

Alaska Ave. Stormwater Detention Ponds



Stormwater Detention Ponds

A detention pond is an area that was excavated placed near tributaries of rivers, streams, lakes or bays to protect against flooding and, in some cases, downstream erosion by storing water for a limited period of a time. If no permanent water is contained within these ponds, they are called "dry ponds," or "dry detention basins." These basins are constructed during new land development projects and can be a stand alone BMP or part of a treatment train.

Dry detention ponds can also be referred to extended detention basins, detention ponds, and extended detention ponds. The basins are designed to temporarily detain stormwater runoff. The length of time the water is held is determined by design, weather and local regulatory requirements. The detaining of the water allows floatables and larger particles and associated pollutants to settle to the bottom of the pond. Both detention and retention ponds require maintenance in order to work as designed.

ROUNDUP: Detention pond meeting today

Sun | West Sound

David Levesque — [Jun 13th, 2001](#)

Kitsap County's Surface and Storm Water Management program will hold a meeting at 7 p.m. today at the Manchester Library to discuss a detention pond being proposed east of Harrison Street.

The pond would be on 3.2 acres, which is surrounded by residential development.

The county plans to use the pond to mitigate increased storm water runoff associated with residential develop occurring upstream from Duncan Creek.

MANCHESTER: Drainage plans move forward

Kitsap Sun | Local

By Christopher Dunagan, Sun Staff — [Mar 12th, 2002](#)

Major stormwater improvements in Manchester are planned to relieve washed-out drainage ditches and to cure flood damage in what once was a little stream known as Duncan Creek.

The South Kitsap community of Manchester was built before engineers began to control the flow of water through residential areas, said Jacque Dean of the Kitsap County Surface and Storm Water Management (SSWM) program.

"It wasn't the county's intention that Duncan Creek become a drainage ditch," he said, "but that's what it has become."

A major pond on 3.2 acres at the headwaters of Duncan Creek is proposed to slow the flow through the creek, which has begun to produce coho and chum salmon after property owners removed impediments to migration.

"(The pond) is going to benefit Duncan Creek water quality and reduce erosion in the stream," Dean said.

Native trees, shrubs and grasses will be planted around the pond to make it appear and function more naturally than a standard retention pond, he said.

"We wanted the pond to fit in well with residential use," he noted, but he stressed that it will be fenced to keep people out for safety reasons.

A meeting tonight at 7 p.m. at Manchester Library will introduce area residents to the initial design of the pond, which is expected to cost about \$300,000.

Another aspect of the drainage system is the need to control heavy flows of water that come down Main Street and discharge near the Manchester dock.

Kitsap County commissioners Monday approved a \$125,000 contract to allow Cosmopolitan Engineering Group to study and recommend several alternatives for releasing the stormwater on the beach or else out into the Puget Sound.

Dean said the overall approach is to build the outfall - the lowest point in the system - then work uphill, installing new stormwater pipes as funding allows.

Reach reporter Christopher Dunagan at (360) 792-9207 or at cdunagan@thesunlink.com.

MEETING TONIGHT

Infiltration of Stormwater & Collection

A significant portion of rainfall in forested watersheds is absorbed into soils by infiltration is stored underground and is slowly discharged to streams through seeps and springs. Duncan Creek is predominately a stream fed by this type of infiltration. This more natural condition makes flooding less significant due to some of the runoff during a storm being absorbed into the ground which lessens the amount of runoff directly entering the stream during a storm.

However, as watersheds are developed and urbanized much of the vegetation is replaced by impervious surfaces. Much more water flows into streams and more quickly due to these sources of runoff and drainage from highly urbanized areas. These increases in volume entering streams increases the likelihood of more frequent and severe flooding events.

The continuing loss of vegetation results in an overall reduction of area where infiltration into groundwater occurs. With more runoff occurring this runoff must be collected through extensive drainage systems. These systems combine water from curbs, storm sewers, ditches that carry stormwater runoff directly into streams.

Much of this runoff is routed to and collected in stormwater detention facilities and detention ponds. Manchester has a many small stormwater water detention areas, the largest being the stormwater detention pond located off of Alaska Ave. The Alaska Ave. detention pond was built in part, in an effort to help reduce and control the amount of, and speed of uncontrolled stormwater runoff indirectly entering Duncan Creek.

SITE 39 - ALASKA DETENTION POND

Location - Alaska Ave. Harrison to Polk

Type - Detention Pond / Pocket Park

SITE 39 - ALASKA DETENTION POND

Site Description

Attractive site with large trees, lots of land and nice existing stormwater pond. Site also receives flows from some of Alaska Ave E (Site 41) and from E Harrison St.

Context & Analysis

The site is set back from the roadway, to the east of Alaska Ave E behind two private lots. There is an access driveway from Alaska Ave E at the north edge of the site by which maintenance vehicles and the public could access the pond. Just east of the site, extending to the north and the south is forested green space on private property that comprises a portion of the headwaters of Duncan Creek. The site itself contains a few existing trees as well as large shrubs and other plants. Visibility into and out of the site from Alaska Avenue E should be considered for safety where public access is provided. Privacy for neighbors may also be a concern.

Description of Retrofit

Expand capacity of existing wet pond by excavating and regrading the southwestern sides of the pond. Install UIC wells to improve infiltration prior to discharge from the pond. Landscape enhancement of pond edge to improve water quality treatment. Improvements primarily focus on water quality, flow control and reduction of peak flow in Duncan Creek. Other proposed site improvements, such as a walking path and benches, will allow the wet pond parcel to be used as a pocket park without compromising the functionality of the wet pond.

Stormwater Benefits: Estimate of Flow Control Potential

Upstream Contributing Drainage Area (acres)	Impervious Area Mitigated (acres) with Flow Control
80-100	2.0

Benefits shown are based on improvements shown in conceptual design and GIS site data.

Mitigated area is based on Kitsap County BMP Sizing Spreadsheet, equal to additional pond volume created and trees proposed on concept design. Design assumes flow control facilities will provide infiltration to receptor soils with a minimum infiltration rate of 0.13 in/hr.

Additional Benefits

- Community - Allows community access to new pocket park for outdoor, passive recreation activities
- Habitat - Improved planting and tree canopy to facilitate and encourage use of new park
- Education - Opportunity to educate public on impacts and needs to manage urban stormwater runoff

Construction Cost Range (does not include soft costs)

- \$325,000 - \$395,000
- Costs include:
 - regrading and improvements to access drive
 - excavation to increase pond volume
 - pedestrian trail and landscape enhancement around pond perimeter
 - increased tree canopy
 - UIC wells for improved infiltration potential
 - construction contingency



Existing Site



Existing Site



Context Diagram

MANCHESTER LID STORMWATER RETROFIT

Manchester, Washington
Conceptual Designs - January 2012



Existing Views



Detention Pond Project Site Context

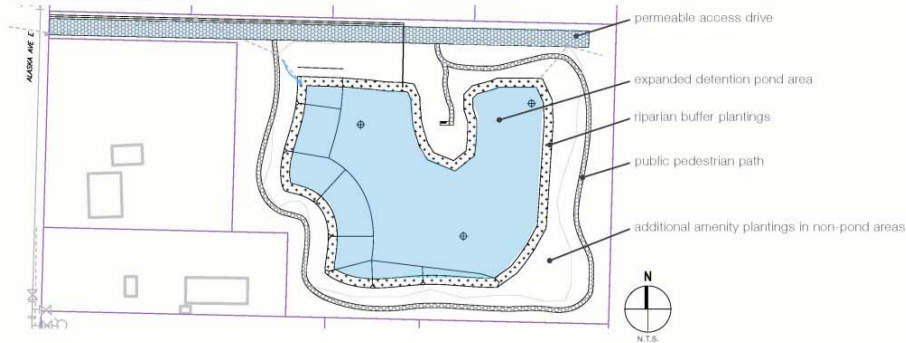


Context Diagram

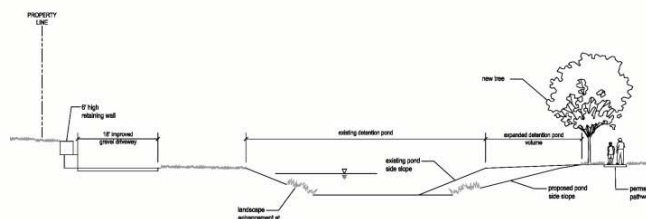


Conceptual Plan

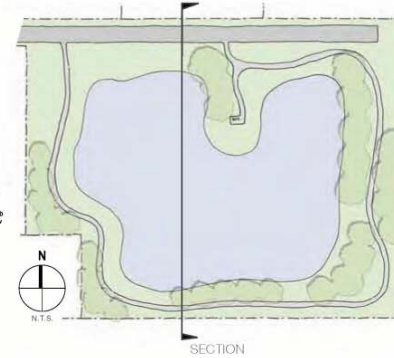
Conceptual Design Plan



Conceptual Design Section



Rendered Plan of Site Treatments



Detention pond with pedestrian and park amenities, Seattle, WA



Detention pond with pedestrian and park amenities, Seattle, WA

County project to ease flooding slated for Manchester

By Chris Henry

Nov. 24, 2011

Tuesday's heavy rains dumped 4.13 inches on Kitsap County, signaling the beginning of winter weather patterns when heavy runoff and flooding are common.

In the waterfront town of Manchester, all the precipitation creates a problem that is compounded by poor soils and the town's location at the bottom of a large hillside.

Kitsap County Public Works officials have selected 10 sites within Manchester for stormwater retrofitting, using green technologies like bioswales and permeable pavement to replace aging pipes and catch basins. Similar efforts are under way in Silverdale and Kingston.

The county hopes to secure grants for the work, which could begin as early as 2015. The projects are part of the Public Works Department's 6-year capital facilities plan.

State guidelines govern stormwater management for new development. No hard rules mandate retrofitting of existing development, but there is a regional push to do so for the sake of water quality, said Chris May, program manager for the Surface and Stormwater Management Program.

The county is taking a systematic approach to identifying areas where retrofitting is needed, and county officials have prioritized projects for long-range planning. Areas slated for future retrofitting include East Bremerton, East Port Orchard, Indianola, Suquamish and Keyport.

Conventional infrastructure isn't off the table, but wherever possible, the county will use low-impact development techniques to manage stormwater May said. LID techniques replicate the natural absorption of stormwater into the soil. The roots of trees and plants help control the flow of water and reduce the chance of flooding.

The soil in LID stormwater features filters out pollutants, including bacterial pollution, fertilizers, oil and grease from cars, metals like copper from car brakes, and zinc from roofs and gutters. The cumulative effect of these pollutants is detrimental to local streams and lakes, and to Puget Sound, said May, so mitigating them is simply the right thing to do.

Often LID is more cost effective, and the designs are visually appealing, he added.

The county looked to Seattle and Portland, as well as other areas, for examples of LID designs that work ... and those that don't. The infamous Ballard rain gardens, which turned into muddy pools, serve as a cautionary tale of what can go wrong with poorly planned designs, May said. County staff learned how to design system intakes for the best filtration and which designs work best for steeper slopes. They also found out which plants are hardy and easy to care for. "We've really taken to heart the lessons we've learned," May said. "All those details really add up to making these systems work or not work properly."

LID requires maintenance that is more akin to landscaping, and public works staff have trained to get up to speed.

Sites in Manchester and Silverdale set for retrofitting were chosen with advice from local residents. Kingston is partway through the public process.

Most of the Manchester sites are public properties and county rights of way. One exception is the Manchester Community Church Property.

Grant funding typically is easier to obtain for public properties. But private property owners interested in using LID stormwater techniques can work through the county's rain garden program, which offers technical assistance and cost sharing for materials up to \$500.

County officials don't know yet whether they will have to install a conventional catch basin in Manchester along with LID features. If they do, it may be installed under a roadway, or on a property the county would have to purchase. The underground treatment plant would be unobtrusive and use a simple mechanical filtration system, May said.

An upgrade of the stormwater outfall pipe off Pomeroy Park also is on the county's project list.

Manchester LID Stormwater Management Sites

East Main Street

Colchester Drive East

Commercial corridor

Village Center (intersection of Main Street and Colchester Drive)

East Main Street

Manchester Community Church

East Raintree Lane

California Avenue detention pond/ bus stop

Alaska Avenue East detention pond

Alaska Avenue East detention pond

California Avenue East ditches

Alaska Avenue East ditches

Valley Avenue East ditches

East Spruce Strett

Manchester Stormwater Park in Center of Town



The Green Futures Lab has monitored the effectiveness of Kitsap County's Manchester Stormwater Park in treating pollutants from the upstream contributing basin, collecting and analyzing samples over the course of one year. Results indicate that both the system of level perimeter wetland cells filled with proprietary soil media, and the vertical spiral rain gardens with a standard biofiltration mix, are especially effective at treating bacteria and metals that are present in the runoff. Cleaning stormwater from over 70 acres in just over 6000 square feet of treatment area, while also providing a park for farmer's markets, celebrations, relaxation, and education, the project demonstrates the potential effectiveness of "Waterfront Stormwater Solution" regional facilities that are also valuable community assets.

Aerial View Looking North Over Town of Manchester



Manchester Stormwater Park is Puget Sound's first stormwater park, providing water quality treatment for an entire community's stormwater in just one small park. The project supports Kitsap County's efforts to meet the requirements of the federal Clean Water Act in an innovative and cost-effective way.

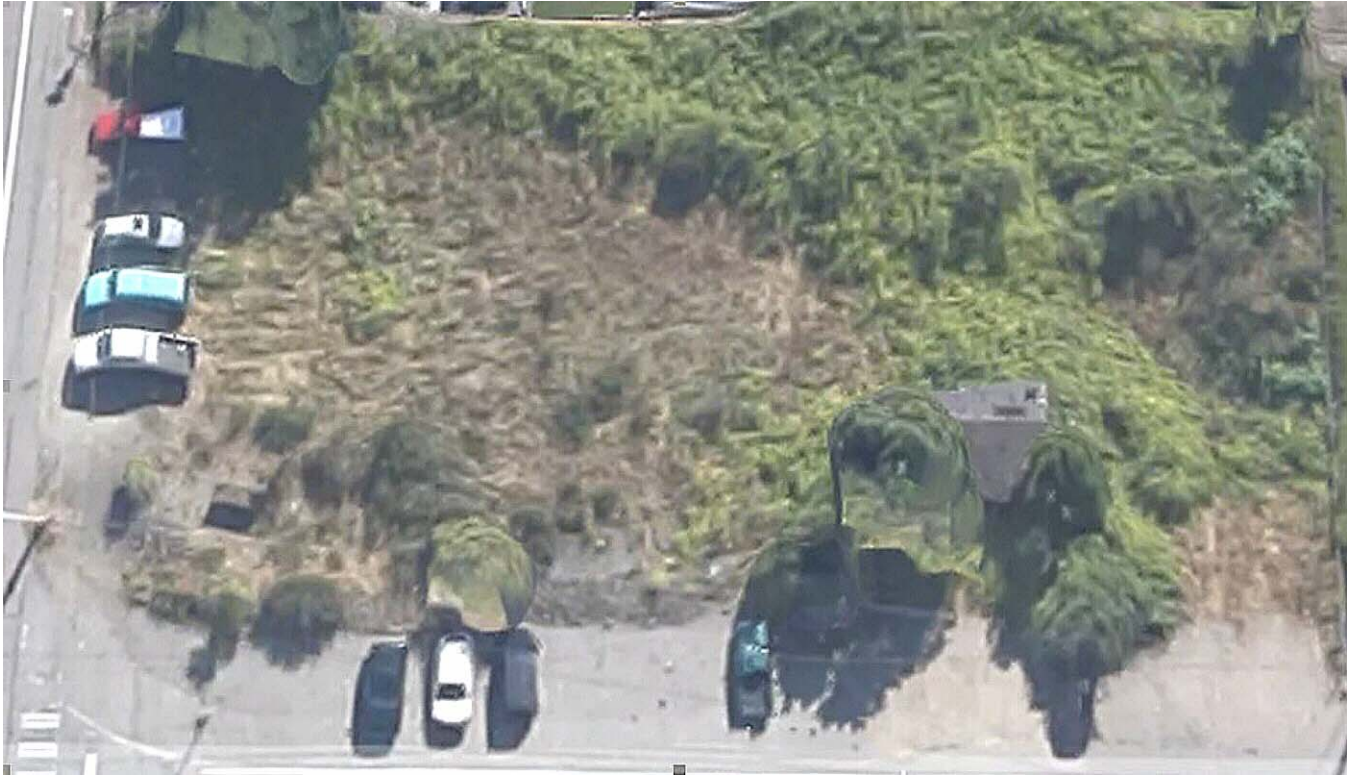
A previously abandoned Brownfields site in Manchester now does double duty as a community space and as a workhorse to clean polluted runoff before it reaches the Puget Sound. The Stormwater Park uses innovative, green stormwater solutions to treat dirty water flowing off 100 urban acres of roads, parking lots, commercial property, and residential areas. The treated water meets today's strict water quality standards.

Runoff is collected and channeled to the Stormwater Park, where treatment cells containing an engineered filter media work along with flood-tolerant plants to clean the runoff by using filtration and absorption processes. Treated water is discharged to an outfall at the beach.

The treatment process removes about 91 percent of pollutants from the runoff. What was once described as one of the dirtiest beaches in Washington will enjoy a new reputation as the home of an innovative, community-driven project that uses natural infrastructure to address stormwater challenges in a big way.

The Stormwater Park project is a community resource that demonstrates social, economic, and environmentally sustainable benefits. Small developed areas throughout Puget Sound and elsewhere could benefit from using a similar approach to stormwater treatment.

Manchester Stormwater Park Land Before



Manchester Stormwater Park Land After



Aerial View of Manchester Stormwater Park Looking East to Seattle

