



East Montlake Park Area

- How can the project enhance connectivity to and through this area?
- How can the project integrate the stormwater facility into the park space and shoreline area?
- What is the preferred access to parking in this area?

East Montlake Park - Baseline Design Constructed Wetland Concept

Description

A planned west side enhanced stormwater treatment facility will occupy the current site of McCurdy Park and the Museum of History & Industry. Currently all stormwater is untreated and discharged into Lake Washington. The baseline design calls for a constructed wetland type of facility to treat stormwater runoff. East Montlake Park, to the north, is retained as a neighborhood park and intended to serve the surrounding neighborhoods.

Function

- Treat all stormwater runoff from new SR 520 west approach bridge and floating bridge as well as the Montlake lid area
- Facilitate regional bicycle/pedestrian path and north-south bicycle/pedestrian connections at 24th Avenue E
- Provide access to the Arboretum and waterfront trail
- Replace the existing hand carry boat launch with new facility
- Potential location of tunnel fire suppression and spill containment vault

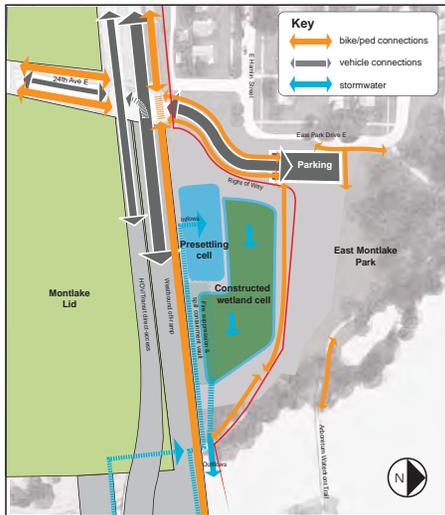
Design Goals

- Integrate functional requirements with the current design of East Montlake Park and shoreline
- Reduce visual and noise impacts on the adjacent homes along East Hamlin Street and East Park Drive E
- Preserve and provide scenic viewpoints

Sustainability Options

- Connectivity - accommodate the bicycle/pedestrian path
- Ecology - treat stormwater and enhance shoreline habitat
- Materials - lowered westbound off-ramp and potential alternative parking access reduces amount of material needed

Access and Circulation Diagram



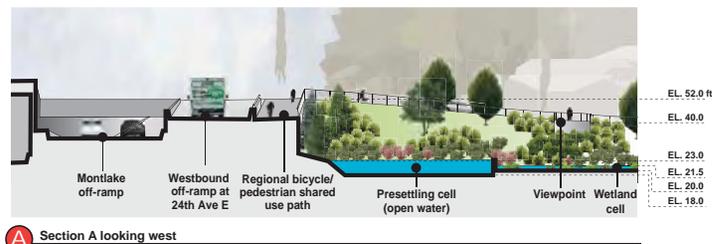
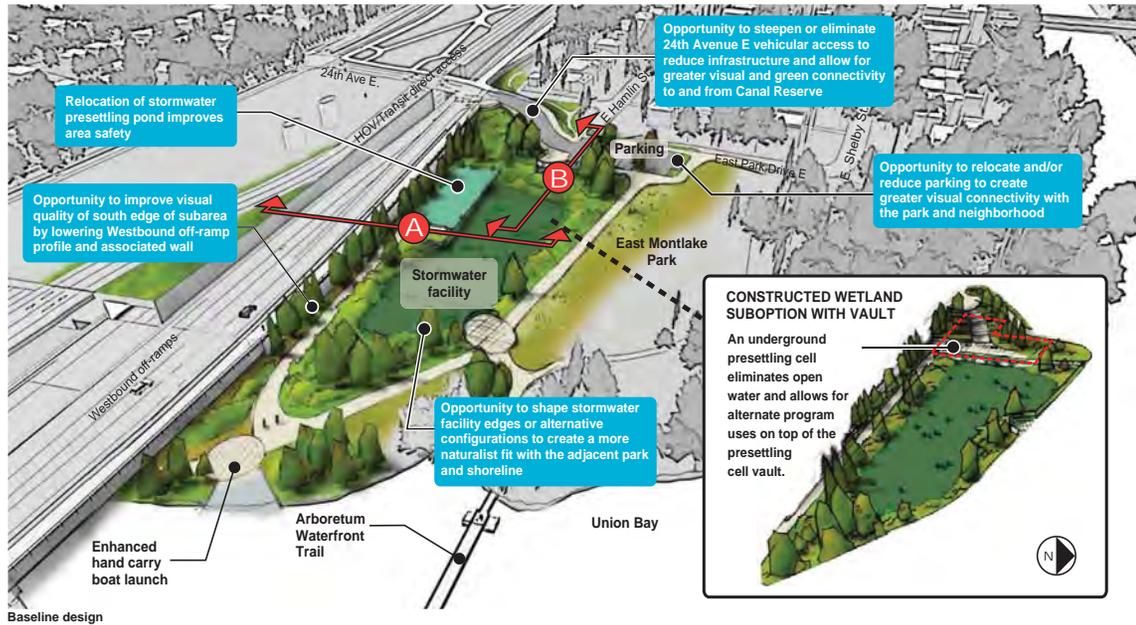
Precedents



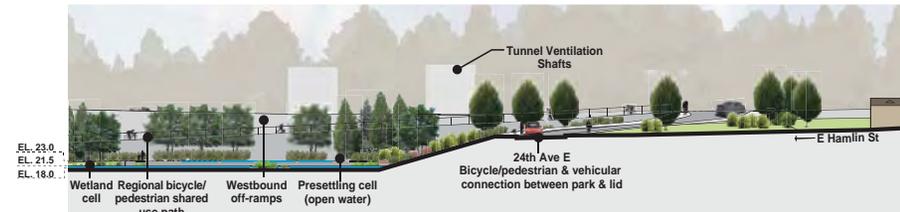
Open presetting cell



Constructed wetland cell



Section A looking west



Section B looking south

DRAFT
April 2012

CONCEPTUAL
DESIGN - THIS OFFICE ONLY OPINIONS THE CITY ENGINEERING DEPARTMENT'S RESPONSIBILITY

Washington State
Department of Transportation

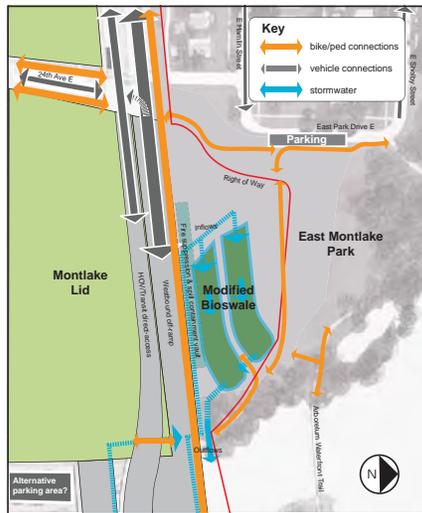


East Montlake Park - Option A Modified Bioswale

Refinement Opportunity

- This design option evaluates the opportunities associated with a modified bioswale to treat stormwater
- The bioswale treats stormwater to the same standard as the constructed wetland proposed in the baseline design, but in a smaller area and does not require standing water

Access and Circulation Diagram



Precedents



A Section A looking west

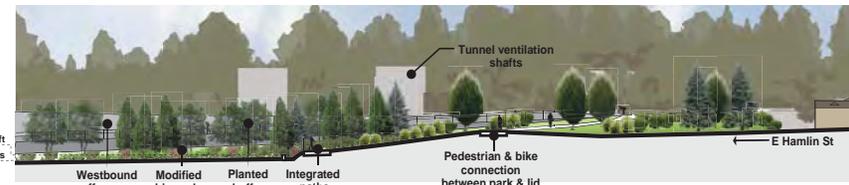
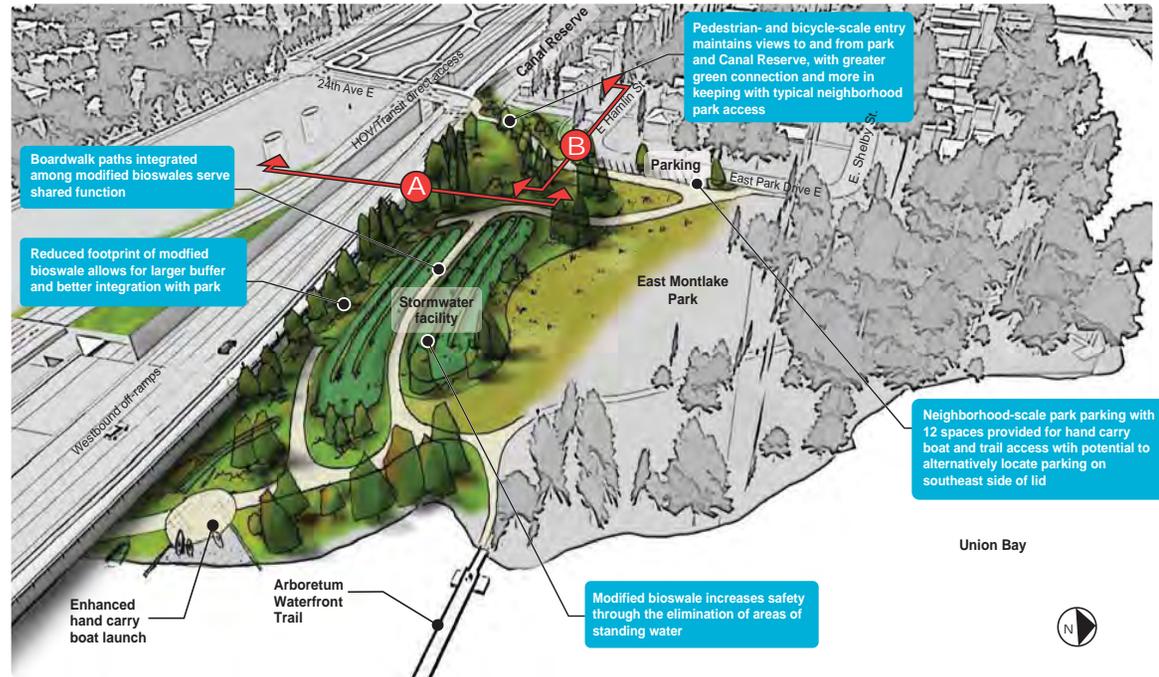
- This option also illustrates a reduced number of parking spaces for the park as well as alternate parking access from local streets

Benefits

- Reduced facility area and meadow-like character allows for more opportunities to integrate the design with the adjacent park
- Parking location maintains usable green space in the neighborhood park
- Better visual and physical connections to and from Canal Reserve

Considerations

- Less wetland habitat
- Bioswale areas are not accessible to public except by boardwalks
- Requires further technical evaluation by regulatory agencies before it can be an approved option



B Section B looking south

DRAFT
April 2012

CONCEPTUAL
DO NOT CONSIDER THIS DESIGN FOR CONSTRUCTION

Washington State
Department of Transportation

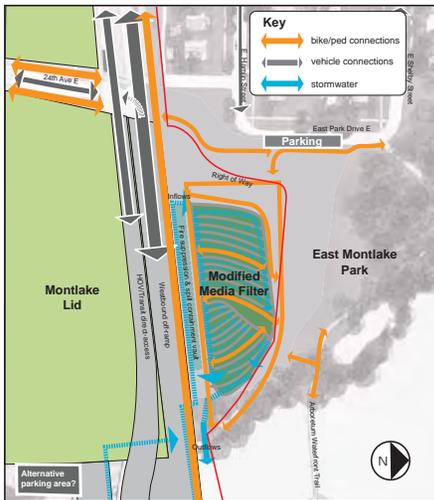
520

East Montlake Park - Option B Modified Media Filter Drain Concept

Refinement Opportunity

- This design option evaluates the opportunities associated with a modified media filter drain concept design to treat stormwater
- This design treats stormwater to the same standard as the constructed wetland proposed in the baseline design, but with a different method of filtering the stormwater that does not result in standing water

Access and Circulation Diagram



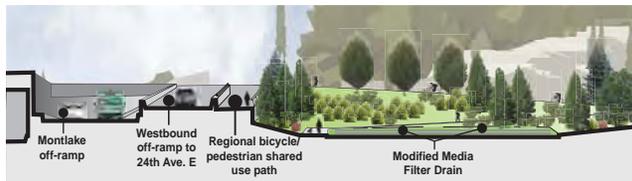
Precedents



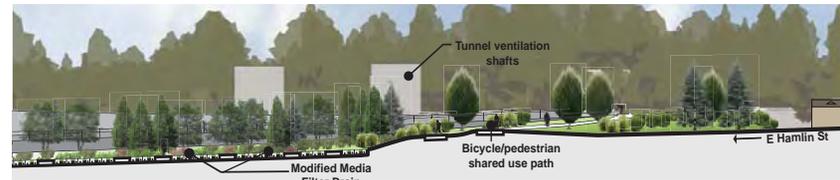
Media Drain Filter without boardwalk



Boardwalk



A Section A looking west



B Section B looking south

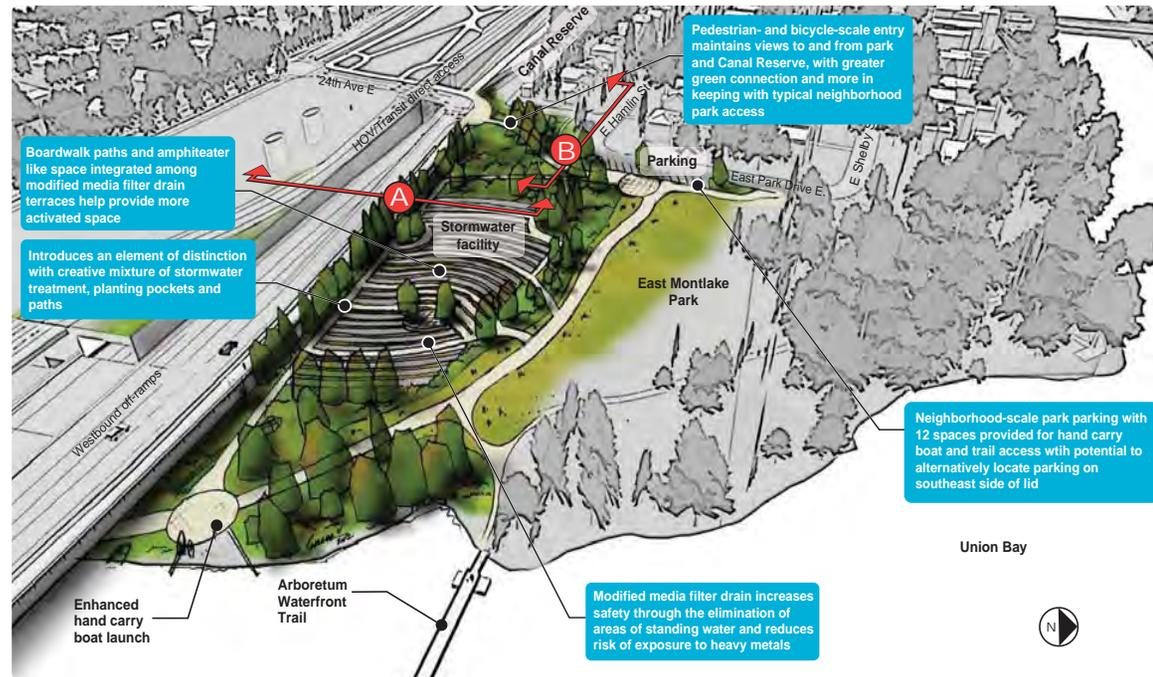
- This option also illustrates a reduced number of parking spaces for the park as well as parking access from local streets

Benefits

- Opportunity for more public access stormwater facility using boardwalk paths
- No standing or open water
- Parking location maintains usable green space in the neighborhood park
- Better visual and physical connections to and from Canal Reserve

Considerations

- Larger stormwater facility footprint; less available green space for integration with the park
- Provides less habitat value for wildlife
- Character of facility is most "urban" aesthetically in contrast to other facility alternatives and meadow-like adjacent park
- Requires further evaluation by regulatory agencies for approval

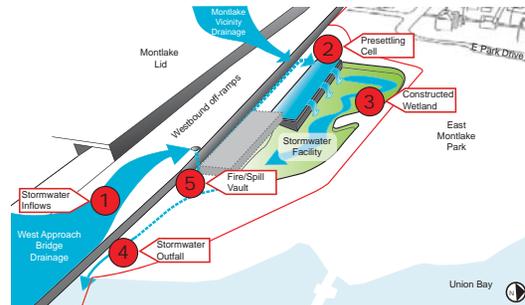


Stormwater System Design Options

Description

Alternate approaches are being considered to meet the requirements for enhanced stormwater treatment. Below are a description of the design options, components, and maintenance considerations associated with each option.

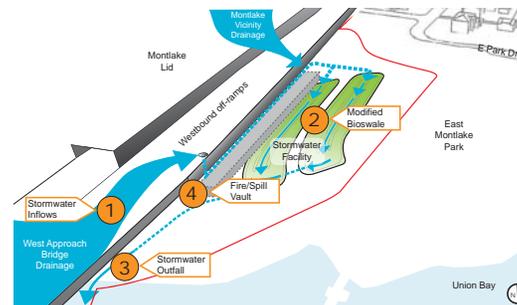
Baseline Design - Constructed Stormwater Wetland



How Does This Work?

- 1 **Stormwater Inflows**
 - Drainage from approximately 24 acres of roadway.
- 2 **Presetting Cell**
 - 5-foot depth open water basin with approximate .2 acre footprint OR a closed vault with the same capacity.
 - Highest concentrations of heavy metals and solids settle out in presetting cell.
 - Vehicular maintenance access required every 3-5 years to the bottom of the open water cell or to the top of a vault for removal of sediment.
- 3 **Constructed Wetland Cell**
 - Flat bottom basin, approximately .7 acres in size, with wetland plantings, which further treat for heavy metals and solids from water.
 - Water may be present for extended periods after storm events with a depth of approximately 18 inches.
 - Primary maintenance activities include control of unwanted plant species on an annual or biannual basis.
- 4 **Stormwater Outfall**
 - Water discharged to Union Bay via an open channel.
- 5 **Fire Suppression and Spill Containment Vault (Underground)**
 - Captures effluent liquids used to manage fires and spills in the Montlake Lid Tunnel.
 - Vehicular maintenance access required to top of vault following operation/testing
 - Periodic inspection of fire suppression and containment system.

Option A - Modified Bioswale*

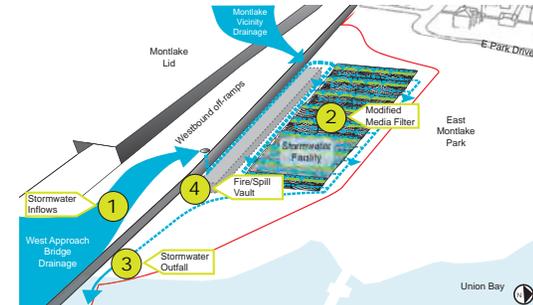


* Pending Dept. of Ecology and WSDOT Approval

How Does This Work?

- 1 **Stormwater Inflows**
 - Drainage from approximately 24 acres of roadway.
- 2 **Modified Bioswale**
 - Flows split equally among a series of 10-foot wide swales.
 - Solids and heavy metals settle out along the length of grassy swale with highest concentrations occurring nearest the top of the swale.
 - Bioswales may require maintenance access 3 times annually for removal of sediment and debris and annually for mowing.
- 3 **Stormwater Outfall**
 - Water discharged to Union Bay via an open channel.
- 4 **Fire Suppression and Spill Containment Vault (Underground)**
 - Captures effluent liquids used to manage fires and spills in the Montlake Lid Tunnel.
 - Vehicular maintenance access required to top of vault following operation/testing
 - Periodic inspection of fire suppression and containment system.

Option B - Modified Media Filter Drain*



* Pending Dept. of Ecology and WSDOT Approval

How Does This Work?

- 1 **Stormwater Inflows**
 - Drainage from approximately 24 acres of roadway.
- 2 **Modified Media Filter Drain**
 - Stormwater flows are split equally among a series of level spreader trenches and distributed evenly over a grass filter strip.
 - Stormwater then flows into gravel media filter trench where it is collected and conveyed to the outfall.
 - Annual maintenance for mowing of the grass filter strip, removal of litter, hand-removal of unwanted vegetation.
 - Periodic maintenance for minor re-grading if channels form and removal of accumulated sediment from flow dispersion system.
 - The media mix will require replenishment or replacement once every 5 to 20 years to restore original efficiency.
- 3 **Stormwater Outfall**
 - Water discharged to Union Bay via an open channel.
- 4 **Fire Suppression and Spill Containment Vault (Underground)**
 - Captures effluent liquids used to manage fires and spills in the Montlake Lid Tunnel.
 - Vehicular maintenance access required to top of vault following operation/testing
 - Periodic inspection of fire suppression and containment system.