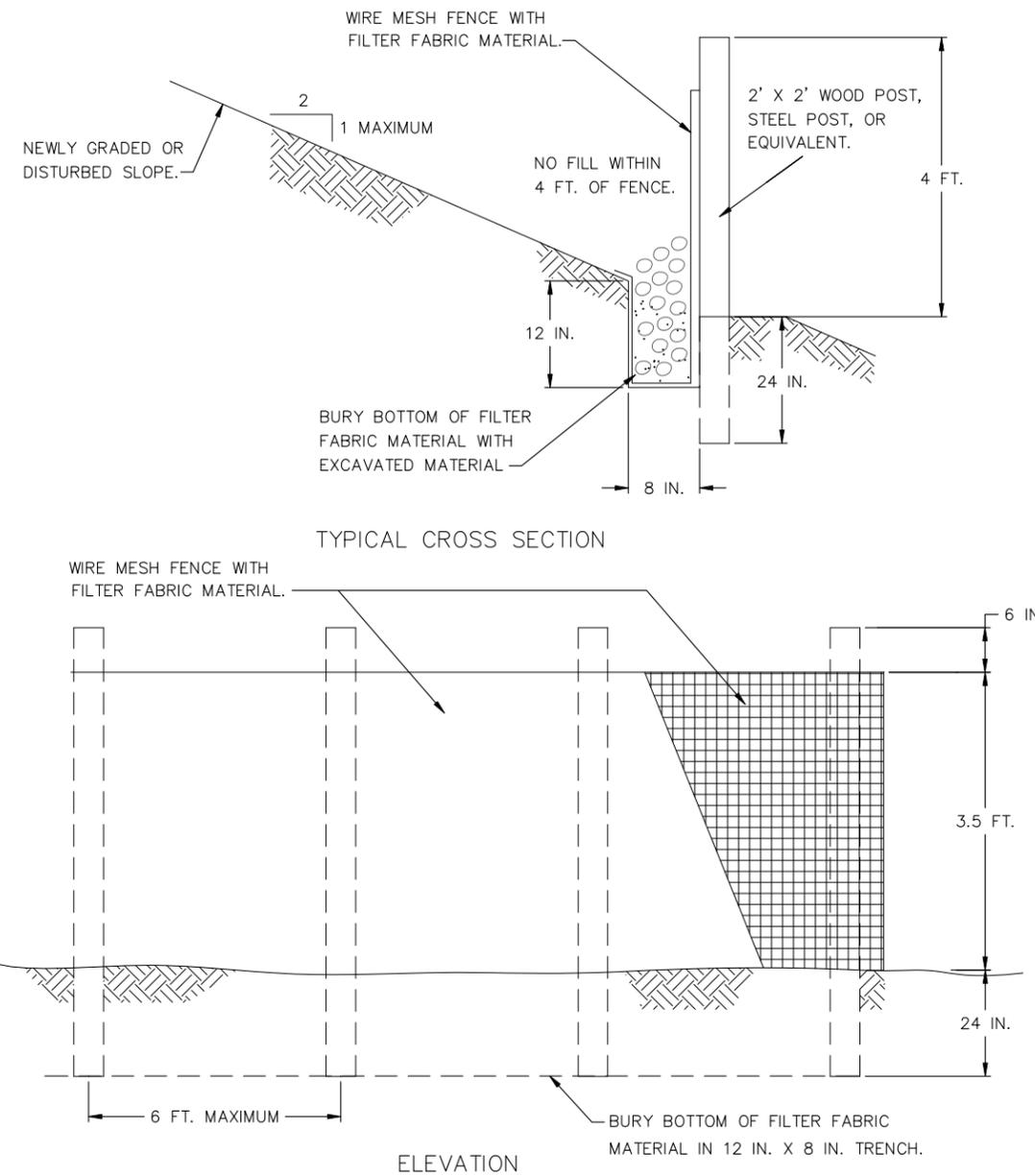




**NOTES:**

- PAD SHALL BE REMOVED AND REPLACED WHEN SOIL IS EVIDENT ON THE SURFACE OF THE PAD OR AS DIRECTED BY THE CITY CLEARING AND GRADING INSPECTOR.
- PAD SHALL BE INSTALLED IN PLANTING STRIP AS APPROPRIATE.
- PAD THICKNESS SHALL BE INCREASED IF SOIL CONDITIONS DICTATE AND/OR PER THE DIRECTION OF THE CITY CLEARING AND GRADING INSPECTOR.
- MINIMUM DIMENSIONS MAY BE MODIFIED AS REQUIRED BY SITE CONDITIONS UPON APPROVAL OF THE CITY CLEARING AND GRADING INSPECTOR.
- PROTECT OR RESTORE EXISTING CURB.
- TO BE INSTALLED ONLY AT DIRECTION OF CITY OF BELLEVUE ENGINEER.

DETAIL - TEMPORARY CONSTRUCTION EXIT (EC-001) 1  
SCALE: NTS C-1



**NOTES:**

- FENCE SHALL NOT BE INSTALLED ON SLOPES STEEPER THAN 2:1.
- JOINTS IN FILTER FABRIC SHALL BE OVERLAPPED 6 INCHES AT POST.
- USE STAPLES, WIRE RINGS, OR EQUIVALENT TO ATTACH FABRIC TO WIRE FENCE.
- REMOVE SEDIMENT WHEN IT REACHES 1/3 FENCE HEIGHT.
- TO BE INSTALLED ONLY AT DIRECTION OF CITY OF BELLEVUE ENGINEER.

DETAIL - REINFORCED SILT FENCE (EC-5) 2  
SCALE: NTS C-1

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CHECK DAM REPAIR  
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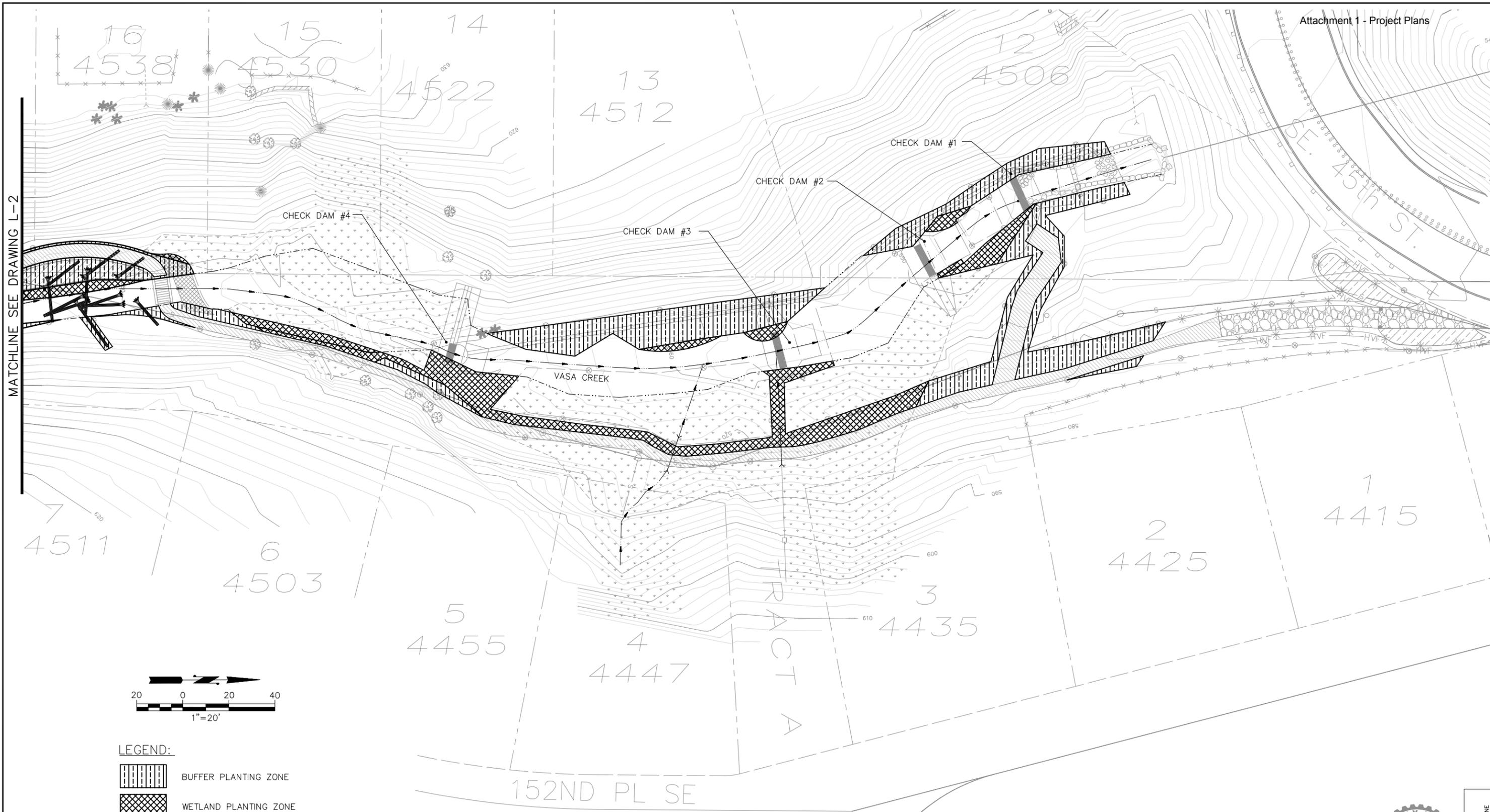
TESC PLAN

DRAWING ES-1 SHT 11 OF 15

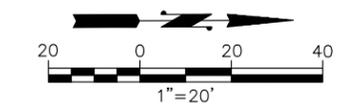


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MATCHLINE SEE DRAWING L-2



- LEGEND:**
- BUFFER PLANTING ZONE
  - WETLAND PLANTING ZONE



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**PLANTING PLAN - SHEET 1 OF 3**

DRAWING L-1      SHT 12 OF 15

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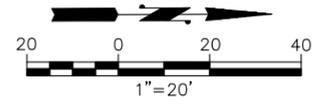


MATCHLINE SEE DRAWING L-3

MATCHLINE SEE DRAWING L-1

**LEGEND:**

- BUFFER PLANTING ZONE
- WETLAND PLANTING ZONE



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**UPPER VASA CREEK  
CHECK DAM REPAIR  
PHASE 2**

**Approved By**

DESIGN MANAGER \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT MANAGER \_\_\_\_\_ DATE \_\_\_\_\_

M. FONTAINE 08/2010  
DESIGNED BY DATE  
L. TURNIDGE 08/2010  
DRAWN BY DATE  
M. EWBANK 08/2010  
CHECKED BY DATE

City of  
Bellevue

UTILITIES

PLANTING PLAN - SHEET 2 OF 3

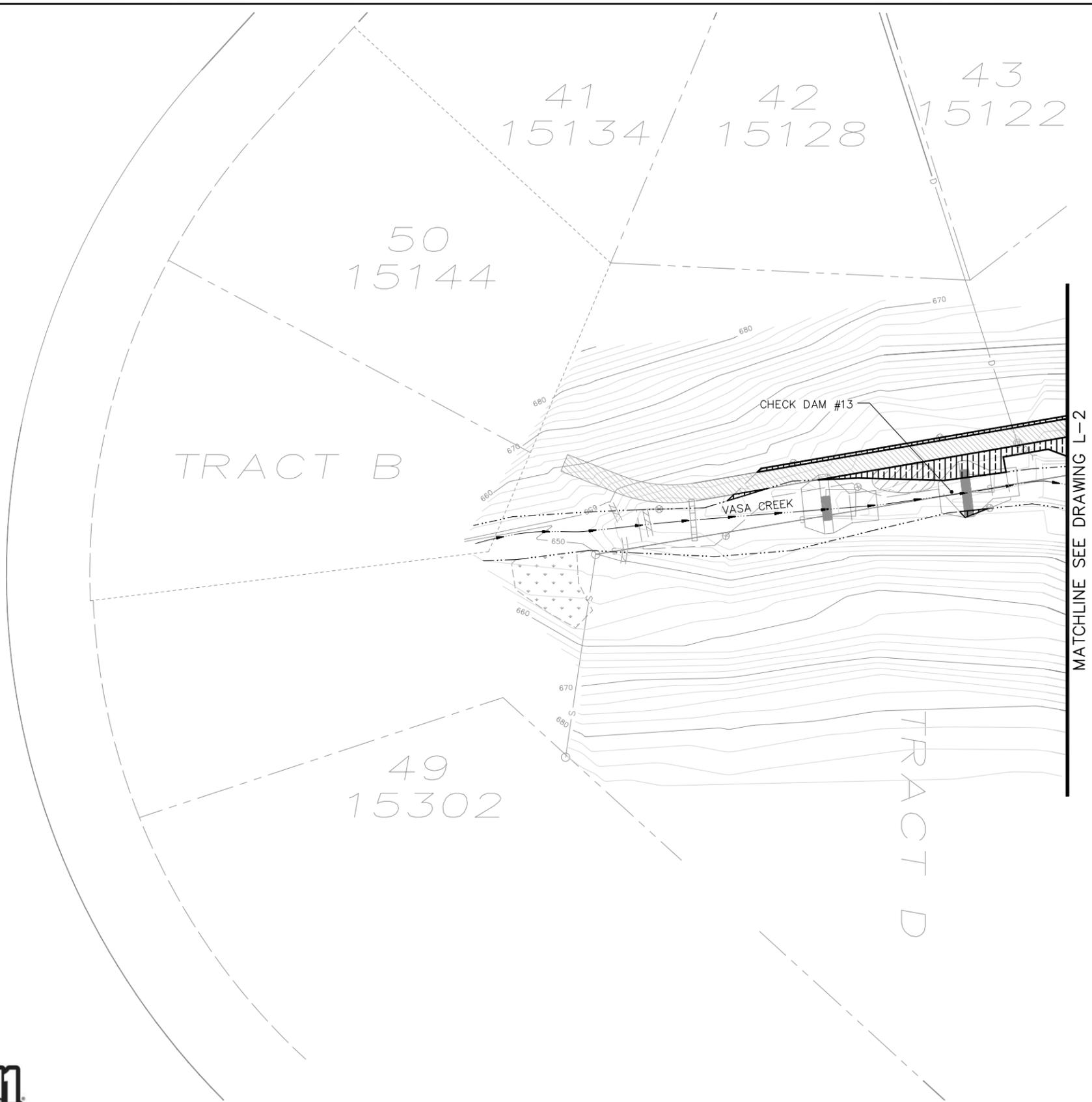
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LEGEND:

-  BUFFER PLANTING ZONE
-  WETLAND PLANTING ZONE



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Bellevue  
UTILITIES

PLANTING PLAN - SHEET 3 OF 3

DRAWING L-3

SHT 14 OF 15

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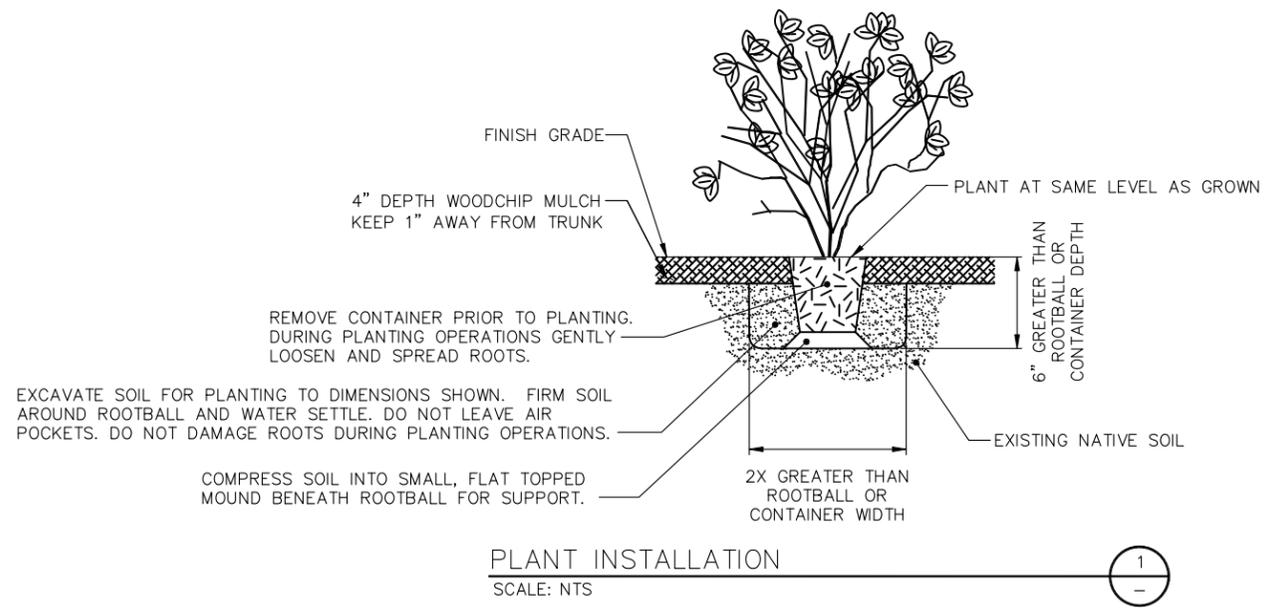


PLANTING SCHEDULE:

ZONE	STRATUM	SCIENTIFIC NAME	COMMON NAME	QUANTITY	SPACING (ON CENTER)	CONTAINER SIZE
WETLAND	SHRUB	CORNUS SERICEA	RED-OSIER DOGWOOD	35	5 FEET	1 GALLON
		RIBES LACUSTRE	SWAMP GOOSEBERRY	35	5 FEET	1 GALLON
		RUBUS PARVIFLORUS	THIMBLEBERRY	35	5 FEET	1 GALLON
		RUBUS SPECTABILIS	SALMONBERRY	35	5 FEET	1 GALLON
	EMERGENT	CAREX OBNUPTA	SLOUGH SEDGE	1397	1.5 FEET	PLUG
BUFFER	SHRUB	ACER CIRCINATUM	VINE MAPLE	102	5 FEET	1 GALLON
		OEMLERIA CERASIFORMIS	INDIAN PLUM	102	5 FEET	1 GALLON
		SAMBUCUS RACEMOSA	RED ELDERBERRY	102	5 FEET	1 GALLON
		SYMPHORICARPOS ALBUS	SNOWBERRY	102	5 FEET	1 GALLON
	FERN	ATHYRIUM FILIX-FEMINA	LADY FERN	2064	1.5 FEET	4-INCH POT
		POLYSTICHUM MUNITUM	SWORD FERN	2064	1.5 FEET	4-INCH POT

PLANTING NOTES:

- SPREAD 4" DEPTH OF WOOD CHIP MULCH THROUGHOUT ALL PLANTING AREAS.
- PLANTING OF ALL SHRUBS, SEDGES, AND FERNS SHALL TAKE PLACE DURING THE DORMANT SEASON (OCTOBER-JANUARY).
- ALL PLANTS SHALL CONFORM TO THE STANDARDS OF THE CURRENT EDITION OF AMERICAN STANDARD FOR NURSERY STOCK AS APPROVED BY THE AMERICAN STANDARDS INSTITUTE (ANSI Z60.1-2004).
- ALL PLANT MATERIALS SHALL HAVE NORMAL, WELL-DEVELOPED BRANCHES AND VIGOROUS ROOT SYSTEMS, AND BE FREE FROM PHYSICAL DEFECTS, PLANT DISEASES, AND INSECT PESTS.
- PLANT SUBSTITUTIONS ARE SUBJECT TO APPROVAL BY THE ENGINEER.
- PLANTS SHALL BE TAGGED FOR IDENTIFICATION WHEN DELIVERED.
- LAYOUT OF ALL PLANT MATERIAL SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
- THE ENGINEER WILL FIELD ACCEPT CONTRACTOR'S FIELD STAKING OF LOCATIONS OF PLANTINGS TO FIT SITE CONDITIONS. USE PLAN FOR QUANTITIES -FINAL LOCATIONS ARE SUBJECT TO CHANGE.
- THE ENGINEER SHALL APPROVE GRADING PRIOR TO PLANT INSTALLATION.
- THOROUGHLY WATER ALL PLANTED AREAS IMMEDIATELY AFTER PLANTING AND WATER FOR OPTIMUM HEALTH DURING DRY PERIODS DURING PLANT ESTABLISHMENT PERIOD.
- KEEP PLANTS SHADED UNTIL THE ACTUAL TIME OF PLANTING. DO NOT LET PLANT MATERIAL SIT IN SUN OR DRY OUT DURING PLANTING.
- PLANT SHRUBS IN CLUSTERS OF THREE OR FIVE OF THE SAME SPECIES. PLACE SHRUBS AT 5 FEET ON CENTER. EVENLY DISTRIBUTE CLUSTERS THROUGHOUT PLANTING AREAS.
- INTERPLANT SEDGE AND FERNS AMONGST SHRUBS AT 1.5 FEET ON CENTER WITHIN RESPECTIVE PLANTING ZONES.



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City of Bellevue  
UTILITIES

PLANT MATERIAL SCHEDULE

DRAWING L-4 SHT 15 OF 15



## **CRITICAL AREAS REPORT**

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# Upper Vasa Creek Check Dam Repairs Phase II Project

Prepared for

City of Bellevue  
Utilities Department

August 2010

**Note:**

Some pages in this document have been purposefully skipped or blank pages inserted so that this document will copy correctly when duplexed.

## **CRITICAL AREAS REPORT**

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# Upper Vasa Creek Check Dam Repairs Phase II Project

Prepared for

City of Bellevue  
Utilities Department  
450 110th Avenue NE  
Bellevue, Washington 98004

Prepared by

Herrera Environmental Consultants  
2200 Sixth Avenue, Suite 1100  
Seattle, Washington 98121  
Telephone: 206.441.9080

August 9, 2010



## Disclaimer

Herrera Environmental Consultants, Inc. has prepared this report for use by the City of Bellevue. The results and conclusions in this report represent the professional opinion of Herrera Environmental Consultants, Inc. They are based in part upon (1) site reconnaissance, and (2) examination of public domain information concerning the study area.

The work was performed according to critical area studies and reporting standards required by the City of Bellevue Land Use Code (Part 20.25H) and the accepted standards in the field of jurisdictional wetland determination and delineation using the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987), the Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys, and Coast Region (Environmental Laboratory 2008), and the Washington State Wetlands Identification and Delineation Manual (Ecology 1997). However, final determination of jurisdictional wetland boundaries pertinent to Section 404 of the Clean Water Act is the responsibility of the Seattle District of the U.S. Army Corps of Engineers. Various agencies of the state of Washington and local jurisdictions may require a review of final site development plans that could potentially affect zoning, buffer requirements, water quality, and/or habitat functions of lands in question. Therefore, the findings and conclusions in this report should be reviewed by appropriate regulatory agencies before any detailed site planning and/or construction activities.



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## 1.0 Report Summary

The Vasa Creek Restoration Project is a City of Bellevue Utilities Department project that involves restoration of rock check dams, installed in 2001, that were damaged during extremely high stream flows during a storm in 2007. The rock check dams stabilize the stream bed which is prone to erosion due to both its location in a steep ravine and the stormwater flows that are conveyed by the channel. The work proposed to occur will improve the design of the check dams to withstand higher flows than the previous design. The check dams will be repaired by placement of approximately 80 to 90 cubic yards of rock (i.e., riprap and quarry spalls). The project will also include the placement of approximately 35 pieces of large woody debris (LWD) to enhance in-stream habitat conditions. Funding for the project will be provided by the Federal Emergency Management Agency (FEMA) and City of Bellevue Capital Improvement Program.

The project is located within, and directly adjacent to, the channel of Vasa Creek in the City of Bellevue. The project extends from the culvert outlet at SE 46th Street downstream to the culvert inlet at SE 45th Street.

Critical areas within the project area include Vasa Creek (stream), six wetlands, buffers for these aquatic resources, geologic hazards (steep slopes/landslide hazards), and habitats for wildlife species of local significance. The project will have no impacts to geologic hazards or habitats for species of local significance. The project will have temporary and permanent impacts on the Vasa Creek stream bed, and temporary impacts to adjacent wetlands wetland buffers and stream buffers. These impacts are summarized in Table S-1 and described below.

**Table S-1. Impacts to Vasa Creek stream channel, wetlands, and buffers in the Vasa Creek Restoration Project Area.**

Resource	Temporary Impacts (square feet)	Permanent Impacts (square feet)
Total Vasa Creek channel impacts (i.e., impacts below OHWM)	9,776	560
Total Wetland Impacts	3,446	0
Wetland A	0	0
Wetland B	0	0
Wetland C	0	0
Wetland D	365	0
Wetland E	375	0
Wetland F	2,706	0
Total buffer impacts (i.e., impacts to stream buffers and wetland buffers)	10,209	0
Total impacts	26,877	560

Temporary impacts to the Vasa Creek stream bed will result from construction access and excavation outside of permanent in-stream structure footprints, and from activities associated with placement of large wood in the channel. Permanent impacts to the Vasa Creek stream bed will result from rock placement to restore the check dams.

*Critical Area Report—Upper Vasa Creek Check Dam Repairs Phase II Project*

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Temporary impacts to wetlands will result from temporary clearing to provide construction access and for placement of large wood.

Temporary impacts to wetland and stream buffers will result from temporary construction access.

Project impacts were evaluated during the design process to reduce impacts to Vasa Creek and associated wetlands, and their buffers. Consistent with the City of Bellevue Land Use Code (LUC) 20.25H.055.C.3.m, design scenarios such as “soft-site” restoration techniques (e.g., coir matting, aggressive riparian planting efforts) were considered and not selected for the following reasons:

- The extremely high flows that occur would generate forces greater than these materials could withstand
- The heavily shaded nature of the project site would reduce the vigor of most planting stock designed for those conditions (e.g., willows)

However, all temporarily impacted wetlands and buffers will be restored by planting native shrubs, emergents, and ferns.

## **2.0 Introduction**

The Vasa Creek Restoration Project (hereafter, “the project”) is a restoration of rock check dams, installed in 2001, that were damaged during extremely high stream flows during a storm in 2007. The rock check dams stabilize the stream bed which is prone to erosion due to both its location in a steep ravine and the stormwater flows that are conveyed by the channel. The proposed project will improve the design of the check dams to withstand higher flows than the previous design. The check dams will be repaired by placement of approximately 80 to 90 cubic yards of rock (i.e., riprap and quarry spalls) in accordance with the engineering design developed for the project. The project will also include the placement of 35 pieces of LWD to enhance in-stream habitat conditions. Funding for the project will be provided by FEMA and City of Bellevue Capital Improvement Program.

### **2.1 Project History**

Several large landslides and heavy rain events in the 1990s resulted in damage to both the project area and property downstream. Damage included slide activity that deposited debris (including trees, soil, and gravel) in Vasa Creek, and movement of debris and sediment within the creek that plugged culverts and damaged infrastructure downstream. The damaged property included an elementary school, a church, and two King County sediment basins. A sewer pipe buried within the substrate of Vasa Creek and portions of several manholes also were exposed and damaged. To prevent further damage, 14 check dams were constructed in Vasa Creek in summer of 2001. The check dams were constructed to prevent erosion, thereby protecting the sanitary sewer main in the stream bed, minimizing the potential for landslides and damage to homes sited on the top of the ravine, reducing risk of damage to downstream infrastructure, minimizing long-term maintenance costs for the sewer main, and improving water quality and downstream habitat for fish species.

In December of 2007, a storm event generated a stream flow with a magnitude greater than a 100-year return interval, damaging 12 of the check dams. FEMA provided funding to repair damages to 10 of the check dams. In 2008, interim repairs were applied to the three check dams that were the most badly damaged. The interim repairs prevented further damage from occurring until the City of Bellevue could design repairs for all the check dams and acquire the necessary permits, solicit bids, award a contract, and construct the repairs. This report describes that design and the effects on critical areas that will result from implementing the project.

The project includes repairs on two of the three check dams that received interim repairs in 2008, and repairs on the remaining seven check dams covered by FEMA funding for damages incurred from the December 2007 storm. In addition to repairing the check dams, the City of Bellevue will install 35 pieces of LWD in the stream bed to create habitat diversity in the stream system.

*Critical Area Report—Upper Vasa Creek Check Dam Repairs Phase II Project*

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## **2.2 Project Setting**

The project is located within and directly adjacent to Vasa Creek in the City of Bellevue (Figure 1). The project extends from the culvert outlet at SE 46th Street downstream to the culvert inlet at SE 45th Street. The project is located entirely within property owned by the City of Bellevue Parks Department, in the Horizon Heights Open Space (parcel #: #3459400500, 1424059099, 3459420200, and 9346920520). The project is located within the southwest ¼ of Section 14, Township 24 North, Range 6 East.

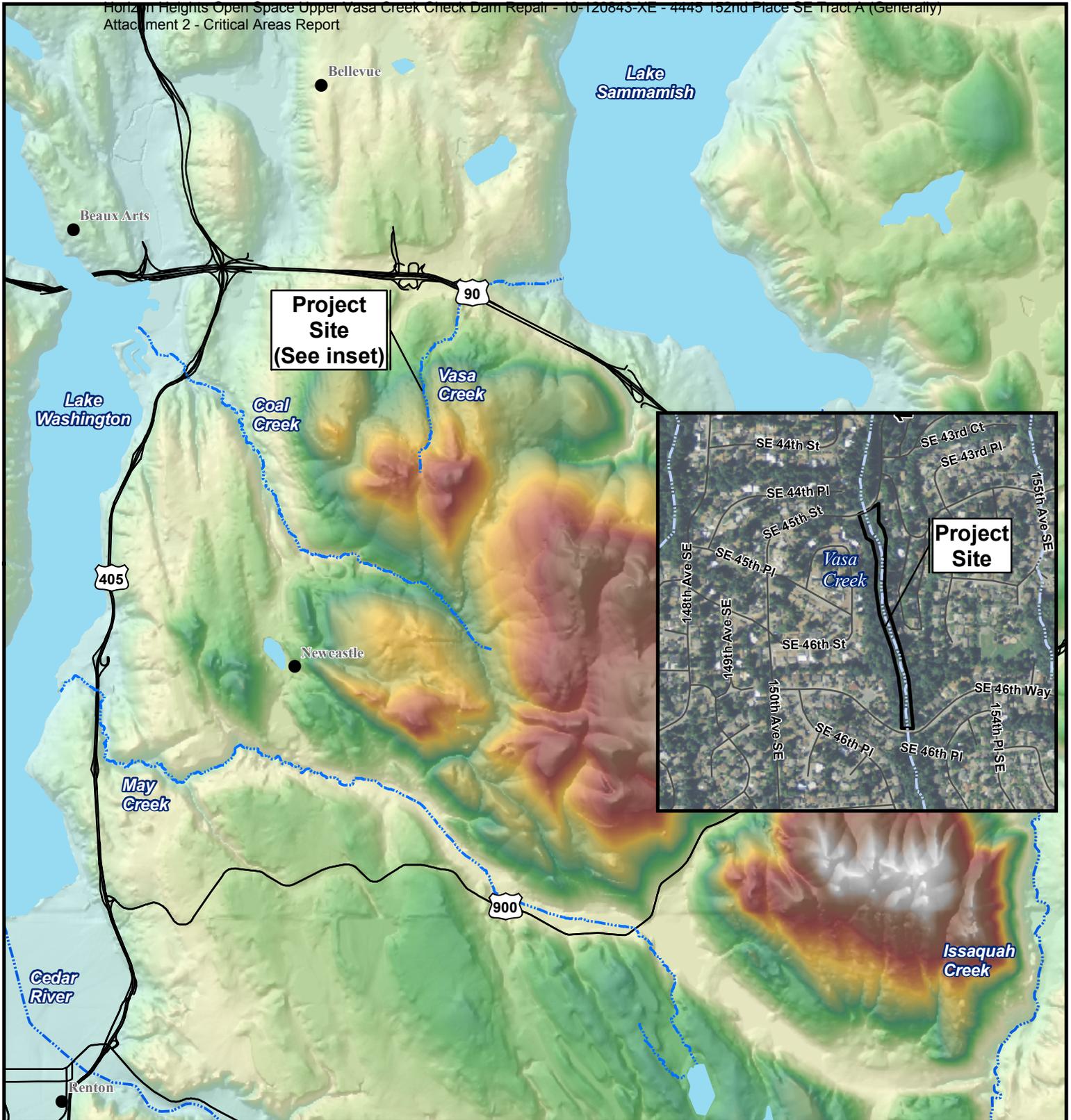
Vasa Creek flows through a steep, forested ravine in the project area. Residential homes are located at the tops of steep slopes that confine the ravine. The watershed of Vasa Creek upstream of the project area is heavily developed. Stormwater from the watershed is conveyed through streets, city and county stormwater infrastructure, ad hoc stormwater diversions (i.e., the many unpermitted residential stormwater discharges), and direct runoff to Vasa Creek. Storm events result in the discharge of large volumes of stormwater to the channel, with very little desynchronization between the storms and runoff. Therefore, storm flows are high and have a very flashy hydroperiod in which stream levels rise rapidly during storm events and fall quickly once rain has subsided. The result is maximum erosion rates during storms, very little base-flow between storms, and reduced opportunities for the establishment of a stable stream bed and riparian vegetation. These erosive conditions in Vasa Creek were addressed with the original check dam project in 2001, the emergency repairs following the 2007 flood, and the current proposed project.

## **2.3 Project Description**

The project will include the following elements:

1. Site preparation [including installation of Temporary Erosion and Sediment Control (TESC) measures, implementation of best management practices (BMPs), and stream flow routing through a bypass system]
2. Check dam repair and LWD installation
3. Site restoration, including replanting of disturbed wetland and buffer areas and restoration of the trail
4. Removal of TESC measures and reintroduction of stream flow to the restored channel

These steps of the project are discussed in detail below, along with a description of anticipated temporary and permanent impacts of the project.

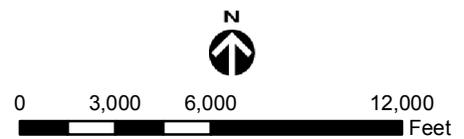


**Legend**

- City
- Highway
- · · · Stream



**Figure 1. Vicinity map for the Vasa Creek Restoration Project, Bellevue, WA.**



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### **2.3.1 Site Preparation**

Site preparation activities include:

1. Staking the limits of disturbance, locations of construction access points, and staging areas, and documenting baseline conditions
2. Establishing traffic control (including exclusion of public trail access for duration of project)
3. Contractor mobilization
4. Installing TESC and implementing other BMPs
5. Developing the access route, stream crossing, staging areas, and a temporary materials/rock handling chute
6. Preparing and activating temporary stream bypass system

#### ***2.3.1.1 Staking the Limits of Disturbance, Locations of Construction Access Points, and Staging Areas, and Documenting Baseline Conditions***

Prior to arrival of the contractor onsite, the City of Bellevue will stake the limits of disturbance, the clearing limits, the existing wetlands, and the locations of the primary construction elements. The primary construction elements of the project include the check dams to be repaired, location of LWD structures in the stream channel, and locations of TESC and other BMPs. The City of Bellevue will take photos of the site (including the existing native vegetation) to document the condition of wetlands and buffer vegetation before the contractor begins work on the project.

#### ***2.3.1.2 Establishing Traffic Control***

Prior to mobilization, the contractor will establish traffic control at the construction access point on NE 46th Street as well as at any locations between the construction access point and arterials, as dictated by the traffic control plan and right-of-way use permit. In addition, the contractor will block pedestrian access to the project site for the duration of the project.

#### ***2.3.1.3 Contractor Mobilization***

Once traffic control is established, the contractor will mobilize to the site. This includes the transportation of the equipment required for the project, support vehicles, TESC and spill prevention control and countermeasures plan (SPCC plan) materials. The contractor will establish a construction access entrance at the existing trail entrance along SE 45th Street, composed of geotextile fabric overlain with quarry spalls to control export of sediment for the

*Critical Area Report—Upper Vasa Creek Check Dam Repairs Phase II Project*

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site. The construction access entrance will include barriers to vehicle access, as well as a gate to allow passage of construction vehicles.

***2.3.1.4 Installing Temporary Erosion and Sediment Control (TESC) and Implementing Other Best Management Practices (BMPs)***

The contractor will be required to implement the measures in the construction stormwater pollution prevention plan (CSWPPP), SPCC plan and traffic control plan, including installation of all components of the TESC plan and streamflow bypass system (described in additional detail in Section 2.3.1.6) as soon as work commences on the project. The engineering plans (Appendix A) identify the minimum requirements for TESC and also define the streamflow bypass system to be used by the contractor. If the contractor elects to use alternative TESC measures or bypass system, then these must be defined in the CSWPPP and approved by the City of Bellevue prior to starting work on the project. All BMPs and other measures described in this section will be inspected by the City of Bellevue engineer after installation to ensure they are installed according to the CSWPPP.

The following TESC BMPs and other measure will be taken to protect water quality and stabilize the site during construction:

- A temporary construction entrance will be established accordance with City of Bellevue standard detail EC-001.
- Vegetation clearing will be limited to areas within the approved disturbance limits.
- Natural vegetation to be cleared will be preserved for as long as possible.
- Catch basin inserts will be installed.
- Reinforced silt fence will be installed as shown in the plans (approximately 300 linear feet) and in accordance with City of Bellevue standard detail EC-005.
- In addition to the reinforced silt fencing shown in the attached plans, the contractor will install reinforce silt fencing downstream of major disturbance areas, such as LWD installation, until work in those areas is complete
- Exposed soils will be covered at the end of each working day when working from October 1 through April 30. From May 1 through September 30, exposed soils will be covered within 7 days of exposure and also at the threat of rain. Exposed soil will be covered using plastic, erosion control blankets, straw or mulch.

*Critical Area Report—Upper Vasa Creek Check Dam Repairs Phase II Project*

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- A sweeper will be staged on site during earthwork to immediately remove soil that has been tracked onto paved areas.
- The contractor will begin work on the upstream-most check dam and work from upstream to downstream in order to minimize impacts to the channel.
- The contractor may install approximately 50 to 100 cubic yards of temporary quarry spalls or wood mulch on the existing access trail in order to stabilize the trail during construction. The material will be removed at the conclusion of the project.
- Accumulation of soils or debris shall be removed from the drive mechanisms (wheels, tracks, tires, etc.) and undercarriage of equipment prior to working below the ordinary high water line of surface waters, and before leaving the site.
- TESC BMPs will be monitored and maintained in accordance with the CSWPPP approved by the City of Bellevue prior to the start of work. At a minimum, this will include daily system inspection and monitoring of system performance, visual observation of water quality, water quality sampling to monitor for turbidity and pH in accordance with the City of Bellevue approved monitoring plan, and maintenance as necessary.

Other BMPs to be implemented at the site include:

- In order to prevent encountering the sanitary sewer line during installation of LWD and anchors, the contractor will pothole prior to excavation whenever excavating within 3 feet of the existing sanitary sewer pipe, or when directed by the City of Bellevue engineer.
- The contractor will be prohibited from using the small existing pedestrian bridge for crossing the creek with equipment or materials because it is too small and light to carry the loads needed for construction. A steel plate will be used to facilitate construction access to the upstream portion of the project site from the single construction exit off of SE 45th Street.
- The contractor will inspect all equipment at the start of each work day and before any work below the ordinary high water mark to ensure the equipment is free of external petroleum-based products while working near or in any surface waters.
- All hydraulic fluid in construction equipment will be vegetable oil based or another approved non-toxic equivalent.
- Spill prevention measures will be taken in accordance with the City of Bellevue approved SPCC plan.

*Critical Area Report—Upper Vasa Creek Check Dam Repairs Phase II Project*

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**2.3.1.5 *Developing Access Route, Stream Crossing, Staging Areas, and a Temporary Materials/Rock Handling Chute***

Once TESC and other BMP measures are in place, the contract will develop the access route to the project restoration sites. The primary access route will follow the path of the existing foot trail. In addition, an existing access route to the culvert under SE 45th Street will be re-established (see Appendix A). Access for the construction equipment will require temporary clearing of trail-side vegetation and installation of a temporary access road (approximately 10 feet wide). If site conditions are too unstable for equipment access, the trail and adjacent cleared areas may be covered in geotextile fabric and buried in quarry spalls or wood mulch to provide a drivable surface for construction equipment.

Once the access route is developed to the stream crossing, a temporary bridge will be installed, using metal plates, augmented with quarry spalls outside of the ordinary high water mark. The access route will then be established to the southern end of the project area.

Once the access route is completed, access areas between the access route and check dam repair sites as well as material staging areas will be cleared and stabilized. The project access entrance will serve as the primary staging area. Several smaller construction staging areas will be located upstream of the existing pedestrian foot bridge. The temporary creek crossing will be located north of the existing pedestrian bridge and will only be used while the creek is bypassed. The materials/rock handling chute will be installed between the existing trail and the creek. See drawing sheets C-1 through C-3 for proposed staging locations and drawing sheet ES-1 for proposed TESC details. A temporary materials/rock handling chute will be installed near check dam #3 to deliver construction materials down the steep embankment between the trail and the check dam.

**2.3.1.6 *Preparing and Activating Temporary Stream Bypass System***

All in-channel work will be sequenced to occur in dry conditions while the creek flow is bypassed around the work area. The contractor will install a temporary bypass system, in accordance with the CSWPPP, to convey water around the work area during construction. The design plans (see Appendix A) detail the temporary bypass system.

In order to isolate the channel from the stream flow, a buried bypass pipe leftover from the original check dam installation in 2001 will be used, augmented with an additional section of bypass pipe in the lower portion of the project area which extends beyond the limit of the existing bypass pipe. A temporary dam composed of sand bags will be built in the stream at the upstream limit of the project area. Flow collected by this dam will be directed to the bypass pipe inlet for the duration of the project. A temporary rock splash pad will be installed at the downstream end of the bypass pipe for energy dissipation while the bypass pipe is in use.

Some dewatering may be required during installation of LWD due to the depth of excavation required to embed the logs and anchor systems. Water encountered during LWD installation will be treated on site to a level that meets Washington State water quality standards using temporary

*Critical Area Report—Upper Vasa Creek Check Dam Repairs Phase II Project*

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sedimentation tanks and filter systems, or directly pumped and discharged to sanitary sewer line that parallels the site.

A sandbag check dam will be installed at the downstream end of the project site (upstream of the outlet of the bypass pipe) in order to collect any hyporheic flow or seepage that occurs at the downstream end of the project site. This will form a small pond at the downstream end of the project site and provide an opportunity for inspection of the water quality. If water collected above this check dam is turbid, then the turbid water can be pumped to the sanitary sewer system until the source of turbidity can be identified and corrected. When flow is gradually returned to the channel upon completion of construction, flow may be temporarily pumped from this small pond into the sanitary sewer system that parallels the project site until the water runs clear in order to prevent water quality impacts downstream.

The temporary bypass system will be monitored and maintained in accordance with the CSWPPP approved by the City of Bellevue prior to the start of work. At a minimum, this will include daily system inspection and monitoring of system performance, visual observation of water quality, water quality sampling to monitor for turbidity and pH in accordance with the City of Bellevue approved monitoring plan, and maintenance as necessary.

Turbid water will not be discharged from the site. In the event that water quality standards for turbidity cannot be achieved, the contractor will pump the turbid water to the sanitary sewer paralleling the site until the source of turbidity can be identified and corrected. However, pumping to the sanitary sewer will only be used as a last resort and will not be used as the primary method of streamflow bypass or TESC.

### **2.3.2 Check Dam Repair and LWD Installation**

Once the project site has been prepared for construction, the check dam repair process will begin. The following sections describe the equipment to be used, material staging and transportation locations and methods, in-channel check dam repair work, and LWD installation.

#### **2.3.2.1 Equipment**

Motorized equipment will be selected by the contractor based on site constraints. The width of the access trail will limit potential equipment choices to small excavators, small tractors, skid steers, mini skid steers, or motorized wheelbarrows. The volume and depth of excavation will require the use of an excavator or tractor with a backhoe.

#### **2.3.2.2 Material Staging and Transportation**

The contractor will receive materials (e.g., riprap, quarry spalls, LWD) for check dam repair at the project site entrance and will use designated staging areas and other areas approved by the City of Bellevue engineer for temporary storage of materials. The contractor will use motorized equipment to transport the material along the construction access route to staging areas adjacent

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to the channel prior to check dam repair. The engineering specifications will place limits on the size of equipment and methods used in order to minimize impacts to the existing trail, wetlands, and the stream channel.

Material may be stockpiled in the area surrounding the site entrance or adjacent to the trail (above the ordinary high water mark of the stream and outside of wetlands). The trail may also be used for temporary stockpiling for riprap, quarry spalls, logs, ecology blocks, and other miscellaneous materials. See the attached plan sheets for designated staging areas. Staging areas identified on the plans may be used for the duration of the project.

### ***2.3.2.3 Rock Check Dam Repair***

Repairs will be performed on check dams #1, #2, #3, #4, #6, #9, #11, #12, and #13. Prior to placing the new rock in the check dams, the channel will be dewatered using the City of Bellevue approved temporary streamflow bypass system (see Section 2.3.1.6 above). A small excavator or other machinery will be used to remove stream sediment and organic debris that has accumulated on the damaged check dams. It is expected that 1 to 2 yards of sediment and organic debris will be temporarily removed from each check dam prior to repair. These materials will be removed from below the ordinary high water mark and will be stockpiled within the limits of disturbance during work on the check dams. The machinery will then be used to place the riprap into the check dams to repair areas that were damaged during December 2007. Due to the heavy nature of some of the riprap pieces (300 to 2,000 pounds each), the small machinery may need to occupy area within the ordinary high water mark of the stream channel in order to reach the check dams for riprap placement. After placement of the riprap, quarry spall pieces will be placed by hand in voids between the riprap to provide additional stability of the check dam structure. After completion of the repair at each check dam, the stream sediment and organic debris will be placed back in the channel and on the face of the check dam. Approximately 80 to 90 cubic yards of riprap and quarry spalls will be placed in the channel. All new rock will be placed below the ordinary high water mark. Attached drawing sheet C-4 shows the details of riprap and quarry spall placement, and drawing sheets C-5 and C-6 show check dam details, photos, and quantities of riprap and quarry spall that will be placed in each check dam.

Repair of check dam #1 differs slightly from repair of other check dams. Check dam #1 was originally constructed of three wire gabion baskets that spanned the width of the channel. The basket in the center of the channel was completely destroyed and the other two baskets were damaged. The remaining damaged baskets will be removed from the channel and disposed of offsite by the contractor. Riprap and quarry spall will be used to rebuild check dam #1 without the use of gabion baskets. The ends of check dams #1 will be benched into firm, undisturbed soil or existing riprap. See drawing sheet C-4 for the details of check dam #1 repair.

### ***2.3.2.4 Large Woody Debris Installation***

Thirty-five (35) pieces of LWD will be added to the channel in order to provide in-water habitat for fish and other aquatic species. The LWD installation is mitigation for the placement of rock below the ordinary high water mark during the check dam repairs described above. Installation

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of most LWD and associated anchors will require excavation below the ordinary high water mark. The LWD pieces will be approximately 12 inches in diameter and approximately 15 to 30 feet long. The root wads associated with the large wood will vary in size. The individual logs are approximately 0.75 cubic yards each totaling approximately 30 cubic yards for all 35 logs. On average, approximately one third of each log will be in the low flow area of the stream channel.

The contractor will procure the logs and transport them to staging areas prior to installation. Log transport will be performed using equipment described in the previous section. The logs will be anchored using cabled duckbill anchors or ecology block anchors. See drawing sheets C-7 and C-8 for detailed illustrations of proposed anchoring systems and installation of log structures that are composed of three or more logs. Installation of the LWD will involve excavation of 10 to 20 cubic yards of soil per log structure in order to provide adequate embedment of the LWD and anchors. Ecology block anchors will be installed with adequate cover to prevent the blocks from becoming uncovered in the future.

The total volume of material that will be excavated for the placement of all LWD, including excavation for logs and anchors, is approximately 200 cubic yards. Excavated materials will be used for backfill after the logs are put in place. Excess material will be distributed evenly on the edge of the low flow channel. No excavated material will be taken offsite.

### **2.3.3 Vegetation Restoration**

Once check dam repair work and LWD installation is complete, temporarily disturbed vegetation will be restored (see Section 3.6 Restoration Plan). The City of Bellevue will take photos of the site (including the native vegetation) to document the condition of the wetlands and buffer vegetation before the contractor begins work on the project. At the conclusion of the project, the contractor will restore the site to pre-project conditions by restoring the original grades, soils, and vegetation (i.e., planting native vegetation). Some of these restoration activities will occur after the removal of TESC measures (described in the following section), as some of the TESC measures will be occupying the locations of restoration sites (e.g., along the existing trail).

### **2.3.4 Removal of TESC Measures, Reintroduction of Stream Flow, and Trail Restoration**

Removal of TESC measures will occur in stages. Following completion of all work, including vegetation restoration, TESC measures that isolate work areas (e.g., silt fencing) will be removed. Sand bag dams at both ends of the project and the bypass system will be removed when streamflow is reintroduced to the channel. Once these dams are removed, the temporary access route materials (quarry spalls, geotextile, stream-crossing metal plates) will be removed, starting from the upstream (south) end of the project area and proceeding north, ending at the removal of the construction entrance. The foot trail will be restored to pre-construction conditions. Site access restrictions (including pedestrian access) will be removed. Pending final inspection by the City of Bellevue engineer, the project will then be considered complete.

## **3.0 Critical Areas Assessment**

Consistent with LUC 20.25H.245, the supporting information upon which this report is based was developed by qualified professionals in the areas of wetlands and fisheries biology, and geomorphology using the best available science and guidance. This report provides Critical Area Report (CAR) information needs specified in LUC 20.25H. For ease of reference, this report includes separate sections for each critical area evaluated for this project: wetlands and streams (Section 3.3), geologic hazards (Section 3.4), and habitats associated with species of local importance (Section 3.5). Each section complies with reporting requirements specific to the critical area and the general CAR reporting requirements provided in LUC 20.25H.250.B.4 through B.8. The report also covers information needs specified under general CAR reporting requirements LUC 20.25H.250.B.1 through B.3 (see Sections 3.1 and 3.2 below).

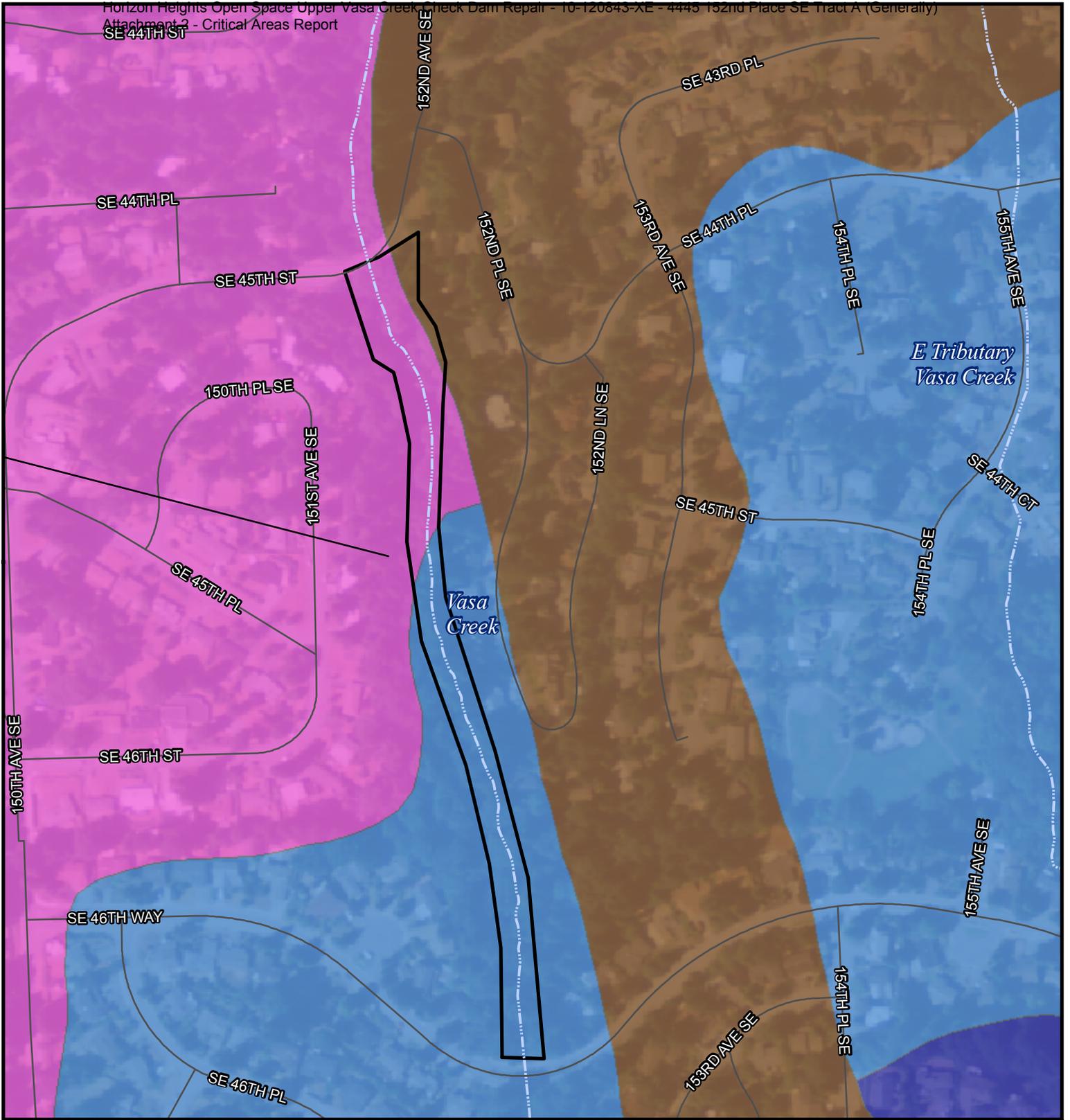
### **3.1 Identification and Classification of Critical Areas and Critical Area Buffers**

This subsection addresses LUC 20.25H.250.B, subsections 1 and 2. Identified critical areas and critical area buffers within and adjacent to the impact area include the following (Figure 2):

- ***Streams and stream buffers*** (Type O waters [LUC 20.25H.075])
- ***Wetlands and wetland buffers*** (Categories II, III, and IV [LUC 20.25H.095])
- ***Geologic hazards*** (Landslide hazard, steep slopes [LUC 20.25H.120])
- ***Habitats associated with species of local importance*** (Breeding habitat for Pileated woodpecker, habitat for protected bat species [LUC 20.25H.150])

### **3.2 Regulations and Codes**

The proposed action is classified as an allowable use and development identified in LUC 20.25H.055.B under “stabilization measures.” The uses are allowed if certain performance standards are met for each critical area identified in the project area. Consistent with the CAR guidance (LUC 20.25H.230 - 270), relevant performance standards are discussed in detail under Sections 3.3 Wetland and Stream Assessment, 3.4 Geologic Hazard Area Assessment, and 3.5 Habitat Assessment.



**Legend**

**Soil type**

- Alderwood gravelly sandy loam, 6 to 15 percent slopes
- Alderwood and Kitsap soils, very steep
- Arents, Alderwood material, 6 to 15 percent slopes

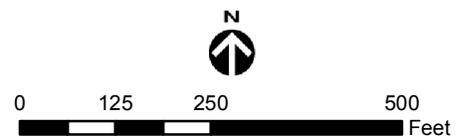
Project limits

Road

Stream

Streams: King County (2009)

**Figure 2. Previously mapped streams and soils in the Vasa Creek Restoration Project, Bellevue, WA.**



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The proposed action meets or will meet the Critical Areas Land Use Permit approval criteria identified in LUC 20.30P. The proposal also meets the general mitigation and restoration plan standards identified in LUC 20.25H.210 - 225, and mitigation standards identified in LUC 20.25H.085 and LUC 20.25H.105. Section 3.6 Restoration Plan outlines the mitigation proposed under this project for Vasa Creek, wetlands, and buffers. A state environmental policy act (SEPA) checklist will also be submitted for the project.

### **3.3 Wetland and Stream Assessment**

The contents of this section satisfies CAR requirements for wetlands and streams specified under LUC 20.25H.110.B and CAR reporting requirements provided in LUC 20.25H.250.B4 – B8. This section describes the conditions of wetlands and streams in the study area, wetland and stream ratings, and required buffer widths.

During the wetland and stream assessment, the project study area and vicinity was inspected for the presence of wetlands and streams.

The objectives of the study were to:

- Delineate (flag) all wetlands in the study area
- Classify all delineated wetlands using the U.S. Fish and Wildlife Service classification system (Cowardin et al. 1979)
- Classify all delineated wetlands using the hydrogeomorphic classification system (Brinson 1993)
- Classify all delineated wetlands and assess their functions using the *Washington State Wetland Rating System for Western Washington—Revised* (Hruby 2004), which is the classification system required by LUC 20.25H.095
- Determine the applicable wetland buffer widths required by LUC 20.25H.095
- Delineate (flag) the OHWM of all streams in the study area
- Classify all stream using the classification system required by LUC 20.25H.075
- Determine the applicable stream buffer widths required by LUC 20.25H.075

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### **3.3.1 Methods and Materials**

Evaluating the presence, extent, and type of wetlands and streams requires a review of available information about the site (e.g., surveys, studies), followed by an onsite wetland and stream delineation. The following sections describe the research methods and field protocols for the wetland and stream evaluations. More information about the methodology used in the wetland delineation performed for this project is available in Appendix B.

#### ***3.3.1.1 Review of Available Information***

A literature review was performed to determine the historical and current presence of wetlands and streams in and near the study area. The sources of information are:

- Aerial photographs of the Vasa Creek project vicinity (USDA 2010)
- Topographic map of the project vicinity (PSLC 2010; Bellevue 2009)
- National Wetlands Inventory map of wetland areas in the project vicinity (USFWS 2010)
- City of Bellevue and King County wetland inventories (Bellevue 2010; King County 2010)
- Hydrography data (stream locations) for City of Bellevue (Bellevue 2010)
- A Catalog of Washington Streams and Salmon Utilization (WDF 1975)
- SalmonScape computer mapping system (WDFW 2010)
- Washington State priority habitat and species (PHS) data (WDFW 2010)
- Washington State Natural Heritage data (WDNR 2010)
- King County area soil survey maps for the project vicinity (NRCS 2010)
- Soil descriptions for the project vicinity (NRCS 2010)
- Hydric soils list for Washington (NRCS 2010)

#### ***3.3.1.2 Wetland Delineation***

This wetland delineation was performed in accordance with the *Washington State Wetlands Identification and Delineation Manual* (Ecology 1997) and the *Interim Supplement to the U.S. Army Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys, and Coast*

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*Region* (Environmental Laboratory 2008), both of which are consistent with the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987).

The methods in these guidance manuals use a three-parameter approach for identifying and delineating wetlands, and rely on the presence of field indicators for hydrophytic vegetation, hydric soils, and hydrology. The methods for evaluating these three parameters are described in Appendix B. This wetland delineation was performed according to procedures specified under the routine wetland determination method (Ecology 1997).

To identify potential wetlands, wetland biologists evaluated field conditions by traversing the study area and noting wetlands, streams and other aquatic features. The biologists evaluated conditions in the area within 300 feet of the study area boundary through observations from within the study area boundaries because they did not have permission to access these properties.

A test plot was established for each area that appeared to have potential wetland characteristics. For each test plot, data on dominant plant species, soil conditions in test plots, and evidence of hydrologic conditions were recorded on wetland determination data forms (see Appendix C). Plants, soils, and hydrologic conditions were also analyzed and documented in adjacent upland areas. Based on collected data, a determination of wetland or upland was made for each area examined.

Following confirmation of wetland conditions in a given area, the wetland boundary was delineated by placing sequentially-numbered, flagging along the wetland perimeter. Test plot locations were also marked with flagging. The locations of wetland boundaries and test plots were subsequently surveyed by CTS Engineers, Inc.

### ***3.3.1.3 Wetland Classification, Rating, and Functional Assessment***

This section provides information on the methods used to classify the wetlands, determine rating categories, and assess functions provided by the wetlands.

#### ***3.3.1.3.1 Wetland Classification***

Wetlands observed on the study area were classified according to the U.S. Fish and Wildlife Service classification system (Cowardin et al. 1979). This system is based on an evaluation of attributes such as vegetation class, hydrologic regime, salinity, and substrate. The wetlands were also classified according to the hydrogeomorphic (HGM) system, which is based on an evaluation of attributes such as the position of the wetland within the surrounding landscape, the source and location of water just before it enters the wetland, and the pattern of water movement in the wetland (Brinson 1993).

#### ***3.3.1.3.2 Wetland Rating***

Wetlands were rated using the *Washington State Wetland Rating System for Western Washington-Revised* (Hruby 2004), hereafter referred to as the Ecology rating system. The Ecology rating system categorizes wetlands according to specific attributes such as rarity;

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sensitivity to disturbance; hydrologic, water quality, and habitat functions, and special characteristics (e.g., mature forested wetland, bog). The total score for all functions determines the wetland rating. The rating system consists of four categories, with Category I wetlands exhibiting outstanding functions and/or special characteristics and Category IV wetlands exhibiting minimal attributes and functions. The rating categories are used to identify permitted uses in the wetland and its buffer, to determine the width of buffers needed to protect the wetland from adjacent development, and to identify the mitigation ratios required to compensate for potential impacts on wetlands. The City of Bellevue requires the use of the Ecology rating system [LUC 20.25H.095].

### *3.3.1.3.3 Wetland Functional Assessment*

Wetland functions are those processes that occur within a wetland, such as the storage of water, cycling of nutrients, and maintenance of diverse plant communities and habitat which benefits wildlife. Wetland functions can be grouped into three broad categories: habitat functions, hydrologic functions, and water quality functions.

Habitat functions include providing food, water, and shelter for fish, shellfish, birds, amphibians, and mammals. Wetlands also serve as a breeding ground and nursery for numerous species. Hydrologic functions include reducing the velocity of stormwater, recharging and discharging groundwater, and providing flood storage. Water quality functions include the potential for removing sediment, nutrients, heavy metals, and toxic organic compounds.

Wetland functions were assessed using the *Washington State Wetland Rating System for Western Washington-Revised* (Hruby 2004), which is approved by the Washington State Department of Ecology for evaluating wetland functions in Washington. This system generates a score for each function based on the wetland's potential and opportunity for providing the function. Using the scores on the wetland rating forms, a qualitative functional rating (high, moderate, or low) was derived for each of the functions (water quality, hydrology, and habitat) provided by each wetland, based on supplemental guidance provided by Ecology (2008a).

### *3.3.1.4 Stream Delineation and Classification*

Streams are considered to be one type of regulated water body according to LUC 20.25H.075. Stream boundaries and buffers were determined according to guidance in the Bellevue Land Use Code.

The ordinary high water mark (OHWM) of streams within the study area were delineated using the definition provided in the Washington Administrative Code (WAC) Section 222-16-010, which has been adopted by the City of Bellevue. According to this definition, the OHWM of streams is “that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation.” In addition, methods in the publication *Determining the Ordinary High Water mark on Streams in Washington State* (2008) were applied.

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To delineate the OHWM, the bed and adjacent banks of streams in the study area were examined for indications of regular high water events. Factors considered when assessing changes in vegetation include:

- Scour (removal of vegetation and exposure of gravel, sand, or other soil substrate)
- Drainage patterns
- Elevation of floodplain benches
- Changes in sediment texture across the floodplain
- Sediment layering
- Sediment or vegetation deposition
- Changes in vegetation communities across the floodplain

Herrera placed flagging on the site, indicating the horizontal and vertical location of the OHWM along the stream(s). The locations of OHWM flags were subsequently surveyed by CTS Engineers, Inc.

Streams on the site were classified using the criteria in LUC 20.25H.075. This system is based primarily on fish, wildlife, and human use, and consists of four stream types: Type S, F, N, or O. Type S streams are those surface waters which are inventoried as “Shorelines of the State” under the Shoreline Management Master Program for the City of Bellevue, pursuant to RCW Chapter 90.58. Type S waters contain salmonid fish habitat. Type F streams are those surface waters which contain habitat for salmonid fish, game fish, and other anadromous fish. Type N streams are those surface waters which do not contain fish habitat, but are connected to Type F waters through an above-ground channel. Type O streams are those surface waters which do not contain fish habitat, and are not connected to Type F waters through an above-ground channel.

### **3.3.2 Results**

This section discusses the results of the wetland and stream delineations, including a review of information obtained from various references, and an analysis of wetland and stream conditions in the study area as observed during field investigations.

#### ***3.3.2.1 Analysis of Available Information***

The available existing information compiled for this wetland and stream delineation is summarized in the following subsections.

##### ***3.3.2.1.1 Previously Mapped Wetlands and Streams***

The National Wetlands Inventory, King County Wetland Inventory, and City of Bellevue Critical Areas mapping do not indicate any previously mapped wetlands in the project area or vicinity.

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The hydrography geographic information system (GIS) data for the study area indicates a stream (Vasa Creek) flowing north through the study area (Figure 2). The stream then continues generally north until it flows through a culvert under Interstate 90 (Bellevue 2010).

#### *3.3.2.1.2 Mapped Soils*

Three types of soil are mapped within the study area (NRCS 2010) (Figure 2):

- Alderwood gravelly sandy loam (6 to 15 percent slopes)
- Alderwood and Kitsap Soils, very steep
- Arents, Alderwood material (6 to 15 percent slopes)

Alderwood gravelly sandy loam is a moderately well-drained soil formed in glacial till and outwash. This soil occurs primarily on uplands. A typical soil profile includes a 27-inch-deep topsoil composed of very dark brown (10 YR 2/2), dark brown (10 YR 3/3), and/or grayish brown (10 YR 5/2) sandy loam, which lies over a grayish brown (10 YR 5/2) substratum composed of consolidated glacial till. This soil is not considered a hydric soil by the NRCS (NRCS 2010).

Alderwood and Kitsap soils (very steep) is a soil mapping unit composed of approximately 50 percent Alderwood gravelly sandy loam (see description above), 25 percent Kitsap silt loam (described later in this section), and 25 percent of other inclusions. Kitsap silt loam is a moderately well-drained soil formed in glacial lake deposits that occur on terraces. A typical soil profile includes a 5 inch-deep topsoil composed of a dark brown (10 YR 3/3) silt loam, which lies over a 20-inch subsoil composed of dark yellowish brown (10 YR 3/4) silt loam. This soil is not considered a hydric soil by the NRCS (NRCS 2010).

Arents (Alderwood material) are Alderwood soils (see description above) that have been disturbed by urbanization to such a degree that they can no longer be classified with the Alderwood series. The parent material and typical profiles are considered that same, but loss of topsoil and disruption of soil horizons may occur. This soil is not considered a hydric soil by the NRCS (NRCS 2010).

#### *3.3.2.1.3 Topography*

The project area ranges in elevation from 680 feet at the southern (upper) end of the project to 600 feet at the northern (lower) project limit (Figure 3). The project is located at the bottom of a steep ravine, with slopes in excess of 40 percent and some sections nearly vertical due to slumping.

#### *3.3.2.2 Analysis of Wetland and Stream Conditions*

Wetland and stream delineation field activities were conducted by Herrera biologists Josh Wozniak and Crystal Elliot. The biologists are certified by the Society of Wetland Scientists as Professional Wetland Scientists (PWS). The wetland delineation was conducted on January 24, 2010. The weather conditions during the fieldwork consisted of: daytime high temperatures of



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approximately 45 degrees Fahrenheit (°F), with cloudy conditions. It was determined that the growing season (as defined in Appendix B) had not yet begun, because no non-woody annual plant species were observed, and the soil temperature approximately 19 inches below the surface was 39 to 40 degrees Fahrenheit.

Herrera biologists delineated six wetlands in the project area: Wetlands A through F (Table 1) and one stream, Vasa Creek (Table 2). The locations and extents of the wetlands, stream and their buffers are shown in Figure 4 and on engineering plans in Appendix A. Detailed descriptions of the wetlands are provided in Tables 3 through 8. The biologists completed wetland delineation data forms (see Appendix C) and a Department of Ecology wetland rating form (Appendix D) for each of the wetlands delineated in the project area. Representative photographs of the wetlands in the project area are included in Tables 3 through 8.

### **3.3.3 Probable Cumulative Impacts**

As a result of the proposed Vasa Creek Restoration Project, there will be temporary and permanent effects on the Vasa Creek stream bed, and temporary impacts to adjacent wetlands and the buffers. These effects are summarized in Table 9, depicted graphically in Figure 5, and described in more detail below.

Temporary impacts to Vasa Creek will result from construction access and excavation outside of permanent in-stream structure footprints, and from activities associated with placement of large wood in the channel. Permanent impacts to Vasa Creek will result from rock placement to restore the check dams.

Temporary impacts to wetlands will result from temporary clearing to provide construction access and placement of large wood.

Temporary impacts to wetland and stream buffers will result from temporary construction access.

### **3.3.4 Wetland and Stream Functions and Values Protection Assessment**

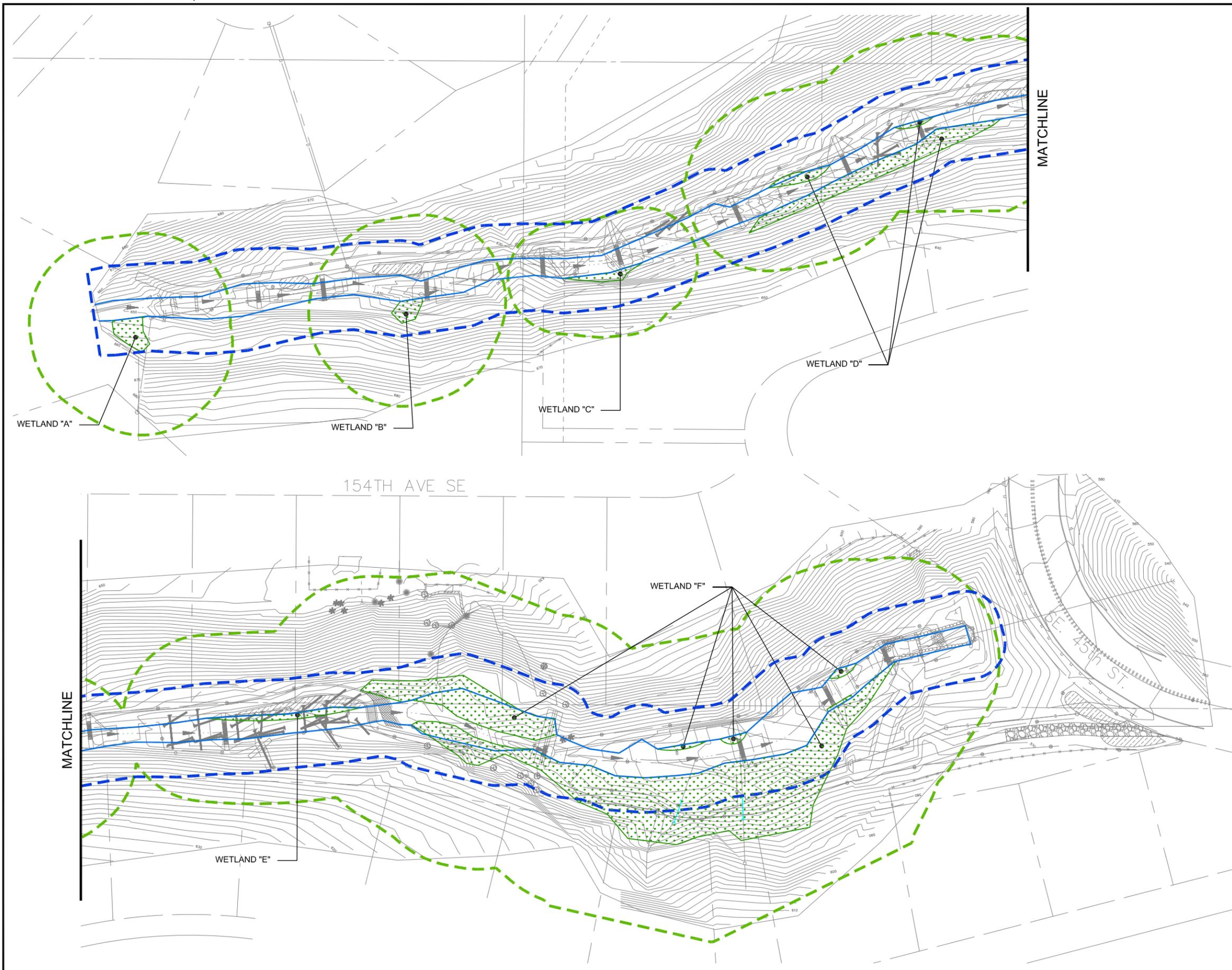
#### ***3.3.4.1 Existing Functions and Values Provided by Affected Wetlands and Streams***

##### ***3.3.4.1.1 Wetland Functions***

Wetland functions for each wetland within the project area were evaluated according to data in the Ecology wetland rating forms (Hruby 2004), and supplemental qualitative ratings (high, medium, low) were determined based on Ecology guidance (Ecology 2008a). A summary of the function scores, the total wetland score, and the associated rating (category) for each wetland is provided (Table 10). Qualitative and quantitative scores for both potential and opportunity for each wetland to provide water quality, hydrologic, and habitat functions is provided.







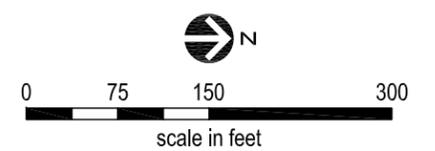
**Figure 5.**  
**Wetlands, Stream Ordinary High**  
**Water Mark, and Buffers in the Vasa**  
**Creek Restoration Project**

**Legend**

-  WETLAND AREA
-  WETLAND BUFFER
-  STREAM BUFFER
-  ORDINARY HIGH WATER MARK (OHWM)

**WETLAND AREAS**

	AREA (SF)
A	427.64
B	257.96
C	228.24
D	2,218.54
E	375.24
F	14,176.33



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**Table 1. Wetlands delineated in the study area for the Vasa Creek Restoration Project.**

Wetland Name	Wetland Size (square feet)	USFWS Classification <sup>a</sup>	Hydrogeomorphic Classification <sup>b</sup>	Department of Ecology Rating Category <sup>c</sup>	City of Bellevue Buffer Width (feet) <sup>d</sup>
A	428	PSS	Slope	III	60
B	258	PSS	Slope	III	60
C	228	PEM	Slope	IV	40
D	2219	PFO, PSS	Riverine flow-through (and slope)	III	60
E	375	PEM	Riverine flow-through	III	60
F	14,176	PFO, PSS	Riverine flow-through (and slope)	II	75

<sup>a</sup> U.S. Fish and Wildlife Service classification is based on Cowardin et al. (1979): palustrine forested (PFO), palustrine scrub-shrub (PSS), and palustrine emergent (PEM)

<sup>b</sup> Hydrogeomorphic classification is based on Brinson (1993).

<sup>c</sup> Wetland category is based on the Department of Ecology wetland rating system (Hruby 2004), which is required by the City of Bellevue.

<sup>d</sup> Wetland buffer widths are based on the Department of Ecology wetland rating, per the City of Bellevue Code.

**Table 2. Vasa Creek stream summary table.**

<b>Stream Name</b>	Vasa Creek		
<b>WRIA Stream Catalog #</b>	08-0056		
	<b>Local Jurisdiction</b>	City of Bellevue	
	<b>DNR Stream Type</b>	Type Ns	
	<b>Local Stream Rating</b>	Type O (based on no fish use and lack of open channel connection to Type F waters)	
	<b>Local Jurisdiction Buffer Width</b>	40	
<b>Documented Fish Use</b>	No known fish use (Watershed Company 2001). Culvert under I-90 acts as a barrier. Stream channel is dry during late summer.		
<b>Riparian/Buffer Condition</b>	The buffer of Vasa Creek contains forested, scrub-shrub, and emergent wetlands, as well as mature forested uplands. Dominant vegetation is composed of red alder ( <i>Alnus rubra</i> ), western red cedar ( <i>Thuja plicata</i> ), big-leaf maple ( <i>Acer macrophyllum</i> ), salmonberry ( <i>Rubus spectabilis</i> ), and red-osier dogwood ( <i>Cornus sericea</i> ). The riparian buffer provides shading and is generally of high quality. Residential areas occur along the top of the ravine, which reduce buffer quality by the noise and lighting disturbance, discharge of stormwater and yard waste into buffer, and presence of domesticated animals (cats and dogs). A trail runs through the buffer, which introduces human and pet disturbances to the buffer.		

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**Table 3. Summary for Wetland A.**

<b>Wetland name</b>	<b>Wetland A</b>		
<b>Location</b>	<b>South end of project area, right bank</b>		
	<b>Local Jurisdiction</b>	City of Bellevue	
	<b>WRIA</b>	08	
	<b>Wetland rating</b>	Category III	
	<b>City of Bellevue buffer width</b>	60 feet	
	<b>Cowardin classification</b>	Palustrine scrub-shrub	
	<b>Hydrogeomorphic classification</b>	Slope	
	<b>Wetland data form(s)</b>	Appendix C, TP-A-WET	
	<b>Upland data form(s)</b>	Appendix C, TP-A-UPL	
<b>Size of entire wetland</b>	428 square feet		
<b>Dominant vegetation</b>	Wetland A is dominated by a shrub/scrub community of salmonberry and western redcedar saplings.		
<b>Soils</b>	Soils were examined to at least a 16-inch depth and exhibited hydric characteristics. Soils are very to extremely gravelly sandy loams. Typical soil colors are black (10 YR 2/1) for the matrix and dark brown (10 YR 3/3) for redoximorphic concentrations. This profile meets the criteria for the hydric soil indicator of redoximorphic dark surface (F6).		
<b>Hydrology</b>	Soils were saturated to the surface with a surface water depth of approximately 0.5 inches. Hydrologic input to this wetland is primarily groundwater discharge from the toe of the slope. The wetland discharges into Vasa Creek.		
<b>Rationale for delineation</b>	All three wetland parameters are met.		
<b>Rationale for local rating</b>	The City of Bellevue Code classifies wetlands according to the current Department of Ecology rating system, which rates Wetland A as a Category III.		
<b>Buffer condition</b>	Buffers surrounding the wetland consist of native mixed coniferous-deciduous forest with a shrub and herbaceous understory. Existing buffers provide moderate to high wildlife habitat and moderate water quality functions. Nearby houses limit the habitat functions. The adjacent road (SE 46th Way) reduces habitat functions due to traffic and human disturbances.		

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**Table 4. Summary for Wetland B.**

<b>Wetland name</b>	<b>Wetland B</b>		
<b>Location</b>	<b>South end of project area, right bank</b>		
	<b>Local Jurisdiction</b>	City of Bellevue	
	<b>WRIA</b>	08	
	<b>Wetland rating</b>	Category III	
	<b>City of Bellevue buffer width</b>	60 feet	
	<b>Cowardin classification</b>	Palustrine scrub-shrub	
	<b>Hydrogeomorphic classification</b>	Slope	
	<b>Wetland data form(s)</b>	Appendix C, TP-B-WET	
	<b>Upland data form(s)</b>	Appendix C, TP-B-UPL	
<b>Size of entire wetland</b>	258 square feet		
<b>Dominant vegetation</b>	Wetland B is dominated by a shrub/scrub community of salmonberry, vine maple ( <i>Acer circinatum</i> ), and creeping buttercup ( <i>Ranunculus repens</i> ).		
<b>Soils</b>	Soils were examined to at least a 16-inch depth and exhibited hydric characteristics. Soils are very gravelly sandy loams. Typical colors are very dark brown (10 YR 2/2) for the matrix and brown (10 YR 4/3) for redoximorphic concentrations. This profile meets the criteria for the hydric soil indicator of redoximorphic dark surface (F6).		
<b>Hydrology</b>	Soils were saturated to the surface with a surface water depth of approximately 0.5 inches. Hydrologic input to this wetland is primarily groundwater discharge from the toe of the slope. The wetland discharges into Vasa Creek.		
<b>Rationale for delineation</b>	All three wetland parameters are met.		
<b>Rationale for local rating</b>	The City of Bellevue Code classifies wetlands according to the current Department of Ecology rating system, which rates Wetland B as a Category III.		
<b>Buffer condition</b>	Buffers surrounding the wetland consist of native mixed coniferous-deciduous forest with a shrub and herbaceous understory. Existing buffers provide moderate to high wildlife habitat and moderate water quality functions. Nearby houses limit the habitat functions.		

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**Table 5. Summary for Wetland C.**

<b>Wetland name</b>	Wetland C		
<b>Location</b>	South end of project area, right bank		
	<b>Local Jurisdiction</b>	City of Bellevue	
	<b>WRIA</b>	08	
	<b>Wetland rating</b>	Category IV	
	<b>City of Bellevue buffer width</b>	40 feet	
	<b>Cowardin classification</b>	Palustrine emergent	
	<b>Hydrogeomorphic classification</b>	Slope	
	<b>Wetland data form(s)</b>	Appendix C, TP-C-WET	
	<b>Upland data form(s)</b>	Appendix C, TP-C-WET	
<b>Size of entire wetland</b>	228 square feet		
<b>Dominant vegetation</b>	Wetland C is dominated by maiden-hair fern ( <i>Adiantum pedatum</i> ), fringed cup ( <i>Tellima grandiflora</i> ), and herb Robert ( <i>Geranium robertianum</i> ), an invasive annual species.		
<b>Soils</b>	Soils were examined to at least a 16-inch depth and exhibited problematic hydric soil characteristics. The soils are exposed parent material (basal till) with abundant groundwater expression supporting the hydrophytic plants. Soils are slumping, and therefore no typical hydric soil development has occurred. However, the aquic moisture regime and unweathered nature of the soils meet the criteria for a problematic hydric soil		
<b>Hydrology</b>	Soils were saturated to the surface with a surface water depth of approximately 0.5 inches. Hydrologic input to this wetland is primarily groundwater discharge from the toe of the slope. The wetland discharges into Vasa Creek.		
<b>Rationale for delineation</b>	All three wetland parameters are met.		
<b>Rationale for local rating</b>	The City of Bellevue Code classifies wetlands according to the current Department of Ecology rating system, which rates Wetland C as a Category IV.		
<b>Buffer condition</b>	Buffers surrounding the wetland consist of native mixed coniferous-deciduous forest with a shrub and herbaceous understory. Existing buffers provide moderate to high wildlife habitat and moderate water quality functions. Nearby houses limit the habitat functions.		

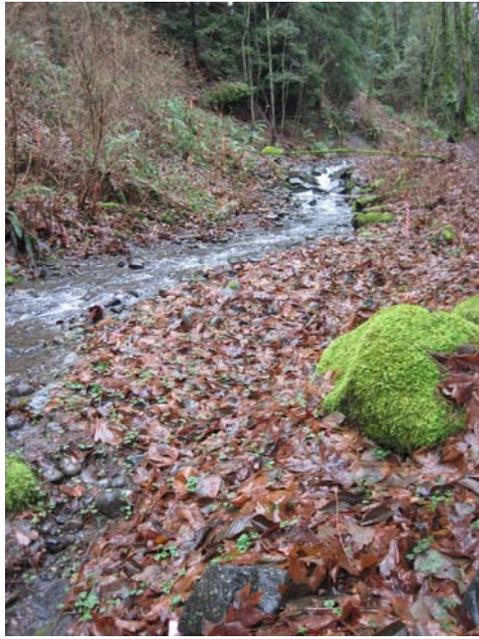
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**Table 6. Summary for Wetland D.**

<b>Wetland name</b>	<b>Wetland D</b>		
<b>Location</b>	<b>Center of project area, both banks (primarily right bank)</b>		
	<b>Local Jurisdiction</b>	City of Bellevue	
	<b>WRIA</b>	08	
	<b>Wetland rating</b>	Category III	
	<b>City of Bellevue buffer width</b>	60 feet	
	<b>Cowardin classification</b>	Palustrine forested/ palustrine scrub-shrub	
	<b>Hydrogeomorphic classification</b>	Riverine flow-through/ slope	
	<b>Wetland data form(s)</b>	Appendix C, TP-D-WET	
	<b>Upland data form(s)</b>	Appendix C, TP-D-UPL	
<b>Size of entire wetland</b>	2,219 square feet		
<b>Dominant vegetation</b>	Wetland D is dominated by a forested community of red alder, salmonberry, maiden-hair fern, and lady fern ( <i>Athyrium filix-femina</i> ) in the understory. Some portions of the wetland lack the forested canopy, and are therefore considered to be scrub/shrub habitat.		
<b>Soils</b>	Soils were examined to at least a 16-inch depth and exhibited hydric characteristics. Soils are gravelly silt loams. Typical colors are very dark grayish brown (2.5 Y 3/2) for the matrix and light olive brown (2.5 Y 5/3) and dark yellowish brown (10 YR 4/4) for redoximorphic concentrations. This profile meets the criteria for the hydric soil indicator of redoximorphic dark surface (F6).		
<b>Hydrology</b>	Soils were saturated to the surface with a surface water depth of approximately 0.5 inches. Hydrologic input to this wetland a combination of groundwater discharge from the hill slope (for the sloped portion) and high water tables and flooding from Vasa Creek (for the riverine flow-through portion). The wetland discharges into Vasa Creek.		
<b>Rationale for delineation</b>	All three wetland parameters are met.		
<b>Rationale for local rating</b>	The City of Bellevue Code classifies wetlands according to the current Department of Ecology rating system, which rates Wetland D as a Category III.		
<b>Buffer condition</b>	Buffers surrounding the wetland consist of native mixed coniferous-deciduous forest with a shrub and herbaceous understory. Existing buffers provide moderate to high wildlife habitat and moderate water quality functions. Nearby houses limit the habitat functions.		

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**Table 7. Summary for Wetland E.**

<b>Wetland name</b>	<b>Wetland E</b>		
<b>Location</b>	<b>Center of project area, left bank</b>		
	<b>Local Jurisdiction</b>	City of Bellevue	
	<b>WRIA</b>	08	
	<b>Wetland rating</b>	Category III	
	<b>City of Bellevue buffer width</b>	60 feet	
	<b>Cowardin classification</b>	Palustrine emergent	
	<b>Hydrogeomorphic classification</b>	Riverine flow-through	
	<b>Wetland data form(s)</b>	Appendix C, TP-E-WET	
	<b>Upland data form(s)</b>	Appendix C, TP-E-UPL	
<b>Size of entire wetland</b>	375 square feet		
<b>Dominant vegetation</b>	Wetland E is dominated by an emergent community composed of creeping buttercup.		
<b>Soils</b>	Soils were examined to at least a 16-inch depth and exhibited hydric characteristics, consistent with a fluvial entisol (alluvial deposits). Soils are composed of stream gravels, with a minor sand component. Hydric soils criteria is based on aquic moisture regime and fluvial nature of gravels.		
<b>Hydrology</b>	Soils were saturated to the surface with a surface water depth of approximately 0.5 inches. Hydrologic input to this wetland is high water tables and flooding associated with Vasa Creek. The wetland discharges back into Vasa Creek.		
<b>Rationale for delineation</b>	All three wetland parameters are met.		
<b>Rationale for local rating</b>	The City of Bellevue Code classifies wetlands according to the current Department of Ecology rating system, which rates Wetland E as a Category III.		
<b>Buffer condition</b>	Buffers surrounding the wetland consist of native mixed coniferous-deciduous forest with a shrub and herbaceous understory. Existing buffers provide moderate to high wildlife habitat and moderate water quality functions. Nearby houses limit the habitat functions.		

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**Table 8. Summary for Wetland F.**

<b>Wetland name</b>	<b>Wetland F</b>		
<b>Location</b>	<b>South end of project area, both banks</b>		
	<b>Local Jurisdiction</b>	City of Bellevue	
	<b>WRIA</b>	08	
	<b>Wetland rating</b>	Category II	
	<b>City of Bellevue buffer width</b>	75 feet	
	<b>Cowardin classification</b>	Palustrine forested/ palustrine scrub-shrub	
	<b>Hydrogeomorphic classification</b>	Riverine flow-through/ slope	
	<b>Wetland data form(s)</b>	Appendix C, TP-F-WET	
	<b>Upland data form(s)</b>	Appendix C, TP-F-UPL	
<b>Size of entire wetland</b>	14,176 square feet		
<b>Dominant vegetation</b>	Wetland F is dominated by a forested community of red alder, salmonberry, red-osier dogwood, lady fern, and creeping buttercup. The scrub-shrub community, located near the center of the wetland, is dominated by red-osier dogwood, salmonberry, and lady fern.		
<b>Soils</b>	Soils were examined to at least a 16-inch depth and exhibited hydric characteristics. Soils are very gravelly sandy loams. Typical colors are black (10 YR 2/1) for the matrix and dark brown (10 YR 3/3) for redoximorphic concentrations. This profile meets the criteria for the hydric soil indicator of redoximorphic dark surface (F6).		
<b>Hydrology</b>	Soils were saturated to the surface with a surface water depth of approximately 0.5 inches. Hydrologic input to this wetland a combination of groundwater discharge from the hill slope (for the sloped portion) and high water tables and flooding from Vasa Creek (for the riverine flow-through portion). The wetland discharges into Vasa Creek.		
<b>Rationale for delineation</b>	All three wetland parameters are met.		
<b>Rationale for local rating</b>	The City of Bellevue Code classifies wetlands according to the current Department of Ecology rating system, which rates Wetland F as a Category II.		
<b>Buffer condition</b>	Buffers surrounding the wetland consist of native mixed coniferous-deciduous forest with a shrub and herbaceous understory. Existing buffers provide moderate to high wildlife habitat and moderate water quality functions. Nearby houses limit the habitat functions. The adjacent road (SE 45th Street) reduces habitat functions due to traffic and human disturbances.		

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**Table 9. Impacts to Vasa Creek Stream Channel, Wetlands, and Buffers in the Vasa Creek Restoration project area.**

Resource	Temporary Impacts (square feet)	Permanent Impacts (square feet)
Total Vasa Creek channel impacts (i.e., impacts below OHWM)	9,776	560
Total Wetland Impacts	3,446	0
Wetland A	0	0
Wetland B	0	0
Wetland C	0	0
Wetland D	365	0
Wetland E	375	0
Wetland F	2,706	0
Total buffer impacts (i.e., impacts to stream buffers and wetland buffers)	10,209	0
Total impacts	22,944	560

**Table 10. Individual wetland function scores for wetlands in the study area for the Vasa Creek Restoration Project**

Wetland Name	Water Quality Functions – Qualitative Rating <sup>a</sup> (numerical score in parentheses)		Hydrologic Functions – Qualitative Rating <sup>a</sup> (numerical score in parentheses)		Habitat Functions – Qualitative Rating <sup>a</sup> (numerical score in parentheses)		Total Score	Department of Ecology Rating Category <sup>b</sup>
	Potential	Opportunity	Potential	Opportunity	Potential	Opportunity		
A	Low (3)	Yes	Low (4)	Yes	Low (4)	Moderate (13)	31	III
B	Moderate (7)	Yes	Low (2)	Yes	Low (3)	Moderate (13)	34	III
C	Low (0)	Yes	Low (0)	Yes	Low (2)	Moderate (13)	15	IV
D	Low (4)	Yes	Low (5)	Yes	Moderate (10)	Moderate (13)	41	III
E	Moderate (8)	Yes	Moderate (8)	Yes	Low (2)	Moderate (13)	47	III
F	Moderate (10)	Yes	Moderate (9)	Yes	Moderate (12)	Moderate (13)	57	II

<sup>a</sup> Qualitative ratings are based on the Department of Ecology “Using the Wetland Rating System in Compensatory Mitigation” focus sheet (Ecology 2008a)

<sup>b</sup> Wetland category is based on the Department of Ecology rating system (Hruby 2004).

Wetlands A through D provide low levels of water quality and hydrologic functions, primarily due to their small size, minimal structure, and sloped nature. Habitat functions are low for Wetlands A through C due to the small size and lack of habitat features. Wetland D is larger, has a forested component, and therefore provides more habitat functions. Wetland E, despite its small size, provides moderate water quality and hydrology functions due to its location within the ordinary high water mark of Vasa Creek and therefore its close interaction with stream base flow and flood waters. Habitat functions for Wetland E are low due to the small size and lack of habitat features. Wetland F provides moderate functions in all categories due to its larger size, interaction with Vasa Creek (on both banks) and variety of habitat features.

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#### **3.3.4.1.2 Stream Functions**

Vasa Creek in the project area provides flow support to downstream sections of the stream. The lower portions of the stream support a variety of native fish species, including anadromous salmonids. The stream in the project area also provides some food sources to aquatic species downstream. These include macroinvertebrates, leaf litter, and other organic inputs. The existing channel provides some water velocity reductions (hydrologic function) and sediment processing (water quality function).

#### **3.3.4.2 Projected Future Conditions: Proposed Action Permitted**

If the project is approved, there will be temporary disturbances to Vasa Creek and adjacent wetlands and buffers during construction. These temporary impacts will be restored as part of the project. The vegetation proposed for temporary disturbance is primarily salmonberry and creeping buttercup. This vegetation will be salvaged and retained on site for replanting following repair work.

If the project is approved, there will be permanent impacts to the Vasa Creek channel as a result of the check dam repairs. These effects are designed to enhance stream functions in Vasa Creek by stabilizing the channel, reducing the risk of severe erosion, and thereby enhancing the potential for the establishment of riparian vegetation. The channel will be dewatered during construction, and all flow will be bypassed directly to the downstream outlet culvert. Therefore no effects to downstream resources are expected.

#### **3.3.4.3 Projected Future Conditions: Proposed Action Denied**

If the project is denied, there will be no temporary or permanent impacts to the Vasa Creek or the adjacent wetlands and buffers. Vasa Creek will remain at risk of major channel erosion in the event of a large storm.

#### **3.3.4.4 Applicable Performance Standards**

None of the required general performance standards provided in LUC 20.25H.080 (Streams) or LUC 20.25H.100 (Wetlands) are applicable to the project largely because the project does not represent a new development project. For example, the project does not involve installation of permanent lighting, creation of permanent sources of noise (e.g., parking lots), introduction of runoff from impervious surfaces, or permanent use of pesticides, insecticides, or fertilizers. The project involves modifications to an existing stream channel; however, the project does not involve relocating an open channel or closing a channel through use of pipes or culverts.

#### **3.3.4.5 Restoration Requirements**

All temporarily cleared vegetation areas within wetlands and buffers will be replanted with native vegetation (see Section 3.6 Restoration Plan). Thirty-five logs will be placed in the stream as in-stream habitat features to offset the placement of rock in the stream.

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### **3.3.5 Impact Avoidance, Minimization, and Mitigation Measures**

The project impacts were evaluated during the design process to reduce impacts to Vasa Creek, the wetlands, and their buffers. As per LUC 20.25H.055.C.3.m, alternative design scenarios, such as “soft-site” restoration techniques (e.g., coir matting, aggressive riparian planting efforts) were considered and not selected due to: the extremely high flows that occur which would generate forces greater than these materials could withstand, and the heavily shaded nature of the project site which would reduce the vigor of most planting stock designed for those conditions (e.g., willows). However, several mitigation measures will be implemented including avoidance, minimization, and restoration measures (see Section 3.6 Restoration Plan).

In accordance with preference of stream mitigation actions (LUC 20.25H.085), temporary and permanent impacts to Vasa Creek will be mitigated on-site by adding habitat structure to the channel in the form of wood. Temporary impact to vegetation within the stream buffer will be restored through replanting. All stream impacts will be mitigated such that functions are replaced at a minimum ratio of one-to-one.

In accordance with preference of wetland mitigation actions (LUC 20.25H.105), temporary impacts to wetland buffers will be mitigated on-site by restoring native vegetation.

## **3.4 Geologic Hazard Area Assessment**

The contents of this subsection satisfies CAR requirements specified under LUC 20.25H.140.B and CAR reporting requirements provided in LUC 20.25H.250.B4 through B8.

The Vasa Creek Restoration project occurs within areas designated as steep slopes, landslide hazards, and erosion hazards areas identified by the City of Bellevue (Figure 4). However, all work will occur in the channel and there will be no disturbance to the vegetation or soils on the steep slopes. The project goal is to stabilize the channel, which will reduce the ongoing toe slope erosion evident at the site. Geotechnical analyses of the project area confirmed that the proposed work will enhance the stability of the steep slopes and landslide hazard areas by reducing toe-of-slope erosion (Golder 1997; AGRA 1999).

Therefore, the project will have no negative effect on geologic hazards, and will reduce risks to these hazards by reducing channel and slope erosion in the long-term.

## **3.5 Habitat Assessment**

The contents of this subsection satisfies habitat assessment report requirements specified under LUC 20.25H.165.A and CAR reporting requirements provided in LUC 20.25H.250.B4 through B8.

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### **3.5.1 Introduction**

To evaluate habitat conditions in the project area and vicinity, biologists surveyed the area to identify dominant species, forest maturity, concentrations of native and invasive plant populations, other habitat features (e.g., snags, logs), habitat potential to support protected wildlife species and indications of use by these species. In addition, Herrera reviewed information provided by WDFW's Priority Habitats and Species (PHS) Program (WDFW 2010), fish usage information from the Salmonscape mapping program (WDFW 2010b), and fish survey data collected in 2001 (Watershed Company 2001).

There are no PHS areas or documented occurrences of protected species in the project vicinity (WDFW 2010a).

Fish usage is restricted to the portion of Vasa Creek downstream of the culvert under Interstate 90 (about 1/2 mile downstream). No anadromous or resident fish occur in the section of Vasa Creek proposed for restoration (WDFW 2010b, Watershed Company 2001).

### **3.5.2 Vegetation On and Adjacent to the Site**

The site is located within a ravine that is vegetated with a diverse, mature, native forested community. Dominant species are big-leaf maple, red alder, western hemlock (*Tsuga heterophylla*), Douglas-fir (*Pseudotsuga menziesii*), western redcedar, indian plum (*Oemleria cerasiformis*), salmonberry, and sword fern (*Polystichum munitum*). A number of large trees and snags occur in the ravine. Vegetation along Vasa Creek is dominated by salmonberry and creeping buttercup.

There are some patches of invasive species, primarily English ivy (*Hedera helix*), with isolated occurrences of English holly (*Ilex aquifolium*) and cherry laurel (*Prunus laurocerasus*).

### **3.5.3 Species of Local Importance with Primary Habitat Association**

Herrera examined the presence of species of local importance with a primary association with habitats occurring in the project area. The following species may occur based on the presence of suitable habitat:

- Bat species: There is good habitat for the protected bat species (western big-eared bat, Keen's Myotis, long-legged Myotis, and long-eared Myotis). These species roost in cavities in large trees and snags which are present and forage over a variety of habitats for prey (insects).
- Vaux's swift: There is potential nesting habitat for Vaux's swifts in hollows of snags at the site.
- Pileated woodpecker: There is good habitat for pileated woodpeckers and it is assumed that breeding habitat is present as well due to the presence of

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suitably sized trees and observations of adults with fledglings during site visits in May 2010.

Several species are not expected to occur either because the species are not present or because suitable habitat is not present. There is no habitat for bald eagles, peregrine falcons, merlins, osprey, or red-tailed hawks due to the closed canopy and dense vegetation that precludes access. In addition, these species are not associated with small stream habitat. There is no habitat for common loons, purple martins, or western grebes which requires lake-shore habitat. There is poor habitat for great blue and green herons. They can hunt along riparian corridors; however, their primary food source, fish, is not present. There is no breeding or congregation habitats for these species. There is no habitat for Oregon spotted frogs or western pond turtles, both of which require perennial water sources and pools. There is foraging and dispersal habitat for western toads in the project area, but no breeding habitat, due to the lack of pools and ponds. There is no fish access or habitat in the project area. Migratory fish are blocked by a long culvert under Interstate 90. Resident fish are precluded by summer drying of the channel. Fish surveys conducted in this section of Vasa Creek confirm these conditions (Watershed Company 2001).

### **3.5.4 Federal, State, or Local Management Recommendations**

The habitat for bats, Vaux's swift, and pileated woodpecker will not be disturbed; therefore, management recommendations are not relevant.

### **3.5.5 Direct and Indirect Impacts**

There will be no direct impacts to the habitats and species described above. No trees or standing snags will be removed. The only vegetation removal (temporary) will be restricted to trees, shrubs, ferns, emergents, and herbs along narrow construction access routes adjacent to the existing trail and the stream. All temporarily disturbed vegetation will be restored following construction. Work will occur in the summer, after pileated woodpecker breeding is complete. The addition of LWD as part of the project will enhance pileated woodpecker foraging habitat, as downed logs are a common feeding location for this species. Noise impacts from the project are not expected to be of sufficient magnitude or duration to disturb wildlife species. Sensitive species may move away from construction activity during active work periods, but are expected to return once work is completed.

During construction the channel will be dewatered and all flow bypassed to the outlet culvert. After construction, water quality will be monitored and turbid water will be discharged to the sewer. Only after turbidity has been reduced to meet water quality standards will the flow be directed to downstream receiving waters. Therefore no effect on downstream water quality will occur.

### **3.5.6 Probable Cumulative Impacts**

There are no cumulative impacts anticipated as a result of the proposed project.

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### **3.5.6.1 Projected Future Conditions: Proposed Action Permitted**

If the project is permitted, no negative effects on protected wildlife species are expected. The addition of large wood to the stream channel will enhance in-stream habitat conditions which will improve downstream conditions by providing a potential food source (aquatic insects and other fauna) for aquatic species (including fish) that occur downstream.

### **3.5.6.2 Projected Future Conditions: Proposed Action Denied**

If the project is denied, the channel will continue to be at risk of extensive erosion, which will degrade habitat functions in the project area, as well as downstream. In addition, there will continue to be no wood in the channel, limiting the habitat potential for this area.

## **3.6 Restoration Plan**

In accordance with LUC 20.25H.210 through 20.25H.225, the City of Bellevue will mitigate for all permanent and temporary impacts to Vasa Creek, wetlands, and buffers.

### **3.6.1 Mitigation Sequencing**

According to LUC 20.25H.215, the City of Bellevue has conducted mitigation sequencing to reasonably avoid and minimize impacts to Vasa Creek, wetlands, and buffers. Unavoidable impacts will be mitigated through restoration efforts.

#### **3.6.1.1 Avoidance**

The project avoids impacts to habitat potentially used by wildlife species of local importance by avoiding clearing of trees and standing snags in the project area. Construction during the summer will avoid the pileated woodpecker breeding season.

#### **3.6.1.2 Minimization**

Several measures will be implemented to minimize impacts to Vasa Creek, wetlands, and buffers.

- To prevent unnecessary vegetation clearing, an existing trail will be utilized as a construction access route. The smallest equipment possible will be used to complete the project. Additional clearing on either side of the trail has been minimized by limiting the width of construction access routes to the minimum necessary for equipment.
- Impacts beyond construction areas will be minimized by designating and clearly marking the limits of all aspects of the project including

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construction access routes, temporary stream crossing, staging areas, temporary materials/rock handling chute, and clearing limits (see Section 2.3 Project Description).

- Impacts are minimized to wetlands by locating all staging areas outside of wetlands.
- Downstream effects during construction will be minimized by maintaining existing base flow and preventing turbidity releases by following an approved construction stormwater pollution control plan (CSPCC) and spill prevention and countermeasures plan (SPCC). Sedimentation and turbidity will be controlled by installing temporary erosion and sediment control (TESC) measures (see Section 2.3 Project Description). The project will be constructed during summer and fall months during dry conditions to sedimentation and erosion within construction areas.

### ***3.6.1.3 Rectification***

Temporary construction impacts to wetlands and buffers will be rectified by restoring these areas with native vegetation.

### ***3.6.1.4 Reduction***

One of the objectives of the project is to reduce impacts to wetlands and buffers over time by stabilizing Vasa Creek and thereby preventing further erosion of stream banks and adjacent wetlands and buffers. The City of Bellevue will continue to monitor Vasa Creek over time and if necessary, conduct additional maintenance.

### ***3.6.1.5 Compensation***

Introduction of angular rock to the channel for stabilization purposes represents a permanent impact, which will be compensated for by introducing instream habitat in the form of LWD with attached rootwads.

### ***3.6.1.6 Monitoring***

The City of Bellevue will continue to monitor the stabilization project over time and will take additional corrective measures if the stabilization structures do not succeed. In addition, the City of Bellevue will monitor the success of replanted areas for a minimum of 5 years.

## **3.6.2 Goal, Objective, and Success Criteria**

The goal of the restoration plan is to restore the temporary disturbance areas of the project to pre-project conditions such that temporarily affected water quality, hydrologic, and wildlife

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functions are replaced. To meet this goal, the objective is to replant all temporarily disturbed wetland and buffer areas.

All areas that are restored will be subject to the following success criteria, which will be monitored for a period of at least 5 years.

***3.6.2.1 Year 1 Success Criterion (2012)***

By the end of the first growing season, 100 percent of the plantings will be alive as demonstrated by budding leaves. The planting contract stipulates that the contractor must replant all plants that did not survive by the end of the first year. The percentage of area covered by nonnative species (e.g., Himalayan blackberry, ivy) will not exceed 10 percent throughout the restoration areas.

***3.6.2.2 Year 2 Success Criterion (2013)***

By the end of the second growing season, at least 80 percent of the plantings will be alive demonstrated by budding leaves. The percentage of area covered by nonnative species (e.g., Himalayan blackberry, ivy) will not exceed 10 percent throughout the restoration areas.

***3.6.2.3 Year 3 Success Criterion (2014)***

By the end of the third growing season, native shrubs will cover at least 20 percent of the restoration areas; and emergent and fern understory plants will cover at least 30 percent of the restoration areas. The percentage of area covered by nonnative species (e.g., Himalayan blackberry, ivy) will not exceed 10 percent throughout the restoration areas.

***3.6.2.4 Year 5 Success Criterion (2016)***

By the end of the fifth growing season, native shrubs will cover at least 50 percent of the restoration areas; and emergent and fern understory plants will cover at least 50 percent of the restoration areas. The percentage of area covered by nonnative species (e.g., Himalayan blackberry, ivy) will not exceed 10 percent throughout the buffer mitigation areas.

**3.6.3 Planting Plan**

All vegetation disturbed will be replaced following completion of the check dam repairs. All planting will occur during the dormant season (October through January). Two distinct planting zones will be planted including wetland and buffer areas consisting of shrub, emergent, and fern plants. Prior to planting, all disturbed soils will be decompacted by tilling. Shrubs will be planted 5 feet on center, whereas emergents and ferns will be planted one foot on center. All of the planting areas will be covered with a four-inch thick layer of wood chip mulch to prevent weed growth and retain soil moisture. Landscape planting plans are included in Appendix A (see drawings sheets L-1 through L-4).

*Critical Area Report—Upper Vasa Creek Check Dam Repairs Phase II Project*

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The wetland planting areas will include red-osier dogwood, swamp gooseberry (*Ribes lacustre*), thimbleberry (*Rubus parviflorus*), salmonberry, and slough sedge (*Carex obnupta*). The buffer planting areas will include vine maple, indian plum, red elderberry (*Sambucus racemosa*), snowberry (*Symphoricarpos albus*), sword fern, and lady fern (*Athyrium filix-femina*).

### **3.6.4 Monitoring Plan**

Construction disturbance areas will be monitored to evaluate the success of revegetation measures in support of replacing functions that were affected during construction. During construction, the project engineer and biologist will monitor the site to ensure that BMPs are implemented such that there are no unanticipated impacts to wetlands or buffers.

The success of restoration will be determined by monitoring the site and determining if success criteria are achieved. The City of Bellevue will arrange to have the mitigation site monitored by a biologist for a minimum of 5 years. Monitoring visits to the site will take place during Years 1, 2, 3, and 5 after construction. For the purpose of measuring plant cover, monitoring transects within the restoration areas. During monitoring visits, representative photographs will be taken from established photo points. After each monitoring visit, a report presenting the results of the site inspection will be submitted to the City of Bellevue Planning and Community Development department.

During Years 1 and 2, the survival of plantings and cover of invasive vegetation will be assessed within the revegetation areas. In addition, the extent of natural colonization in terms of percent cover of herbaceous (e.g., ferns) and woody shrubs will be measured. During Years 2, 3, and 5, percent plant cover will be evaluated including native and invasive vegetation.

During each monitoring year, in addition to assessing conditions along monitoring transects, observations of overall conditions will be made throughout the restoration areas. Within the monitoring report, the biologist responsible for monitoring will make recommendations for annual maintenance of the restoration areas such as replanting, watering, weeding, and removal of trash. If plants are not succeeding, the biologist may make recommendations for suitable plant substitutions based on site conditions.

## **3.7 Conclusions**

The proposed Vasa Creek restoration project will stabilize the stream channel, providing long-term habitat protection within the project area and downstream. In addition, the placement of large wood in the stream will enhance habitat conditions in the stream.

Although there will be temporary effects on adjacent vegetation, these areas will be restored following construction. There will be only temporary effects on wetlands due to the placement of logs. There will not be any permanent impacts to wetlands.

*Critical Area Report—Upper Vasa Creek Check Dam Repairs Phase II Project*

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The project will be adjacent to steep slopes and landslide hazards, but the project will not disturb these areas. Further, the proposed channel stabilization will reduce long-term risks to these areas by reducing toe-of-slope erosion.

The project will occur adjacent to a number of wildlife habitat features, but these features will not be disturbed. Downstream fish habitats will be protected by bypassing stream flow during the project, and preventing turbid water from reaching downstream areas. No adverse effects are anticipated on wildlife species of local importance.



## 4.0 References

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*Critical Area Report—Upper Vasa Creek Check Dam Repairs Phase II Project*

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Reed, B.P. 1993. 1993 Supplement to National List of Plant Species that Occur in Wetlands: Northwest (Region 9). Combined 1988 national list and 1993 supplement. U.S. Department of Interior, Fish and Wildlife Service. Obtained November 16, 2009, from USACE website: <http://www.nww.usace.army.mil/html/offices/op/rf/wetdelww/plantlistsupp.pdf>.

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## **APPENDIX A**

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# Project Engineering Plans



## Pyle, David

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**From:** Pyle, David  
**Sent:** Tuesday, October 26, 2010 9:25 AM  
**To:** 'Karen Walter'  
**Cc:** Noeske, Stephen; Stewart Reinbold ; Paine, Michael  
**Subject:** RE: Horizon Heights Open Space/Upper Vasa Creek Check Dam Project, 10-120843-XE, Optional Determination of Non-Significance  
**Attachments:** Response to Muckleshoot Comments.pdf

Karen-

Please see attached PDF letter responding to your comments and questions.

If you have any follow up questions, please let me know.

David Pyle  
Senior Land Use Planner  
City of Bellevue  
[dpyle@bellevuewa.gov](mailto:dpyle@bellevuewa.gov)  
(425)452-2973 (Office)  
(425)452-5225 (Fax)  
[www.bellevuewa.gov](http://www.bellevuewa.gov)

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**From:** Karen Walter [<mailto:KWalter@muckleshoot.nsn.us>]  
**Sent:** Thursday, September 23, 2010 1:18 PM  
**To:** Pyle, David  
**Cc:** Noeske, Stephen; Stewart Reinbold  
**Subject:** Horizon Heights Open Space/Upper Vasa Creek Check Dam Project, 10-120843-XE, Optional Determination of Non-Significance

David,

The Muckleshoot Indian Tribe Fisheries Division has reviewed the Optional Determination of Non-Significance Notice Materials for the above referenced project. We reviewed the checklist, critical areas report, and the site plans for this project. We offer the following comments in the interest of protecting and restoring the Tribe's treaty protected fisheries resources.

1. Water Typing for Upper Vasa Creek

The environmental checklist and the Critical Areas Report indicate that Upper Vasa Creek is considered to be a Type N (non-fish bearing water) based on the blocking culvert under I-90. Additional information is needed to correctly type the portion of stream affected by the project. As we have stated previously, human created barriers should not be the basis for identifying streams as non-fish bearing as these structures can and should be replaced with fish passable structures as required by the State's Hydraulic Code. To be conservative, Upper Vasa Creek should be reevaluated on site to determine if it meets the physical criteria of a presumed fish-bearing water as noted in WAC 222-16-031(3) and the Washington State Forest Practices Board Manual 13. A fisheries biologist with experience in these types of surveys should conduct this work. If any portion of Upper Vasa Creek in the project area is determined to meet the physical criteria in WAC 222-16-031(3), then the project should re-evaluate its potential impacts to this stream including buffer impacts and stormwater impacts

The Critical Areas Report fails to evaluate areas downstream of this site to determine if there are any natural barriers that would preclude fish passage to the project site. If there are no natural barriers downstream, then we would expect salmonids to use this stream given its proximity to Lake Sammamish and a stream gradient of 5% as report in the Critical Areas report.

2. Proposed wood structure

There is no technical rationale for the size, number and orientation of the proposed log structures. Given the extent of affected channel work due to the repairs to the rock weirs and their inability to pass wood, the project

needs to fully mitigate for the blockage of wood passage. The project will need to add a significant amount of wood to mitigate for this impact, as well as, increase the diameter of wood so that it does not mobilize substantially and cause the rock check dams to fail. We provided comments on the wood proposal to the City's applicant in July 2010 via email noting that the wood should be larger and the number of logs should meet the recommendations from Fox and Bolton (2007, attached).

3. Planting plan

Conifer trees should be planted in the stream and wetland buffer areas that will be impacted as part of the project. The planting plan shows only low growing shrubs and ferns.

4. Stormwater controls

From our field review, it appears that some adjacent property owners are discharging stormwater directly into the stream. We recommend that these stormwater pipes be removed and the stormwater be routed into the City's stormwater system where it will likely have less impact to Upper Vasa Creek than the existing conditions.

5. Please describe the analysis used to determine the likelihood of success for this project since the previous project was designed for the 100 year storm event and still failed. As part of this, please describe how the City proposes to control or manage upstream stormwater inputs that are likely undetained currently.

6. At some point, the City and King County should look at moving the existing sewer pipe exposed due to the landslides and bank erosion that was one reason why the rock dams were built in the first place. If the sewer is relocated, then it may be possible to remove or modify the dams to improve habitat forming processes and provide fish passage. The current 4-5' high rock check dams are barriers to fish passage. If the stream meets potential fish habitat as discussed in comment 1, then these rock check dams will likely need to be modified to provide fish passage or find other alternatives to provide fish passage.

We appreciate the opportunity to review this proposal. Please let me know if you have any questions.

Thank you,  
Karen Walter  
Watersheds and Land Use Team Leader

*Muckleshoot Indian Tribe Fisheries Division  
39015 172<sup>nd</sup> Ave SE  
Auburn WA 98092  
253-876-3116*



October 26, 2010

Karen Walter  
Muckleshoot Indian Tribe Fisheries Division  
39015 - 172nd Avenue SE  
Auburn, Washington 98092-9763

RE: 10-120843-LO – City of Bellevue Utilities Department Horizon Heights Open Space Upper Vasa Creek Check Dam Repair

Karen-

I am writing to respond to your questions submitted regarding project 10-120843-LO. We have considered your comments and have provided a response as follows:

**1. Water Typing for Upper Vasa Creek**

***The environmental checklist and the Critical Areas Report indicate that Upper Vasa Creek is considered to be a Type N (non-fish bearing water) based on the blocking culvert under I-90. Additional information is needed to correctly type the portion of stream affected by the project. As we have stated previously, human created barriers should not be the basis for identifying streams as non-fish bearing as these structures can and should be replaced with fish passable structures as required by the State's Hydraulic Code. To be conservative, Upper Vasa Creek should be reevaluated on site to determine if it meets the physical criteria of a presumed fish-bearing water as noted in WAC 222-16-031(3) and the Washington State Forest Practices Board Manual 13. A fisheries biologist with experience in these types of surveys should conduct this work. If any portion of Upper Vasa Creek in the project area is determined to meet the physical criteria in WAC 222-16-031(3), then the project should re-evaluate its potential impacts to this stream including buffer impacts and stormwater impacts***

***The Critical Areas Report fails to evaluate areas downstream of this site to determine if there are any natural barriers that would preclude fish passage to the project site. If there are no natural barriers downstream, then we would expect salmonids to use this stream given its proximity to Lake Sammamish and a stream gradient of 5% as report in the Critical Areas report.***

Comment noted. Staff agree that this section of stream may meet the definition of fish habitat and may be considered a Type F stream due to the presence of habitat characteristics and features. Please note that this is a proposal to repair existing legally established stream stabilization features that are located within the stream channel. Regardless of the stream typing, the project is considered a repair and as a repair the design requirements are not affected by stream typing. We have determined that typing the stream as a Type F or as a Type N will not change the outcome of the project design due to the scope of work as a repair. Please also note that regardless of stream typing, the City Utilities Department has voluntarily included the addition of large woody debris as a project element in an effort to improve habitat within the stream channel. Development Services staff have determined that no further stream typing analysis is required.

2. **Proposed wood structure**

***There is no technical rationale for the size, number and orientation of the proposed log structures. Given the extent of affected channel work due to the repairs to the rock weirs and their inability to pass wood, the project needs to fully mitigate for the blockage of wood passage. The project will need to add a significant amount of wood to mitigate for this impact, as well as, increase the diameter of wood so that it does not mobilize substantially and cause the rock check dams to fail. We provided comments on the wood proposal to the City's applicant in July 2010 via email noting that the wood should be larger and the number of logs should meet the recommendations from Fox and Bolton (2007, attached).***

This is a proposal to repair damage to existing legally established stream stabilization features. No expansions are proposed. Proposed repairs to the stabilization features are funded by FEMA. Funding is limited to the actual repair of rock check dams. Any additional work outside the scope of repair will require funding from the Utilities Department CIP fund and is not eligible for re-imbusement by FEMA. In this case, the Utilities Department recognizes the value of adding wood to the stream channel and has volunteered to incorporate this improvement into the check dam repair plans, although the cost of adding this improvement is paid from the City's CIP fund, not the repair fund provided by FEMA. The addition of wood is primarily incorporated as a habitat improvement feature and it's incorporation is not intended to augment the stabilization design, although benefits may be realized. The amount of wood proposed by the City Utilities Department has been determined by Development Services staff to be acceptable, as no wood is required at all. All proposals to add wood to the stream are considered voluntary, are not required by City codes, and are not being done as mitigation for check dam repair work as the check dams were previously installed.

3. **Planting plan**

***Conifer trees should be planted in the stream and wetland buffer areas that will be impacted as part of the project. The planting plan shows only low growing shrubs and ferns.***

The scope of work is the repair of existing stream stabilization features and no expansion of new facilities is proposed. Tree removal is not planned as part of the repair, avoidance is preferred, although tree removal is contemplated and may occur as temporary disturbance when unavoidable and when tree replacement is included. The applicant has been asked to provide additional tree plantings although tree plantings, beyond those required to mitigate unavoidable tree removal, are not required by the City's Land Use Code and Critical Areas Ordinance.

4. **Stormwater controls**

***From our field review, it appears that some adjacent property owners are discharging stormwater directly into the stream. We recommend that these stormwater pipes be removed and the stormwater be routed into the City's stormwater system where it will likely have less impact to Upper Vasa Creek than the existing conditions.***

The scope of work does not include addressing upland drainage issues that are predominantly of origin from private property. Field review indicates that many of these independent systems have been installed to prevent erosion on the adjacent hillside due to surface sheetflow originating from upland development and impervious surfaces. These independent systems were not installed by the City although they do serve in the function of protecting hazardous slopes and limiting erosion and sediment loading in the stream. We do

not anticipate modifying these systems as part of this project, although new stormwater rules will require improvements as redevelopment to the upland development occurs.

- 5. Please describe the analysis used to determine the likelihood of success for this project since the previous project was designed for the 100 year storm event and still failed. As part of this, please describe how the City proposes to control or manage upstream stormwater inputs that are likely undetained currently.**

Engineering design requirements dictate the use of a 100 year return interval design parameter. The storm event that damaged the check dam facilities was of a greater magnitude than that anticipated by engineering standards. This is a repair, not a re-design, and has been approved by FEMA who is funding the project. To abate the potential for channel erosion and check dam displacement, larger rock materials less susceptible to the forces of floodwater are proposed, although the overall size and intensity of the check dams will not be increased. The repair has followed the same 100 year return interval design requirement. To manage inputs into the City's public/private storm systems, the City has adopted new stormwater detention and conveyance rules, although retroactive improvement is not required. Stormwater improvements are required with redevelopment in accordance with the City's stormwater manual.

- 6. At some point, the City and King County should look at moving the existing sewer pipe exposed due to the landslides and bank erosion that was one reason why the rock dams were built in the first place. If the sewer is relocated, then it may be possible to remove or modify the dams to improve habitat forming processes and provide fish passage. The current 4-5' high rock check dams are barriers to fish passage. If the stream meets potential fish habitat as discussed in comment 1, then these rock check dams will likely need to be modified to provide fish passage or find other alternatives to provide fish passage.**

Comment noted. The proposal does not include plans to relocate the sewer main located below the stream bed as sewer replacement is a significant capital improvement project and is outside of the scope of check dam repair. At the point of the sewer main's functional expiration and planned replacement the location of a new replacement sewer main will be contemplated.

I trust the responses provided above have addressed your questions and comments. Please let me know if you need additional information.

Sincerely,

***Sent Via Email***

David Pyle  
Land Use Planner

Cc: Stephen Noeske, COB Utilities Department  
Michael Paine, COB Development Services Department

City of Bellevue Submittal Requirements

Horizon Heights Open Space Upper Vasa Creek Check Dam  
Repair  
4445 152nd Place SE Tract A(Generally)

**ENVIRONMENTAL CHECKLIST**

SEPA Checklist Reviewed By:  
David Pyle, Land Use Planner  
425-452-2973 - dpyle@bellevuewa.gov

If you need assistance in completing the checklist or have any questions during the permit process, please visit or call the Permit Center (425-452-6864) between 8 a.m. and 4 p.m., Monday through Friday (Wednesday, 10 to 4). Our TTY number is 425-452-4636.

**BACKGROUND INFORMATION**

Property Owner: City of Bellevue

Proponent: City of Bellevue

Contact Person: Stephen H. Noeske, PE

(If different from the owner. All questions and correspondence will be directed to the individual listed.)

Address: PO Box 9012  
Bellevue WA 98009-9012

Phone: (425) 452-5271 snoeske@bellevuewa.gov

Proposal Title: Upper Vasa Creek Check Dam Repair Phase 2

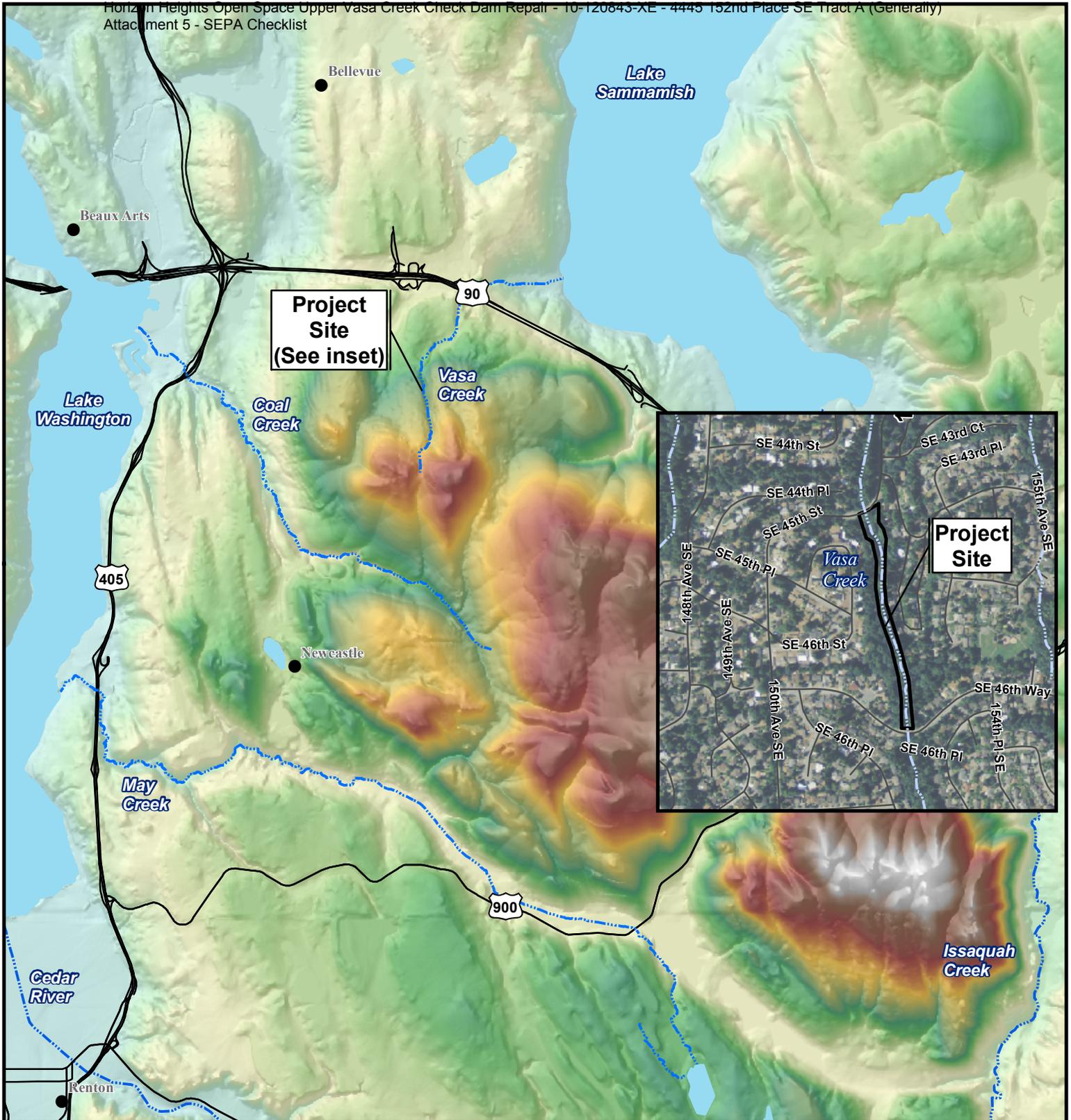
Proposal Location: Between 151st Avenue SE and 152nd Place SE and between SE 46th Way and SE 45th Street, a.k.a. Horizon Heights Open Space  
(Street address and nearest cross street or intersection)

Provide a legal description if available.

- Parcel #3459400500  
HORIZON HEIGHTS NO 1
- Parcel #1424059099  
NE 1/4 OF SW 1/4 LESS N 20 AC LESS S 420 FT OF E 661 FT LESS POR PLATTED HORIZON HEIGHTS NOS 1 2 & 3
- Parcel #3459420200  
HORIZON HEIGHTS # 3
- Parcel #9346920520  
WHISPERING HEIGHTS DIV # 3

Please attach an 8 1/2" x 11" vicinity map that accurately locates the proposal site.

See Figure 1 (next page)

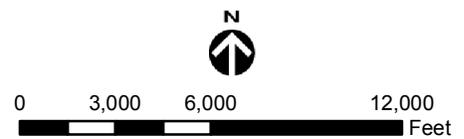


**Legend**

- City
- Highway
- · · · Stream



**Figure 1. Vicinity map for the Vasa Creek Restoration Project, Bellevue, WA.**



**HERRERA**  
ENVIRONMENTAL CONSULTANTS

Give an accurate, brief description of the proposal's scope and nature:

1. General description:

Funding for the project will be provided by FEMA and the City of Bellevue CIP funds. Previously installed (2001) rock check dams were damaged in a storm event in 2007. The check dams will be reconstructed with approximately 80 to 90 cubic yards of larger rock (i.e. riprap and quarry spall) and include the placement of 35 pieces of large woody debris (LWD). See attached plan set.

Installation of rock check dams, and LWD and anchors will require excavation and fill above and below the ordinary high water mark. The work will include installation of appropriate temporary erosion and sediment control BMPs, such as sandbags to direct the stream flow to an existing and temporary bypass system and silt fencing, as well as a temporary creek crossing, in order to prevent adverse impacts to water quality. There is a small existing pedestrian bridge that is too small and light to carry the loads needed for construction, so use of a steel plate or other temporary stream crossing is anticipated to facilitate construction access from the single construction entrance off of SE 45th Street.

The creek channel on the project site will be de-watered during construction using an existing bypass pipe that was previously installed, and a temporary bypass pipe.

2. Acreage of site: 5.1 acres

3. Number of dwelling units/buildings to be demolished: None

4. Number of dwelling units/buildings to be constructed: None

5. Square footage of buildings to be demolished: Not applicable

6. Square footage of buildings to be constructed: Not applicable

7. Quantity of earth movement (in cubic yards): Approximately 600 cubic yards of earth movement for the installation of rock check dams, logs, and ecology blocks

8. Proposed land use: No change from current use.

9. Design features, including building height, number of stories and proposed exterior materials:

No buildings are being constructed. Work for this proposal involves placement of rock materials to repair existing rock check dams, and the installation of approximately 35 pieces LWD with anchors.

10. Other: None

**Estimated date of completion of the proposal or timing of phasing:**

The project will last approximately eight (8) weeks during the summer/fall of 2011. Construction timing will match fish windows determined by the Washington Department of Fish and Wildlife (WDFW) and other regulating agencies.

**Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

May require additional permits at the point of maintenance depending on the scope of work proposed.

Yes, future maintenance activities on the check dams may be required after unusually heavy storm events.

**List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

- Critical Areas Report (supporting documentation for Critical Areas Land Use Permit per City of Bellevue guidance). Report includes wetland assessment, stream assessment, habitat assessment, geologic hazard assessment, and a vegetation management plan.
- Endangered Species Act Assessment, No Effect Letter
- Joint Aquatic Resource Permit Application (JARPA)

**Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. List dates applied for and file numbers, if known.**

There are no known applications pending approval that would directly affect the property covered by this proposal.

**List any government approvals or permits that will be needed for your proposal, if known. If permits have been applied for, list application date and file numbers, if known.**

- City of Bellevue Critical Areas Land Use
- City of Bellevue Clearing and Grading
- City of Bellevue Right of Way Use Permit
- Washington State Department of Fish and Wildlife, Hydraulic Project Approval
- United States Army Corps of Engineers, Section 404 Permit
- Washington State Department of Ecology, Section 401 water quality certification and Coastal Zone Management Concurrence
- U.S. Fish and Wildlife Service and National Marine Fisheries Service, ESA consultation
- King County Dewatering Permit

**Please provide one or more of the following exhibits, if applicable to your proposal.**

(Please check appropriate box(es) for exhibits submitted with your proposal):

- Land Use Reclassification (rezone) Map of existing and proposed zoning
- Preliminary Plat or Planned Unit Development  
Preliminary plat map See attached plan set.
- Clearing & Grading Permit  
Plan of existing and proposed grading  
Development plans
- Building Permit (or Design Review)  
Site plan  
Clearing & grading plan
- Shoreline Management Permit
- Site plan

## A. ENVIRONMENTAL ELEMENTS

### 1. Earth

a. **General description of the site:**  Flat  Rolling  Hilly  Steep slopes  Mountains  Other

b. **What is the steepest slope on the site (approximate percent slope)?**

The project involves work in a stream which is situated in ravine bounded steep slopes on either side. The longitudinal stream slope in the project site is approximately 5.2%. The ravine walls adjacent to the stream are sloped approximately 40%. The ravine walls are not part of the work associated with this proposal.

c. **What general types of soil are found on the site (for example, clay, sand, gravel, peat, and muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.**

The United States Department of Agriculture, Natural Resources Conservation Service classifies the soils within the project as Alderwood gravelly sandy loam (6 to 15 % slopes); Alderwood and Kitsap Soils, very steep; Arents, Alderwood material (6 to 15% slopes) [NRCS 2010].

d. **Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.**

Yes, there are currently existing surface indications of erosion and there is a history of erosion in the immediate vicinity of the project.

This is a stream stabilization project.

Several large landslides and heavy rain events in the 1990s resulted in damage to both the project area and property downstream. Damage included debris (including trees, soil, and gravel) deposited in Vasa Creek from slide activity and movement of debris and sediment that plugged culverts and damaged infrastructure downstream. The sewer pipe buried within the substrate of Vasa Creek, and portions of several manholes were also exposed and damaged. To prevent further damage to the creek, the sewer pipe, culverts, and properties downstream, fourteen check dams were constructed in Vasa Creek in summer of 2001. The check dams were constructed to prevent erosion; thereby protecting the sanitary sewer main in the creek bed, minimizing the potential for landslides and damage to homes sited on the top of the ravine, reducing risk of damage to downstream infrastructure, minimizing long-term maintenance costs for the sewer main, and to improving water quality and downstream habitat for fish species.

In December of 2007, a storm event generated a stream flow with a magnitude greater than a 100-year return interval, damaging 12 of the check dams that were constructed in 2001. Because of the unstable soils and potential for more storm events in the future, this project will repair dams identified as being damaged from the December 2007 storm. In addition to habitat enhancement, the installation of large woody debris (LWD) will also help minimize bank and slope erosion.

e. **Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.**

Project activities that involve filling and grading include the repair of existing rock check dams; installation of large wood debris; removal of one damaged gabion check dam and replacement with a rock check dam; and the placement of temporary quarry spall or other materials to stage equipment, alter the existing trail, develop a temporary materials chute, and for a stream crossing. Contractors will acquire imported materials from a source(s) approved by the City of Bellevue. The following text describes each of the project activities associated with filling and grading and approximate quantities. Please see drawings C-1 through C-3 Site Plan for existing conditions, and locations of proposed activities; drawing C-4 which shows details of rip rap and quarry spall placement; C-5 and C-6 showing check dam details and photos; and drawings C-7 and C-8 for details of LWD placement.

#### **Check Dam Repair**

The purpose of placing rock fill into the stream is to repair the existing rock check dams damaged by unusually heavy storm flows during the winter of 2007. Imported materials will consist of approximately 80 to 90 cubic yards of quarry spall and riprap. The contractor will excavate approximately 20 cubic yards of loose rock and organic debris from the footprint areas of the

damaged check dams and stockpile suitable materials on site for reuse. Imported material will be placed into the original check dams but in such a manner as to prevent future damage of the structures. Stockpiled streambed sediment and organic material will be placed on the face of the check dams or in the stream channel.

### **LWD Installation**

The purpose of installing large wood debris is to create habitat diversity in the stream system and to help minimize bank and slope erosion. Imported materials will consist of 35 pieces of large wood. The 35 pieces of large wood will be approximately 12 inches in diameter and approximately 15 to 30 feet long. The root wads associated with the large wood will vary in size. The individual logs that will be placed are approximately 0.75 cubic yards each, totaling approximately 30 cubic yards for all 35 logs. The total volume of material that will be excavated for the placement of LWD is approximately 200 cubic yards. Excavated materials will be used for backfill after the logs are put in place. Excess material will be distributed evenly on the edge of the channel. No material for the installation of LWD will be taken off site.

### **Placement of Temporary Quarry Spall and Wood Mulch**

The contractor will place temporary quarry spall and wood mulch to allow access of equipment and materials to project activities in various locations throughout the project extent. This could include expanding the width or flattening the access trail to allow equipment passage and prevent damage, developing temporary material and equipment staging areas, developing a stabilized construction ingress-egress, developing a temporary materials chute to move materials to check dam #3, and developing a temporary creek crossing to avoid damaging the existing pedestrian bridge during construction activities. The volume of temporary quarry spall and wood mulch is approximately 50 to 100 cubic yards. All temporary quarry spall will be removed by the contractor and integrated into the check dams or hauled off site. All wood mulch will be integrated into the trail or restoration plantings following construction, or hauled offsite.

The trail will be restored to its original condition after construction. The original condition will be based on photos of the trail taken by the City prior to construction.

### **Placement of Permanent Wood Mulch**

The contractor will place up to approximately 170 cy of permanent wood mulch for vegetation restoration following construction. It is anticipated that approximately 60 cy of wood mulch used during construction will be reused, and approximately 120 cy will be imported.

#### **f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.**

The purpose of this project is to prevent the recurrence of stream bed incision and channel erosion. Steep slopes (40% or greater) consisting of erodible soils on either side of the project area are outside the project footprint; thereby protecting the slopes against further erosion. Erosion due to Contractor's construction activities within the project footprint could occur but will be minimized with the required implementation of appropriate Best Management Practices (BMP's) which will be outlined in the temporary erosion and sedimentation control (TESC) plan and Stormwater Pollution Prevention Plan (SWPPP) for the project.

#### **g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?**

This project does not propose to construct any impervious surfaces. The placement of LWD, rip rap, and quarry spall are not considered impervious as defined by Bellevue Code 20.50.026.

#### **h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:**

The following TESC BMPs and other measures, including compliance with permit requirements, will be taken to reduce or control erosion, or other impacts to the earth during construction:

- Establish a temporary construction exit at the site entrance in accordance with City of Bellevue standard detail EC-001.

- Limit areas of vegetation clearing to areas within the approved disturbance limits.
- Preserve natural vegetation to be cleared for as long as possible.
- Install reinforced silt fence as shown in the plans (approximately 300 linear feet) and in accordance with City of Bellevue standard detail EC-005.
- Cover exposed soils at the end of each working day when working from October 1 through April 30. From May 1st through September 30, cover exposed soils within 7 days of exposure and also at the threat of rain. Exposed soil will be covered using plastic, erosion control blankets, straw or mulch.
- Begin work on the upstream most check dam and work from upstream to downstream in order to minimize impacts to the channel.
- Install geotextile and temporary quarry spalls or wood mulch on the existing access trail in order to stabilize the trail during construction.
- TESC BMPs will be monitored and maintained in accordance with the CSWPPP approved by the City of Bellevue prior to the start of work. At a minimum, this will include daily system inspection and monitoring of system performance, visual observation of water quality, water quality sampling to monitor for turbidity and pH in accordance with the City approved monitoring plan, and maintenance as necessary.

## 2. AIR

- a. What types of emissions to the air would result from the proposal (i.e., dust, automobile odors, and industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.**

Heavy equipment used during construction of this project will emit exhaust and create dust that could contribute to ambient concentrations of suspended particulate matter during project construction. However, these emissions will be short term. Consequently, as long as construction equipment is properly maintained and operated to minimize emissions, no significant air quality impacts are expected to result from construction activities.

Dust from clearing, grading, and other construction activities will be minimized at all times.

The completed project would not produce any additional emissions of carbon monoxide, sulfur, and particulate matter, nor would it produce additional green house gas emissions.

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.**

There are no known off-site sources of emissions or odors that may affect this proposed project.

- c. Proposed measures to reduce or control emissions or other impacts to the air, if any:**

Possible construction impacts on air quality would be addressed through the use of construction BMPs. BMPs that could reduce carbon monoxide, sulfur, and particulate matter during construction include the following:

- Use relatively new, well maintained equipment
- Require appropriate emission-control devices on all construction equipment
- Avoid prolonged periods of vehicle idling
- Comply with Puget Sound Clean Air Agency regulations requiring reasonable precautions to minimize odor and dust impacts

Best management practices for the control of windborne construction dust could include the following:

- Apply water to the roadway
- Avoid tracking dirt onto adjacent roadways
- Plant vegetative cover as soon as possible after grading
- Use dust suppressants that have been approved by the director
- Apply water to the site for dust suppression in a manner that keeps sediment out of the creek and public drainage system in a manner that keeps sediment out of the creek and public drainage system.

### 3. WATER

#### a. Surface

**(1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.**

The project is located adjacent and within approximately 1,400 linear feet of the upper reach of Vasa Creek and located adjacent and within riparian and slope wetlands paralleling the creek. See attached Critical Areas Report for a description of the water bodies within the project.

Vasa Creek. Vasa creek is located in the greater Vasa Creek Basin in water resource inventory area (WRIA) 8 of the Cedar/Sammamish watershed. This reach of Vasa Creek is classified by the Washington Department of Natural Resources as a non-fish perennial (type "NP") stream. According to Washington Department of Fish and Game, this portion of Vasa Creek is located approximately 5,000 linear feet south of an impassible fish barrier at I-90. The barrier at I-90 consists of a sedimentation pond, and a gravel-filled channel that lacks perennial surface flow.

Wetlands. A total of six wetlands have been delineated within the project limits, totaling 17,684 square feet. The wetlands within the project limits include 914 square feet of slope wetlands, 16,395 square feet of riverine flow through (and slope) wetlands, and 375 square feet of riverine wetland.

**(2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.**

Excavation, fill, and grading activities to install large wood, repair check dams, and replace gabions would occur above and below the OHWM of Vasa Creek, and within wetlands. All work would occur within 200 feet of waterbodies described in 3.a(1). The following table outlines the impacts to Vasa Creek, wetlands, and buffers in the project area. Please see Figure 6 of the attached Critical Areas Report showing the temporary and permanent impacts to wetlands, and streams above and below the ordinary high water mark and within the critical area buffers.

**Table 1. Impacts to Vasa Creek Stream Channel, Wetlands, and Buffers in the Vasa Creek Restoration project area.**

Resource	Temporary Impacts (square feet)	Permanent Impacts (square feet)
Total Vasa Creek channel impacts (i.e. impacts below OHWM)	9,776	560
Total Wetland Impacts	3,446	0
Wetland A	0	0
Wetland B	0	0
Wetland C	0	0
Wetland D	365	0
Wetland E	375	0
Wetland F	2,706	0
Total buffer impacts (i.e. impacts to stream buffers and wetland buffers)	10,209	0
Total impacts	26,877	560

The appropriate work window would be determined during the permitting process by the WDFW and other regulating agencies to avoid affecting fish in the downstream reaches of the stream. See attached Critical Areas Report for an understanding of project activities over and adjacent to waterbodies described in 3.a(1).

**(3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

Approximately 110 to 120 cubic yards of new materials will be placed below the OHWM of Vasa Creek described in 3.a(1). The temporary impacts to the wetlands would be the result of temporary clearing to provide construction access and placement of large wood. The project would not permanently affect wetlands. The fill would come from a combination of onsite areas excavated as part of the project and from outside resources. Imported large woody debris, quarry spalls, ecology blocks, wood mulch, and riprap would come from a source(s) approved by the City of Bellevue. See Table 2 for descriptions of fill and excavation quantities above and below the OHWM within Vasa Creek and adjacent wetlands.

**Table 2. Excavation and fill quantities above and below the OHWM.**

Type of Activity	Excavation below OHWM (cubic yards)	Excavation in wetlands above the OHWM (cubic yards)	Excavation in wetlands below the OHWM (cubic yards)	Total Excavation (cubic yards) <sup>2</sup>	Fill in wetlands above the OHWM (cubic yards)	Fill in wetlands below the OHWM (cubic yards)	Fill below OHWM (cubic yards)	Total Fill (cubic yards) <sup>3</sup>
Check Dam Repair	20	0	0	20	0	0	80 to 90	80 to 90
LWD Installation <sup>4</sup>	120	2	20	200	0	0	30	30
Placement of Temporary Quarry Spall <sup>1</sup>	0	0	0	0	20	0	0	50
Placement of Temporary Wood mulch	0	0	0	0	20	0	0	50
Placement of Permanent Wood mulch <sup>5</sup>	0	0	0	0	170	0	0	170
TOTAL	140	2	20	220	210	0	110 to 120	380 to 390

1. Estimated quantity for temporary construction exit and temporary trail stabilization
2. Includes excavation totals outside of the OHWM, and outside of wetlands
3. Includes fill totals outside of OHWM, and outside of wetlands
4. Fill quantities include the approximate volume of logs and ecology blocks placed below the ordinary high water mark.
5. Placed during planting.

**(4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.**

The contractor will install a temporary bypass system, in accordance with the CSWPPP, to convey water around the work area during construction to that work can occur in dry conditions. The attached design plans (drawings C-1 through C3) detail the temporary bypass system.

In order to isolate the channel from the stream flow, a buried bypass pipe from the original check dam installation in 2001 will be used, augmented with an additional section of bypass pipe in the lower portion of the project area, which extends beyond the limit of the existing bypass pipe. A temporary dam composed of sand bags will be built in the stream at the upstream limit of the project area. Flow collected by this dam will be directed to the bypass pipe inlet for the duration of the project. A temporary rock splash pad will be installed at the downstream end of the bypass pipe for energy dissipation while the bypass pipe is in use.

Some dewatering may be required during installation of LWD due to the depth of excavation required to embed the logs and anchor systems. Water encountered during LWD installation will be treated on site to a level that meets the water quality requirements of the Department of Ecology using temporary sedimentation tanks and filter systems, or directly pumped and discharged to sanitary sewer line that parallels the site.

A sandbag check dam will be installed at the downstream end of the project site (upstream of the outlet of the bypass pipe) in order to collect any hyphoreic flow or seepage that occurs at the downstream end of the project site. This will form a small pond at the downstream end of the project

site and provide an opportunity for inspection of the water quality. If water collected above this check dam is turbid, then the turbid water can be pumped to the sanitary sewer system until the source of turbidity can be identified and corrected. When flow is gradually returned to the channel upon completion of construction, flow may be temporarily pumped from this small pond into the sanitary sewer system that parallels the project site until the water runs clear in order to prevent water quality impacts downstream.

The temporary bypass system will be monitored and maintained in accordance with the CSWPPP approved by the City of Bellevue prior to the start of work. At a minimum, this will include daily system inspection and monitoring of system performance, visual observation of water quality, water quality sampling to monitor for turbidity and pH in accordance with the City approved monitoring plan, and maintenance as necessary.

Turbid water will not be discharged from the site. In the event that Department of Ecology turbidity limits cannot be met, the contractor will pump the turbid water to the sanitary sewer paralleling the site until the source of turbidity can be identified and corrected. However, pumping to the sanitary sewer will only be used a last resort and will not be used as the primary method of streamflow bypass or TESC.

**(5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

No, this proposal does not lie within a 100-year flood plain.

**(6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

No waste materials will be discharged to surface waters as a result of the proposed project. Flow from the bypass pipe will be slowly reintroduced to the stream when stabilized. Minor surface erosion of restored bed and bank areas will occur during site rewatering, and during the "first flush" of the project area during initial exposure to storm flows. Site rewatering will be monitored and treatment or diversion to the sewer may be used to ensure streamflow meets the Department of Ecology turbidity limits.

**b. Ground**

**(1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description.**

Some dewatering may be required during installation of LWD due to the depth of excavation required to embed the logs and anchor systems. Water encountered during LWD installation will be treated on site to a level that meets the water quality requirements of the Department of Ecology using temporary sedimentation tanks and filter systems, or directly pumped and discharged to sanitary sewer line that parallels the site.

**(2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals...; agricultural; etc.) Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

Not applicable.

**c. Water Runoff (Including storm water)**

**(1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

This proposal involves repairing existing manmade stream features (check dams) with the sole purpose to prevent erosion. Water will continue to flow in its current direction towards Lake Sammamish. Runoff from surrounding streets and residential developments are directed towards the stream and this proposal does not propose to change this existing discharge.

**(2) Could waste materials enter ground or surface waters? If so, generally describe.**

During construction, waste materials (e.g. gasoline and diesel fuel) from construction equipment could enter Vasa Creek, and could enter groundwater areas of exposed soils. However, a construction spill prevention control and countermeasure plan (CSPCC) would be developed, and BMPs would be implemented for spill control and prevention. Waste materials will not be discharged from the project once completed. During construction, the contractor will implement the following BMPs:

- Pothole prior to excavation whenever excavating within 3 feet of the existing sanitary sewer pipe, or when directed by the City engineer to prevent encountering the sanitary sewer line during installation of LWD and anchors.
- Inspect all equipment at the start of each work day and before any work below the ordinary high water mark to ensure the equipment is free of external petroleum-based products while working near or in any surface waters.
- Use vegetable oil based hydraulic fluid in construction equipment or another approved non-toxic equivalent.
- Adhere to spill prevention measures in accordance with the City approved CSPCC plan.

**d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:**

The following Construction Stormwater Pollution Prevention Plan (CSWPPP) BMPs and other measures, including compliance with permit requirements, will be taken to reduce or control surface, ground, and runoff water impacts:

- Install catch basin inserts
- Install reinforced silt fence as shown in the plans (approximately 300 linear feet) and in accordance with City of Bellevue standard detail EC-005
- Install reinforced silt fencing downstream of major disturbance areas, such as LWD installation, until work in those areas is complete, in addition to the reinforced silt fencing shown in the attached plans
- Stage a sweeper on site during earthwork to immediately remove soil that has been tracked onto paved areas
- Remove accumulation of soils or debris from the drive mechanisms (wheels, tracks, tires, etc.) and undercarriage of equipment prior to its working below the ordinary high water line of surface waters, and before leaving the site.
- Monitor and maintain TESC BMPs in accordance with the CSWPPP approved by the City of Bellevue prior to the start of work. At a minimum, this will include daily system inspection and monitoring of system performance, visual observation of water quality, water quality sampling to monitor for turbidity and pH in accordance with the City approved monitoring plan, and maintenance as necessary.

**4. Plants**

**a. Check or circle types of vegetation found on the site:**

- deciduous tree: red alder, big leaf maple, Oregon ash
- evergreen tree: fir, western red cedar, pine, western hemlock
- shrubs: vine maple, beaked hazelnut, black elderberry, red-osier dogwood, Indian plum, salmonberry, red huckleberry
- grass
- pasture
- crop or grain
- wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other: red-osier dogwood, salmonberry, giant horsetail, creeping buttercup, maidenhair fern, lady fern
- water plants: water lily, eelgrass, milfoil, other
- other types of vegetation

**b. What kind and amount of vegetation will be removed or altered?**

The proposed project will result in temporary disturbance of approximately 10,000 square feet (0.23 acres) of riparian vegetation and 3,500 square feet (0.08 acres) of wetland vegetation. The type of vegetation that will be removed consists of herbaceous vegetation, small shrubs, and small trees less than 8" in diameter. No significant trees per City of Bellevue Land Use Code 20.50.046 will be removed or harmed during the process.

**c. List threatened or endangered species known to be on or near the site.**

There are no threatened or endangered plant species known to be on or near the proposed project site.

**d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:**

All vegetation disturbed will be replaced following completion of the check dam repairs in accordance with the landscape planting plans in Appendix A of the Critical Areas Report (see Sheets L-1 through L-4). All planting will occur during the dormant season (October through January). Two distinct planting zones will be planted including wetland and buffer areas consisting of shrub, emergent, and fern plants. Prior to planting, all disturbed soils will be decompacted by tilling. Shrubs will be planted five feet on center, whereas emergents and ferns will be planted 1.5 feet on center. All of the planting areas will be covered with a 4-inch thick layer of wood chip mulch to prevent weed growth and retain soil moisture. Landscape planting plans are included.

The wetland planting areas will include red-osier dogwood (*Cornus sericea*), swamp gooseberry (*Ribes lacustre*), thimbleberry (*Rubus parviflorus*), salmonberry (*Rubus spectabilis*), and slough sedge (*Carex obnupta*). The buffer planting areas will include vine maple (*Acer Circinatum*), indian plum (*Oemleria cerasiformis*), red elderberry (*Sambucus racemosa*), snowberry (*Symphoricarpos albus*), lady fern (*Athyrium filix-femina*) and sword fern (*Polystichum munitum*).

**5. ANIMALS**

**a. Check or circle any birds and animals which have been observed on or near the site or are known to be on or near the site:**

- Birds: hawk, heron, eagle, songbirds, pileated woodpecker
- Mammals: deer, raccoon, mountain beaver, fox, coyote, squirrels, bats
- Fish: bass, salmon, trout, herring, shellfish, other:

This section of Vasa Creek is a non-fish bearing stream via the Final Report, City of Bellevue Stream Typing Inventory, Watershed Company, August 14, 2001; and the Washington Department of Fish and Wildlife, SalmonScape (information obtained from their website on May 12, 2010) (WDFW 2010).

**b. List any threatened or endangered species known to be on or near the site.**

There are no threatened or endangered species known to be on or near the proposed project site. There is good habitat for pileated woodpeckers and it is assumed that breeding habitat is present as well due to the presence of suitably sized trees and observations of adults with fledglings during site visits in May, 2010. The pileated woodpecker is a species of local importance under Bellevue Code LUC 20.25H.150.

**c. Is the site part of a migration route? If so, explain.**

Yes. The project is within a principal route of the North American Pacific Flyway, an important trans-continent migration route for birds.

**d. Proposed measures to preserve or enhance wildlife, if any:**

The proposed installation of LWD will result in improved habitat conditions to the affected reach. The installation of wood will absorb the highly erosive forces of large streamflow events thereby protecting the streambank from erosion. This will likely improve turbidity levels in the downstream reach of Vasa Creek nearest to Lake Sammamish. The lower reach contains fish species including cutthroat trout, late run kokanee, coho, and sockeye salmon.

Although project activities are located in an area of Vasa Creek that is non-fish bearing, installation of LWD is also beneficial to other wildlife species. The LWD will provide food and shelter for macroinvertebrates which become prey for birds, amphibians, and riparian animals. It will also provide shelter and habitat for insects, birds, and small animals; including the pileated woodpecker (a species of local importance).

**6. Energy and Natural Resources**

**a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy need? Describe whether it will be used for heating, manufacturing, etc.**

No energy will be needed for the completed project.

**b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.**

This proposal will not affect the use of solar energy.

**c. What kinds of energy conservation features are included in the plans of the proposal? List other proposed measures to reduce or control energy impacts, if any:**

Not applicable (see item A.6.a.)

**7. Environmental Health**

**a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.**

Potentially hazardous materials likely to be present during construction include gasoline and diesel fuels, oils, and lubricants. A spill of one of these substances could occur during construction as a result of either equipment failure or worker error. All hydraulic fluid in construction equipment will be vegetable oil based or another approved non-toxic equivalent.

No environmental health hazards will occur once the proposal is completed.

**(1) Describe special emergency services that might be required.**

Emergency fire or medic services could be required during construction and possibly during maintenance of the completed project. No special emergency services will be required once the proposal is completed.

**(2) Proposed measures to reduce or control environmental health hazards, if any.**

The contractor will implement the following measures to reduce or control environmental health hazards:

- Submit a Health and Safety Plan before work commences. This plan will provide information on any toxic substances that may be associated with the project and outline safe procedures for handling any of these substances.
- Implement appropriate BMPs which will be outlined in the TESC plan, CSPCC plan, and CSWPPP for the project.

- Contain and dispose of contaminated materials that are encountered during construction in a manner consistent with the level of contamination, in accordance with federal, state and local regulatory requirements, by a qualified contractor(s).

Because no environmental health hazards would be created once the proposed project is completed, no measures to reduce or control health hazards are proposed.

## **b. Noise**

### **(1) What types of noise exist in the area which may affect your project (for example, traffic, equipment, operation, other)?**

Per City of Bellevue Code (9.18.030) and the Washington State Department of Ecology, the loudest permissible sound for a residential zone is 60 A-weighted decibels (dBA). The background noise existing in the project would not affect the proposed project.

### **(2) What types and levels of noise would be created by or associated with the project on a short-term or long-term basis (for example, traffic, construction, operation, other)? Indicate what hours noise would come from the site.**

Noise levels within the project area would temporarily increase during construction activities from construction vehicles and equipment. Pursuant to Bellevue City Code (BCC) 9.18.020, sounds created by construction and emanating from the construction site are exempt from the provisions of the Bellevue Noise Ordinance between the hours of 7:00 a.m. and 6:00 p.m. on weekdays, and 9:00 a.m. and 6:00 p.m. on Saturdays which are not legal holidays. Sounds emanating from construction sites on Sundays or legal holidays or outside of the exempt work hours are prohibited pursuant to BCC 9.18.040 unless expanded hours of operation are authorized by the applicable department director subject to specific criteria.

Long terms noises will remain unchanged.

### **(3) Proposed measures to reduce or control noise impacts, if any:**

In the short term, noises from the Contractor's equipment will only occur during the permissible work hours per Bellevue City Code 9.18.020. Additional noise abatement measures that could be implemented include the following:

- Install and maintain effective mufflers.
- Locate equipment and vehicle staging areas as far from residential areas as possible.
- Minimize idling of power equipment.
- Modify backup alarms to reduce noise impacts.

## **8. Land and Shoreline Use**

### **a. What is the current use of the site and adjacent properties?**

The site is currently being used as an open space by the City of Bellevue Parks department. Adjacent properties are being used as single family residences.

### **b. Has the site been used for agriculture? If so, describe.**

It is unknown whether this site was used for agriculture. It appears to be unlikely given the topography.

### **c. Describe any structures on the site.**

There is an existing wooden foot bridge within the proposed project boundaries.

**d. Will any structures be demolished? If so, what?**

No structures are being demolished under this proposal.

**e. What is the current zoning classification of the site?**

The current zoning classification for the site is R-5.

**f. What is the current comprehensive plan designation of the site?**

The current comprehensive designation for this site is single family.

**g. If applicable, what is the current shoreline master program designation of the site?**

N/A

**h. Has any part of the site been classified as an “environmentally sensitive” area? If so, specify.**

Identified environmentally sensitive areas include Vasa Creek and associated buffer, wetlands and wetland buffers, and a geologic hazards area. The stream and wetlands and their buffers are considered habitats associated with species of local importance. The environmentally sensitive areas are described in the Critical Areas Report attached to this checklist.

**i. Approximately how many people would reside or work in the completed project?**

N/A

**j. Approximately how many people would the completed project displace?**

N/A

**k. Proposed measures to avoid or reduce displacement impacts, if any:**

N/A

**i. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:**

N/A

**9. Housing**

**a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.**

N/A

**b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.**

N/A

**c. Proposed measures to reduce or control housing impacts, if any:**

N/A

## 10. Aesthetics

- a. **What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?**

N/A

- b. **What views in the immediate vicinity would be altered or obstructed?**

No views in the immediate vicinity would be altered or obstructed.

- c. **Proposed measures to reduce or control aesthetic impacts, if any:**

Because the project would not include aesthetic impacts, no measures reduce or control impacts are proposed.

## 11. Light and Glare

- a. **What type of light or glare will the proposal produce? What time of day would it mainly occur?**

No light or glare will result from the proposed project.

- b. **Could light or glare from the finished project be a safety hazard or interfere with views?**

No light or glare from the finished project would be a safety hazard or interfere with views.

- c. **What existing off-site sources of light or glare may affect your proposal?**

No existing off-site sources of light or glare would affect the proposed project.

- d. **Proposed measures to reduce or control light or glare impacts, if any:**

No light or glare impacts would occur; therefore, no measures are proposed to reduce or control impacts.

## 12. Recreation

- a. **What designated and informal recreational opportunities are in the immediate vicinity?**

The project site is known as Horizon Heights Open Space. The site contains Vasa Creek Trail which is used by neighboring residents to walk adjacent to the creek.

- b. **Would the proposed project displace any existing recreational uses? If so, describe.**

The project would temporarily displace recreational use. The existing pathway will be utilized by the contractor to transport construction materials to the various check dam repair locations and for the safety of the public; those areas will be temporarily closed.

- c. **Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:**

Implementing and applying measures reducing or controlling impacts to recreational use will be difficult and dangerous to the public. The paths around the work sites will be cordoned off to protect people from harm. Informational signs will be utilized to inform users the trail is temporarily closed.

### 13. Historic and Cultural Preservation

- a. **Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.**

There are no known national, state, or locally listed historic sites on or next to the site.

- b. **Generally describe any landmarks or evidence of historic, archeological, scientific, or cultural importance known to be on or next to the site.**

The 1999 SEPA threshold determination for installation of the original check dams that were destroyed in the 2007 storm indicated that there was no potential for impact to any potentially significant site (City of Bellevue 1999). In addition, the City of Bellevue Historic and Cultural Resources Survey (Tobin, Pendergrass 1993) indicates no historic or cultural resources on or next to the site.

- c. **Proposed measures to reduce or control impacts, if any:**

Should evidence of cultural remains, either historic or prehistoric, be encountered during excavation, work in the immediate area will be suspended, and the find will be examined and documented by a professional archaeologist in accordance with State law. Decisions regarding appropriate mitigation and further action would be made at that time.

### 14. Transportation

- a. **Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.**

The project site is bounded to the south by SE 46th Way, to the north by SE 45th Street, to the west by 151st Avenue SE, and to the east by 152nd Avenue SE.

- b. **Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?**

The project site is currently served by King County METRO bus service. The nearest bus stop (bus route #208) is located several properties west on SE 46th Street along the southerly boundary of the site.

- c. **How many parking spaces would be completed project have? How many would the project eliminate?**

N/A

- d. **Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).**

There is no roadway work proposed for this project.

- e. **Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

No water, rail or air transportation will be used for this proposed project.

- f. **How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.**

No daily vehicular trips will be generated by the completed project.

- g. **Proposed measures to reduce or control transportation impacts, if any:**

N/A

**15. Public Services**

- a. **Would the project result in an increased need for the public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.**

The completed project will not result in an increase in public services.

- b. **Proposed measures to reduce or control direct impacts on public services, if any.**

N/A

**16. Utilities**

- a. **Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other,**

A sanitary sewer pipe is located adjacent and underneath Vasa Creek.

- b. **Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.**

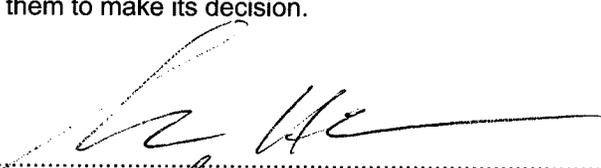
No new utilities are being proposed for this project.

**Signature**

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature

Date Submitted

  
August 30, 2010

**References**

City of Bellevue. 1999. SEPA Determination of Non Significance, File #PSEPA 99 266, May 27, 1999.

NRCS. 2010 Soil survey geographic database for King County area, Washington. U.S. Department of Agriculture, Natural Resources Conservation Service. Obtained January 15, 2010, from agency website: <<http://soildatamart.nrcs.usda.gov>>.

Tobin, Caroline C., Pendergass, Lee, F. 1993. City of Bellevue Historic and Cultural Resources Survey. March 1993. Survey Updated in July 1997.

WDFW. 2010. SalmonScape. Washington Department of Fish and Wildlife. Obtained May 12, 2010, from agency website: <<http://wdfw.wa.gov/mapping/salmonscape/index.html>>.