Venema Natural Drainage System FAQs

What is a Natural Drainage System Project?

Natural Drainage Systems (also called Green Stormwater Infrastructure) — treat polluted runoff from roads, roofs, and parking lots by capturing and cleaning it before it harms our waterways. Natural drainage helps our city act more like a forest. Natural drainage systems can be constructed on public or private property to help soak in and clean stormwater that would otherwise enter our storm sewers, creeks, streams and lakes. The Venema NDS will use multiple technologies to help nature out.

How does natural drainage work?

Natural Drainage Systems use plants, trees, and special soil types to remove pollutants from stormwater and slow the speed of these waters. The goal of a natural drainage system is to manage stormwater by mimicking how nature would handle it: first slowing it down in cascades or shaped swales, and then through biomass uptake of water and pollutants by plants and trees, and through infiltration into the soil.

What do these natural drainage systems look like?

Natural systems:

- Generally green in appearance, there are lots of trees, shrubs and plants. The plantings mimic nature to re-establish functions lost due to urbanization.
- Have common features such as cascading pools of water, wide, flat vegetated swales or ditches. These all serve to slow the water down and remove pollutants before the stormwater gets to a receiving body of water.
- Process stormwater near the source, rather than the more expensive alternative of installing detention ponds or water quality vaults and all the conveyance pipes necessary to move the stormwater.

What is deep groundwater infiltration?

Deep groundwater infiltration is a process where clean waters are allowed to be directed underground to a significant depth well below home basement levels to help recharge the groundwater which feeds area creeks and streams, in this case Venema and Piper's Creek. Geologists and environmental engineers see this as helping to keep creek waters flowing safely for fish and their aquatic habitat.

How will the Venema NDS work?

The Venema NDS includes both a series of **bioretention swales** and **deep groundwater infiltration**. A bioretention swale is a type of rain garden designed to absorb larger amounts of stormwater. Bioretention swales are typically located in public spaces, such as in the planting strip alongside the roadway or on neighborhood streets. The Venema bioretention swales have a drain underneath, to collect stormwater after it has filtered through and been cleaned by the

amended soil. The drain either carries this clean water deep into the ground or sends it back into the storm sewer system at a slow and controlled rate.

Why are natural drainage systems being proposed here?

NDS projects help to slow stormwater, and remove pollutants from it. The greater Broadview neighborhood was developed without a formal stormwater infrastructure, and so stormwater conveyance is a problem on downstream properties, creeks and Puget Sound.

This preferred strategy has been selected based on:

- Technical feasibility
- Cost
- Potential impacts on and benefits to the surrounding neighborhood
- Ability to reduce sewage overflows
- Opportunity to realize additional benefits

In March 2013, Seattle Mayor Michael McGinn put into motion development of a citywide natural drainage plan with the goal to manage 700 million more gallons of stormwater annually by 2025. The Seattle City Council endorsed that goal in July by resolution, "establishing a City policy that green stormwater infrastructure is a critical aspect of a sustainable drainage system and adopting a 2025 goal for green stormwater infrastructure implementation in Seattle."

What are some features of the design with the Venema NDS?

The Venema project will reconstruct five blocks of roadway on NW 122nd Street and NW 120th Street (pictured below) to install natural drainage swales and planting improvements.

The paved portion of the street is realigned and sidewalks are reconstructed. A series of wide, stepped swales are constructed on one side of each street. Special soil and plantings are part of the swales to meet stormwater quality performance measures. An underdrain directs water that seeps through the swales to collection basins, and then to drywells which use gravity to allow the water to recharge groundwater at a deep level. When a large storm event happens, high flows are bypassed through a piped system which follows the current downstream path of pipes.

The project must adhere to safety standards for street travel as developed and required by the Seattle Department of Transportation. Any waters cleaned for passive groundwater recharge must also meet Washington State Department of Ecology requirements.

What are some construction impacts I can expect?

Construction is not easy on any neighborhood. During construction, you can expect construction equipment and workers in the area, including construction vehicles and materials. City requirements limit hours of work to not earlier than 7 a.m. weekdays and Saturdays (9 a.m. Sundays), and not later than 9 p.m. Dust, mud and noise are a part of construction, along with parking impacts and traffic revisions. Our goal is to build the project with the least impacts and get it done as quickly and as safely as possible.

What about the finished product? Will this project make my basement wet, or wetter?

The reason this project is using deep groundwater recharge is not to make surface ground conditions worse. The water will be infiltrated deep beneath the ground levels and it's not anticipated to affect already soggy near-surface conditions worse, or cause additional groundwater to enter basements or crawlspaces.

What will the City do with regard to maintenance?

The City will, at minimum, provide the following:

- Check and clean the structures and lines on a periodic basis.
- Vegetation maintenance as required to maintain storm drainage system performance.
- Other unscheduled maintenance by the City may be required and would be performed due to unforeseen circumstances, such as storms, accidents, etc

What will the adjacent property owners need to maintain?

The City considers these improvements to be like any other planting strip in the City. How well the planting strip is maintained is ultimately up to the adjacent property owner, and reflects that. As you drive around the City you will undoubtedly notice that some people maintain their planting strips well, and some do not. The level of maintenance above the basic level is up to you. The plants chosen for this project consist mainly of drought tolerant, native and/or selections best suited for use on Natural Drainage System projects based on site conditions and the drainage functions they support.

What will the parking changes mean to me?

During construction, parking may be difficult. There will be parking restrictions and traffic revisions. The City is committed to working with the neighborhood to minimize the impacts of construction.

After the project is complete, the look and the use of the street right-of-way will be different than it is today. After construction, the gravel or paved shoulder that presently exists along many of the streets will be eliminated. It will be up to residents to inform visitors that parking on the paved portion of the street is legal, as long as a minimum 10-foot wide lane is maintained for movement of vehicle traffic.

The use of the unpaved shoulders of the road will definitely change after the project. For vehicles that may need to stay for longer time periods you should consider parking them in your driveway, or side streets. Street Parking throughout the City is limited to 72 hours by ordinance, however this is only enforced in Broadview on a complaint basis. Parking of detached trailers in the right of way is not legal at any time. Vehicles wider than 80 inches and commercial vehicles are prohibited by municipal code from being parked on the street between the hours of midnight and 6 A.M.. These regulations again, are only enforced on a complaint basis. The parking of trailers and larger vehicles should be outside of the right-of-way, on your lot, if land use codes permit it, or off-site at another location.

I have landscaping, fencing or other improvements in the public right-of-way, what should I do?

The City will have the streets surveyed to identify improvements in the right-of-way that will need to be relocated or removed. This will be communicated to you with sufficient advance notice for you to relocate the plantings, fences or improvement if you wish to do so.

My neighborhood has a traffic circle, are you going to take it out?

The goal of the project is to not remove or reconstruct existing traffic calming features like traffic circles, however it may become necessary to reconfigure these, or use an alternate method of traffic calming if adequate turning radiuses for emergency vehicles cannot be maintained. SPU will work with the Seattle Department of Transportation (SDOT) to figure this out.

How do I stay informed, and who do I contact for more information?

Visit the project website: www.seattle.gov/util/VenemaCreek. Sign-up for the project listserv for future announcements. Call or email the project manager, Don Anderson, at (206) 233-1086, or donald.anderson@seattle.gov.