

Marysville Watershed Planning Stormwater Action Plan



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Marysville Watershed Planning Stormwater Action Plan

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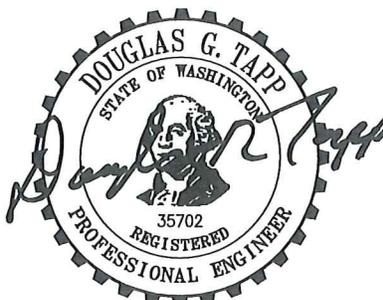
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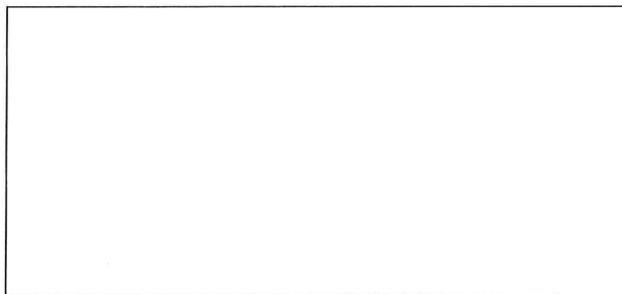


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EXECUTIVE SUMMARY

The Stormwater Challenge

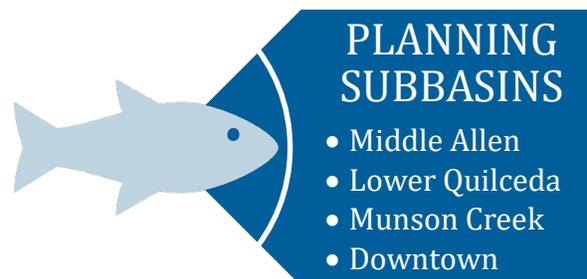
Stormwater is rain water that flows off of hard surfaces like roads, parking lots, lawns, and rooftops. As water flows across ground surfaces, it collects pollution. Pollution from our cars—such as oil, tire particles, and brake dust—pesticides from yards, and garbage on the edge of the road can all be found in stormwater. In older developments, stormwater—with any collected pollution—flows into drains then through underground pipes to the nearest creek. New developments are required to build stormwater treatment facilities to clean stormwater before it reaches the creek. This summary describes a project that will help clean stormwater and protect streams in Marysville.

Project Introduction

In 2020, the City of Marysville (City) started a project to create a strategic plan to reduce pollution entering local streams. This plan will help the City to:

- Target stormwater improvements that will quickly provide benefits to areas with the most potential for restoration;
- Construct stormwater projects now, rather than waiting for redevelopment;
- Make sure tax dollars are spent in a fair and equitable manner; and
- Involve the public in decision making activities, like approving stormwater retrofits and programs.

The first phase of the project described stream conditions inside city boundaries and ranked areas within the city based on the potential to improve water quality with stormwater actions. This work is documented in a 2022 report titled [Marysville Watershed Planning Basin Assessment and Prioritization](#). Four drainage areas—listed to the right—were then chosen as the focus for stormwater projects and programs.



Management Actions

As part of the [Stormwater Management Action Plan](#), the City considered projects and programs to help improve water quality and stream health in the selected subbasins. Stormwater retrofit projects were selected based on need for treatment, expected benefits, available space for construction, and connection with the community and other projects.

Stormwater retrofits are improvements to the stormwater system that add treatment in developed areas not treated before.

Concepts for four retrofit projects are included in the plan. The projects—which include park and roadway improvements as well as stormwater facilities— will benefit streams in the Munson Creek and Middle Allen Creek planning subbasins. These projects are expected to be designed and constructed over the next five to



ten years. The City will reach out to the community during the design process for input on project elements such as park amenities and neighborhood access during construction.

Stormwater facilities alone are not enough to correct water quality problems, especially in more urban areas of Marysville. The City is also prioritizing tree planting programs in the four planning subbasins. This program will focus on street tree planting in the Downtown and Lower Quilceda Creek areas and increasing tree canopy cover on city-owned parcels, including parks, open spaces, and stormwater facilities.

Source control programs improve streams by reducing chances for rain water to come into contact with pollution sources. In the Downtown area, the City is beginning source control inspections at commercial and

industrial sites. A new pollution education program will also be started to increase awareness that open dumpsters cause stormwater pollution. This source control program will encourage businesses to keep dumpster lids closed.

Source control is the process of stopping or reducing pollutants before they reach the natural environment.

Implementation

The City intends to build planned projects and initiate programs over the next ten years. The City has already received grant funding for some of the new programs and plans to apply for additional grants from the Washington Department of Ecology, as well as other agencies, to cover design and construction—estimated at more than \$11 million—of the selected projects.

It is important to measure success and stay accountable to the plan’s goals. Success will be measured by tracking project completion, changes in tree cover, and source control program participation. The City will also review planned progress and budget needs as part of the next Stormwater Comprehensive Plan update in 2024-2025.

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1 INTRODUCTION

In 2020, the City of Marysville (City) started a watershed planning project to identify actions that can be taken to reduce pollution and improve conditions in local streams. The objectives of the planning project are to help the City:

- Target stormwater retrofit projects that will quickly provide benefits to areas with the most potential for restoration;
- Construct stormwater retrofits now, rather than waiting for redevelopment;
- Make sure tax dollars are spent in a fair and equitable manner; and
- Involve the public in decision making activities, like approving stormwater retrofits and programs.

The City manages a stormwater system with over 280 miles of pipes and ditches and nearly 1,000 stormwater facilities. Runoff from city streets, homes, parks, and businesses drains through the stormwater system into 50 miles of streams within the city limits. The receiving watersheds include Quilceda Creek (shown in green in Figure 1), Allen Creek (yellow), and areas that drain directly to Ebey Slough in the Snohomish River estuary (blue). The receiving watersheds are divided into 24 planning subbasins, thirteen of which have most of their area within the city.

The first phase of the work described conditions in the streams and watersheds inside the city boundaries and prioritized subbasin areas for planning and implementation of stormwater management projects and programs.

This plan summarizes the earlier work, identifies specific projects and programs to address flow and water quality problems in the selected subbasins, and presents an implementation plan for the selected actions. Four project concepts have been developed to a conceptual design level to help kick-start the implementation process.

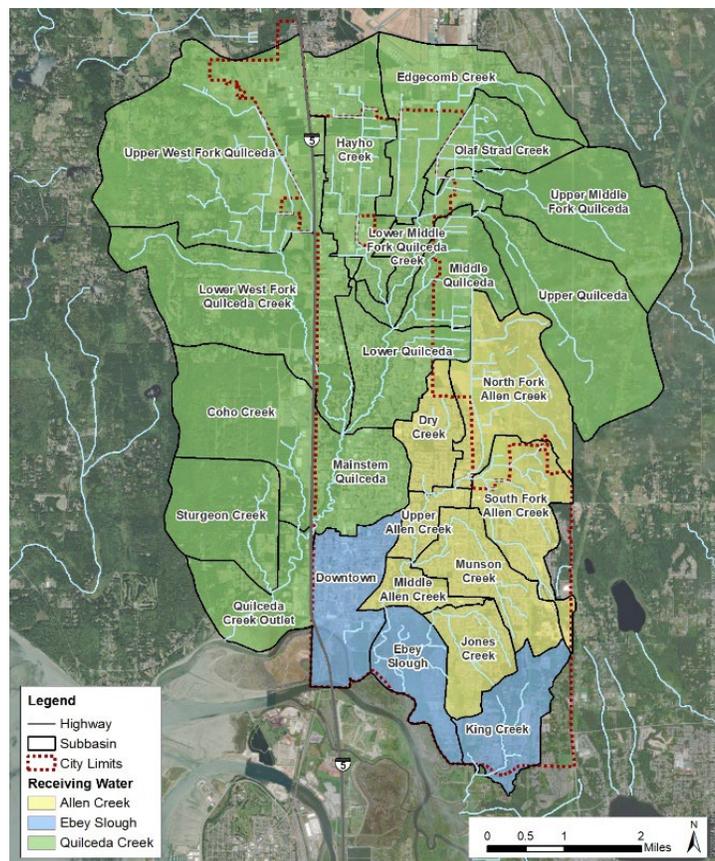


Figure 1. City of Marysville receiving waters

2 BASIN CHARACTERIZATION AND SELECTION

The Marysville watershed planning project began with a review of existing basin conditions and systematic prioritization of subbasins for stormwater management actions. This first phase of the project was fully documented in the [Marysville Watershed Planning Basin Assessment and Prioritization](#) report (NHC, 2022). The following sections summarize key steps and outcomes from the previous work.

2.1 Existing Conditions

The project team reviewed existing mapping, monitoring, and modeling data to characterize existing land use, stormwater treatment, water quality, and ecological conditions in each stream and subbasin. Existing conditions were classified based on a series of metrics related to resource value (or importance for natural processes and aquatic species) and level of degradation from existing development and other human impacts. Metrics are listed in Table 1 below.

Table 1. Basin characterization metrics

Resource Value Metrics	Degradation Metrics
Forest Cover	Impervious Surface
Wetland	Land Use
Riparian Forest	Stormwater Treatment
Potential Stream Habitat	Water Quality Impairment
Fish Use	Hydrologic Impairment
Groundwater Recharge	Road Crossings
	Future Development

The maps on the following page (Figure 2) show the relative resource value and level of degradation for subbasin areas within the city limits. Green indicates positive conditions for stream and water quality (high resource value or low degradation) while red indicates poorer conditions (low resource value or high degradation).

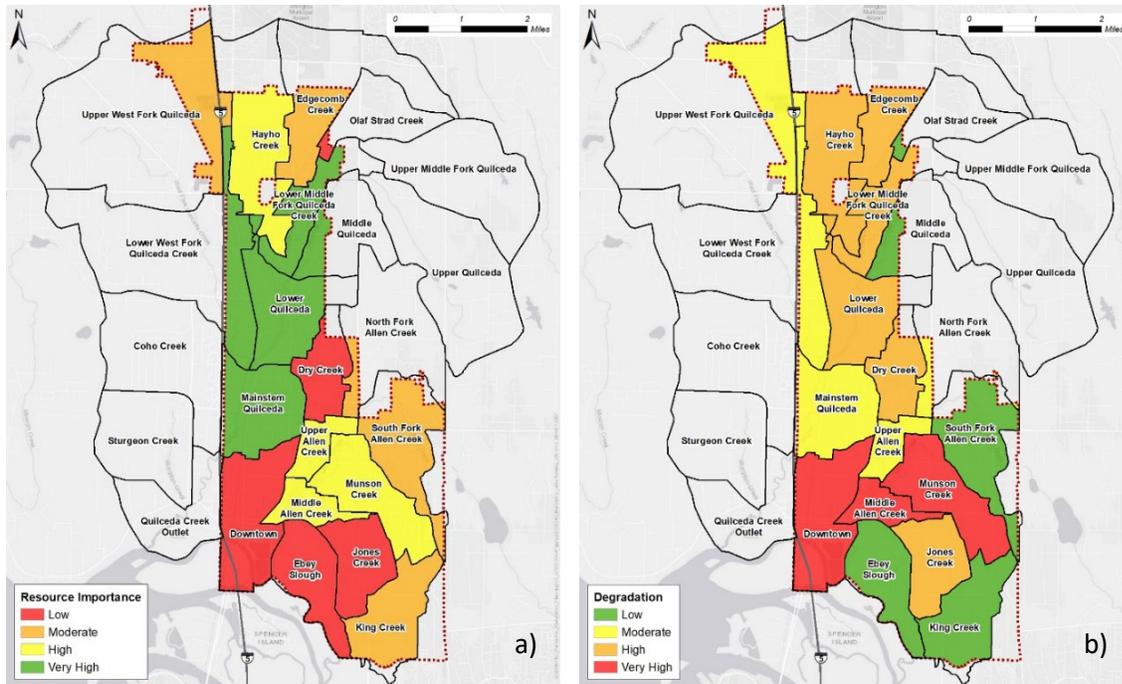


Figure 2. Relative rankings of subbasin (a) resource value and (b) level of human impact

The City also conducted an environmental justice review to help inform which areas should be prioritized for investment. The review considered whether minority, low-income, tribal, or indigenous populations could experience a disproportionate environmental harm or risk in certain areas of the city.

2.2 Prioritization and Subbasin Selection

The data analysis determined where water quality or ecological concerns exist and where new projects could provide the most benefit to streams. Subbasin value and degradation scores were plotted on a management matrix (Figure 3) that provides guidance on preferred objectives and approaches for watershed management. Basins falling into the “Restoration” corner will require a large effort to restore natural processes and

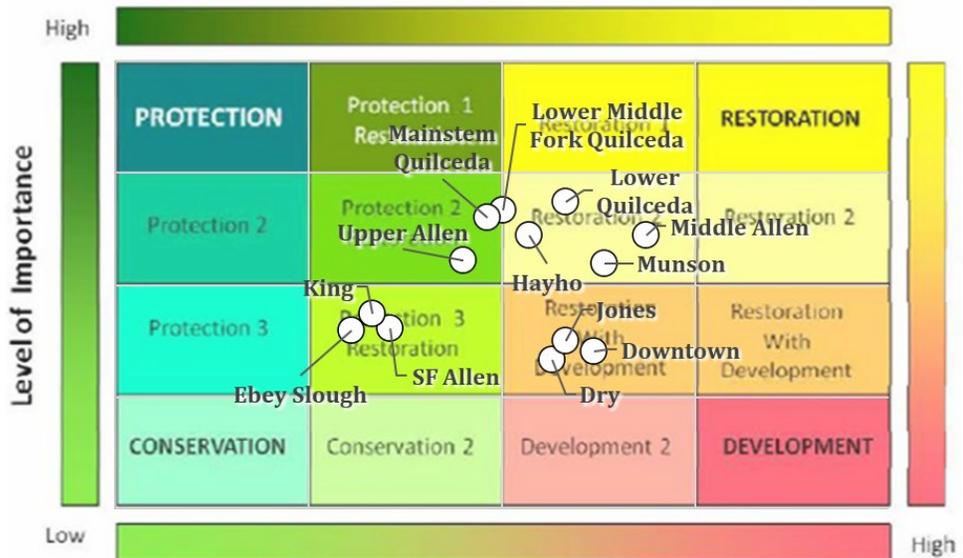


Figure 3. Stormwater management action matrix

achieve significant water quality benefits but also have a high ecosystem value. Basins in the “Protection” corner have a high ecological importance and low degradation. These basins have not been heavily impacted by development and may be target areas for programmatic actions or code revisions to protect existing resources. “Conservation” basins are areas with a low ecological importance but also low degradation. These would require a much lower level of action, mainly to maintain existing conditions. The basins in the “Development” corner have a low ecological importance and significant existing human impact. Significant efforts to achieve water quality benefits may not be warranted by the lower resource value, and development should continue to be directed to these areas.

After staff discussions and input from stakeholders, the City decided to prioritize areas falling toward the “Restoration” corner—with a high level of environmental importance that have also been impacted by development. The Middle Allen, Lower Quilceda, and Munson Creek subbasins were selected for stormwater retrofit planning. These subbasins lack effective stormwater treatment, offer chances to improve stream quality, and have potential City-owned project sites. The City also elected to target the Downtown subbasin for water quality programs to address higher environmental risks identified in the environmental justice review. Downtown was not targeted for retrofit projects as multiple stormwater projects have already been planned and/or constructed in the basin. The four prioritized subbasins are shown in Figure 4.

Identification and recommendations for specific retrofit projects and stormwater programs in each basin are discussed in the following sections.

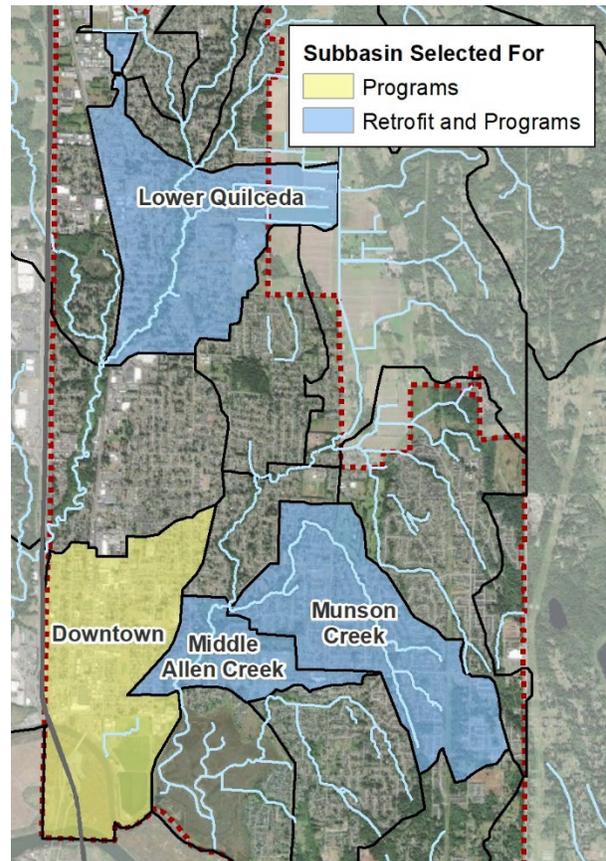


Figure 4. Prioritized subbasins

2.3 Stakeholder Engagement Summary

Results of the subbasin assessment and initial prioritization were presented to local stakeholders as part of a public process. A presentation was also given to the Public Works Committee and the Diversity Advisory Committee. Both committees are made up of community members, with the Public Works Committee also including City Council members, the Mayor, and the City Administrator. The draft plan was posted on the City of Marysville web site, and a request for comments was advertised on the City’s social media accounts. Comments and input were received from City staff, Department of Ecology (Ecology), Snohomish County, and the Tulalip Tribes. The input was incorporated into the GIS analysis and score weighting before selecting the target subbasins for stormwater management action planning. The final subbasin assessment and prioritization was also posted on the City’s web site.

3 STORMWATER RETROFITS

This section describes the selection and development of sites and concepts for stormwater management projects conducted as part of this planning process.

3.1 Retrofit Screening

The initial step in identifying retrofit sites uses desktop GIS analysis to identify, characterize, and rank potential sites. Sites included both parcels and segments of the public right-of-way. Five initial screening criteria were used to identify sites with potential retrofit opportunities in the Munson, Lower Allen, and Lower Quilceda basins:

- Existing stormwater ponds/vaults (no size threshold)
- Publicly owned parcels (no size threshold)
- Public right-of-way segments (segmented at major intersections and drainage subbasin boundaries)
- Vacant parcels (no building over 500 square feet)
- Parking lots (commercial/industrial)

The initial screening identified 574 parcels and right-of-way segments for further consideration: 209 in Lower Quilceda, 290 in Munson Creek, and 75 in Lower Allen Creek.

Each of the sites identified in the opportunity screening was scored based on the following characteristics related to desirability/suitability for retrofits:

- Property ownership
- Parcel size
- ROW type (e.g., arterial, local)
- Existing stormwater facility
- Contributing drainage area (by visual assessment)
- Infiltration potential
- Existing stormwater treatment
- Known problem area/drainage complaint
- Average site slope
- Forest cover (negative factor, avoid disturbing intact forest)
- Wetland cover (negative factor)

The objective of the desktop retrofit screening was to identify potential sites and narrow the list to approximately 30 of the most suitable for field reconnaissance and review. To identify an initial short list, individual scoring factors were weighted based on their desirability related to impactful retrofit projects. Parcel size, drainage area, known problem areas, existing level of stormwater treatment, and presence of existing facilities were weighted higher, as these factors suggest greater treatment need and/or potential for projects serving larger areas. City staff reviewed the top scoring sites, along with additional internal information, to produce a list of selected sites (shown in purple in Figure 5 below) for further investigation.

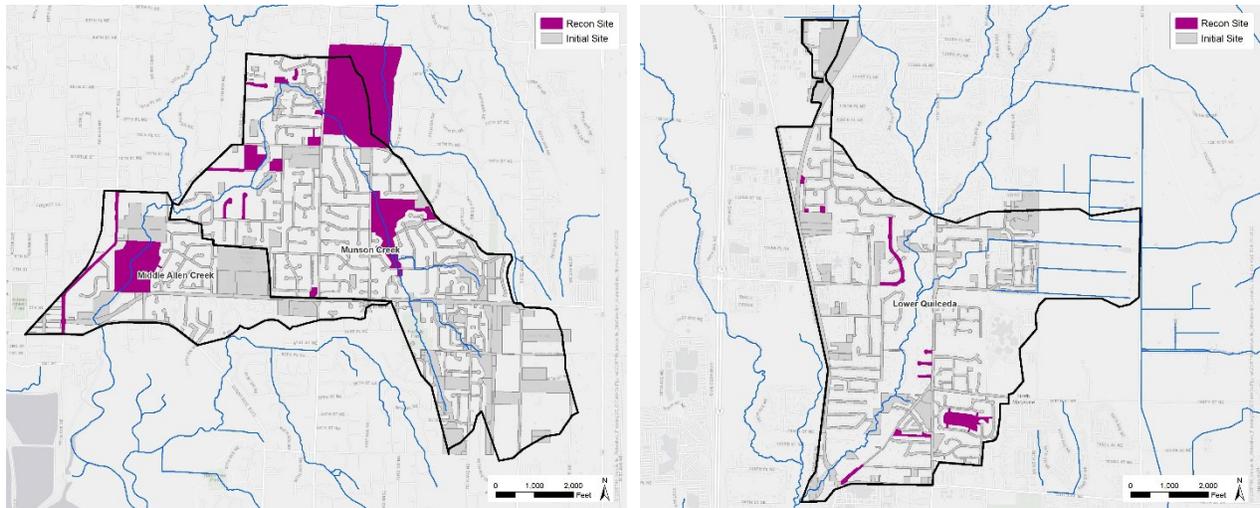


Figure 5. Stormwater retrofit reconnaissance sites

3.2 Site Selection

The project team performed site visits to the 23 sites in early February 2022 with two project engineers visiting each site. One team focused on the Lower Quilceda basin, while the other visited the Middle Allen and Munson basins. Site visits were augmented with a review of all available materials for each site, including the City’s GIS, record drawings, and information developed for the project on expected site infiltration characteristics.

Retrofit Reconnaissance Investigation (RRI) forms were filled out for each site. The form summarizes all the field and office investigations for each site, to support objective comparison between sites. The form documents the following aspects of each site under existing conditions: location, ownership, upstream drainage area and land use, existing stormwater management (type and volume), and approximate elevation drop across the site (which affects the type of facilities that can be built). Site constraints were also documented, including utilities, permitting factors, soils, possible critical areas, etc. The form allows for documentation of a proposed stormwater infrastructure concept, including calculation of available storage volume and a description of the proposed facility. A site map and proposed concept sketch were prepared, as well as a map of the area draining to each site. The completed RRI forms are provided in searchable PDF format as Appendix A.

A Site Feasibility Ranking (SFR) form was developed with feasibility criteria relevant to retrofit site selection. The criteria are grouped into categories addressing Site Feasibility, Environmental Benefits, Safety Concerns, and Opportunities, as shown in Figure 6. Criteria reflect both construction and implementation feasibility, as well as likelihood of success.

FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5		
Site Feasibility	F1.1	Potential Utility or Site Constraints
	F1.2	Sufficiency of Space Given Setback Requirements, etc.
	F1.3	Drainage Infrastructure Can be Reasonably Modified
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)
Safe	F3.1	Address/ Correct a drainage issue or safety concern
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1
Opportunity	F4.1	Opportunity to Combine with another project
	F4.2	Opportunity to Receive Grant or other funding partners

Figure 6. Site feasibility criteria

Information from the RRI forms was used to assign scores to each site based on the guidance shown in Figure 6. Once the SFR forms were compiled, both the RRI and SFR forms were distributed to the project team (City staff and consultants) for input on site ranking. Concerns and/or opportunities were identified by team members and scores were adjusted to reflect consensus ratings. Final rankings for the sites are presented in Table 2. The SFR forms are provided in searchable PDF format as Appendix B.

Table 2. Site feasibility rankings

Rank	Site #	Location	Feasibility Score
Middle Allen Subbasin			
1	241	Jennings Park	4.27
Munson Creek Subbasin			
1	219	Youth Peace Park, 76th St NE	3.73
2	9	80th PI NE	3.55
3	85	SD-DF-49 Cedar Crest Greens	3.45
4	212	7516 64th Ave NE 30052700106600	3.36
5	213	Grove St near the intersection of 61st Ave NE (library)	3.27
6	7	74th St NE, between Grove St and 60th Dr NE	2.73
7	71	61st Dr NE	2.64
8	70	59th Dr NE ROW	2.45
9	249	67th Ave NE and 64th St NE, 00723000011000	2.27
10	318	Cedarcrest Vista East Divisions 1& 2, 8224 67th Ave NE	2.09
11	325	Cedarcrest Golf Course	2.00
12	328	Near cul-de-sac of 67th St NE	2.00
Lower Allen Creek Subbasin			
1	170	Strawberry Vista, near 122nd St NE and 42nd Dr NE	3.36
2	125	Parcel located at intersection of 124th PI NE and 41st Ave NE	3.36
3	169	Strawberry Vista Pond 1, near 41st Ave NE and 122nd St NE	3.18
4	28	ROW, 47th Dr NE between 118th St and 116th St NE	2.82
5	188	Shoultes Park	2.73
6	68	110th PI NE between creek outfall and 21st Ave NE	2.55
7	69	Near intersection 110th St NE and 51st Ave NE	2.36
8	70	Near intersection of 109th St NE and 51st Ave NE	2.36
9	57	Shoultes Road between 101st PI NE and 100th St NE	2.36
10	29	47th Dr NE between 121st PI NE and 118th St NE	2.27

3.3 Priority Stormwater Retrofits

Based on the results from the selection process, the team recommended the Jennings Park, Youth Peace Park, and 80th Place NE cul-de-sac sites (listed in bold in Table 2 and shown in Figure 7) for retrofit projects. This section describes the three retrofit projects for which conceptual designs were developed as part of this work, as well as the City's Armar Road retrofit project, which is already in design. Key project characteristics are summarized in Table 3. Summary sheets and conceptual plans for the three projects developed as part of this study are also provided in Appendix C and Appendix D, respectively.



Figure 7. Recommended retrofit projects

The following paragraphs provide a brief description of the planned stormwater facilities for each of the four retrofit projects. Table 3 summarizes basic project information, including treatment area, maintenance requirements, and estimated costs.

Armar Road. This project is currently in design, and an alternatives analysis has been completed. The chosen alternative includes infiltration trenches and Filterra (or equivalent) systems, which will be constructed in the planter strip along both sides of Armar Road. The improvements will extend from 47th Avenue NE to approximately 200 feet north of the Jennings Park entrance. The Filterra systems will provide enhanced water quality treatment, via filtration of 91 percent of runoff volume, as required prior to infiltration. The trenches will need to be registered with Ecology’s Underground Injection Control (UIC) program and will be designed to meet all UIC requirements. This project is at approximately 30% design, with funding in place to get to 90% design by the end of 2024.

Jennings Park. Two water quality facilities will be constructed at this site. The north facility will be an open “boxless” media filter system. It will look similar to a rain garden, with plants and areas that can be viewed by park patrons. The northern facility will repurpose an existing bioswale that receives runoff from the Parkview Estates neighborhood (55th Drive NE). The existing facility was built thirty years ago and does not meet today’s standards for treatment or flow control. The existing facility will be redesigned as a constructed wetland to enhance the runoff treatment capacity and provide native habitat. The southern facility will be located in the parking lot off of 64th Street NE and will include a below-grade media filter system in a vault. Both systems could be specified as a product similar to a biopod, or an equivalent system. This project received additional grant funding through the Puget Sound Regional Council (PSRC) to advance its current status to 30% design.

Peace Park. A wet/detention vault, which will be built below grade, can accommodate future park amenities. Because there is limited elevation change in the stormwater system across the site (roughly four to five feet), the recommendation is to provide a flow control vault with a wetpool underneath the vault. This provides both basic water quality treatment and some flow control for the basin in one facility. A concrete vault is recommended, as it provides the most efficient volume for the limited area. This project has been developed to an approximate 10% design level.

80th Place NE. A water quality vault and an infiltration system will be constructed under the roadway. The water quality vault will likely need to accommodate a limited elevation drop, similar to a modular wetland system, to maximize the volume available for an infiltration system. Depending on the infiltration capacity of the site soils, the system may be a concrete vault or a more linear system, like a perforated tank or chamber system installed parallel to other utilities. This project has been developed to an approximate 10% design level.

Table 3. Priority retrofit projects

Project	Armar Road (51st NE to 47th NE)	Jennings Park	Peace Park	80th Place NE
Facility Type(s)	Infiltration trenches and proprietary pre-treatment system	Proprietary soil media filter	Wet/detention flow control vault	Infiltration system and proprietary pre-treatment system and soil media vault
Treatment Type	Infiltration and Enhanced WQ	Enhanced WQ	Flow Control and Basic WQ	Infiltration, Flow Control and Enhanced WQ
Tributary Area	13.7 acres	118 acres	12.3 acres	8.7 acres
Mitigated Acres (WQ/Flow Control)	13.7/13.7	118/0	12.3/6.1	8.7/4.3
Anticipated Maintenance¹	Medium Remove trash and debris, replace pretreatment mulch, and prune vegetation twice per year. Inspect infiltration system.	High Providing weeding of invasive species. Remove trash and debris. Rake mulch layer and replace outfall protection if erosion is present. Maintain plants and replant as necessary. Replace mulch layer every 1 to 2 years. Replace proprietary soil media every 15 years when necessary.	Low Remove trash and sediment accumulation with a vacuum truck every 1-3 years.	Medium Remove trash from screening device every 6 to 12 months. Remove sediment every 1 to 2 years. Replace cartridge filter media every 1 to 2 years. Inspect infiltration system.
Estimated Total Construction Cost	\$1,100,000 ²	\$2,100,000 ²	\$4,300,000 ²	\$1,700,000 ²
Construction Cost per Treated Acre	\$80,300 ²	\$17,800 ²	\$350,000 ²	\$195,000 ²

¹ Maintenance requirements approximated as relatively Low, Medium, or High based on complexity of installation (number of BMPs, accessibility) and requirements of individual BMP types.

² Dollars are reported in 2022 values and do not account for supply chain issues or changes in market conditions. Values are rough order of magnitude based on the 10-30% Design and includes 20% design contingency, 8% general conditions, and 6% contractor overhead/fee. Sales taxes are not included.

3.4 Needs for Future Phases

Armar Road. The City has grant funding to bring this project to 90% design by the end of 2023. Construction costs will determine whether full walkway improvements can be completed. This project is listed in the Transportation Element of the Comprehensive Plan and on the City's Transportation Improvement Plan (TIP) 6-year project list for non-motorized improvements. The TIP project proposes building sidewalks in place of the current striped walkways. The City intends to seek additional funding from Ecology (and other sources) to support final design efforts and construction. Currently, The City intends to apply for additional grant funding in either 2023 or 2024 for completion of construction in 2027 or 2028.

Jennings Park. Coordinate design with the pump track design such that the projects are married together with the trail connections. The City is also developing a survey of park users to gather input on preferred park uses and desired amenities.

Peace Park. Complete a full topographic survey. Engage the Parks department to understand the projected timeline and goals for park redevelopment. Provide community engagement to get input on proposed park amenities and help citizens understand how they impact the stormwater system.

80th Place NE. Complete geotechnical investigations to determine available infiltration rates. Conduct further stormwater modeling to confirm the necessary volume for the proposed system, based on site-specific infiltration rates. Complete a full topographic survey. Explore replacing storm mains to increase the elevation drop across the system. Explore the possibility of installing a stormwater flow restriction structure lower in the system to increase the efficiency of the proposed flow control. Assess the possibility of partnering with a sewer replacement project. Provide community engagement, so that neighbors know and understand the benefits of the project, as well as the short-term impacts due to construction. The final design should address neighborhood concerns.

Project sites were screened for potential cultural or archaeological resources using the state's WISAARD database. There were no findings within any of the project extents, though the predictive model indicated that a cultural resources survey would be advisable in all four locations. Since the planned projects are retrofits of already developed areas, the risk of encountering cultural resources is anticipated to be low. However, further cultural review is expected to be completed for each project.

4 STORMWATER PROGRAMS

Recent modeling exercises have demonstrated that a site-by-site approach to stormwater retrofits is insufficient to address the existing levels of degradation in urban receiving waters. Programmatic stormwater actions, critical area preservation, and stream channel restoration programs are also necessary to achieve water quality improvements (Ecology, 2018). In recognition of the challenges of improving degraded urban receiving waters, Ecology has required that an evaluation of land management or development strategies and programs be included in this plan.

4.1 Land Management/Development Strategies

To assist municipalities with the land management and development strategies assessment, Ecology issued an SMAP Guidance document (Ecology, 2019a). The stated intent of the requirement is to protect or conserve areas with high resource value. The Ecology guidance suggests that this could be done by purchasing property or implementing zoning changes. In areas that have already been built out, the guidance suggests that efforts to increase canopy cover should be implemented.

Existing Land Management/Development Strategies

The City has already established requirements to preserve and replace trees during new and redevelopment. The Marysville Municipal Code (MMC) outlines the requirements for landscaping and critical areas. Chapter 22C.120 Landscaping and Screening requires landscaping in new developments or when substantial improvements are made to an existing development. Section 22C.120.140 Street Tree requirements specifically calls for new trees to be planted along all city streets and access easements.

The MMC also encourages the preservation of significant trees. Specifically, Chapter 22C.090 Residential Density Incentives provides a five percent increase above base density, if substantial overstory vegetation is preserved. Further density incentives can be achieved through installation of perimeter vegetation planting. These incentives result in more tree retention, or installation, than would otherwise be required for a new development. Retaining existing trees results in many ecological benefits for the community including, but not limited to, soil stabilization, complex mature habitat, and water uptake. Consolidating development on a smaller footprint also results in the preservation of land overall, preventing urban sprawl.

Title 22E regulates development in critical areas, such as wetlands and streams. Impacts to critical areas or their buffers must be mitigated. Even if the buffer is not directly impacted by development, replanting is required if the existing critical area buffer is inadequate. An existing buffer is considered “inadequate” when non-native plant species provide the dominant cover, vegetation is lacking, or enhancement planting could significantly improve buffer functions. Buffer widths vary by critical area type and location.

The City owns several large open space areas in the selected basins, approximately 119 acres of which are riparian corridors or wetlands. Jennings Park and Northpoint Fitness Park are the two largest sites. The City has partnered with the Snohomish Conservation District and Adopt-A-Stream to complete restoration projects at both of these parks. Earth Day tree planting events have also been conducted at the parks.

New Strategies

The appropriateness of new land management and development strategies was evaluated in light of the existing land cover conditions in the selected basins, demographics, and neighborhood planning efforts. The City is tasked with accommodating future population growth under the State of Washington Growth Management Act. The Snohomish County Buildable Lands Report (Snohomish County, 2021) assesses whether forecast growth can be reasonably accommodated within the city limits. This report is used as a

framework for evaluating how much population growth is expected in the future and how many housing units must be allotted inside City limits.

The receiving water assessment determined the level of impervious surface and the current land use conditions within city limits. Table 4 shows the percent area covered by impervious surface and forest, as well as percent area classified as undeveloped, in each of the planning subbasins.

Table 4. Subbasin land cover characteristics

Basin	Land Cover (% of Basin Area)		Undeveloped Area (%)
	Impervious Surface	Forest	
Middle Allen Creek	45%	16%	14%
Munson Creek	37%	18%	0%
Downtown	50%	8%	0%
Lower Quilceda Creek	42%	9%	5%

The current land use in the Middle Allen Creek, Munson Creek, and Lower Quilceda Creek basins is primarily low density residential. Under future growth projections, these areas are expected to increase to medium and high density residential. The Downtown area is already a mix of residential and commercial and is also expected to become higher density in the future.

The City must balance the need to accommodate future growth and housing with natural resource preservation and restoration. The State Growth Management Act (GMA) also requires urban development within Urban Growth Areas (UGAs) to protect lands outside of UGAs. The requirement thus necessitates that development within the UGAs become more dense. Additional land purchases and zoning changes have been evaluated for the selected basins and found to provide limited opportunity for water quality benefit, given that these basins are largely developed and have existing, established neighborhoods and other uses.

The City already owns several large tracts along riparian corridors. New development along streams will be constrained by the existing land use codes discussed above. Buffers that are inadequate or degraded are required to be re-established with native trees and shrubs when development or redevelopment occurs. The critical area and associated buffer are required to be placed in Native Growth Protection Area (NGPA) tracts or easements for permanent protection. Over time, as buffers are restored with development, the health of the critical areas improves.

Land use strategies were also considered through the lens of populations that may be experiencing a disproportionate risk for environmental harms within the city. Several sources of data were used to identify populations experiencing higher risk and/or geographic areas of the city that may pose environmental hazards. Sources included US Census Bureau data, Marysville School District data, Ecology's *What's In My Neighborhood* toxic cleanup site map, the Environmental Protection Agency's EJScreen Environmental Justice Screening and Mapping Tool, and Washington State Department of Health Environmental Health Disparities Map.

The resource maps showed that the Downtown and Middle Allen subbasins are both at high risk for populations living in poverty and for poor air quality. The recent 2021 Downtown Master Plan update further validated this information by identifying that 32 percent of all households pay more than 30 percent of their income on housing costs (26 percent of owners, 47 percent of renters). Zoning and other land management strategies were evaluated with the 2021 Downtown Master Plan update. However, the land management and development strategies recommended therein do not directly address water quality management concerns as required by Ecology. Stormwater retrofit projects are underway to address the stormwater quality management concerns.

More can be done to correct the identified environmental risk factors by increasing tree canopy. High impervious surface affects those living in the area by creating a heat island effect. Trees decrease temperatures by shading impervious areas and homes. On average, urban tree canopy can reduce air temperatures between one and five degrees F (King Conservation District, 2021). This reduces costs of cooling in the summer and protects people who might be vulnerable to heat-related illnesses such as those living in poverty. Urban trees also help to reduce air pollution, by absorption and deposition of contaminants (King Conservation District, 2021).

Ecology's Stormwater Management Manual for Western Washington (SWMMWW) contains design guidelines to quantify the area of benefit that can be achieved by planting trees (BMP T5.16 Tree Retention and Tree Planting). According to the SWMMWW, trees provide stormwater flow control through interception, transpiration, and increased infiltration. Tree planting provides a beneficial impact area that is directly related to the tree canopy cover. Therefore, the stormwater reductions are relatively small for individual trees. However, tree planting programs can be implemented throughout the city to provide a more robust overall benefit by making incremental reductions in the stormwater volume over an entire basin. Furthermore, the benefits obtained with enhanced tree cover will increase as trees mature.

With high impervious surface, low forest cover, and minimal undeveloped land, increasing canopy cover is a practical land use strategy for the selected basins.

Recommended Sites

To promote increased canopy cover, the City has identified potential planting sites that include streets, City-owned parcels, and stormwater facility parcels. Street locations were identified using GIS. Planting sites in the selected Downtown, Munson Creek, Middle Allen Creek, and Lower Quilceda Creek basins were identified on streets with an existing sidewalk and a planter strip without any trees. Areas with a planter strip at least six feet wide were further evaluated to assess for conflicts with City utilities. The most promising locations were field-verified to determine if overhead utilities could affect the variety of trees selected. Twenty-five locations in the Downtown neighborhood and one location in the Lower Quilceda Creek basin were identified for street tree planting (Figure 8).

City-owned parcels with riparian buffer, open spaces, or stormwater facilities were also identified using GIS. Identified parcels were classified based on the current use, and the approximate area for additional trees was estimated. One planting site was identified in the Lower Quilceda Creek basin, three sites in Middle Allen Creek, and nineteen sites in the Munson Creek basin (Figure 9).

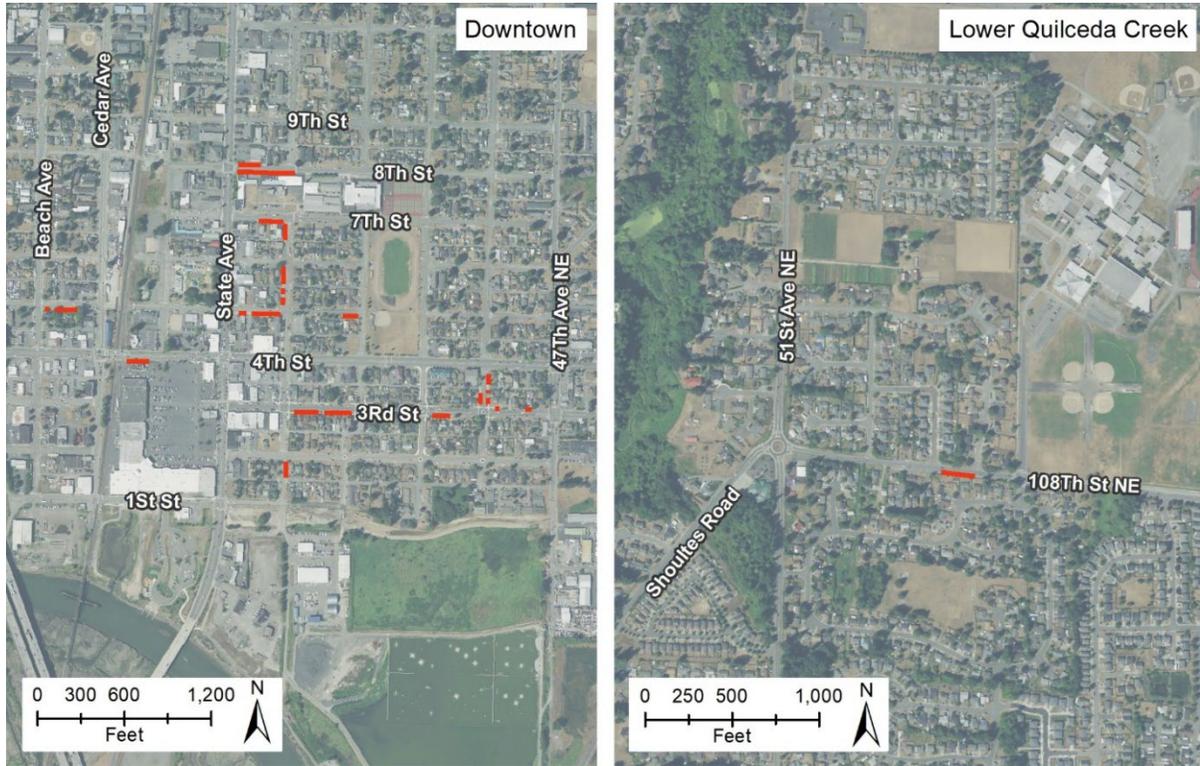


Figure 8. Street tree planting sites (shown in red)

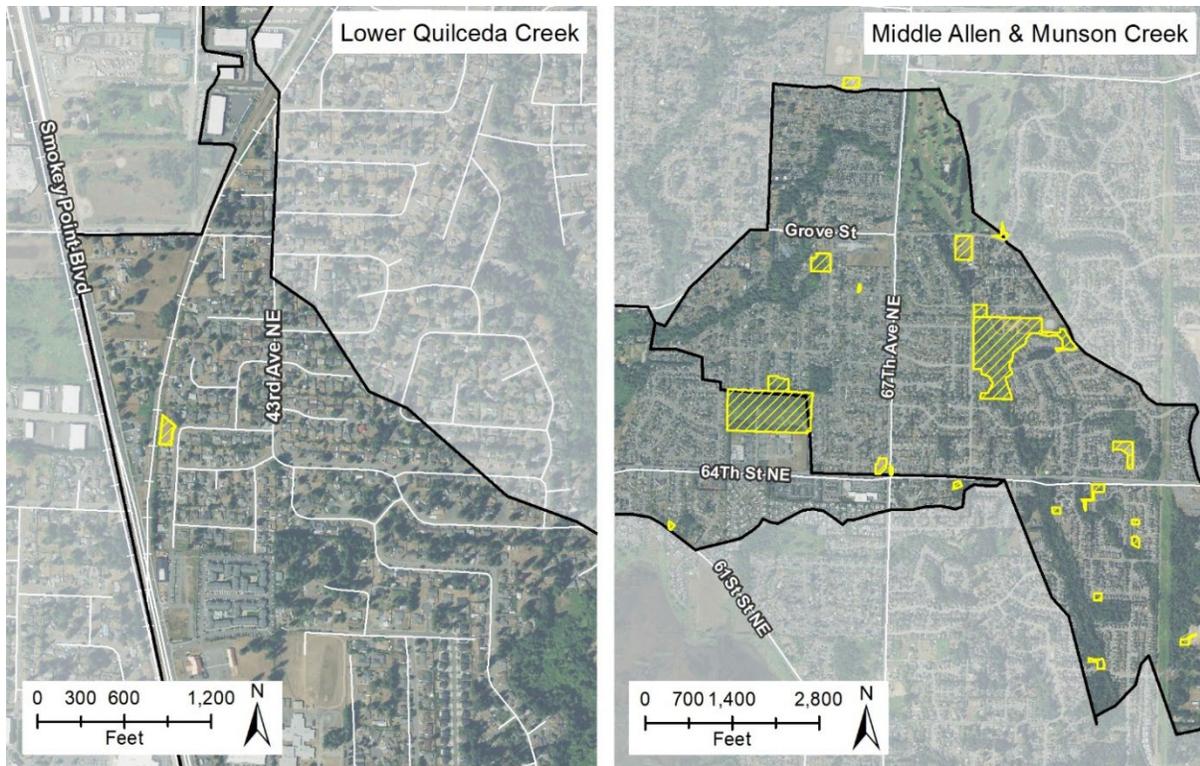


Figure 9. Tree planting parcels

4.2 Stormwater Management Programs

Ecology has required “targeted, enhanced, or customized implementation of stormwater management actions” as part of this plan. This requirement is intended to provide a new focus for programs that are already mandatory. The list of recommended programs includes Illicit Discharge Detection and Eliminations (IDDE) field screening, source control inspections, operations and maintenance inspections, enhanced maintenance, or public education and outreach behavior change programs.

As discussed in the previous section, the environmental justice review indicates that the Downtown neighborhood is likely experiencing a higher risk for environmental harms than other areas of the City. Therefore, programs to reduce pollution sources in Downtown are prioritized in this plan.

Source Control

A Source Control Program is a proactive, preventive, inspection-based program focused on addressing pollution from existing land use and activities that have a potential to release pollutants to the stormwater system. Preventing pollutants from contaminating stormwater is an effective way to reduce impacts of municipal stormwater on streams (Ecology, 2018).

The City plans to begin source control inspections in the Downtown and Lower Quilceda basins. The City established an inventory of publicly and privately owned institutional, commercial, and industrial sites that have the potential to contribute pollutants to stormwater. The business inventory initially identified 1,268 parcels for inspection citywide. There are 310 sites located in the Downtown basin and 117 sites located in the Lower Quilceda basin.

The City will conduct approximately 250 source control inspections annually. Follow-up inspections at a previously-inspected site count toward the annual inspection total. The frequency of follow-up inspections is unknown at this point. However, the City is anticipating that follow-up visits will be required for a majority of the sites during the first years of the program.

Dumpster Outreach

The second stormwater management action that will be targeted is an Education and Outreach program. In 2021, the City joined 30 other jurisdictions in the Dumpster Outreach Group (DOG). The group worked with a local social marketing consultant to develop a dumpster behavior change program. Each municipality implemented a pilot program to test the effectiveness of the outreach, which encourages the closing of dumpster lids to prevent rainwater intrusion.

The City continues to be involved with the DOG. The dumpster program will be implemented along with the Source Control business inspections. These programs naturally go well together. Source control inspections will be focused on outdoor storage and the stormwater collection system. Every business has a trash receptacle, and the City provides solid waste service, which eliminates potential barriers of working with an outside service providers.

5 IMPLEMENTATION

The City plans to implement the projects and programs discussed in the previous section within the next 20 years, with many expected in the six-year short-term planning horizon.

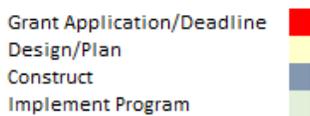
5.1 Proposed Timeline

The timeline in Table 5 shows the anticipated implementation schedule for the projects and programs described in the previous sections. The retrofit projects are expected to be funded primarily through grants. Grant deadlines for each phase of the capital projects are indicated by red shading. Initial funding for the programmatic actions is already in place through the City budget. The Source Control and Dumpster Outreach programs will begin January 1, 2023. Tree planting will begin in 2024, with an expected spring design and fall planting cycle each year.

The retrofit projects identified in this plan are expected to be designed and constructed over the next ten years. This plan can also be used to guide longer term actions in the seven- to twenty-year range. Additional retrofit projects can be selected from the list in Section 3.1 (with initial rankings shown in Table 2).

Table 5. Project implementation timeline

Project/Program	Short-Term Actions																Long-Term Actions																			
	2024				2025				2026				2027				2028				2029				2030				2031				2032			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Armar Road																																				
Jennings Park																																				
Peace Park																																				
80th Pl NE																																				
Street Trees/ Sites																																				
Source Control																																				
Dumpster Outreach																																				



5.2 Budget Needs and Funding Sources

Retrofit Projects

Retrofit project costs are rough order of magnitude estimates based on the current (10-30%) designs and include 20 percent design contingency, 8 percent general conditions, and 6 percent contractor overhead/fee. Values are in 2022 dollars and do not include sales tax.

Armar Road. Design for this project is expected to extend through 2024, with construction likely to begin in 2026 and extend through 2028. Grants for construction costs—approximately \$1.1 million—will be applied for in fall of 2024 or 2025.

Jennings Park. Design is expected to start in 2027 and will cost approximately \$525,000, across 2027 and 2028. Design costs are approximated as 25% of the construction costs. Grants for construction costs will be applied for in 2026 for expected construction in 2029-2030 and will be approximately \$2.1 million.

Peace Park. Design is expected to start in 2029 and will cost approximately \$1.1 million, across 2029 and 2030. Design costs are approximated as 25% of the construction costs. Grants for construction costs will be applied for in 2029 for expected construction in 2031-2032 and will be approximately \$4.3 million.

80th Place NE. This project is expected to start outside of the six-year short-term action timeline. Grant funding for design costs will be applied for in 2029 and will cost approximately \$425,000 across 2031 and 2032. Design costs are approximated as 25% of the construction costs. Grants for construction costs will be applied for in 2031 with expected construction in 2033-2034 and will be approximately \$1.7 million.

Tree Planting

The City is anticipating an annual budget of \$10,000 from the Surface Water NPDES budget to accommodate future tree planting efforts. This could be increased or matched by partnering with other agencies. The level of planting varies at the parcel sites. Some sites are candidates for more extensive wetland or riparian buffer restoration. The City will pursue opportunities to partner with the Conservation District and local non-profit organizations to plant trees at the parcel sites.

Source Control

The City has received a grant from the Department of Ecology (WQC-2022-MaryPW-00075) to begin the Source Control program. The funding will be used for one full-time employee (FTE) to implement the source control inspections. The grant agreement is active through June 2025, after which time the City anticipates the FTE position will be included in the 2025/2026 storm/sewer budget as a permanent position.

Dumpster Outreach

The program will be funded through the City's existing education and outreach budget. The City will continue to partner with other cities in the Dumpster Outreach Group (DOG) to implement and adapt this program. Bulk orders of supplies and outreach materials will help to keep implementation costs low.

5.3 Adaptive Management and Plan Update Process

The City has partnered with Snohomish County to receive new aerial photos every two years. New images—or other publicly available land cover data sets—will be used to periodically conduct updated

land cover assessments. The land cover analysis can be used to establish a status and trend metric for the City's tree planting program.

As previously mentioned, a Stormwater Comprehensive Plan update is anticipated to occur in 2024-2025. This will provide an opportunity to review projects and progress, evaluate additional retrofits, and identify additional funding and budget sources for the City's surface water program as a whole.

6 RESOURCES

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Washington State Department of Health. Information by Location, Washington Tracking Network.
Accessed 26 April 2021, <https://fortress.wa.gov/doh/wtn/WTNIBL/>

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<https://washingtonstatereportcard.ospi.k12.wa.us/ReportCard/ViewSchoolOrDistrict/100142>

APPENDIX A

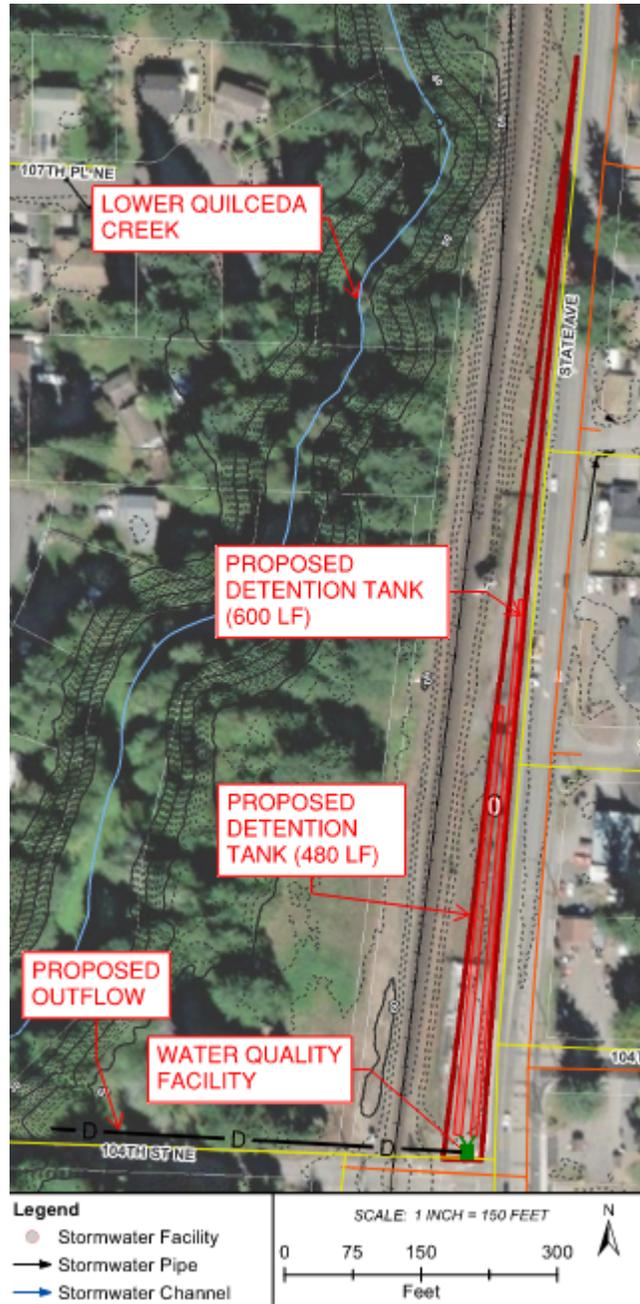
FIELD RECONNAISSANCE FORMS



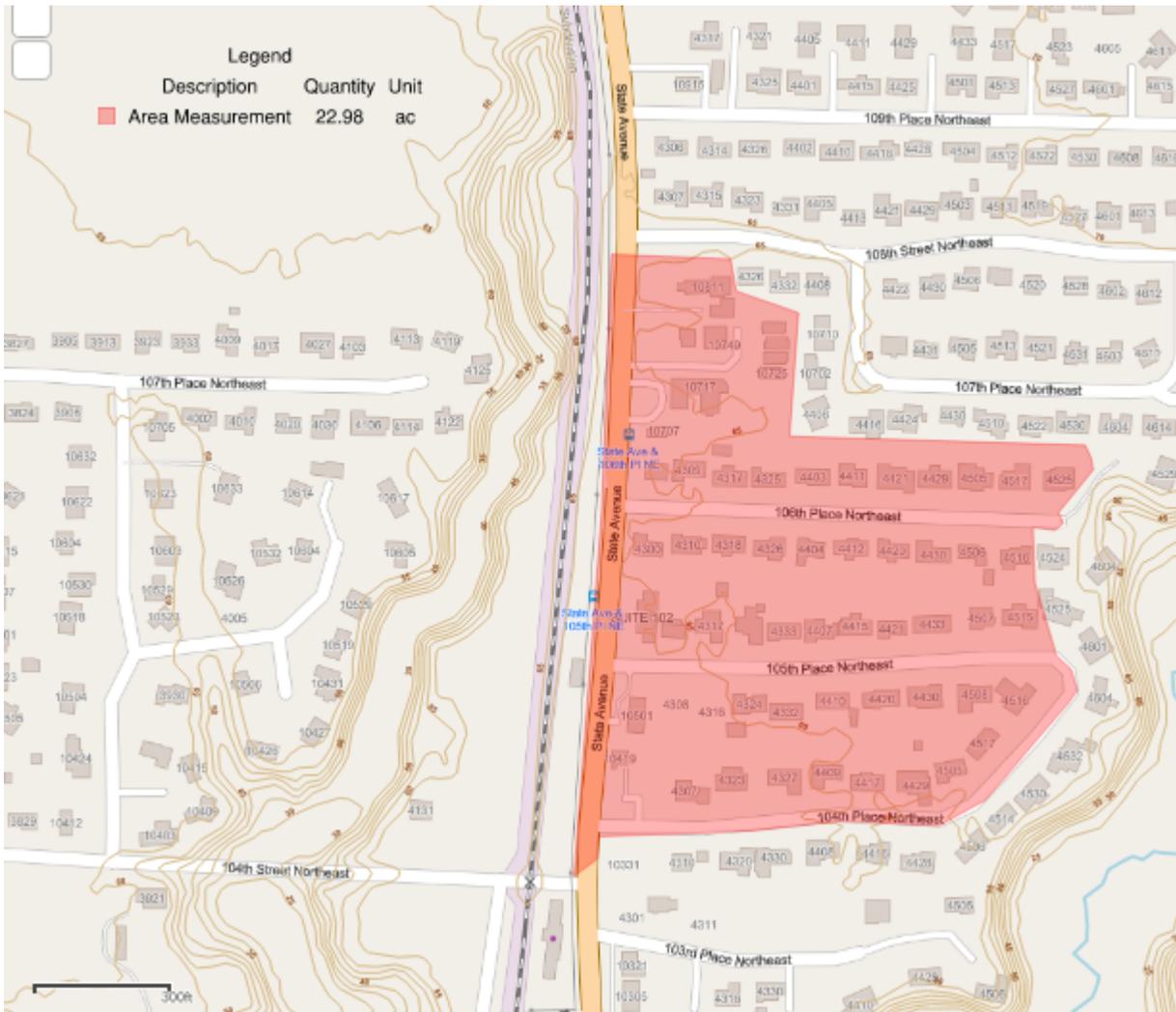
Unique Site ID: 0	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/9/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: _____		
Location Notes: State Ave between 106th PI NE and 104th PI NE in Marysville		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown		
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input checked="" type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input checked="" type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 23 ac Imperviousness ≈ 46 % Impervious Area ≈ 10.6 ac	Drainage Area Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input checked="" type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes:		
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: Catch basins located between 105 th PI and 106 th PI, outfall not listed		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Possible flooding problems, catch basins are off of the roadway and near private parcels.		
Approximate existing head available: ~20'		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flow Control <input type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage)	Retrofit Computations (Storage) 23ac. * 0.46 = 10.58 ac 10.58 ac * (18,000cf/ac) = 190,440 cf needed Length needed for 8' dia pipe = 3,789 lf Lineal space available ~ 1,100 ft																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input checked="" type="checkbox"/> Proprietary Media Filter <input type="checkbox"/> Infiltration <input checked="" type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance: A detention tank could be located on the south side of the site between the roadway and train tracks. Heavy construction was observed in this area during the investigation.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: High use area between traffic and train line	Access: <input type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input type="checkbox"/> Space <input checked="" type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input checked="" type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Yes</th> <th style="width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other:</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other:	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH: _____ Other Factors: _____
Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input type="checkbox"/>	Cable																										
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<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other:																										
Soils: Prior Geotechnical Analysis: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Soil Classification: _____ Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: _____ Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Soils classified as Ragnar fine sandy loam Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Sketch



Tributary Areas





Design or Delivery Notes

87,120 ft³ needed for storage volume, total provided in sketch ~ 54,249 ft³

Follow-up Needed to Complete Field Concept

- | | |
|--|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area impervious cover | <input checked="" type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

High traffic area with construction present, likely flooding in the area. The site is also very flat with little existing drainage. Improvements would require boring under existing train tracks, need to lead pipe down ravine, impacts to existing slopes.

Site is identified as being utilized for a roadway widening project that is currently underway. Thus the project is not considered for further investigation.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

Unique Site ID: 9	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/9/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: _____		
Location Notes: 136th St NE near the intersection with 40th Ave NE		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown		
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input checked="" type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input checked="" type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault		
<input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault		
<input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 15 ac	Drainage Area Land Use:	
Imperviousness ≈ 30 %	<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional	
Impervious Area ≈ 4.47	<input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial	
Notes:	<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related	
	<input type="checkbox"/> Townhouses <input type="checkbox"/> Park	
	<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped	
	<input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible		
If Yes, Describe:		
The roadway drains south to existing catch basins and then is piped under the roadway to a drainage ditch. Existing stream noted on the north side of the roadway.		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.:		
Water present in ditch, seemingly in good condition. Ditches appear to be flat and not conveying water, infiltration rate described as "poor".		
Approximate existing head available:		
~3'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality
 Channel Protection
 Flow Control
 Infiltration
 Repair
 Other:

Existing Facility Computations (Storage)

V ~ 18,000 ft³

Retrofit Computations (Storage)

$V = (2/3) * 4 * 8,982$
 V = 23,952 ft³

Proposed Treatment Option:

- Expanded Detention
 Wet Pond
 Constructed Wetland
 Bioretention/BSM
 Proprietary Media Filter
 Infiltration
 Swale
 Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

The proposed retrofit would increase the size of the existing trenches, improve conveyance, and add a water quality facility prior to discharge into the creek. Modular wetland also an option.

Site Constraints

Adjacent Land Use:

- Residential
 Commercial
 Institutional
 Industrial
 Transport-Related
 Park
 Undeveloped
 Other: _____

Possible conflicts due to adjacent land use? Yes No

If yes, describe:

Access:

- No Constraints
 Constrained due to:
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown

Yes	Possible	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water
<input type="checkbox"/>	<input type="checkbox"/>	Gas
<input type="checkbox"/>	<input type="checkbox"/>	Cable
<input type="checkbox"/>	<input type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____

Potential Permitting Factors:

- | | | |
|------------------------------|-----------------------------------|--|
| Dam Safety Permits Necessary | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Wetlands | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to a Stream | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Floodplain Fill | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Forests | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Specimen Trees | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| How many? | _____ | |
| Approx. DBH: | _____ | |

Other Factors:

Soils:

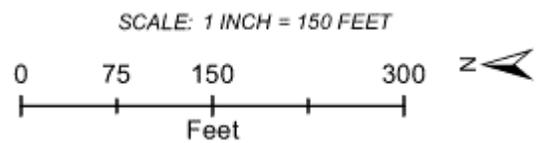
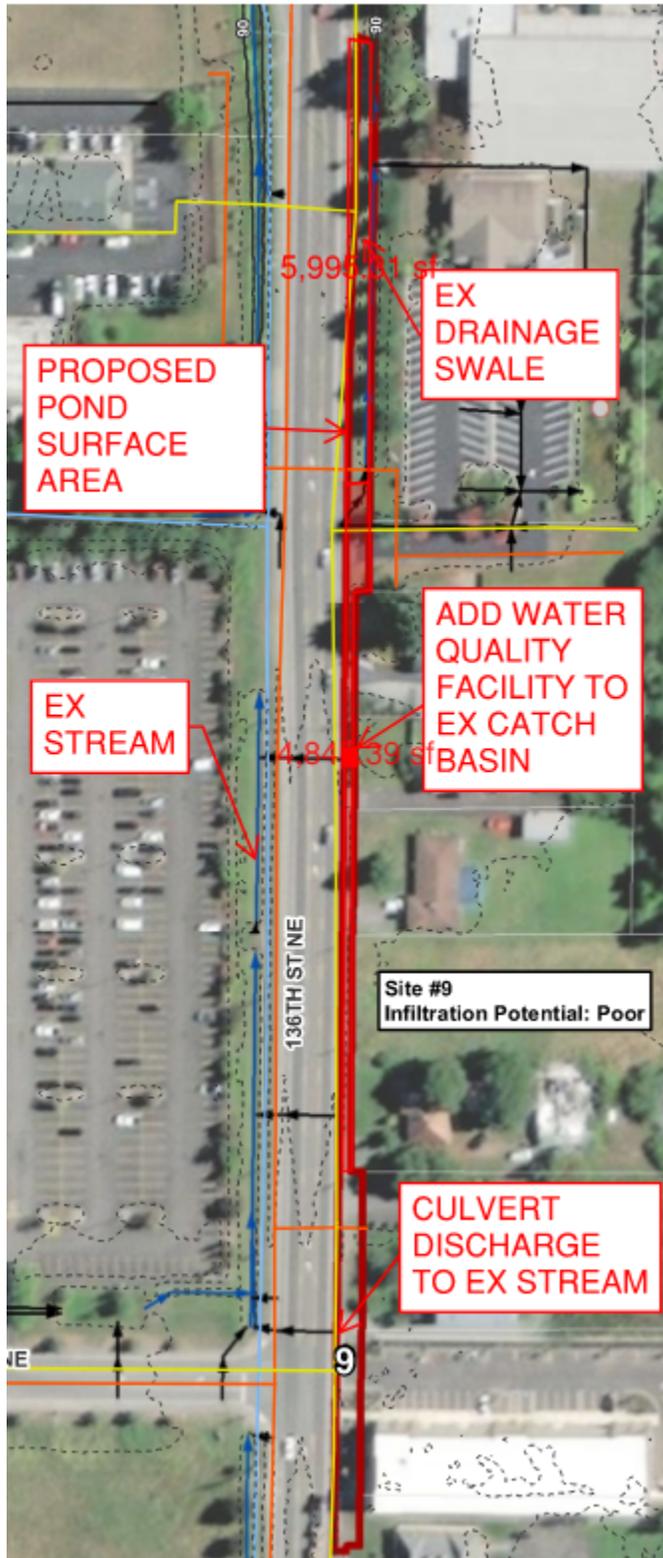
- Prior Geotechnical Analysis: Yes No
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

Soil Classification: _____

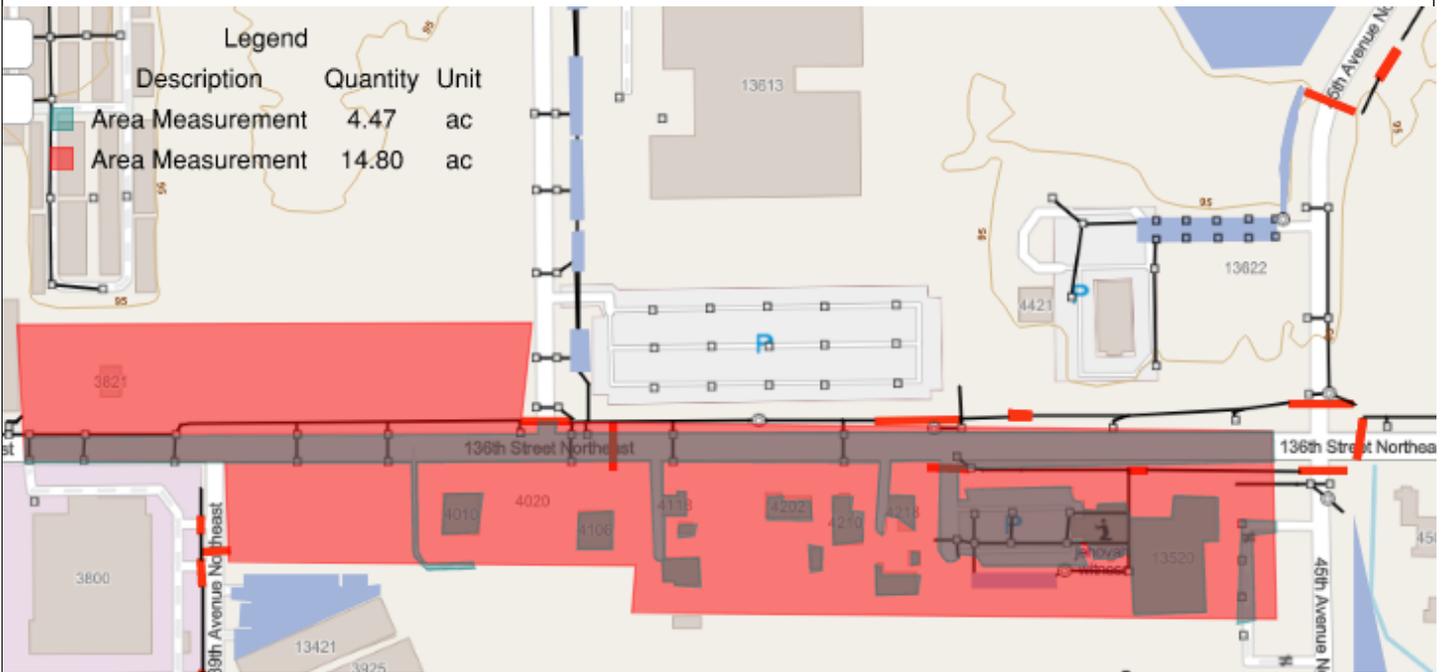
Comments:

Soil infiltration described as "Poor". Soils classified as custer fine sandy loam and norma loam.

Sketch



Tributary Area





Design or Delivery Notes

Space is limited with the adjacent water main, recommendation for conveyance and improvements to the existing swales. Compost filter possible, likely no biorientation or flow control. Modular wetland with minimal head could be an option.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

136th St NE is a high traffic roadway, very little room to expand size of the existing drainage ditch. The site soils are also graded as “poor”, so another option might include adding a treatment vault and replacing the ditch with a culvert.

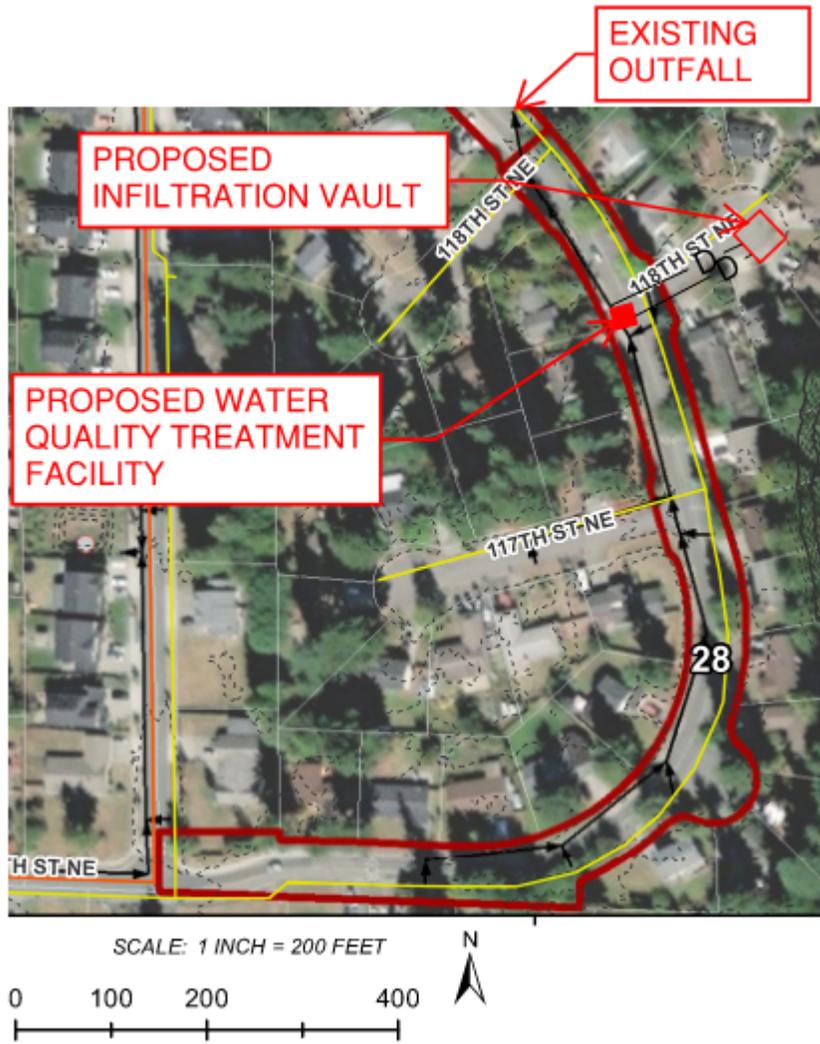
Project is already in the City’s comprehensive plan and is thus not a candidate for further investigation.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

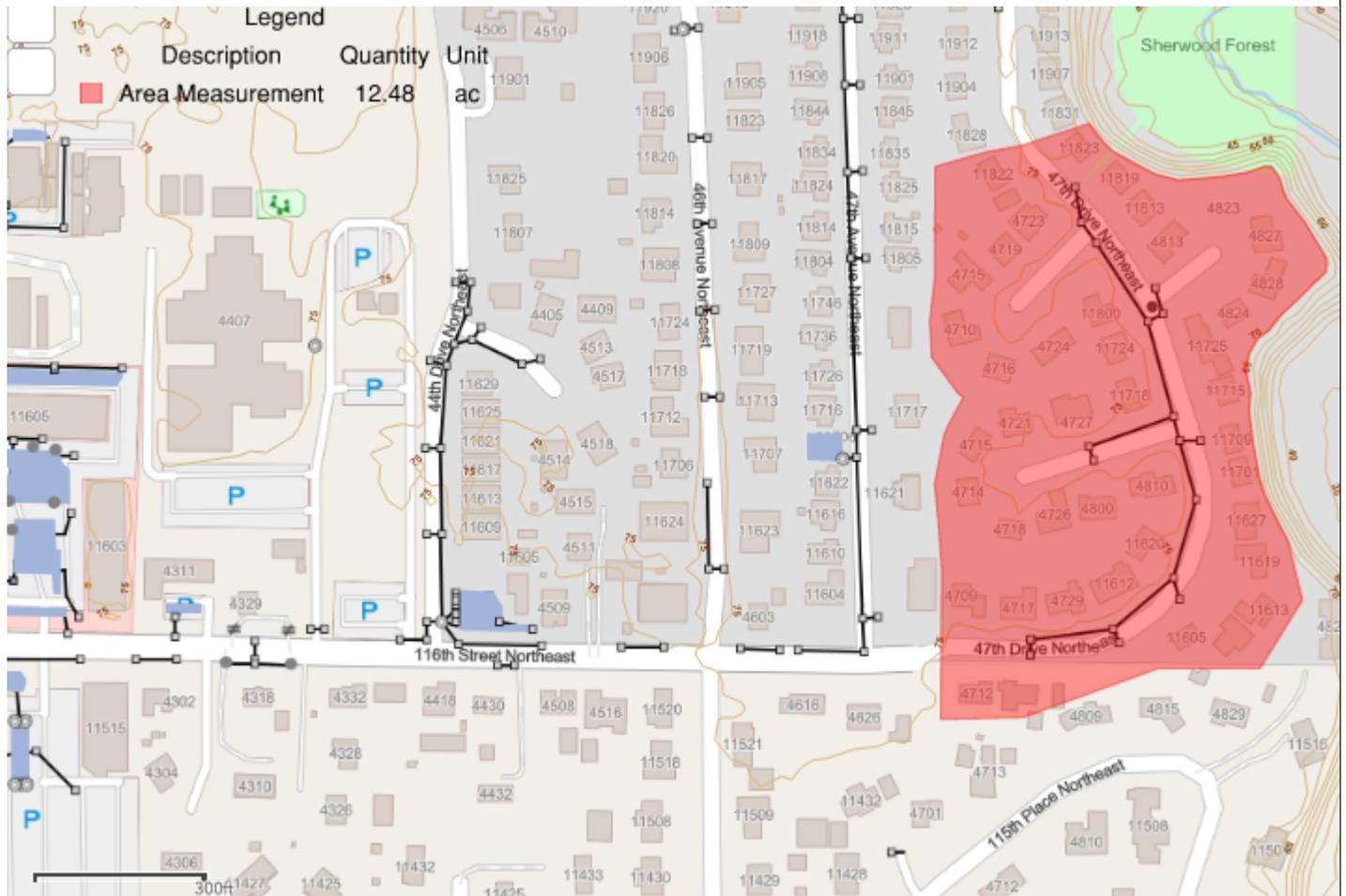
Unique Site ID: 28	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/9/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: <u>ROW</u>		
Location Notes: 47th Dr NE between 118th St NE and 116th St NE in Marysville		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown		
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault		
<input checked="" type="checkbox"/> Outfall <input type="checkbox"/> ROW <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault		
<input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ <u>12.5 ac</u>		Drainage Area Land Use:
Imperviousness ≈ <u>46</u> %		
Impervious Area ≈ <u>5.75</u>		
Notes: No drainage complaints, no UIC		<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible		
If Yes, Describe: Catch basins intercept runoff from 47 th Dr NE and the surrounding outfalls prior to outfall into the Lower Quilceda Creek		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: The existing right of way drains to the north to an existing outfall into Lower Quilceda Creek. No visible problems were detected. Infiltration rate described as "good".		
Approximate existing head available: ~20'		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flow Control <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage)	Retrofit Computations (Storage) 2 ac*ft needed for infiltration facility = 87,120 ft ³ Infiltration vault available volume 40' x 40' X 15' = 24,000 cf (cul-de-sac) Length of 6' dia tank needed = 3,082 lf																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input checked="" type="checkbox"/> Proprietary Media Filter <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
Retrofit includes stormfilters added to catch basins, conveyance to vault, with overflow to Lower Qualceda Creek.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: Improvements in ROW would affect neighboring parcels.	Access: <input type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input checked="" type="checkbox"/> Space <input checked="" type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input checked="" type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; text-align: left;">Yes</th> <th style="width: 10%; text-align: left;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Sewer</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Water</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Gas</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Cable</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric to Streetlights</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Overhead Wires</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Other: _____</td> </tr> </tbody> </table>	Yes	Possible		<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Gas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Electric	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH: _____ Other Factors: _____
Yes	Possible																											
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cable																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Electric																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____																										
Soils: Prior Geotechnical Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Classification: _____ Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: _____ Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No "Good" infiltration potential. Soils described as Ragnar fine sandy loam. Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Sketch



Tributary Area





Design or Delivery Notes

High impact to residents, limited in space due to existing utilities and service connections to existing parcels.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input checked="" type="checkbox"/> Other: Infiltration rate, explore "deep" infiltration | |

Initial Feasibility and Construction Considerations

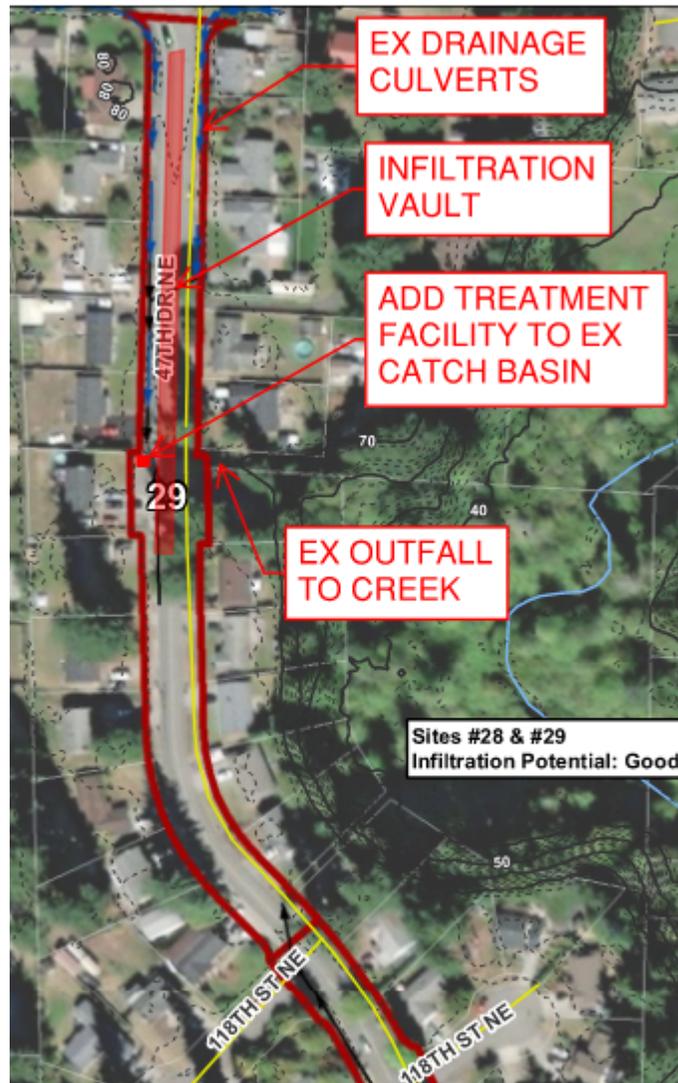
Impacts to the ROW and neighborhood access, disturbance caused to the location of the outfall between two neighboring parcels.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

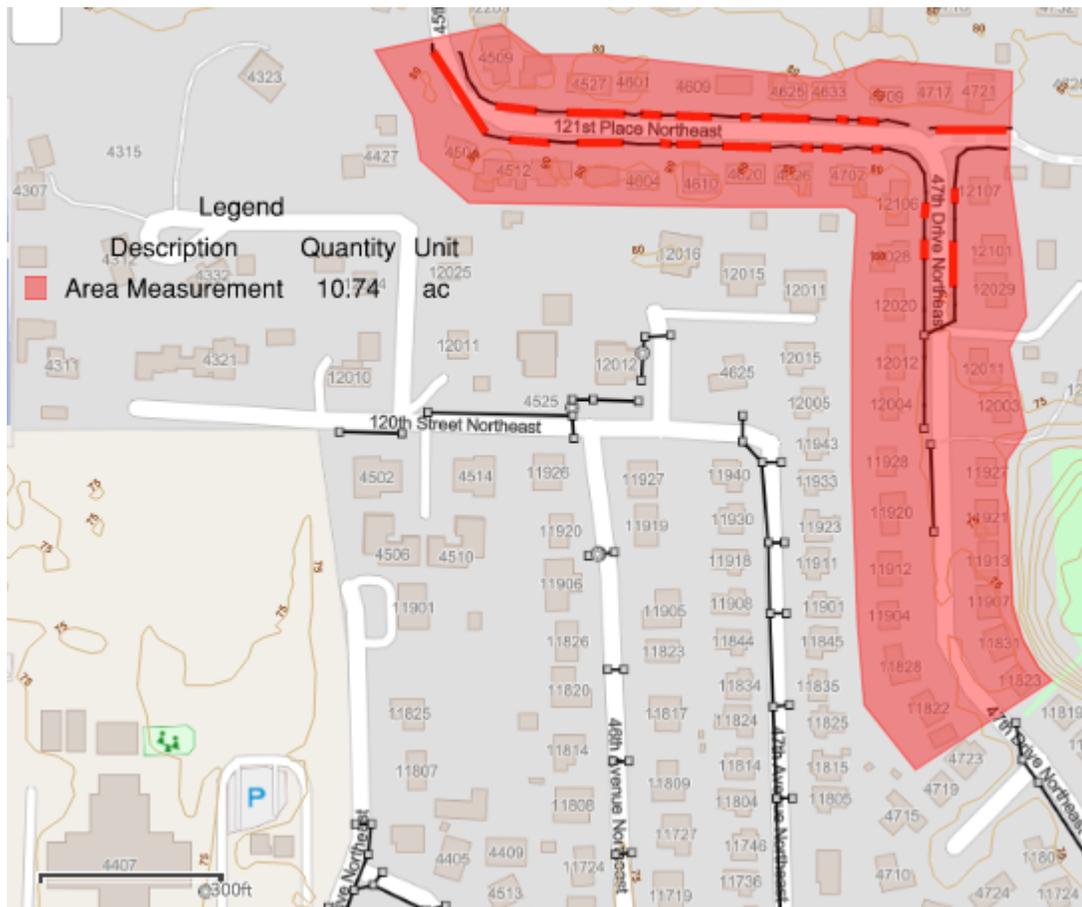
Unique Site ID: 29	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/9/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: <u>ROW</u>		
Location Notes: 47th Dr NE between 121st Pl NE and 118th St NE		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown		
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input checked="" type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault		
<input checked="" type="checkbox"/> Outfall <input type="checkbox"/> ROW <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault		
<input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ <u>10.74</u>	Drainage Area Land Use:	
Imperviousness ≈ <u>46</u> %	<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional	
Impervious Area ≈ <u>4.94</u>	<input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial	
	<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related	
	<input type="checkbox"/> Townhouses <input type="checkbox"/> Park	
	<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped	
	<input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: Found one old drainage complaint WO 27953, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible		
If Yes, Describe: Catch basins intercept runoff from 47 th Dr NE and the surrounding outfalls prior to outfall into the Lower Quilceda Creek		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown		
Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: No visible issues, the site drains to the south prior to outfall into the Lower Quilceda Creek.		
Approximate existing head available: ~20'		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flow Control <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage)	Retrofit Computations (Storage) 2 ac*ft = 87,120 ft ³ 30' x 290' x 10' infiltration vault needed																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input checked="" type="checkbox"/> Proprietary Media Filter <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
Retrofit would improve a water quality treatment system prior to outfall into the creek.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____	Access: <input type="checkbox"/> No Constraints Constrained due to: <input checked="" type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input checked="" type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Possible conflicts due to adjacent land use? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: Private access road and catch basin in ROW																												
Conflicts with Existing Utilities: <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Yes</th> <th style="width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other:</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other:	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH: _____ Other Factors: _____
Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other:																										
Soils: Prior Geotechnical Analysis: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Soil Classification: <u>Good</u> Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Soils classified as Ragnar fine sandy loam Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Sketch



Tributary Area





Design or Delivery Notes

Follow-up Needed to Complete Field Concept

<input type="checkbox"/> Confirm property ownership	<input type="checkbox"/> Obtain existing stormwater practice as-builts
<input checked="" type="checkbox"/> Confirm drainage area	<input checked="" type="checkbox"/> Obtain site as-builts
<input type="checkbox"/> Confirm drainage area impervious cover	<input type="checkbox"/> Obtain detailed topography
<input type="checkbox"/> Confirm volume computations	<input type="checkbox"/> Obtain utility mapping
<input type="checkbox"/> Confirm concept sketch	<input checked="" type="checkbox"/> Confirm storm drain invert elevations
	<input type="checkbox"/> Confirm soil types
<input type="checkbox"/> Other:	

Initial Feasibility and Construction Considerations

Impacts to the ROW and neighborhood access, disturbance caused to the location of the outfall between two neighboring parcels.

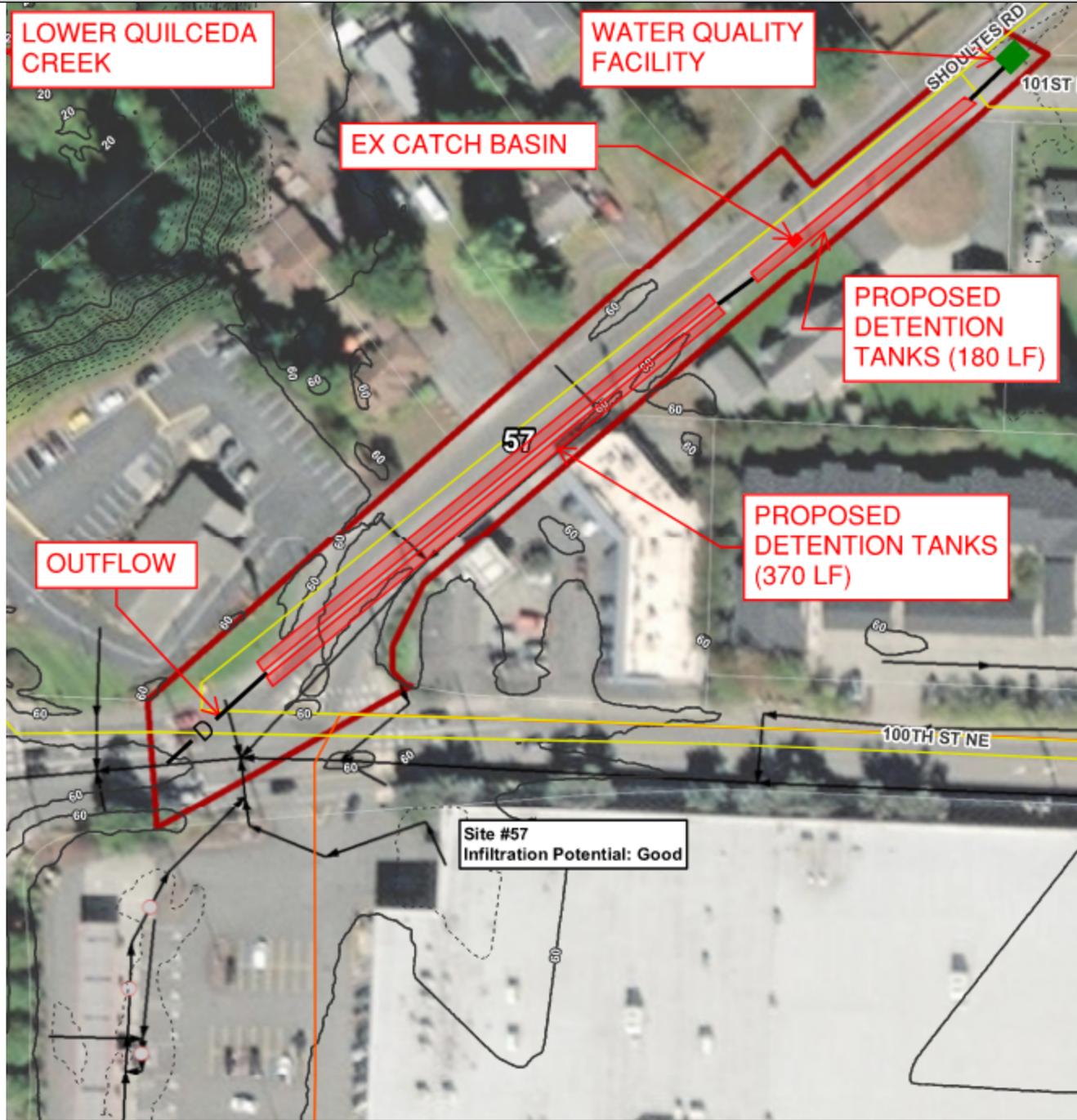
Is site candidate for further investigation?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Maybe

If yes, type(s):

Unique Site ID: 57	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/9/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: ROW		
Location Notes: Shoultes Road between 101st PI NE and 100th St NE		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown		
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input checked="" type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault		
<input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault		
<input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 9.30 ac		Drainage Area Land Use:
Imperviousness ≈ 33 %		
Impervious Area ≈ 3.06		
Notes: Area drains via contours, minimal conveyance. No drainage complaints, no UIC		<input type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Other:
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible		
If Yes, Describe: Catch basins route roadway runoff and adjacent parcel runoff to the main in 100 th Ave NE		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Ponding water along the side of the roadway along Shoultes Road. System currently collects all runoff from nearby commercial and residential, may be at capacity. Infiltration rate described as "good".		
Approximate existing head available: Unknown		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flow Control <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage)	Retrofit Computations (Storage) 1 ac*ft = 43,560 ft^3 = infiltration volume needed Detention = 3.06 ac*(18,000 cf/ac) = 55,080 cf 46,221 cf shown																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input checked="" type="checkbox"/> Proprietary Media Filter <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
Water quality systems in catch basins prior to detention tank.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: Busy intersection, ROW disruption	Access: <input type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input checked="" type="checkbox"/> Space <input checked="" type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Yes</th> <th style="width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Sewer</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Water</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Gas</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Cable</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric to Streetlights</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Overhead Wires</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Other:</td> </tr> </tbody> </table>	Yes	Possible		<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Electric	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other:	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH: _____ Other Factors: _____
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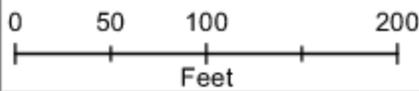
Sketch



Legend

- Stormwater Facility
- Stormwater Pipe
- Stormwater Channel

SCALE: 1 INCH = 100 FEET



Tributary Area





Design or Delivery Notes

High construction, likely limited space due to existing utilities. High impact to neighboring parcels and neighborhoods.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input checked="" type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input checked="" type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

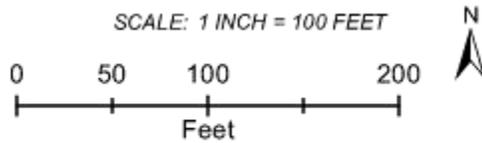
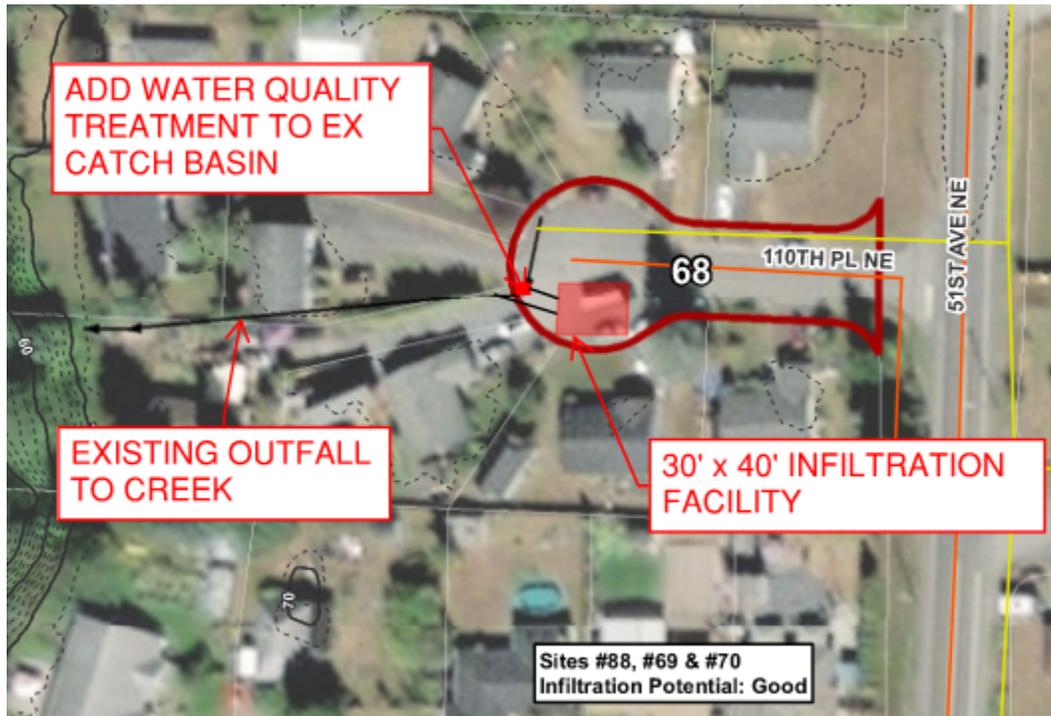
This location is a high traffic area and could possibly affect neighborhood access. Stormwater work required in the right of way.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

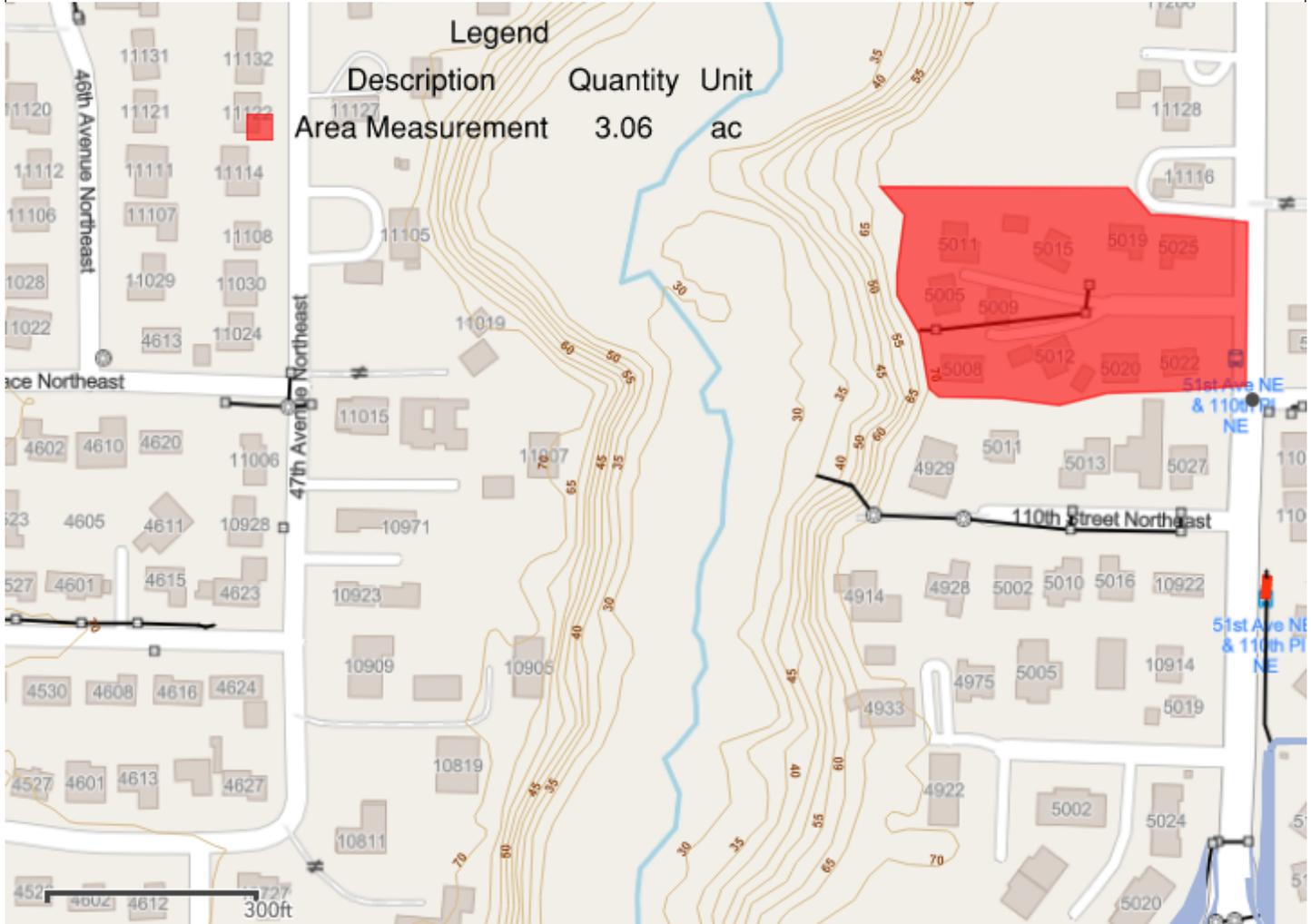
Unique Site ID: 68	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/9/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: <u>ROW</u>		
Location Notes: 110th PI NE between the creek outfall and 21st Ave NE		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown		
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input checked="" type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ <u>3.06 ac</u>	Drainage Area Land Use:	
Imperviousness ≈ <u>46</u> %	<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Impervious Area ≈ <u>1.4 ac</u>		
Notes:		
No drainage complaints, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible		
If Yes, Describe:		
Drainage from the cul-de-sac is collected in catch basins and routed to an outfall to the Lower Quilceda creek. Infiltration rate described as "good".		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.:		
Drainage from the roadway is collected in catch basins and conveyed to the west side of the cul-de-sac prior to discharge into the Lower Quilceda Creek		
Approximate existing head available:		
~20'		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flow Control <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage)	Retrofit Computations (Storage) 0.5 ac*ft = 21,780 ft ³ 30' x 40' footprint shown Volume = 30' x 40' x 15' = 18,000 cf																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input checked="" type="checkbox"/> Proprietary Media Filter <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
The existing inlets can be replaced with media filter catch basin to treat runoff prior to infiltration.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: Neighboring parcels: _____	Access: <input type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input checked="" type="checkbox"/> Space <input checked="" type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input checked="" type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
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Soils: Prior Geotechnical Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Classification: _____ Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: _____ Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No "Good" infiltration potential. Soils classified as Lynnwood Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No loamy sand. Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Sketch



Tributary Area





Design or Delivery Notes

Explore “deep” infiltration rates. Replace existing inlets with media system prior to discharge to infiltration system, overflow outfall to creek.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

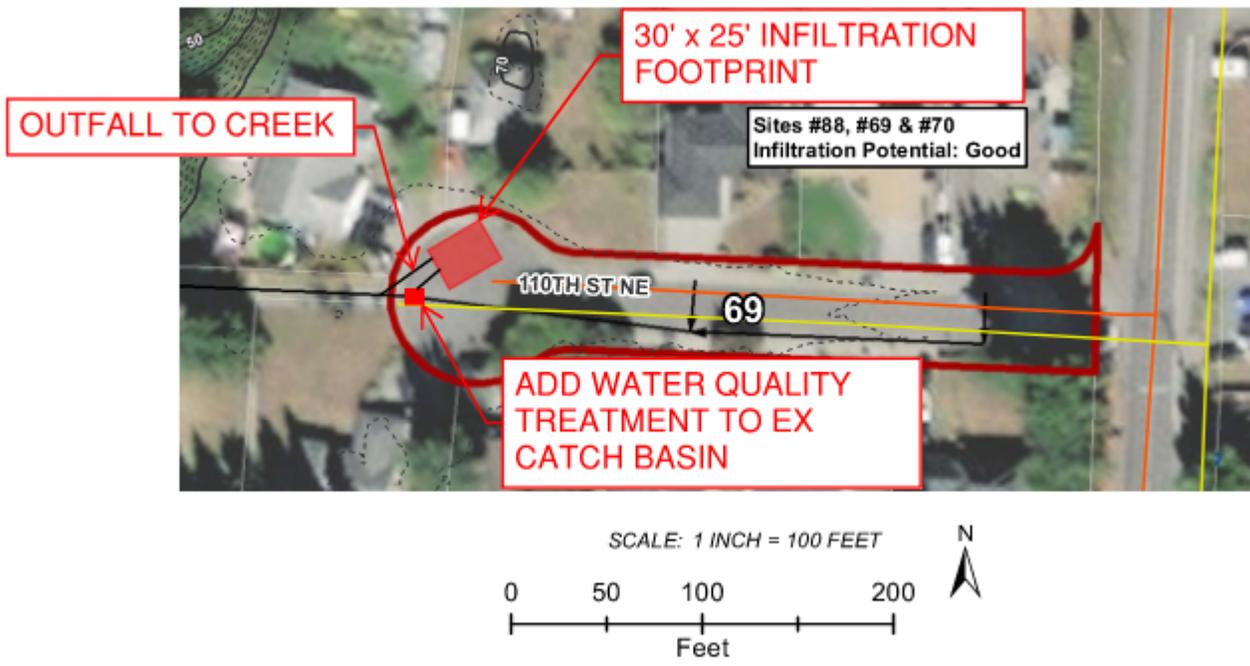
The proposed improvements are located in the ROW and would affect access to the neighboring parcels.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

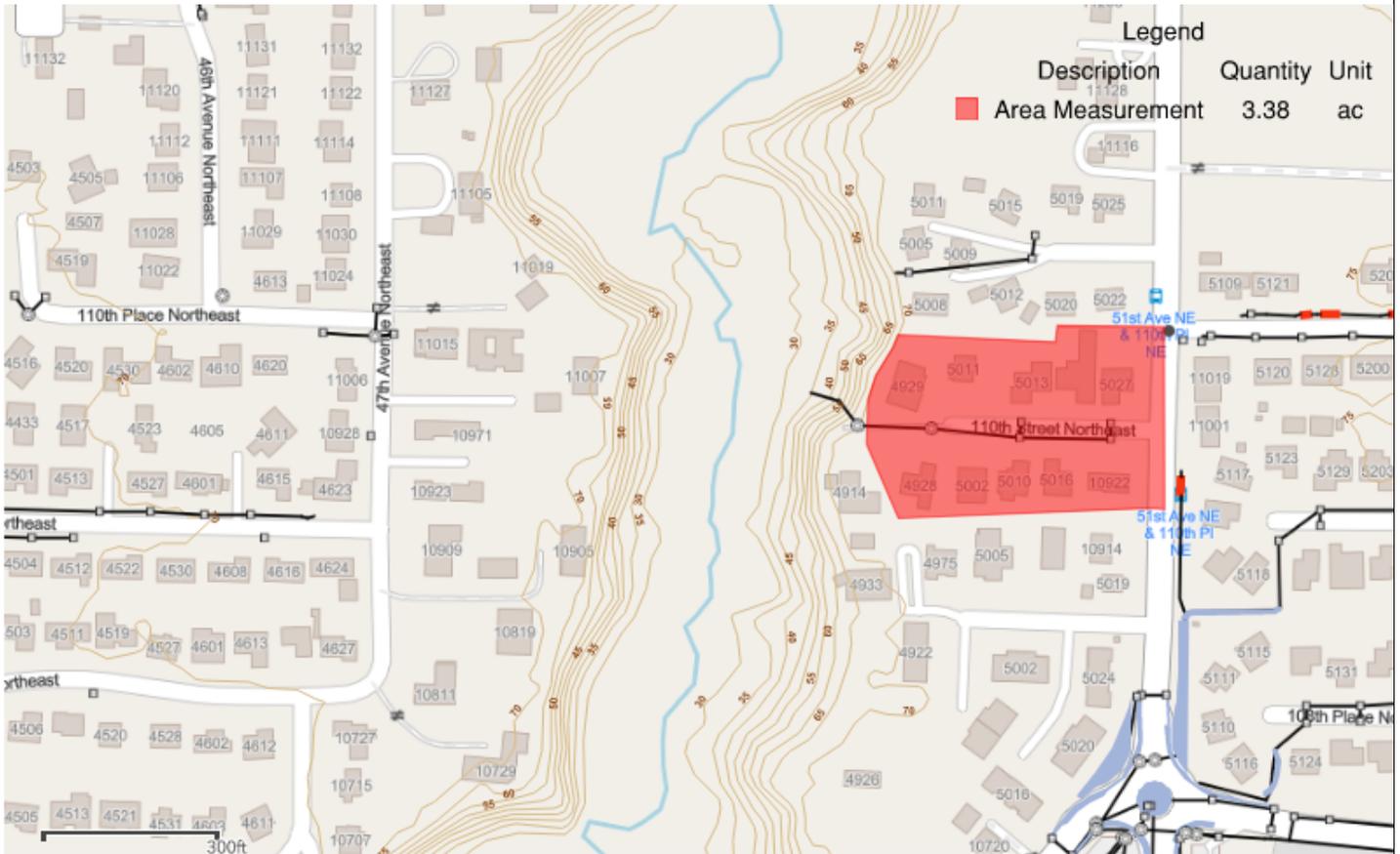
Unique Site ID: 69	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/9/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: ROW		
Location Notes: Near the intersection of 110th St NE and 51st Ave NE Marysville (cul-de-sac)		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown		
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault		
<input checked="" type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault		
<input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 3.38 ac	Drainage Area Land Use:	
Imperviousness ≈ 46 %	<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional	
Impervious Area ≈ 1.55 ac	<input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial	
	<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related	
	<input type="checkbox"/> Townhouses <input type="checkbox"/> Park	
	<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped	
	<input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: No drainage complaints, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible		
If Yes, Describe: Drainage from the cul-de-sac is collected in catch basins and routed to an outfall to the Lower Quilceda creek. Infiltration rate described as "good".		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Drainage from the roadway is collected in catch basins and conveyed to the west side of the cul-de-sac prior to discharge into the Lower Quilceda Creek		
Approximate existing head available: ~20'		

Proposed Retrofit																																																				
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flow Control <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																																																				
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Soil Classification: _____ Comments: "Good" infiltration potential. Soil classified as Custer fine sandy loam and Lynwood loamy sand.																																																				

Sketch



Tributary Area





Design or Delivery Notes

Explore “deep” infiltration rates. Replace existing inlets with media system prior to discharge to infiltration system, overflow outfall to creek.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
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| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

The proposed improvements are located in the ROW and would affect access to the neighboring parcels.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			



Unique Site ID: 70	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/9/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: ROW		
Location Notes: Site is located near the intersection of 109th St NE and 51st Ave NE in Marysville		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown		
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input checked="" type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 3.42 ac Imperviousness ≈ 46 % Impervious Area ≈ 1.57 ac	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input checked="" type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: No drainage complaints, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: Drainage from the cul-de-sac is collected in catch basins and routed to an outfall to the Lower Quilceda creek. Infiltration rate described as "good".		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Roadway drains from east to west, picking up some runoff from 51 st Ave NE. Outfall from catch basin drains directly into the creek valley.		
Approximate existing head available: ~20'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality Channel Protection Flow Control
 Infiltration Repair Other:

Existing Facility Computations (Storage)

Retrofit Computations (Storage)

0.5 ac*ft = 21,780 ft³
 30' x 15' footprint shown
 30' x 15' x 15' = 6,750 cf volume provided

Proposed Treatment Option:

- Expanded Detention Wet Pond Constructed Wetland Bioretention/BSM
 Proprietary Media Filter Infiltration Swale Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

The existing inlets can be replaced with media filter catch basin to treat runoff prior to infiltration.

Site Constraints

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Access:

- No Constraints
 Constrained due to:
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Possible conflicts due to adjacent land use? Yes No

If yes, describe:

Neighboring parcels

Conflicts with Existing Utilities:

- None
 Unknown

Yes	Possible	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water
<input type="checkbox"/>	<input type="checkbox"/>	Gas
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other:

Potential Permitting Factors:

- | | | |
|------------------------------|-----------------------------------|--|
| Dam Safety Permits Necessary | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Wetlands | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to a Stream | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Floodplain Fill | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Forests | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Specimen Trees | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |

How many? _____
 Approx. DBH: _____

Other Factors:

Soils:

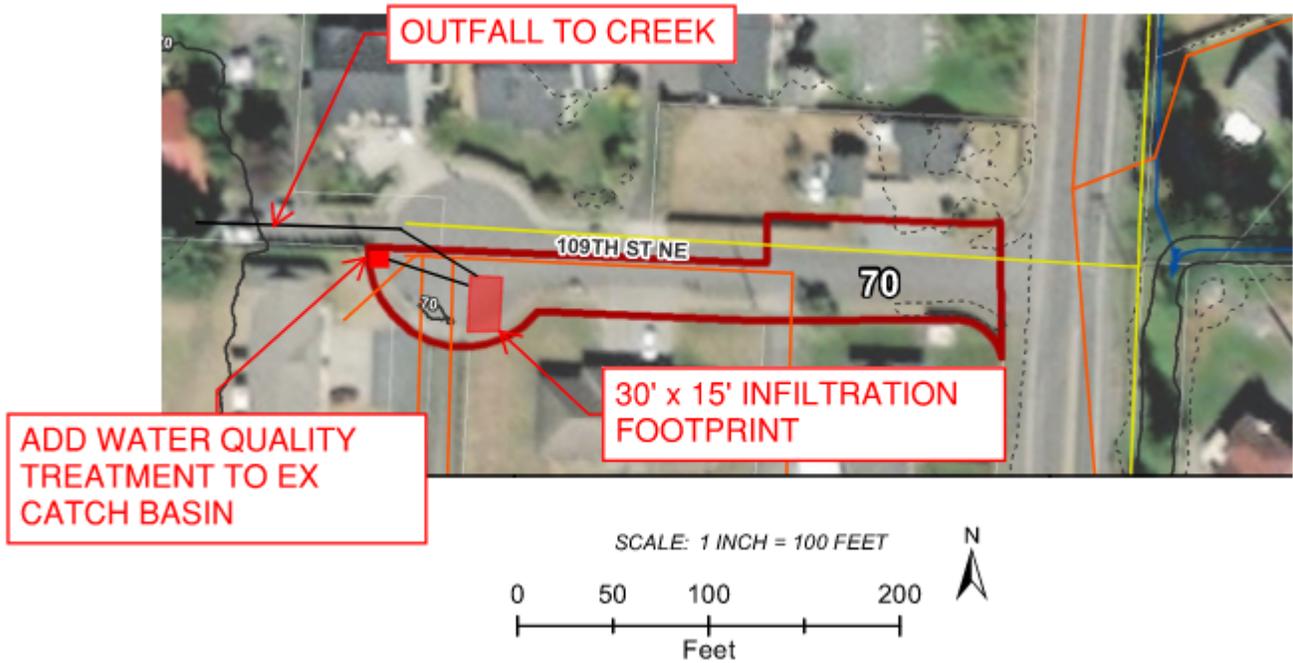
- Prior Geotechnical Analysis: Yes No
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

Soil Classification: _____

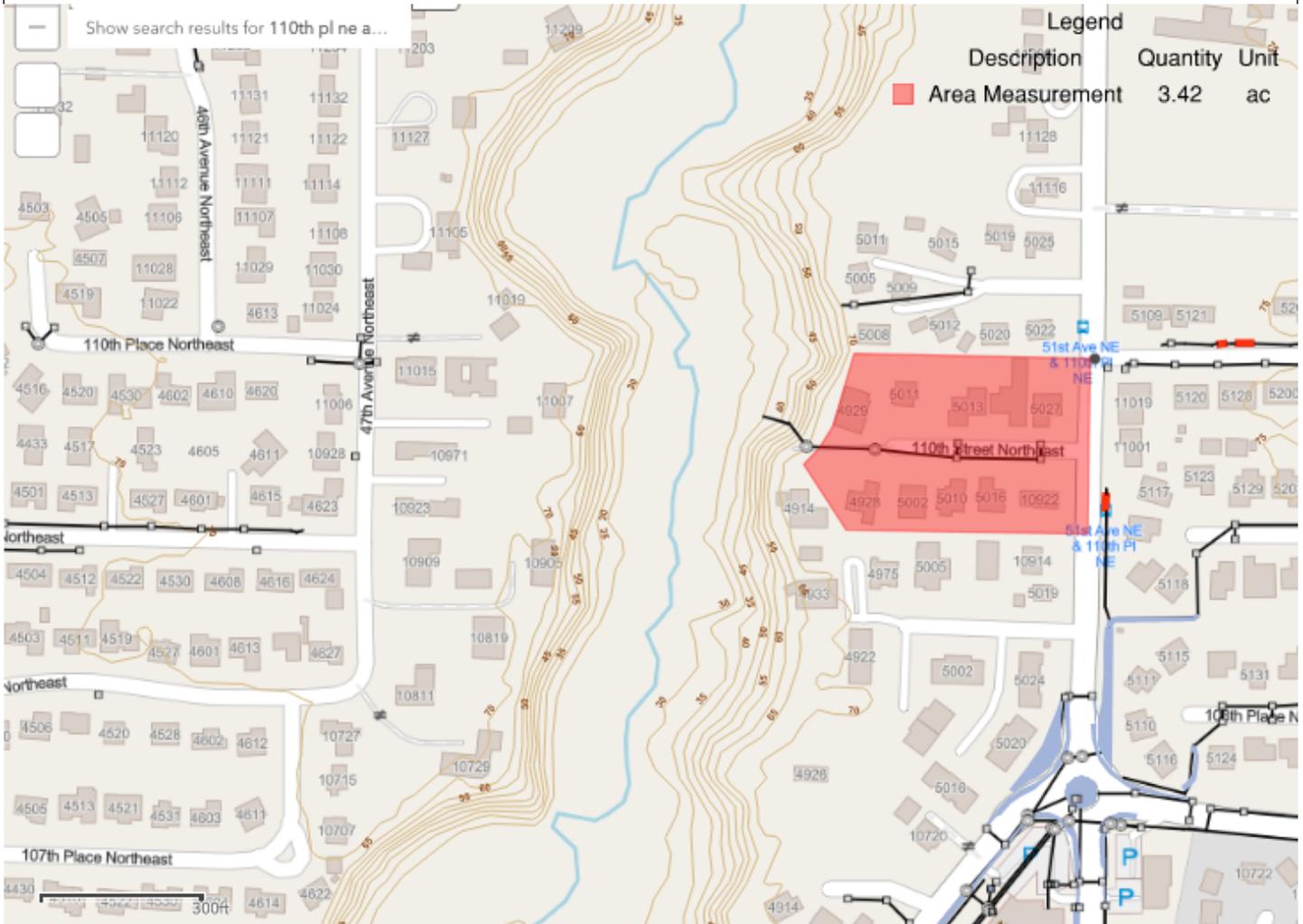
Comments:

"Good" infiltration potential. Soil classified as custer fine sandy loam

Sketch



Tributary Area





Design or Delivery Notes

Explore “deep” infiltration rates. Replace existing inlets with media system prior to discharge to infiltration system, overflow outfall to creek.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

The proposed improvements are located in the ROW and would affect access to the neighboring parcels.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

Unique Site ID: 125	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/9/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: 00671600005000		
Location Notes: Parcel located at the intersection of 124th PI NE and 41st Ave NE in Marysville		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown		
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault		
<input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault		
<input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 5.97	Drainage Area Land Use:	
Imperviousness ≈ 46 %	<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional	
Impervious Area ≈ 2.75	<input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial	
	<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related	
	<input type="checkbox"/> Townhouses <input type="checkbox"/> Park	
	<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped	
	<input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: No drainage complaints, possible UIC but older than 2006		
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible		
If Yes, Describe: Drainage is collected in catch basins prior to outfall into the Lower Quilceda Creek.		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown		
Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: The existing site is vacant with no existing utilities. Neighboring adjacent parcels drain to detention ponds near the roadway (no stormwater visible). Site could be used to infiltrate this runoff or runoff from the other sites in the area being considered for retrofit. Site infiltration described as "good"		
Approximate existing head available: ~3'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality Channel Protection Flow Control
 Infiltration Repair Other:

Existing Facility Computations (Storage)

Retrofit Computations (Storage)

0.2 ac*ft needed for infiltration = 8,712 ft³
8,600 sf footprint shown

Proposed Treatment Option:

- Expanded Detention Wet Pond Constructed Wetland Bioretention/BSM
 Proprietary Media Filter Infiltration Swale Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

The site appears to be a vacant lot at the same elevation as street level. Parcel could be used as an infiltration facility if excavated.

Site Constraints

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Possible conflicts due to adjacent land use? Yes No

If yes, describe:

Setbacks from existing houses

Access:

No Constraints

Constrained due to:

- Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown

Yes Possible

- Sewer
 Water
 Gas
 Cable
 Electric
 Electric to Streetlights
 Overhead Wires
 Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable

How many? _____

Approx. DBH: _____

Other Factors: _____

Soils:

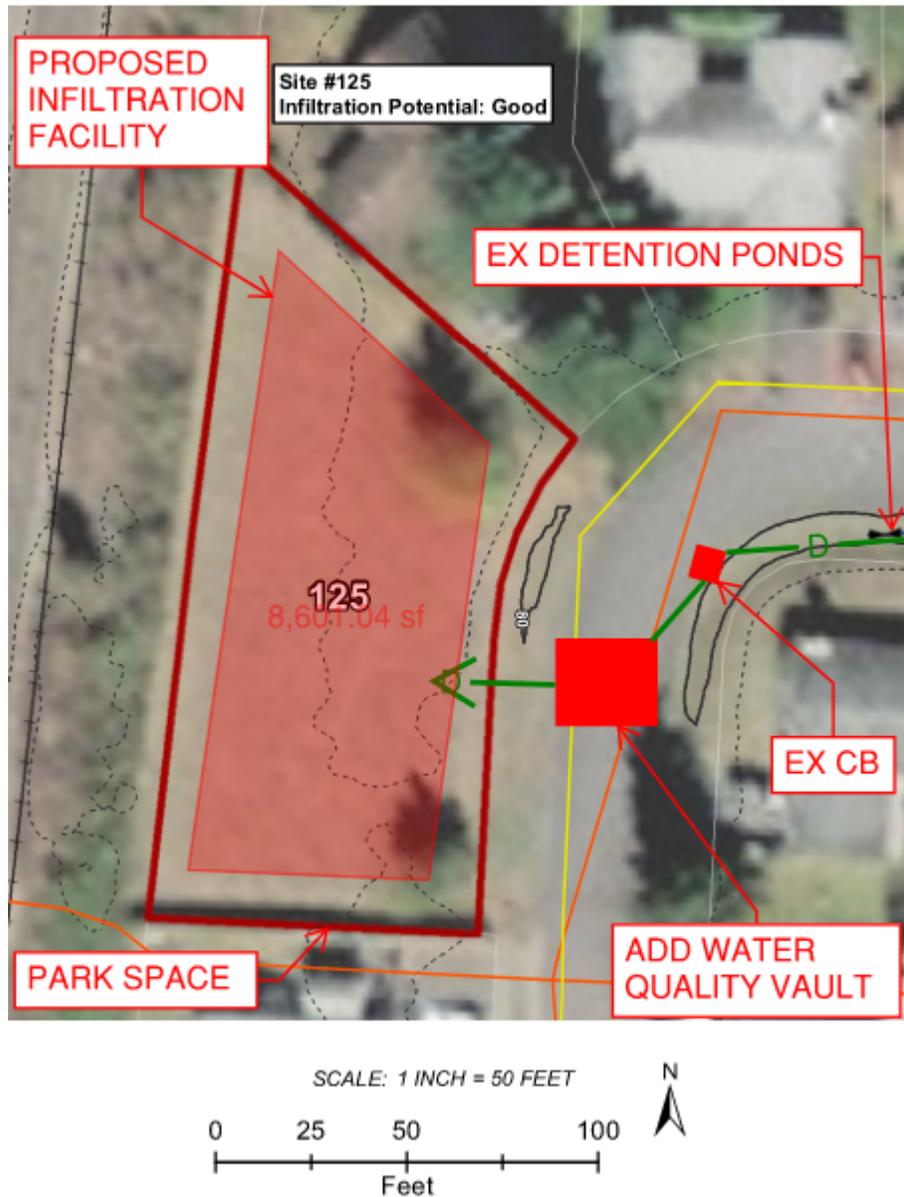
- Prior Geotechnical Analysis: Yes No
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

Soil Classification: _____

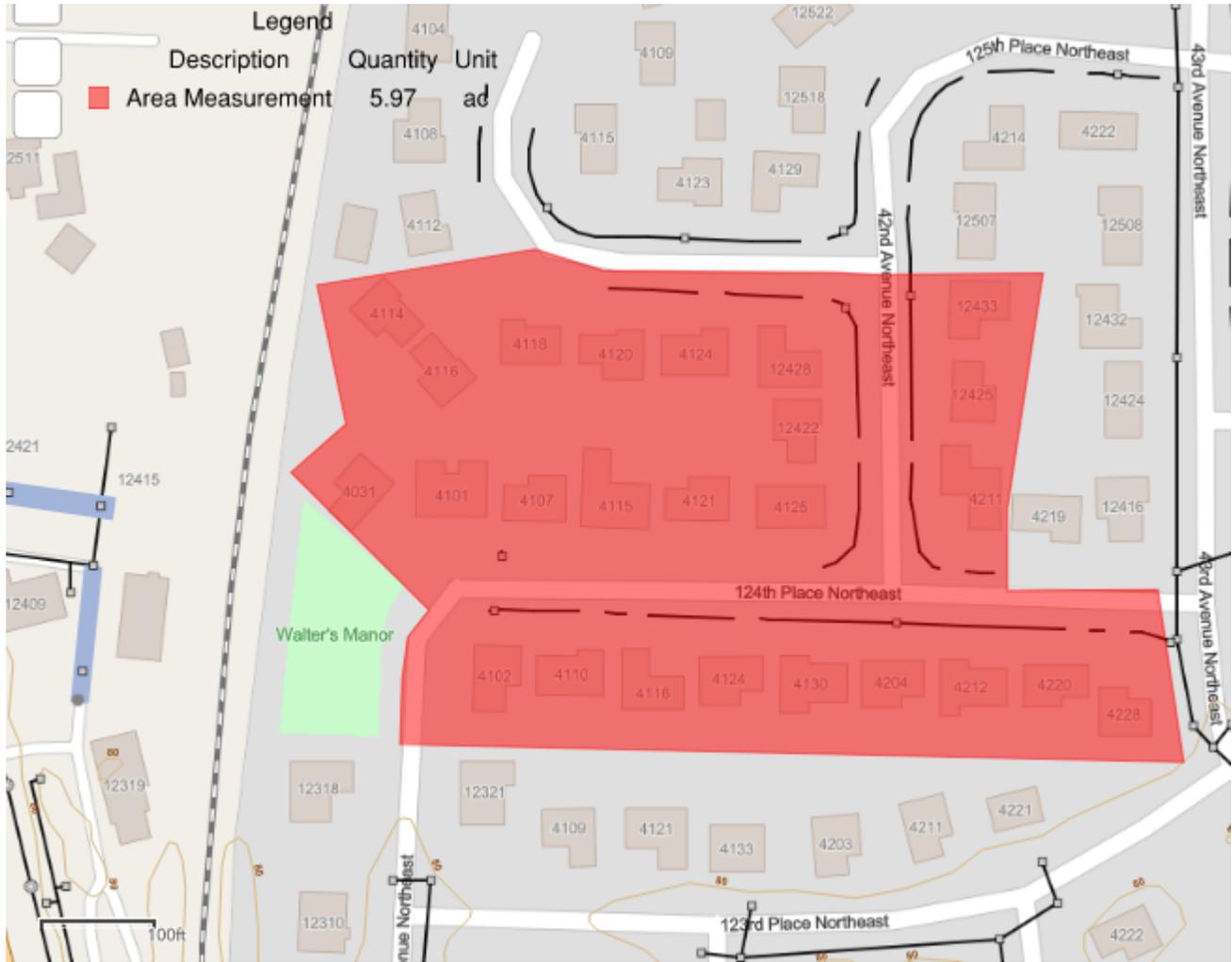
Comments:

"Good" soil infiltration rates. Soil classified as custer fine sandy loam

Sketch



Tributary Area





Design or Delivery Notes

Provide water quality treatment prior to infiltration facility. Consider either below grade vault or infiltration system to provide space for park amenities.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

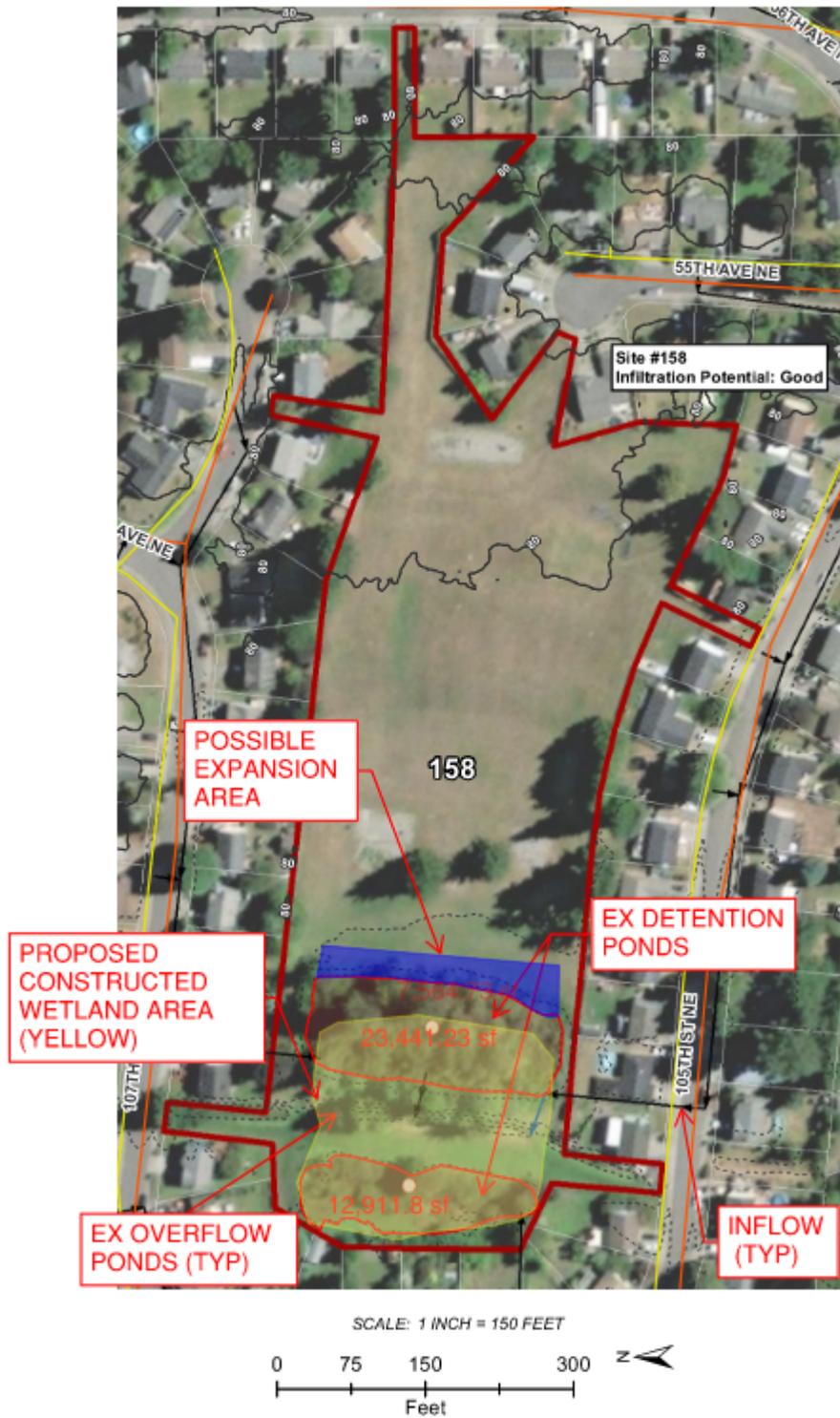
No existing utilities seem to be onsite. Large area to work with, flow can be redirected from neighboring lots considered sites to this parcel. Pending soil report and record drawings.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

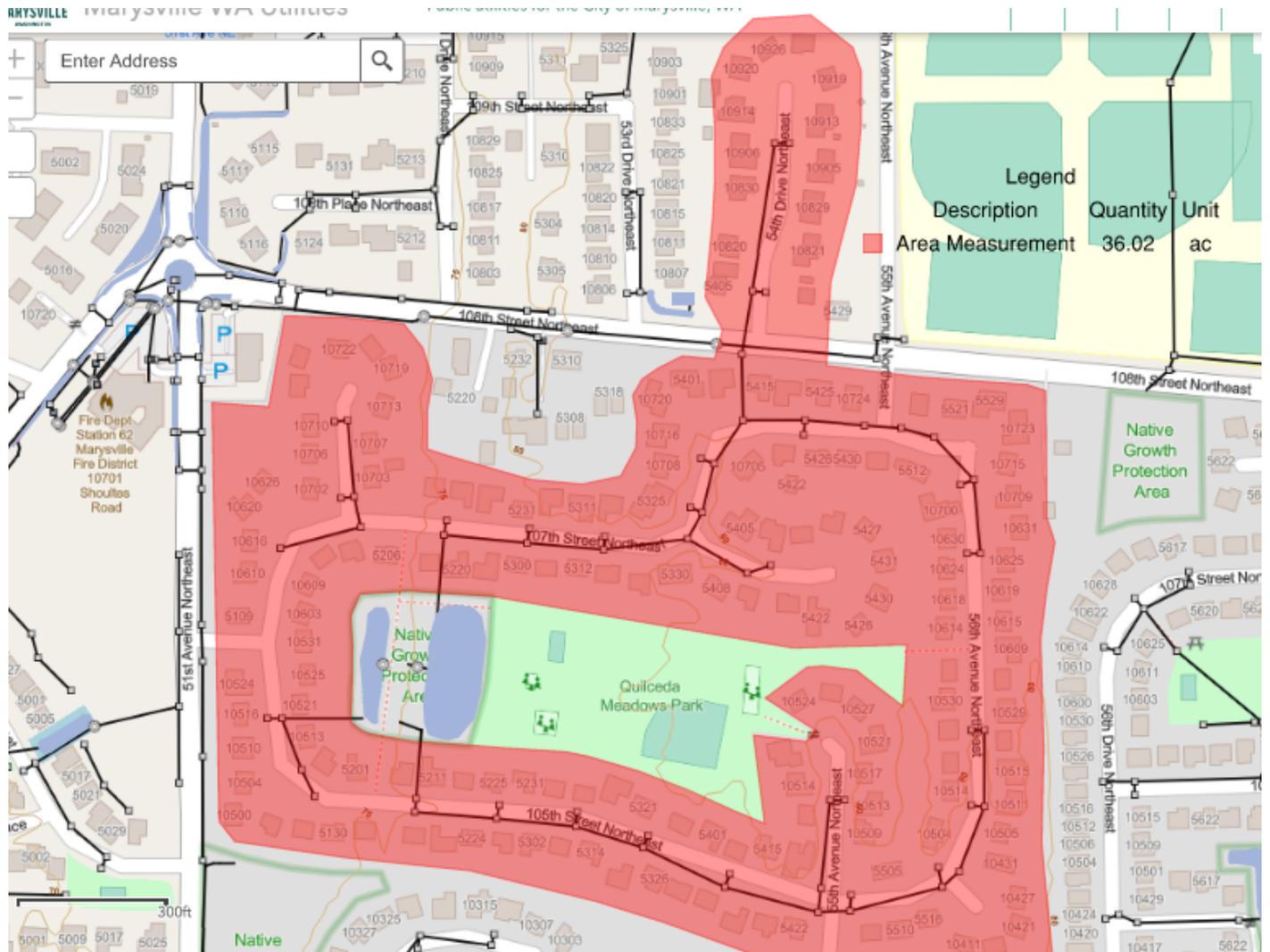
Unique Site ID: 158	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/9/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: Quilceda Meadow		
Address: 00676700020100		
Location Notes: Local park located near the intersection of 54th Ave NE and 107th St NE		
Ownership: <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private <input type="checkbox"/> Unknown		
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input checked="" type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 36.02 Imperviousness ≈ 46 % Impervious Area ≈ 16.57	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes:		
Existing Stormwater Management		
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: Failing infiltration ponds and flow control facilities		
Existing Treatment Provided: <input checked="" type="checkbox"/> Detention <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Runoff from the surrounding neighborhood and roadways is collected in catch basins and routed to a water quality wetland prior to overflow into failing infiltration ponds. Soil infiltration described as "good"		
Approximate existing head available: ~3'		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input checked="" type="checkbox"/> Flow Control <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage) West facility ~ 12,900 * 3 = 38,700 ft ³ East facility ~ 23,400*3 = 70,200 ft ³	Retrofit Computations (Storage) ~ 3af*ft needed = 130,680 ft ³ 21,780 ft ³ additional needed for infiltration Wetland (36.02*.03) = 1.0806 ac 1.0806*43560 = 47,071 ft ² @ 2' depth																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input checked="" type="checkbox"/> Wet Pond <input checked="" type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input type="checkbox"/> Proprietary Media Filter <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
The existing wetland can be upsized to meet current standards, infiltration ponds can be upgraded or replaced																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe:	Access: <input type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input checked="" type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other:																											
Conflicts with Existing Utilities: <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 10%;">Yes</th> <th style="text-align: left; width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other:</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other:	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH: _____ Other Factors:
Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other:																										
Soils: Prior Geotechnical Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												
Soil Classification: _____ Comments: Observed standing water in shallow systems. "Good" infiltration classification. Soils is comprised of custer fine sandy loam, Lynnwood loamy sand, fine sandy loam																												

Sketch



Tributary Area





Design or Delivery Notes

Provide water quality treatment prior to infiltration system. Can consider rehab to existing facilities to constructed wetland, provide infiltration system to the north of the existing wetland. Consider either infiltration pond or below grade infiltration.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

Area available for expansion, existing facilities are outdated and malfunctioning. Wetland expansion could encroach into the existing playground.

Is site candidate for further investigation? Yes No Maybe

Is site candidate for early action project(s)? Yes No Maybe

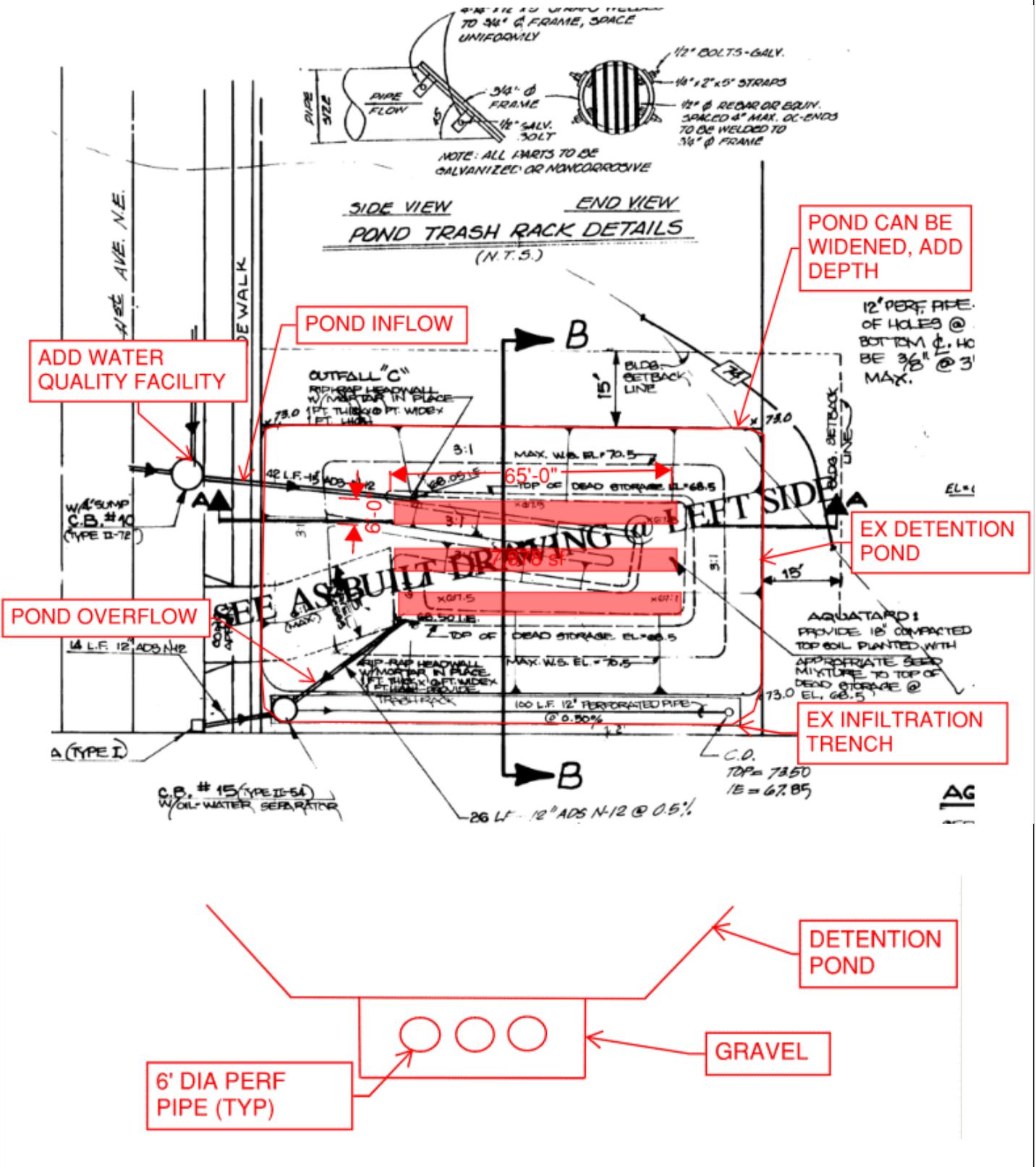
If no, is site candidate for other restoration project(s)? Yes No Maybe

If yes, type(s): Consider retrofit of existing drainage swales to the west, buried culverts and standing water observed.

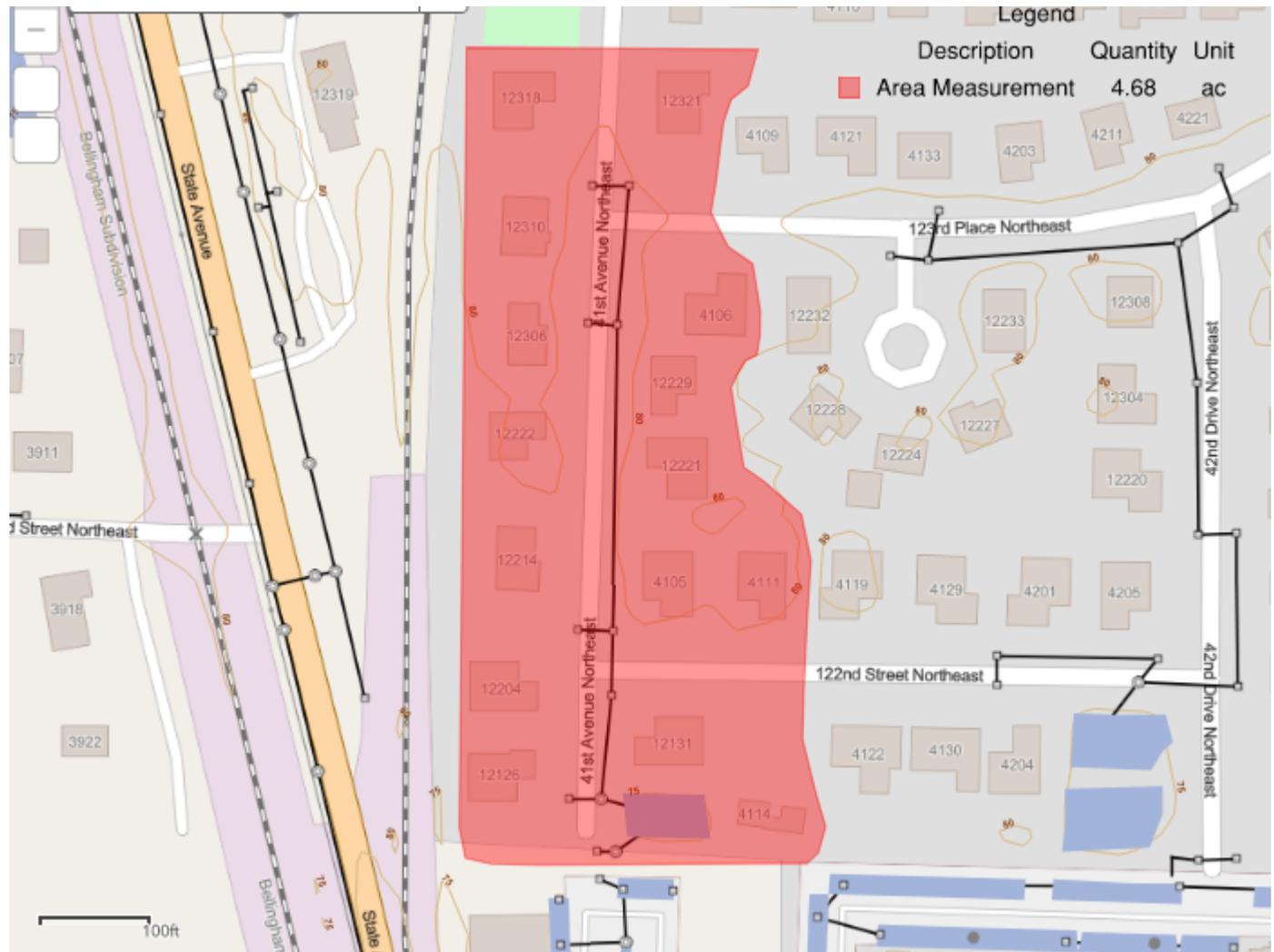
Unique Site ID: 169	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/11/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: Strawberry Vista Pond 1 SD-DF-262		
Address:		
Location Notes: Detention pond near the intersection of 41st Ave NE and 122nd St NE		
Ownership:	<input type="checkbox"/> Public	<input checked="" type="checkbox"/> Private
	<input type="checkbox"/> Unknown	
If Public, Government Jurisdiction:	<input checked="" type="checkbox"/> Local	<input type="checkbox"/> State
	<input type="checkbox"/> DOT	<input type="checkbox"/> Other:
Proposed Retrofit Location:		
Storage		
<input checked="" type="checkbox"/> Pond	<input type="checkbox"/> Conveyance System	<input type="checkbox"/> Vacant Parcel
<input type="checkbox"/> Outfall	<input type="checkbox"/> ROW	<input checked="" type="checkbox"/> Infiltration
<input type="checkbox"/> Other:	<input type="checkbox"/> Wetpond	<input type="checkbox"/> Wet Vault
	<input type="checkbox"/> Tank	<input type="checkbox"/> Vault
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 4.68 ac	Drainage Area Land Use:	
Imperviousness ≈ 46 %	<input checked="" type="checkbox"/> Residential	<input type="checkbox"/> Institutional
Impervious Area ≈ 2.15 ac	<input checked="" type="checkbox"/> SFH (< 1 ac lots)	<input type="checkbox"/> Industrial
	<input type="checkbox"/> SFH (> 1 ac lots)	<input type="checkbox"/> Transport-Related
	<input type="checkbox"/> Townhouses	<input type="checkbox"/> Park
	<input type="checkbox"/> Multi-Family	<input type="checkbox"/> Undeveloped
	<input type="checkbox"/> Commercial	<input type="checkbox"/> Other:
Notes:		
City easement to maintain but lot dedicated to HOA. No drainage problems, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	<input type="checkbox"/> Possible	
If Yes, Describe:		
Stormwater detention pond fed by stormwater runoff from the surrounding residential development.		
Existing Treatment Provided:	<input checked="" type="checkbox"/> Detention	<input checked="" type="checkbox"/> Infiltration
	<input type="checkbox"/> Water Quality	<input type="checkbox"/> None
	<input type="checkbox"/> Unknown	
Year of Construction, if known:	1992	
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.:		
Standing water visible, northern inflow pipe not visible. Possible outflow pipe clog due to height of water. Site infiltration rate described as "good".		
Approximate existing head available:		
~5' per record drawings,		
Could provide additional depth, groundwater height to be confirmed		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input checked="" type="checkbox"/> Flow Control <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage) Pond volume 6,869 cf	Retrofit Computations (Storage) Detention pond = 0.0468 ac = 2,040 SF footprint (depth 6 ft) = 12,240 cf 12,240 cf – 6,869 cf = 5,371 cf additional storage needed Infiltration = 1 ac*ft needed = 43,560 cf																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input type="checkbox"/> Proprietary Media Filter <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
Improve existing infiltration facility, add a water quality facility prior to ponding. Remove sediment from bottom of pond to allow for infiltration. Could consider additional depth by providing below grade volume.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe:	Access: <input checked="" type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other:																											
Conflicts with Existing Utilities: <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Yes</th> <th style="width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other:</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other:	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH: _____ Other Factors:
Yes	Possible																											
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<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other:																										
Soils: Prior Geotechnical Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Classification: <u>Good</u> Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Soil is classified as custer fine sandy loam Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Sketch



Tributary Area





Design or Delivery Notes

A water quality facility should be added prior to entry into the system. The existing detention system can either be depended and laterally expanded, or detention pipes can be added to the bottom of the existing system.

Follow-up Needed to Complete Field Concept

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input checked="" type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

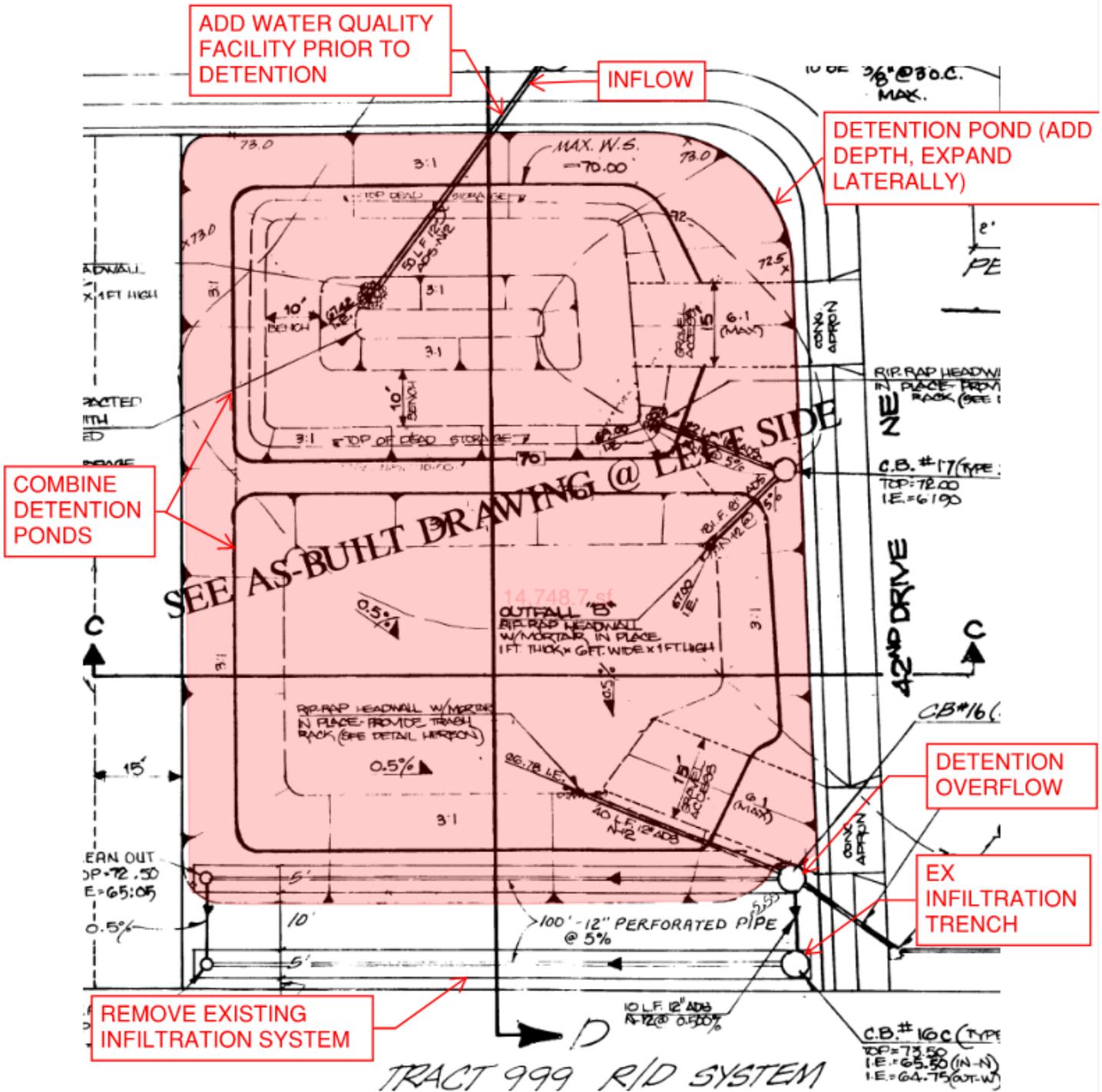
The site is very accessible and construction in the ROW could be kept to a minimum. Impacts to neighbors also at minimum

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

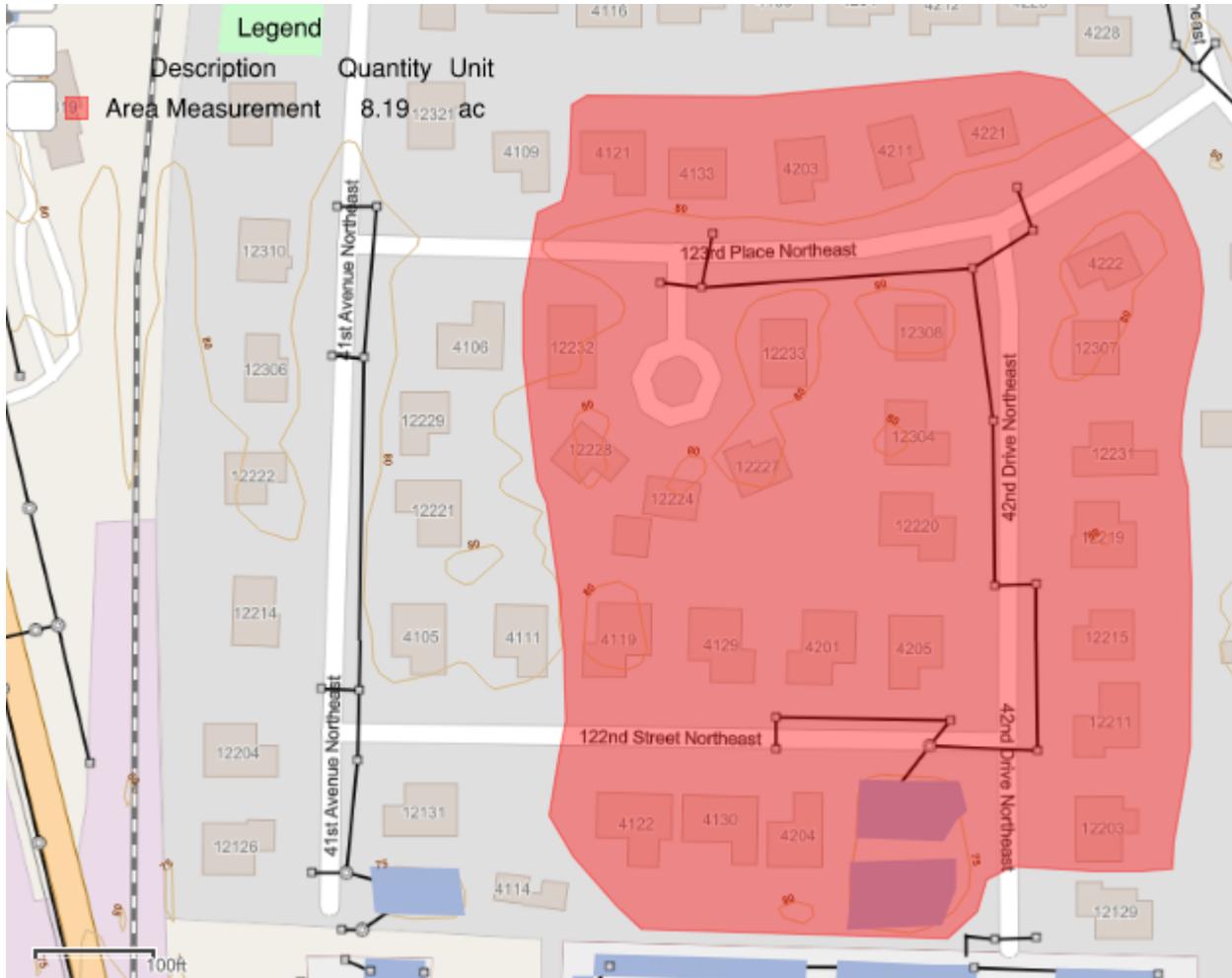
Unique Site ID: 170	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/9/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: Strawberry Vista SD-DF-264		
Address:		
Location Notes: Intersection of 122nd St NE and 42nd Dr NE Marysville		
Ownership: <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private <input type="checkbox"/> Unknown		
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input checked="" type="checkbox"/> Pond <input checked="" type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault		
<input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault		
<input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 8.19 ac	Drainage Area Land Use:	
Imperviousness ≈ 46 %	<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional	
Impervious Area ≈ 3.77 ac	<input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial	
	<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related	
	<input type="checkbox"/> Townhouses <input type="checkbox"/> Park	
	<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped	
	<input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: City easement to maintain but lot dedicated to HOA, no drainage problems, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible		
If Yes, Describe: Detention pond with infiltration trench at overflow		
Existing Treatment Provided: <input type="checkbox"/> Detention <input checked="" type="checkbox"/> Infiltration <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known: 1993		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Site is not infiltrating, standing water to max height (per record drawings) present with garbage. Infiltration at the site described as "good".		
Approximate existing head available: ~3'		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flow Control <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage) 21,278 cf	Retrofit Computations (Storage) Infiltration = 1 ac*ft needed = 43,560 cf Detention pond = .0819 ac = 3,568 sf @ 6' depth = 67860 cf needed 21,405 – 21,278 = 127 cf needed																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input checked="" type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input type="checkbox"/> Proprietary Media Filter <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input checked="" type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
Water quality treatment would be added prior to entering the detention system. Existing system can be cleaned, and existing ponds can be combined to meet updated requirements.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe:	Access: <input checked="" type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input checked="" type="checkbox"/> Property Ownership <input type="checkbox"/> Other:																											
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Soils: Prior Geotechnical Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Classification: <u>Good</u> Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Soil classified as Ragnar fine sandy loam Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Sketch



Tributary Area





Design or Delivery Notes

Existing system is not functioning properly. A water quality facility will need to be added to the inflow, and the existing detention systems can be combined to account for the additional volume requirements.

Follow-up Needed to Complete Field Concept

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Confirm concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input checked="" type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

Site is accessible with minimal utility conflict.

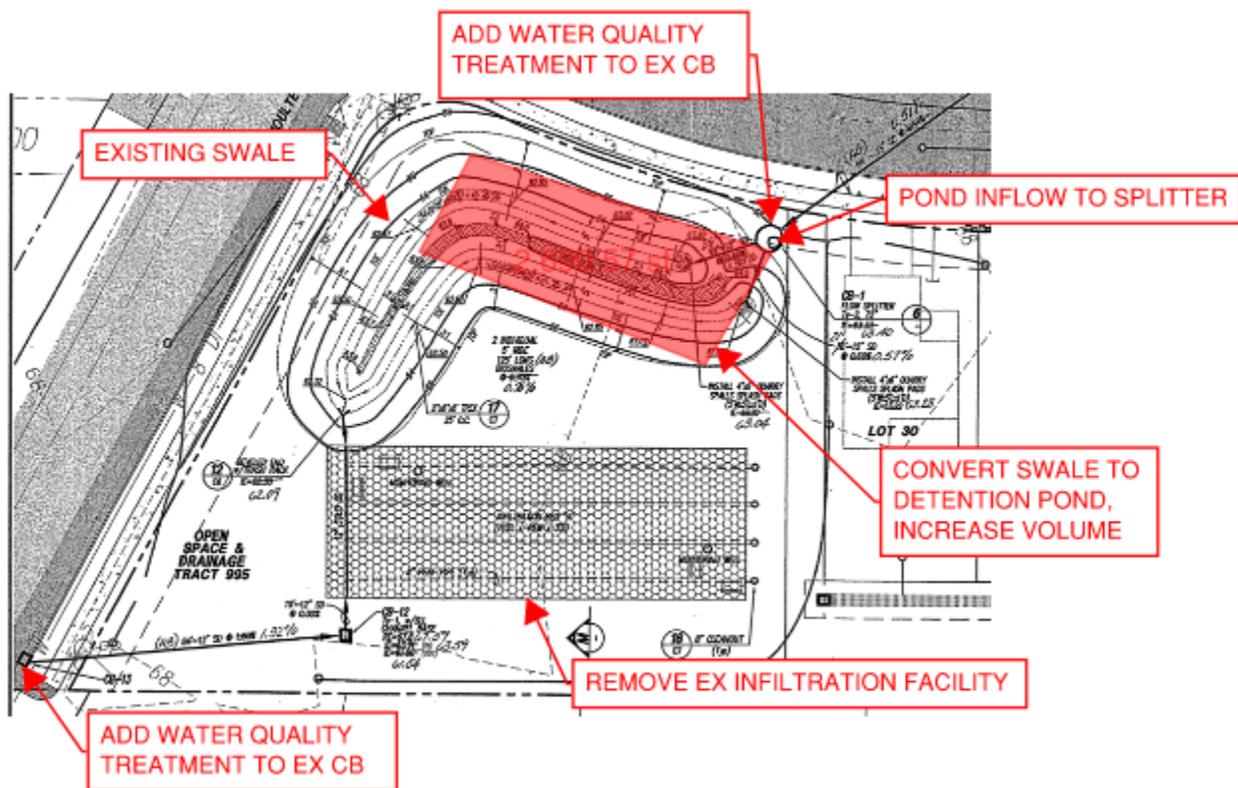
Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Maybe

If yes, type(s):

Unique Site ID: 188	Subwatershed:	Watershed: Lower Quilceda Creek
Date: 2/9/2022	Assessed By: Cassandra Steffen	
Site Description		
Name:	Shoultes Park SD-DF-8129	
Address:	01027300099500	
Location Notes:	Intersection of Shoultes Rd and 104th PI NE in Marysville	
Ownership:	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private <input type="checkbox"/> Unknown	
If Public, Government Jurisdiction:	<input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:	
Proposed Retrofit Location:		
Storage		
<input checked="" type="checkbox"/> Pond	<input type="checkbox"/> Conveyance System	<input type="checkbox"/> Vacant Parcel
<input type="checkbox"/> Outfall	<input type="checkbox"/> ROW	<input checked="" type="checkbox"/> Infiltration
<input type="checkbox"/> Other:	<input type="checkbox"/> Wetpond	<input type="checkbox"/> Wet Vault
	<input type="checkbox"/> Tank	<input type="checkbox"/> Vault
Drainage Area to Proposed Retrofit		
Drainage Area ≈	6.10 ac	Drainage Area Land Use:
Imperviousness ≈	37 %	
Impervious Area ≈	2.26 ac	
Notes:	<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Existing Stormwater Management		
Existing Stormwater Practice:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	
If Yes, Describe:	Dual bioswale with combined overflow to a below ground infiltration facility. Bioswale capacity per as-builts 4', infiltration trench capacity 3'	
Existing Treatment Provided:	<input checked="" type="checkbox"/> Detention <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input type="checkbox"/> None <input type="checkbox"/> Unknown	
Year of Construction, if known:	2004	
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.:		
Runoff from the surrounding areas is collected in catch basins located in the roadways, routed from 104 th PI NE to an onsite flow splitter prior to routing to the onsite swale. Overflow from the swale is conveyed to an infiltration trench. The south eastern outflow pipe from the flow splitter was not visible. Soil infiltration rate described as "good"		
Approximate existing head available:		
~5'		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input checked="" type="checkbox"/> Flow Control <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input checked="" type="checkbox"/> Other:																												
Existing Facility Computations (Storage) Infiltration trench 13,200 cf, Swale ~ 5,000 cf	Retrofit Computations (Storage) Infiltration ~ 0.5 ac*ft needed = 21,780 cf Detention Ponds = 0.061 ac = 2,657 sf @ 6' depth = 15,943 cf																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input checked="" type="checkbox"/> Proprietary Media Filter <input checked="" type="checkbox"/> Infiltration <input checked="" type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
Upgrade flow control device to current flow control standards and to provide water quality treatment by using proprietary devices with low head loss. The existing swale can be converted to a detention pond to add volume and the existing infiltration facility can also be expanded.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe:	Access: <input checked="" type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other:																											
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Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
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Soils: Prior Geotechnical Analysis: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Soil Classification: <u>Good</u> Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Soil is classified as Ragnar fine sandy loam Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Sketch



Tributary Area





Design or Delivery Notes

Replace with pond, with upstream media cartridges

Follow-up Needed to Complete Field Concept

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Confirm concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: | <input checked="" type="checkbox"/> Confirm soil types |

Initial Feasibility and Construction Considerations

Ample space to expand or replace facilities. Construction in Shoultes road should be kept to a minimum to avoid traffic delays

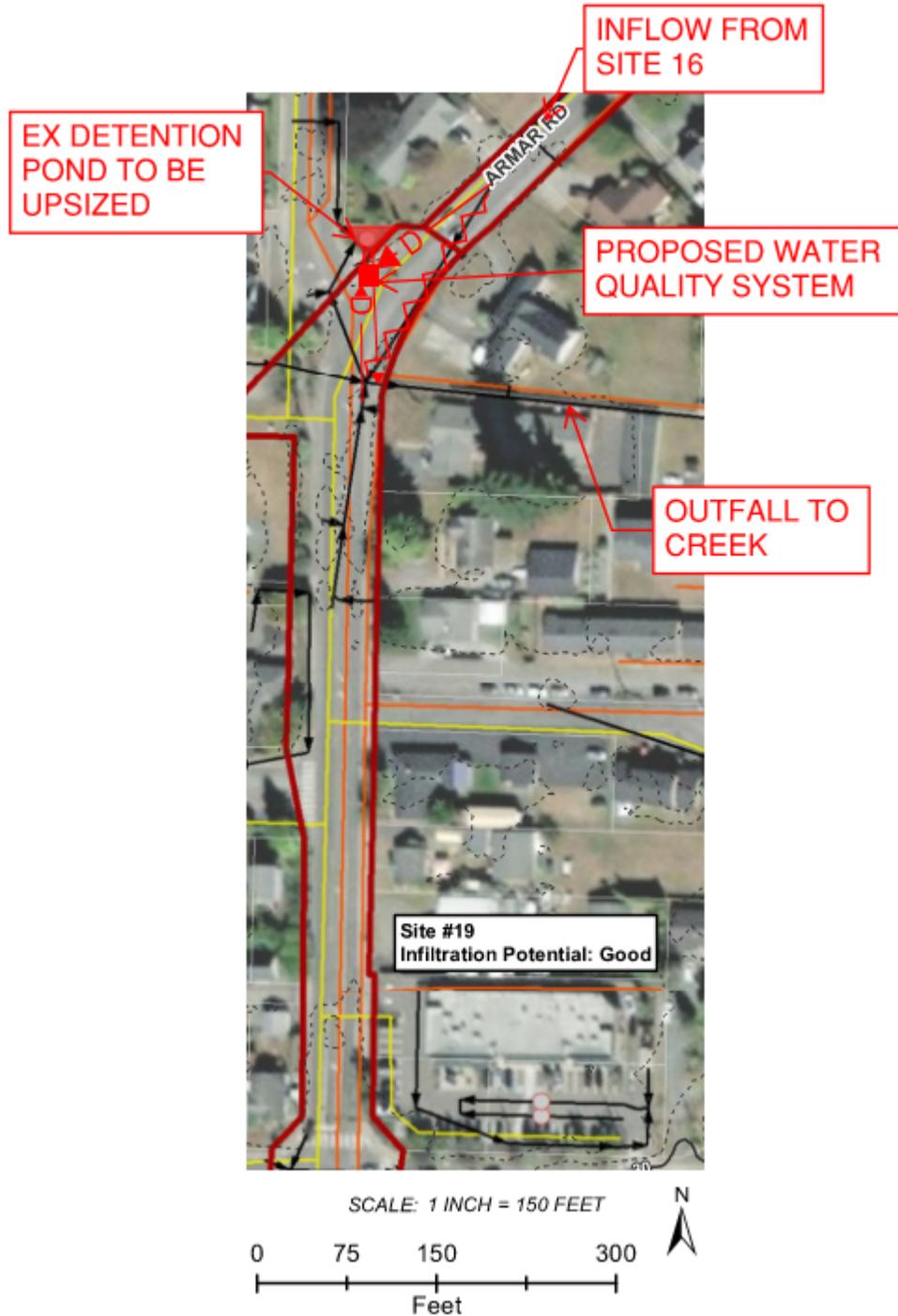
Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			



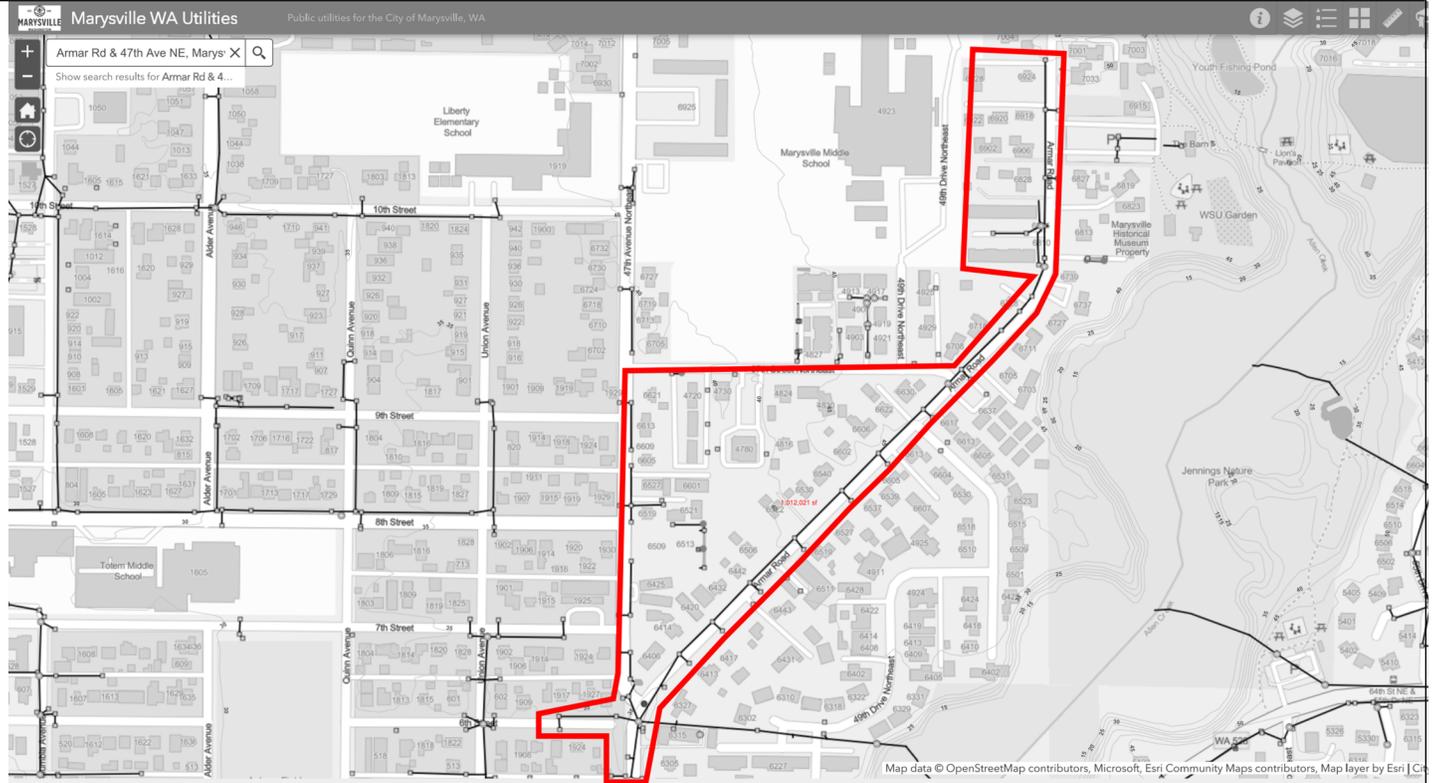
Unique Site ID: 16 & 19	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/10/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: _____		
Location Notes: Armar Rd between 47th Ave NE and 61st St NE		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input checked="" type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 23.23 Imperviousness ≈ 54 % Impervious Area ≈ 12.55	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes:		
Existing Stormwater Management		
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: Flow restrictor located in manhole at outfall, channel protection also located at outfall		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown Year of Construction, if known: 1977		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Existing sites contain catch basins and conveyance down Armar Rd prior to outfall to the east to Munson Creek. There is an existing detention pond located just west of site 19 that is significantly undersized.		
Approximate existing head available: ~5'		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flow Control <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage) Existing pond footprint = 545 SF	Retrofit Computations (Storage) Required Infiltration Volume ~ 2 ac*ft = 87,120 cf Potential Vault Volume: 545 SF x 10' = 5,450 cf Consider water quality treatment in lieu of flow control																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input checked="" type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input checked="" type="checkbox"/> Proprietary Media Filter <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
Deep infiltration test required, retrofit includes reroute of existing stormwater pipe to a water quality facility prior to entering an infiltration pond. Suggest a water quality treatment facility in lieu of an infiltration system as the site does not have sufficient space.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: Neighboring parcels	Access: <input type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input type="checkbox"/> Space <input checked="" type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input checked="" type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; text-align: left;">Yes</th> <th style="width: 10%; text-align: left;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Sewer</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Water</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Gas</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Cable</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Electric</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric to Streetlights</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Overhead Wires</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Other:</td> </tr> </tbody> </table>	Yes	Possible		<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cable	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other:	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH: _____ Other Factors: _____
Yes	Possible																											
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other:																										
Soils: Prior Geotechnical Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Classification: _____ Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: _____ Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Soil infiltration described as "good". Soils classified as Ragnar Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No fine sandy loam Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Concept Sketch



Tributary Basin



Map data © OpenStreetMap contributors, Microsoft, Esri Community Maps contributors, Map layer by Esri | C

Site Area
Site Area: 1,012,000.00 sf
8.3 ac

300ft



Design or Delivery Notes

Water quality vault would be quite large for required amount of tributary area drainage, would conflict with existing utilities in Armar Rd. Re-route of storm to existing detention pond would cause additional ROW disturbance. The existing flow restrictor at outfall can also be updated to current requirements. This project is likely not feasible due to impacts to a very busy ROW, limited space available, and insufficient space to provide full treatment.

Follow-up Needed to Complete Field Concept

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

A large amount of volume needed for the combined sites, would need adjusted easement from property owners or would require additional ROW disturbance. Existing detention pond could be deepened to provide additional storage volume. Intersection was busy at time of site visit.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

Unique Site ID: 241	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/11/2022	Assessed By: Cassandra Steffen	
Site Description		
Name:	Jennings Park parking lot and SD-DF-223 Parkview Estates	
Address:	Jennings Nature Park (South East park entrance)	
Location Notes:	Creek basin to the west of 55th Dr NE	
Ownership:	<input checked="" type="checkbox"/> Public	<input type="checkbox"/> Private <input type="checkbox"/> Unknown
If Public, Government Jurisdiction:	<input checked="" type="checkbox"/> Local	<input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond	<input checked="" type="checkbox"/> Conveyance System	<input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault
<input checked="" type="checkbox"/> Outfall	<input type="checkbox"/> ROW	<input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault
<input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈	68.07 and 37.47 ac	Drainage Area Land Use:
Imperviousness ≈	46 %	
Impervious Area ≈	31.3 ac and 17.24 ac	
Notes:	<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Existing Stormwater Management		
Existing Stormwater Practice:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Possible
If Yes, Describe:	The southern outfall drains directly to the creek, while the northern outfall enters an energy dissipator and swale with overflow routed to Munson Middle Allen Creek.	
Existing Treatment Provided:	<input type="checkbox"/> Detention	<input type="checkbox"/> Infiltration <input checked="" type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown
Year of Construction, if known:	1992	
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.:		
Existing swale to the north appears to be overgrown and has turned into more of a detention pond.		
Approximate existing head available:		
~30'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality
 Channel Protection
 Flow Control
 Infiltration
 Repair
 Other:

Existing Facility Computations (Storage)

Swale ~ 279 lf

Retrofit Computations (Storage)

Detention vault volume needed ~ 563,400 CF (north)
 Detention vault volume needed~ 310,320 CF (south)

Proposed Treatment Option:

- Expanded Detention
 Wet Pond
 Constructed Wetland
 Bioretention/BSM
 Proprietary Media Filter
 Infiltration
 Swale
 Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

Water quality treatment systems to be added to the outfall prior to entering a detention system.

Site Constraints

Adjacent Land Use:

- Residential
 Commercial
 Institutional
 Industrial
 Transport-Related
 Park
 Undeveloped
 Other: _____

Possible conflicts due to adjacent land use? Yes No

If yes, describe:

Access:

No Constraints

Constrained due to:

- Slope
 Space
 Utilities
 Tree Impacts
 Structures
 Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown

Yes Possible

- Sewer
 Water
 Gas
 Cable
 Electric
 Electric to Streetlights
 Overhead Wires
 Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable

How many? _____
 Approx. DBH: _____

Other Factors:

Soils:

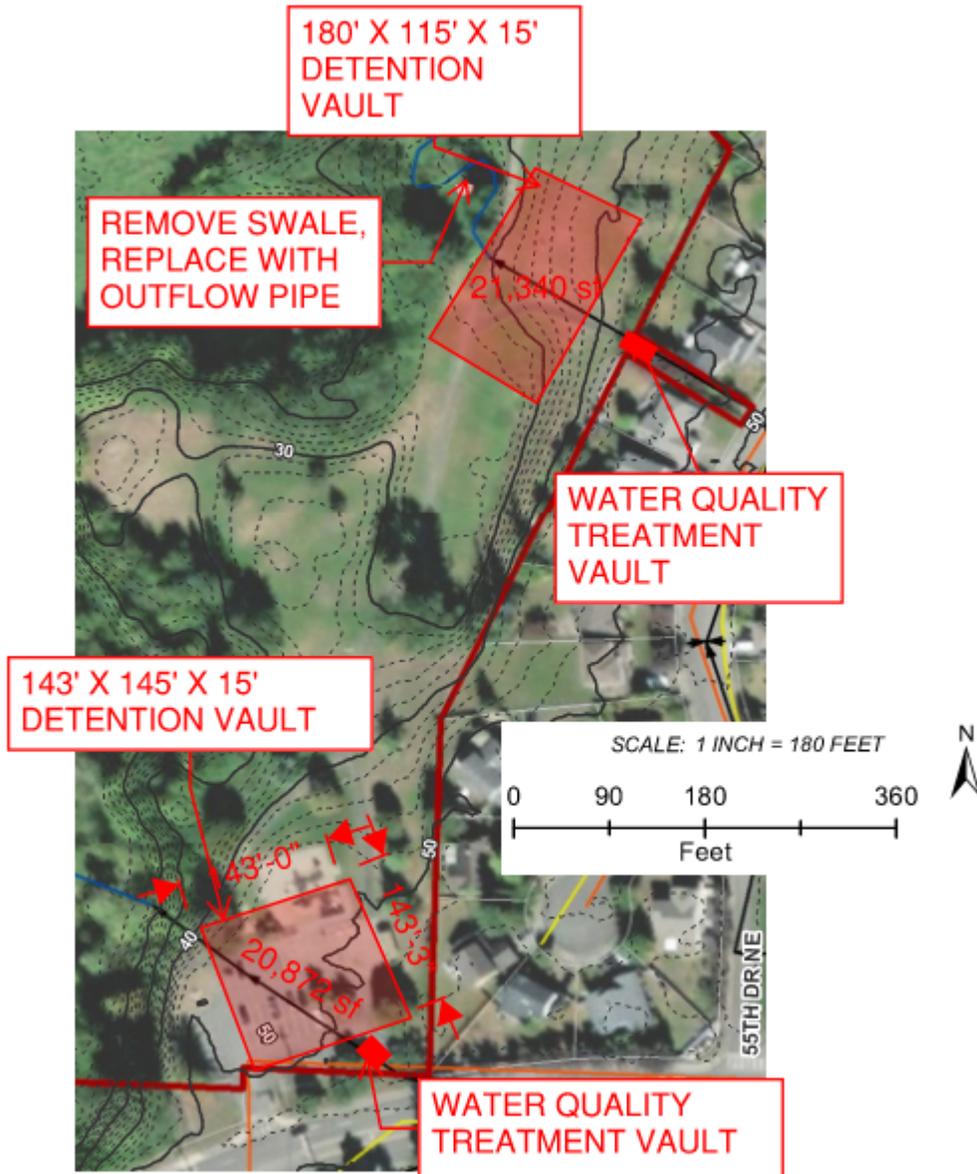
- Prior Geotechnical Analysis: Yes No
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

Soil Classification: _____

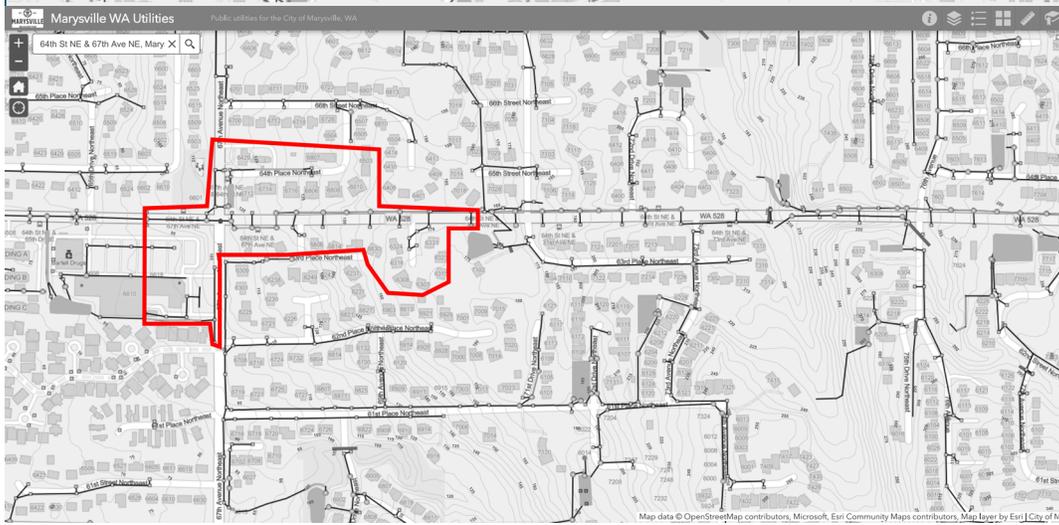
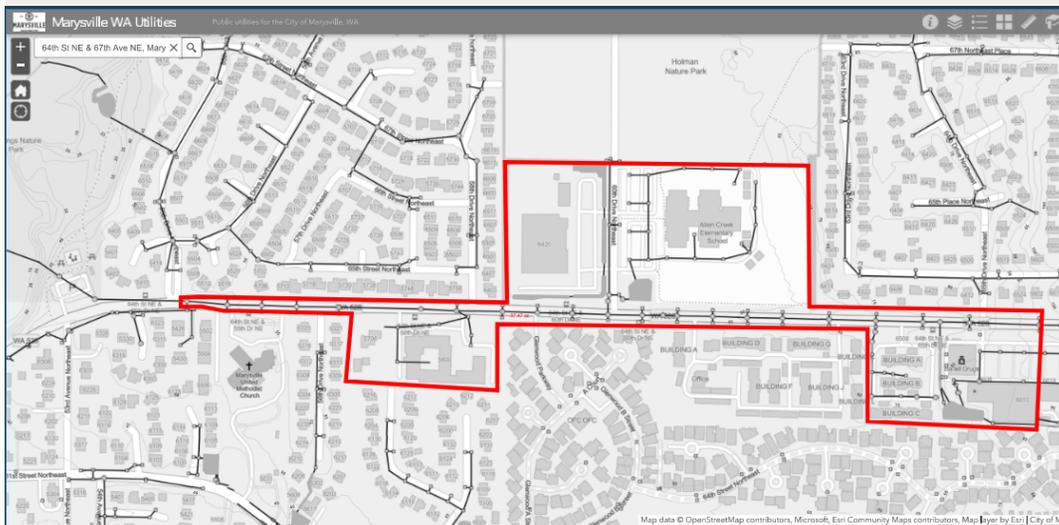
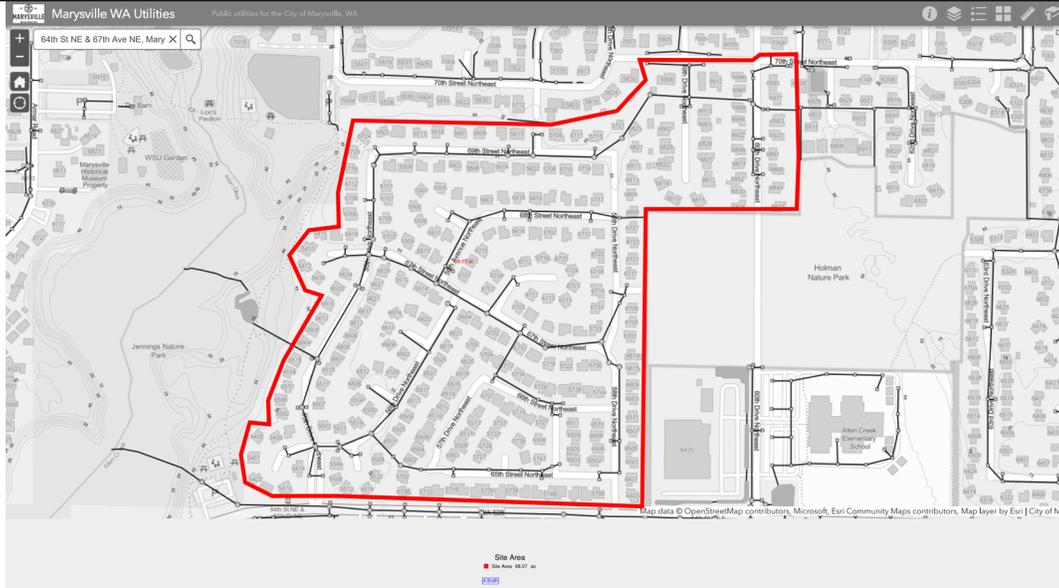
Comments: _____

Infiltration rate described as "poor"

Concept Sketch



Tributary Basin





Design or Delivery Notes

Disturbance to existing parking lot, detention options could also be placed in field with existing storm conveyance redirected.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

City interested in prioritizing site; large amount of available space available for improvements. Addition funding allocated to the site.

Is site candidate for further investigation? Yes No Maybe

Is site candidate for early action project(s)? Yes No Maybe

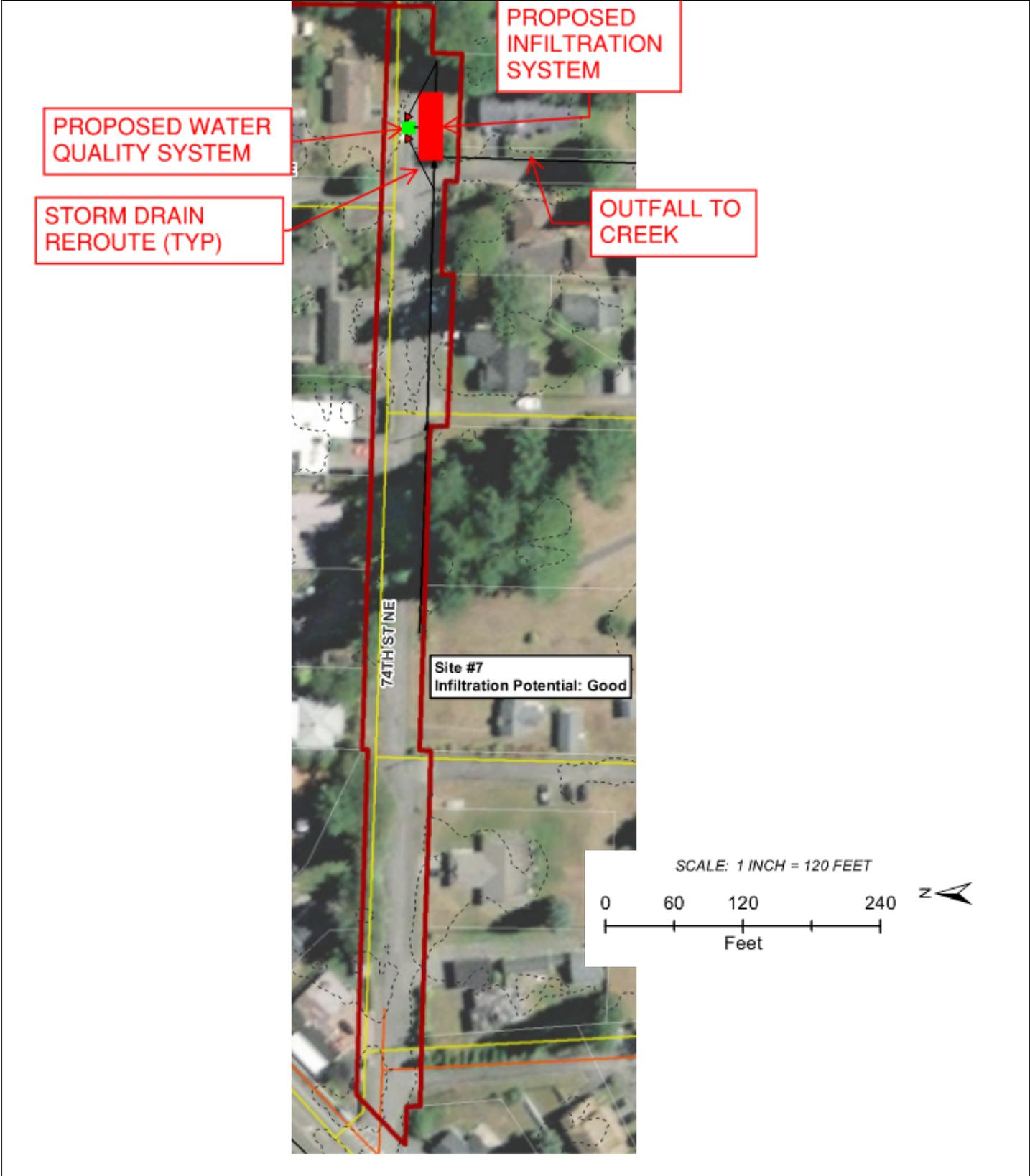
If no, is site candidate for other restoration project(s)? Yes No Maybe

If yes, type(s): Snohomish Conservation District has been doing stream restoration plantings at the site. There may be ongoing maintenance items still occurring from this project

Unique Site ID: 7	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/10/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: _____		
Location Notes: 74th St NE between Grove St and 60th Dr Ne		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input checked="" type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 2.19 ac Imperviousness ≈ 68 % Impervious Area ≈ 1.49 ac	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: No drainage complaints, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: 		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: A side street collecting runoff from the roadway and adjacent residential lots prior to outfall to Munson Creek.		
Approximate existing head available: ~20'		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flow Control <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage)	Retrofit Computations (Storage) Infiltration = 0.5 ac*ft needed = 21,780 cf 60' x 25' x 15' shown = 22,500 cf																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input checked="" type="checkbox"/> Proprietary Media Filter <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
The outfall will be intercepted with a water quality facility prior to entering an infiltration facility before outfall to Munson Creek.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: Access to neighboring parcels	Access: <input type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input checked="" type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Yes</th> <th style="width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Sewer</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Water</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Gas</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Cable</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Electric</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric to Streetlights</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Overhead Wires</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Other:</td> </tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cable	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other:	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH: _____ Other Factors: _____
Yes	Possible																											
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other:																										
Soils: Prior Geotechnical Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Classification: _____ Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: _____ Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Soil infiltration classified as "good". Soil is a combination of Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No very gravely sand loam and gravelly medium loam Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Sketch



Tributary Area





Design or Delivery Notes

ROW impacts would affect neighboring parcels. Existing utilities to be protected in place

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

Little tributary area for area disturbed by construction. Deep infiltration testing is required. Existing stormwater conveyance would need to be rerouted.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			



Unique Site ID: 9	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/10/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: _____		
Location Notes: 80th PI NE		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input checked="" type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 9.13 ac Imperviousness ≈ 54 % Impervious Area ≈ 4.93 ac	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: No drainage complaints, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: 		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: The site collects some roadway runoff from 60 th Dr NE as well as parcel and roadway runoff from the surrounding area along 80 th PI NE prior to discharge into Munson Creek		
Approximate existing head available: ~10'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality Channel Protection Flow Control
 Infiltration Repair Other:

Existing Facility Computations (Storage)

Retrofit Computations (Storage)

Infiltration ~ 1ac*ft = 43,560 cf
 40' x 40' x 15' footprint available (shown) = 24,000 cf

Proposed Treatment Option:

- Expanded Detention Wet Pond Constructed Wetland Bioretention/BSM
 Proprietary Media Filter Infiltration Swale Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

Retrofit area shown in cul-de-sac for a max of 1600 sf footprint. A deep infiltration test is required.

Site Constraints

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Access:

- No Constraints
 Constrained due to:
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Possible conflicts due to adjacent land use? Yes No

If yes, describe:
 Neighborhood access

Conflicts with Existing Utilities:

- None
 Unknown

Yes	Possible	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gas
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cable
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other:

Potential Permitting Factors:

- | | | |
|------------------------------|-----------------------------------|--|
| Dam Safety Permits Necessary | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Wetlands | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to a Stream | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Floodplain Fill | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Forests | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Specimen Trees | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |

How many? _____
 Approx. DBH: _____

Other Factors:

Soils:

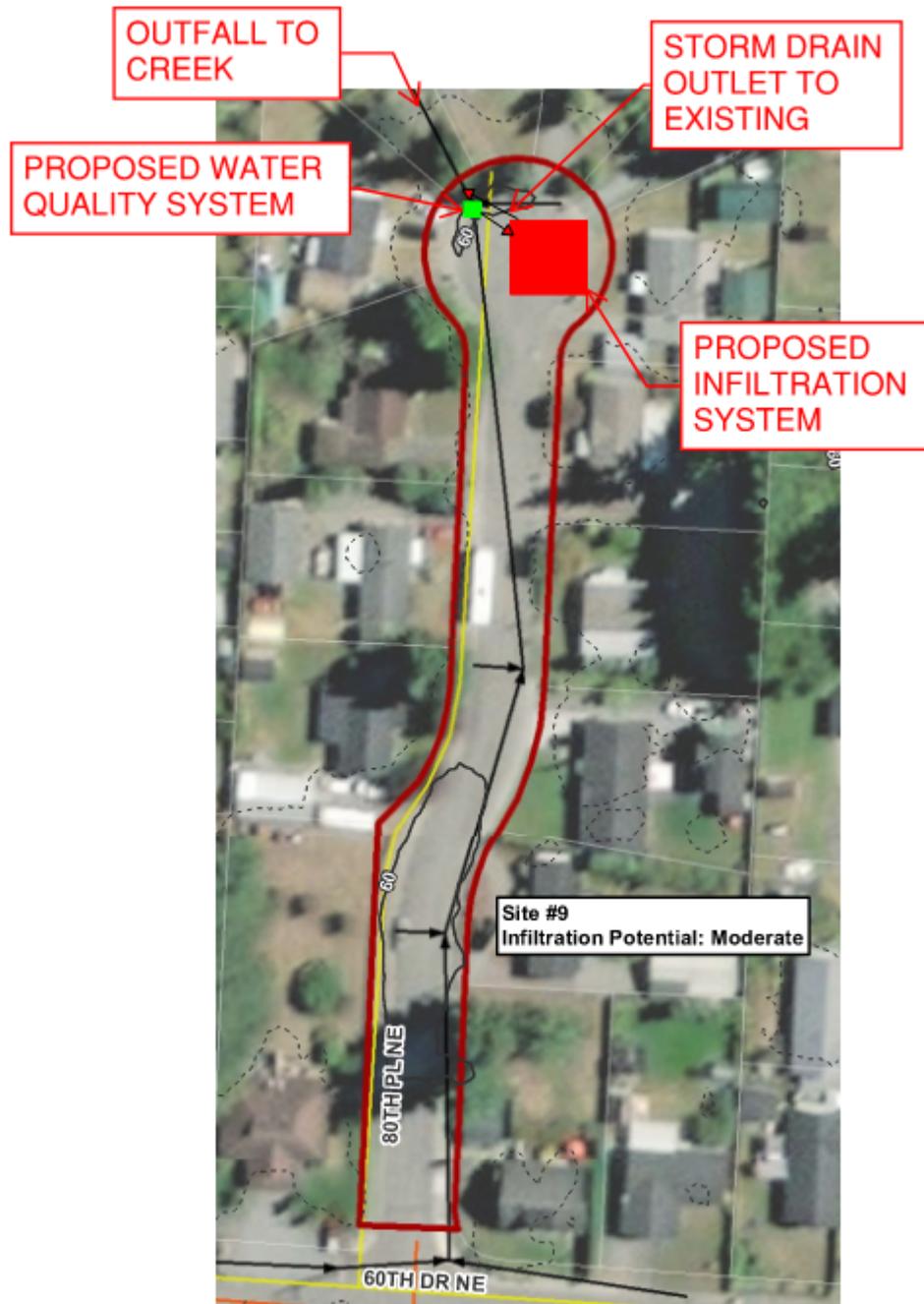
- Prior Geotechnical Analysis: Yes No
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

Soil Classification: Marysville Sand Member Qvrm

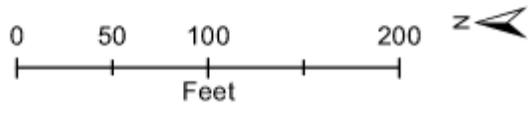
Comments:

Soil infiltration classified as "moderate". Sand depth of 15 to >25 feet bgs. Shallow groundwater anticipated at about 7 to 12 feet bgs. Preliminary infiltration rate 1 to 10 inches per hour.

Sketch



SCALE: 1 INCH = 100 FEET



Tributary Area





Design or Delivery Notes

Existing system to be intercepted with a water quality facility prior to conveyance into an infiltration vault.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input checked="" type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

A long infiltration trench would disturb access to neighboring parcels. Existing watermain located on the west side of the street as well as possible utility conflicts with sewer, cable and gas.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			



Unique Site ID: 70	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/10/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: _____		
Location Notes: 59th Dr NE right of way		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input checked="" type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 6.71 Imperviousness ≈ 54 % Impervious Area ≈ 3.62	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: No drainage complaints, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: 		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Existing catch basins located in 59 th Dr NE collect stormwater and route it to the north west side of the roadway prior to outfall into Munson Creek.		
Approximate existing head available: ~20'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality Channel Protection Flow Control
 Infiltration Repair Other:

Existing Facility Computations (Storage)

Retrofit Computations (Storage)

Required: Infiltration ~ 1 ac*ft = 43,560 cf
 Available: 25'wx40'lx15'd = 15,000 cf

Proposed Treatment Option:

- Expanded Detention Wet Pond Constructed Wetland Bioretention/BSM
 Proprietary Media Filter Infiltration Swale Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

A deep infiltration test is required. The water quality vault is shown in the location of the existing catch basin. A 40' x 25' X 15' infiltration facility is shown, placed in the required setbacks from shown existing utilities.

Site Constraints

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Access:

- No Constraints
 Constrained due to:
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Possible conflicts due to adjacent land use? Yes No

If yes, describe:

Access to neighboring parcels

Conflicts with Existing Utilities:

- None
 Unknown

Yes	Possible	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gas
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cable
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other:

Potential Permitting Factors:

- | | | |
|------------------------------|-----------------------------------|--|
| Dam Safety Permits Necessary | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Wetlands | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to a Stream | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Floodplain Fill | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Forests | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Specimen Trees | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |

How many? _____
 Approx. DBH: _____

Other Factors:

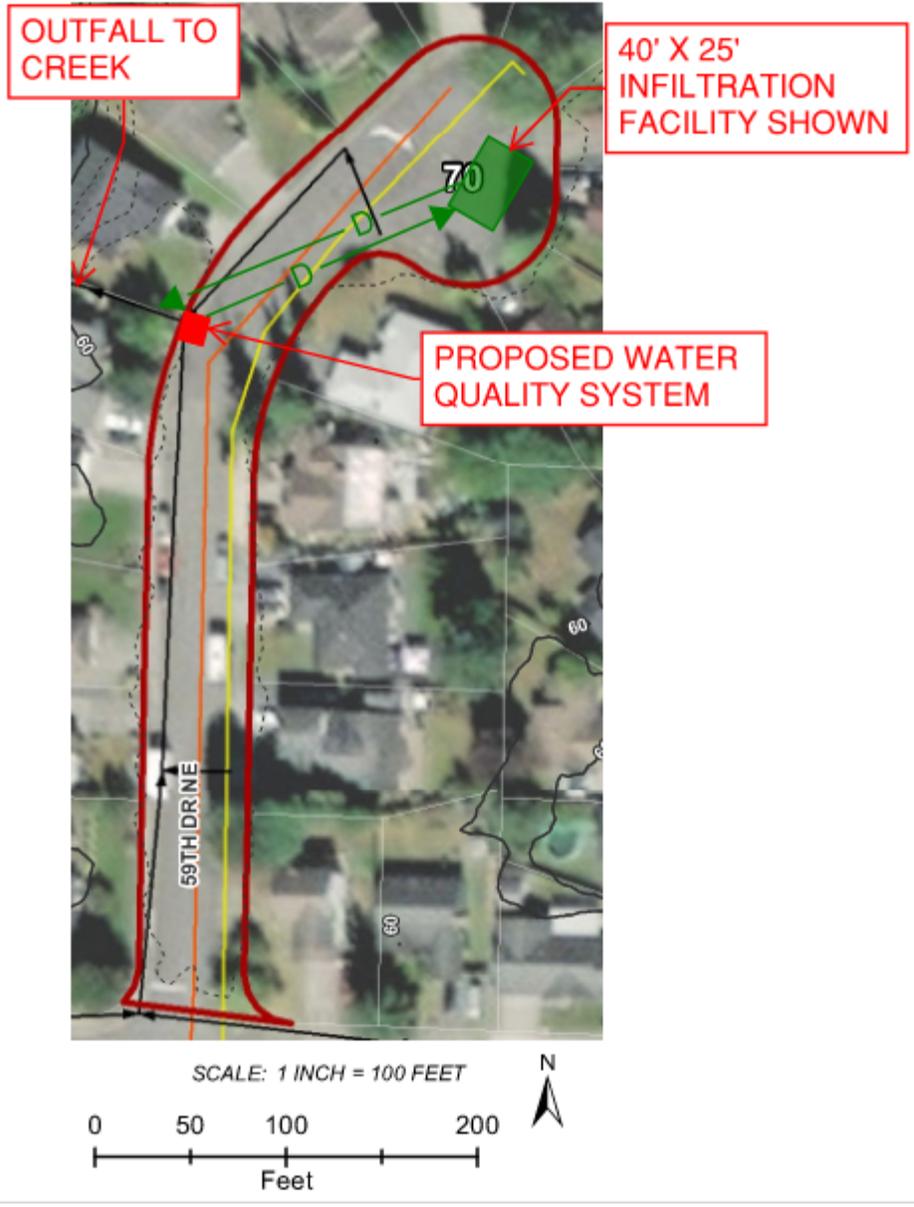
Soils:

- Prior Geotechnical Analysis: Yes No
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

Soil Classification: _____

Comments:
 Infiltration classified as "good". Soils comprised as gravelly sandy loams, Bellingham silty clay loam, norma loam, and Ragnar fine sandy loam

Sketch



Tributary Area





Design or Delivery Notes

A water quality system would be added in place of the catch basin shown, with overflow routing to an infiltration trench with any additional overflow routing to the creek.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

Construction in the ROW would impede local access to parcels. Due to setbacks from existing utilities, a full-size infiltration facility could likely not be provided. A deep infiltration test would need to be conducted.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

Unique Site ID: 71	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/10/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: _____		
Location Notes: 61st Dr NE		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input checked="" type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 6.91 Imperviousness ≈ 54 % Impervious Area ≈ 3.73	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: No drainage complaints, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: 		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Existing catch basins collect flow from 61 st Ave NE and route to the north prior to outfall to Munson Creek.		
Approximate existing head available: ~20'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality Channel Protection Flow Control
 Infiltration Repair Other:

Existing Facility Computations (Storage)

Retrofit Computations (Storage)

Infiltration ~ 1 ac*ft = 43,560 cf
 15'W x 25'L x15'D = 5,625 CF

Proposed Treatment Option:

- Expanded Detention Wet Pond Constructed Wetland Bioretention/BSM
 Proprietary Media Filter Infiltration Swale Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

Stormwater would enter a water quality facility prior to entering the 15' x 25' infiltration facility as shown.

Site Constraints

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Access:

- No Constraints
 Constrained due to:
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Possible conflicts due to adjacent land use? Yes No

If yes, describe:

Access to neighboring parcels

Conflicts with Existing Utilities:

- None
 Unknown

Yes	Possible	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gas
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cable
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other:

Potential Permitting Factors:

- | | | |
|------------------------------|-----------------------------------|--|
| Dam Safety Permits Necessary | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Wetlands | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to a Stream | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Floodplain Fill | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Forests | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Specimen Trees | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |

How many? _____
 Approx. DBH: _____

Other Factors:

Soils:

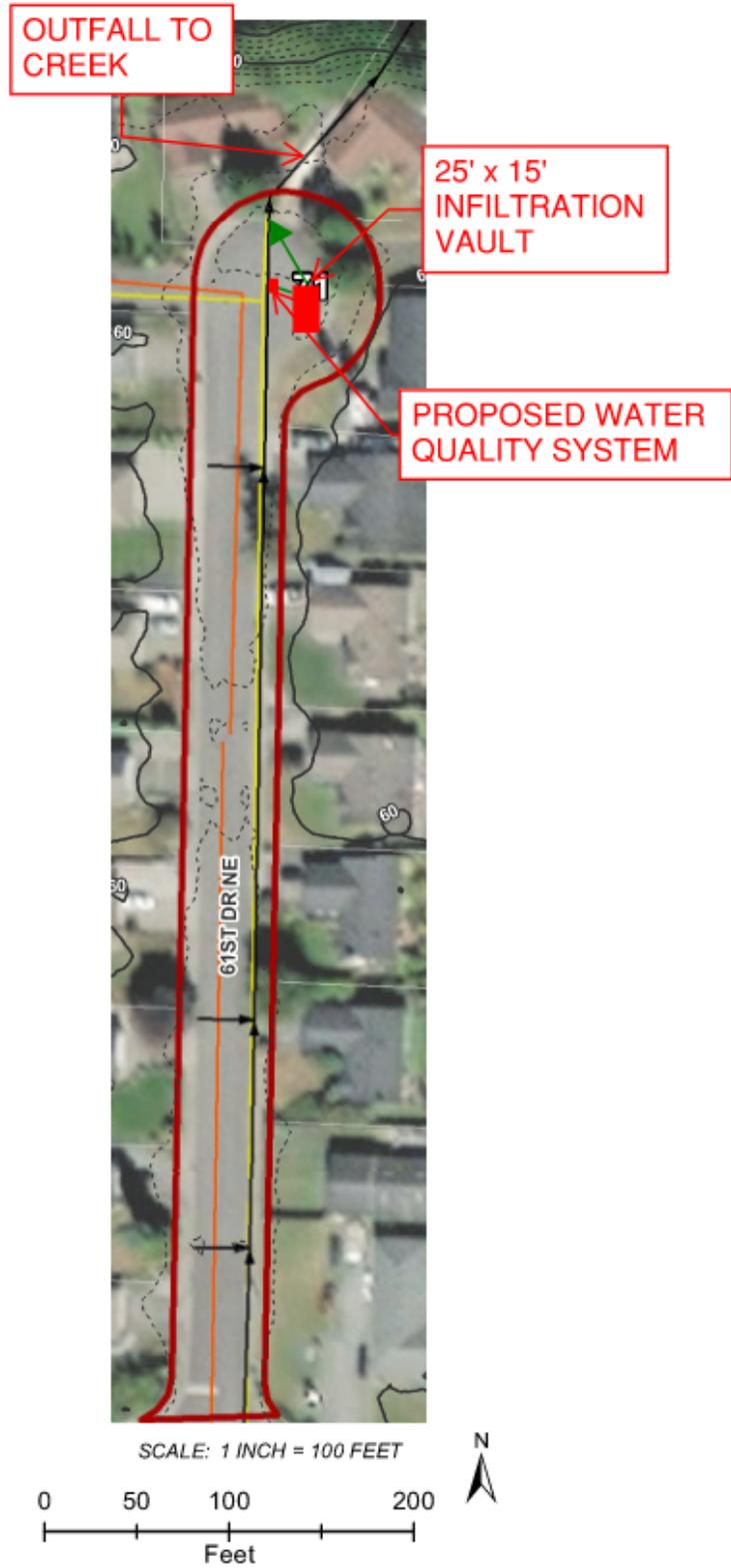
- Prior Geotechnical Analysis: Yes No
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

Soil Classification: _____

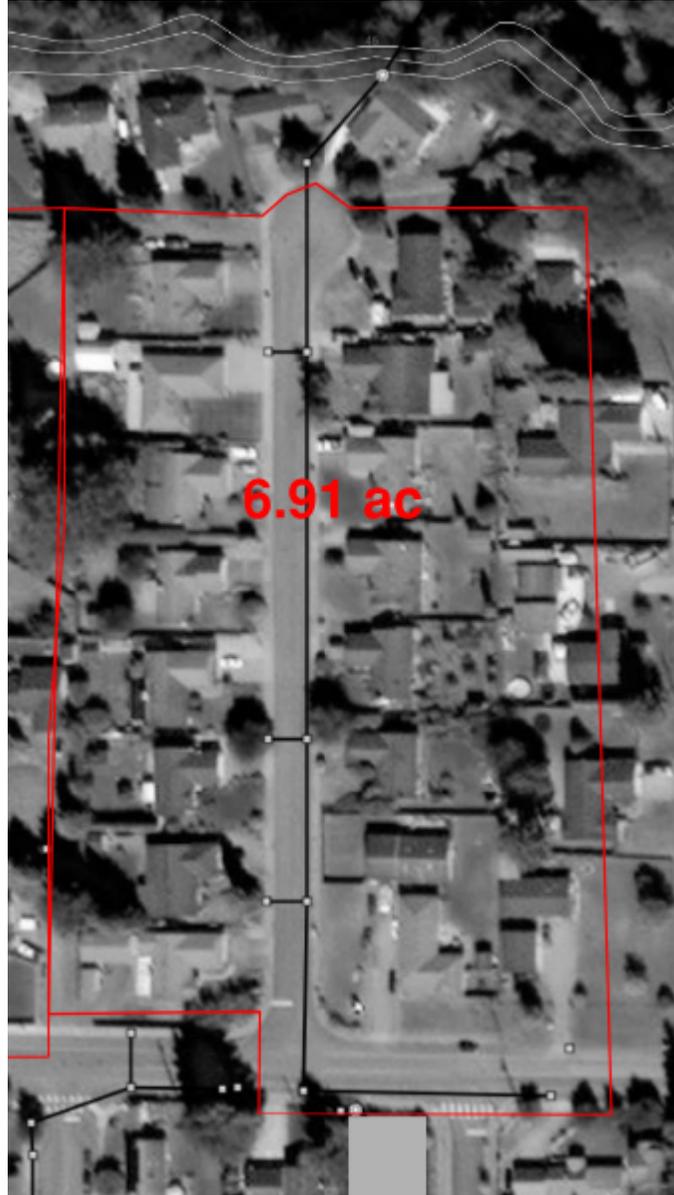
Comments:

Infiltration classified as "good". Soils are comprised of gravelly sandy loam, silty clay loam, norma loam, and Ragnar fine sandy loam

Sketch



Tributary Area





Design or Delivery Notes

A deep infiltration test is required.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

Construction in the ROW would affect neighboring parcels and impede neighboring access. Setbacks from existing utilities make available space limited.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

Unique Site ID: 85	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/13/2022	Assessed By: Jesse Newman	
Site Description		
Name:	SD-DF-49 Cedar Crest Greens	
Address:	81st Street NE and 65th Drive NE	
Location Notes:	00883300099400	
Ownership:	<input checked="" type="checkbox"/> Public	<input type="checkbox"/> Private <input type="checkbox"/> Unknown
If Public, Government Jurisdiction:	<input type="checkbox"/> Local	<input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:
Proposed Retrofit Location:		
Storage		
<input checked="" type="checkbox"/> Pond	<input type="checkbox"/> Conveyance System	<input type="checkbox"/> Vacant Parcel <input checked="" type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault
<input type="checkbox"/> Outfall	<input type="checkbox"/> ROW	<input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault
<input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈	7.65 ac (residential) + 24.77 (gc)	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input checked="" type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:
Imperviousness ≈	68 (residential) + 10 (golf course) %	
Impervious Area ≈	7.68 ac	
Notes: No Drainage Problems, No UIC		
Existing Stormwater Management		
Existing Stormwater Practice:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Possible
If Yes, Describe: Biofiltration swales and stormwater detention ponds.		
Existing Treatment Provided:	<input checked="" type="checkbox"/> Detention	<input checked="" type="checkbox"/> Infiltration <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> None <input type="checkbox"/> Unknown
Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Runoff from Cedar Crest greens subdivision drains to an existing stormwater detention pond. The detention pond is fenced with an existing rockery around the west and south edge. The pond discharges to a 24-inch storm pipe that conveys stormwater from the golf course pond. Connection to the existing storm pipe is not well documented on the record drawing and needs to be confirmed in the field.		
Approximate existing head available: ~6'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality Channel Protection Flow Control
 Infiltration Repair Other:

Existing Facility Computations (Storage)

20,152 cf (detention pond)

Retrofit Computations (Storage)

Required Detention = 138,240 cf

Provided Infiltration vault—7280 sf *10 ft deep = 72,800 cf

Proposed Treatment Option:

- Expanded Detention Wet Pond Constructed Wetland Bioretention/BSM
 Proprietary Media Filter Infiltration Swale Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

Replace existing pond with underground detention vault, treat runoff with proprietary media filter.

Site Constraints

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Possible conflicts due to adjacent land use? Yes No

If yes, describe:

Access:

No Constraints

Constrained due to:

- Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown

Yes Possible

- Sewer
 Water
 Gas
 Cable
 Electric
 Electric to Streetlights
 Overhead Wires
 Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable

How many? ~3
 Approx. DBH: _____

Other Factors:

Soils:

- Prior Geotechnical Analysis: Yes No
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

Soil Classification: Marysville Sand Member (Qvm)

Comments:

Fine sand to depth of about 8 to 15 feet bgs, underlain by silt/clay deposits. Shallow groundwater anticipated at about 4 to 10 feet bgs. Infiltration rate of 0.2 to 2 inches/hour.

Sketch



Tributary Area





Design or Delivery Notes

Project will require shoring to protect adjacent properties. Will need to be constructed in stages to get concrete to all walls. Will need to be structurally designed. Construction access to the site is constrained by trees.

Follow-up Needed to Complete Field Concept

- | | |
|--|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

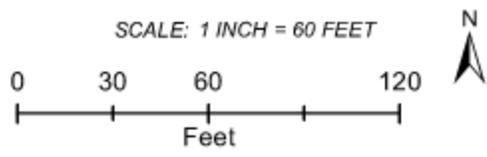
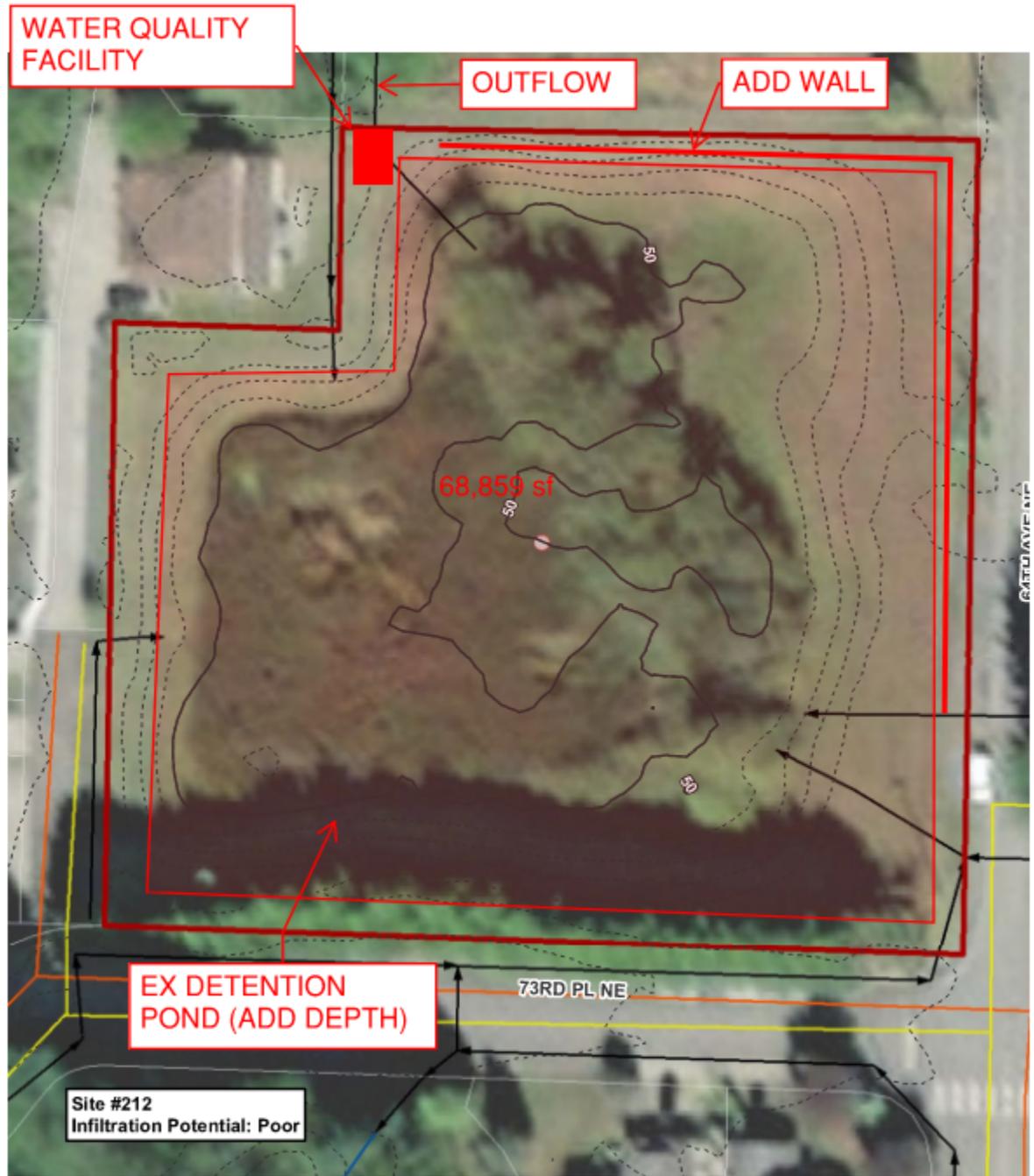
Homes will need to be protected from deep excavation with shoring. Infiltration was determined likely to be infeasible. A detention system could still be retrofitted to potentially provide more volume and also include runoff treatment.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

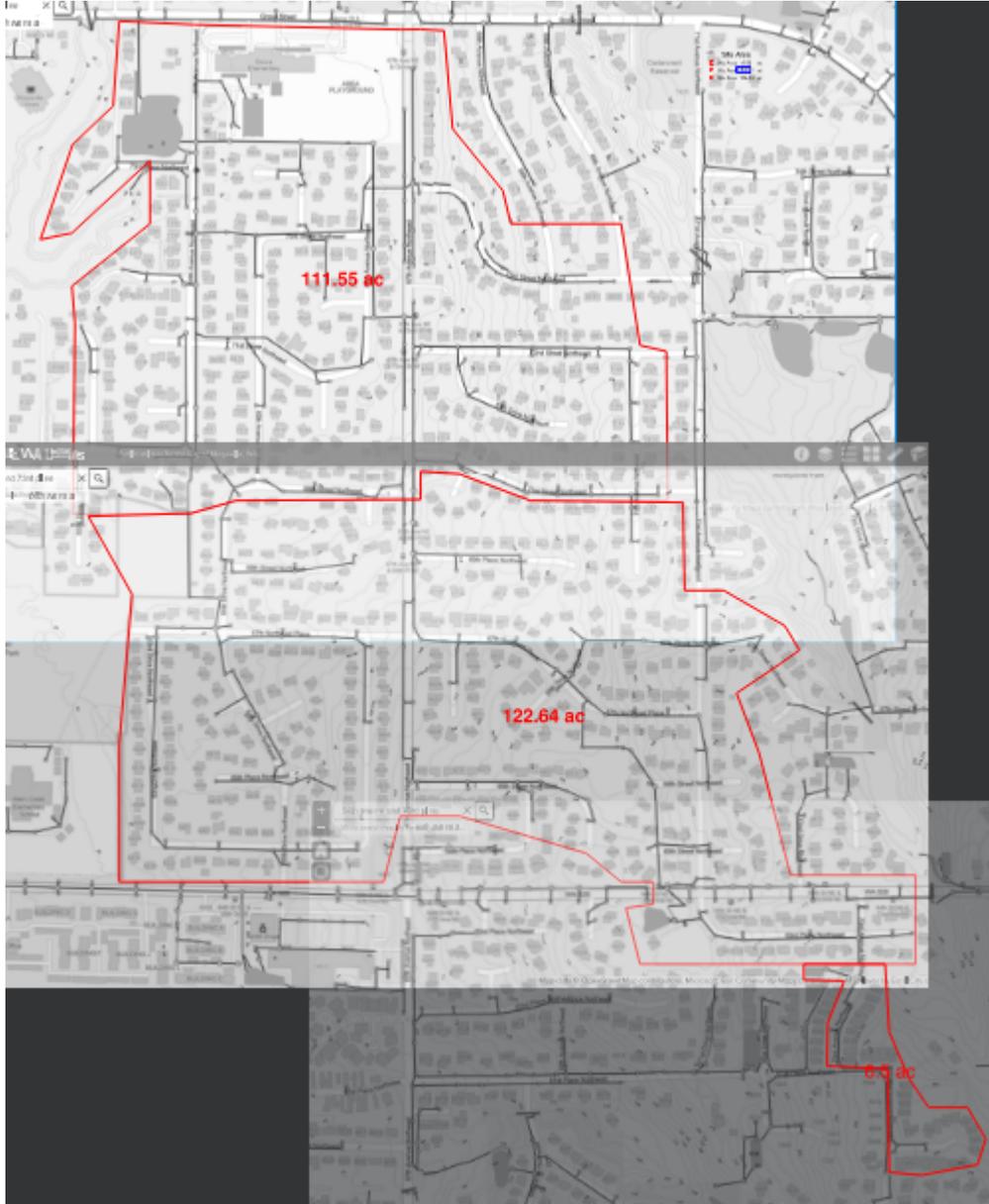
Unique Site ID: 212	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/11/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: SD-DF-20 Kellog Regional Detention		
Address: 7516 64th Ave NE, 30052700106600		
Location Notes: Northern parcel at the intersection of 73rd PI NE and 64th Ave NE		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input checked="" type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 240.69 Imperviousness ≈ 46 % Impervious Area ≈ 110.72	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: No drainage problems, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: The existing site is a stormwater retention pond		
Existing Treatment Provided: <input checked="" type="checkbox"/> Detention <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input type="checkbox"/> None <input type="checkbox"/> Unknown Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: The existing site is a stormwater retention pond with approx. 342,258 CF of storage		
Approximate existing head available: ~7'		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input checked="" type="checkbox"/> Flow Control <input type="checkbox"/> Infiltration <input checked="" type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage) 342,258 CF	Retrofit Computations (Storage) Detention volume needed = 1,992,960 cf needed Detention pond ~ 68,859 sf * 10' * (2/3) = 459,060 available storage at site																											
Proposed Treatment Option: <input checked="" type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input type="checkbox"/> Proprietary Media Filter <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
Depth can be added to existing system via the addition of onsite walls or storage tanks under the existing pond. A water quality facility is shown at the system outlet.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe:	Access: <input type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input checked="" type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other:																											
Conflicts with Existing Utilities: <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Yes</th> <th style="width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other:</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other:	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input checked="" type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH: _____ Other Factors:
Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
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<input type="checkbox"/>	<input type="checkbox"/>	Other:																										
Soils: Prior Geotechnical Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Classification: _____ Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: _____ Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Infiltration rate described as "poor". Soil classified as gravelly sandy loam, silty clay loam, and Norma loam. Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Sketch



Tributary Area





Design or Delivery Notes

The pond is probably not functioning as designed. Our crew did a modification on the outlet at some point because it clogged a lot.

Follow-up Needed to Complete Field Concept

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input checked="" type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

Impacts would not affect ROW, existing site can be accessed easily and maintained. Land directly north appears vacant, could expand facility further north if additional land is acquired.

Is site candidate for further investigation?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

Unique Site ID: 213	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/11/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: _____		
Location Notes: Grove St near the intersection of 61st Ave NE, library parking lot		
Ownership: <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private <input type="checkbox"/> Unknown		
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input checked="" type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input checked="" type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault		
<input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault		
<input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 13.46 ac	Drainage Area Land Use:	
Imperviousness ≈ 54 %	<input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional	
Impervious Area ≈ 7.26 ac	<input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial	
Notes:	<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related	
No drainage problems, no UIC	<input type="checkbox"/> Townhouses <input type="checkbox"/> Park	
	<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped	
	<input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Existing Stormwater Management		
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible		
If Yes, Describe:		
Stormwater conveyance via catch basins and pipe along Grove Street prior to outfall into Cedar Creek.		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known: 1986		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.:		
Site drainage system appears to be functioning well. Drainage sheet flows to the existing onsite catch basins where it then enters the drainage system.		
Approximate existing head available:		
~10		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flow Control <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage) Infiltration gravel trench = 6' x 3' x 145' = 2,610 cf Infiltration pipe (4' dia) = 1,821.2 cf Total = 4,431 cf	Retrofit Computations (Storage) Infiltration ~ 1 ac*ft = 43,560 cf 82'x130'x4' = 42,640 cf proposed																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input checked="" type="checkbox"/> Proprietary Media Filter <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
Roadway runoff can be piped on site where it will go thru water quality treatment prior to infiltration.																												
Site Constraints																												
Adjacent Land Use: <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe:	Access: <input type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input checked="" type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input checked="" type="checkbox"/> Property Ownership <input type="checkbox"/> Other:																											
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Yes	Possible																											
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<input type="checkbox"/>	<input type="checkbox"/>	Other:																										
Soils: Prior Geotechnical Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Classification: _____ Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: _____ Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Infiltration rate described as "good". Soil classified as gravelly sandy loam and Ragnar fine sandy loam Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Sketch



Tributary Area





Design or Delivery Notes

Water quality treatment location shown on sketch, space is available to add system.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

Library would need to remain accessible throughout construction. Could have issues with property ownership.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

Unique Site ID: 219	Subwatershed: Munson Creek	Watershed: Allen Creek
Date: 2/7/2022	Assessed By: Jesse Newman	
Site Description		
Name: Youth Peace Park		
Address: 76th St NE, Marysville, WA 98270		
Location Notes:		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 13.01 ac Imperviousness ≈ 45 % Impervious Area ≈ 5.85 ac	Drainage Area Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: Located in 4.5 SFH. Drainage problem to the N on 77th PI NE. Further investigation would be needed to determine if it could be (or needs to be) tied into this project. No UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: 		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input type="checkbox"/> None <input type="checkbox"/> Unknown Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Existing site is flat, large space no visible problems.		
Approximate existing head available: 11'		

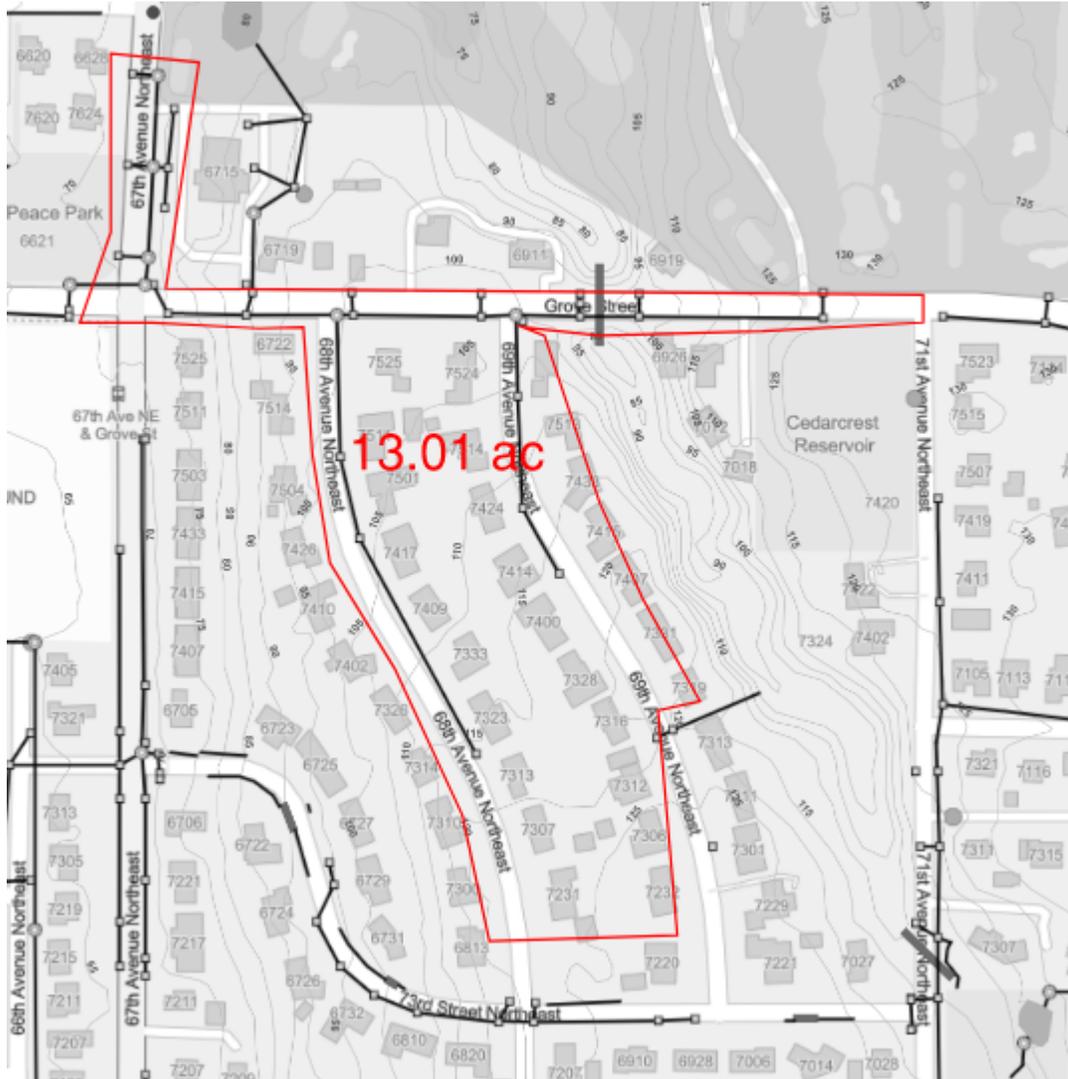
Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input checked="" type="checkbox"/> Flow Control <input type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage) NA	Retrofit Computations (Storage) 18,000 CF * 5.85 ac = 105,300 cf																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input checked="" type="checkbox"/> Proprietary Media Filter <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input checked="" type="checkbox"/> Other: Vault																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
Stormwater will be directed to the vault off of the intersection of Grove Street and 67 th Ave NE. It is likely the vault area can be reduced by increasing depth of system, though record drawings are required to determine the invert elevations.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe:	Access: <input checked="" type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
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Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
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<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other:																										
Soils: Prior Geotechnical Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Classification: Per soil map- Fine sandy loam (63%) and Tokul Gravelly medial Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: Evidence of poor infiltration (clays, fines): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Poor infiltration rate Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																												

Sketch



Legend <ul style="list-style-type: none"> ● Stormwater Facility → Stormwater Pipe → Stormwater Channel — Water Main — Sewer Main Opportunity Site 	SCALE: 1 INCH = 60 FEET 0 30 60 120 Feet	MARYSVILLE WATERSHED PLANNING DRAFT Munson Creek Opportunity Site(s) ID #219	
	Coordinate System: NAD 1983 STATEPLANE WASHINGTON NORTH FIPS 4601 FEET		
	Job: 2005749		Date: 18-JAN-2022

Tributary Area





Design or Delivery Notes

Vault will be large and will likely need walls to support the planks toward the center of the vault. Vault can be lengthened to improve sediment retention and overall hydraulics.

Existing park may be impacted. This could be a dual project to refresh the park assets while constructing the stormwater system.

Groundwater could be intercepted with construction and would need to be investigated further. The ultimate MS4 outfall has water flowing through the summer.

This is a higher traffic arterial. Water quality should be located upstream of the detention facility (shown downstream but could be rearranged). Will need to review traffic counts and confirm if oil control would be triggered.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input checked="" type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input checked="" type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

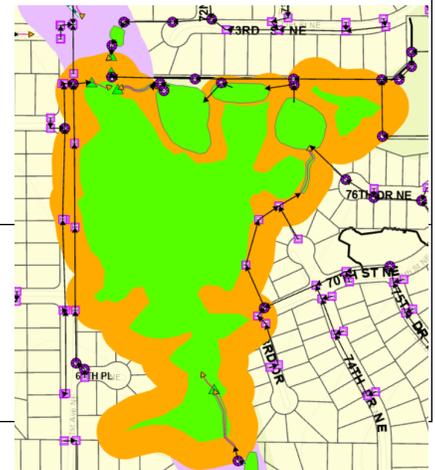
Initial Feasibility and Construction Considerations

Will likely need shoring on the east and south edge if in close proximity to the roadway. Vault may need to be a bit larger depending on the water quality system that is chosen.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe

If yes, type(s):

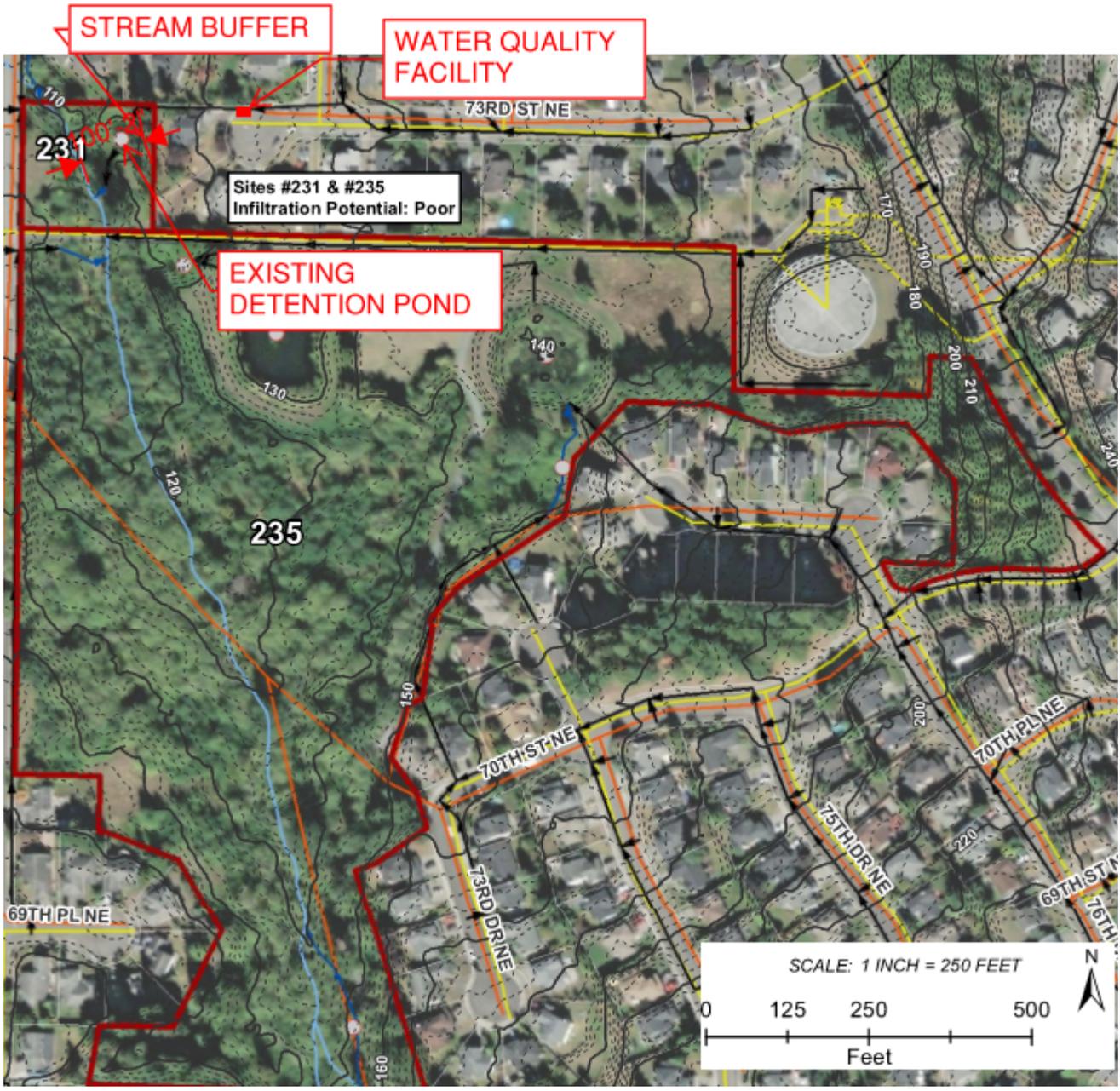
Unique Site ID: 231	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/11/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: SD-DF-27 Munson Creek Estates Div 2		
Address: 00770600002700		
Location Notes: Creek basin to the east of 71st Ave NE		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input checked="" type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input checked="" type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 13.06 ac Imperviousness ≈ 54 % Impervious Area ≈ 7.05 ac	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes:		
Existing Stormwater Management		
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe:		
Existing Treatment Provided: <input checked="" type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> None <input type="checkbox"/> Unknown Year of Construction, if known: 1992		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Constructed detention ponds and bioswale. Existing pond on site 231 is located next to a steep slope and within the stream buffer area. Site 235 has been delineated as a wetland. Here is a snip with the wetland delineations and buffers shown.		
Approximate existing head available: ~20'		



Unique Site ID: 231

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flow Control <input type="checkbox"/> Infiltration <input checked="" type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage) Detention pond = 2,200 cf	Retrofit Computations (Storage) Surface area available = 1,595 $V = (2/3) * 2' * 1,595 \text{ SF}$ $V = 2,127 \text{ SF}$																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input checked="" type="checkbox"/> Proprietary Media Filter <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:																												
A water quality vault is shown upstream of the existing detention pond. The existing pond is located within the required stream buffer.																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: Stream buffer	Access: <input type="checkbox"/> No Constraints Constrained due to: <input checked="" type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input checked="" type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; text-align: left;">Yes</th> <th style="width: 10%; text-align: left;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other: _____</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input checked="" type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to a Stream <input checked="" type="checkbox"/> Probable <input type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH: _____ Other Factors: New wetland delineation would be required. Old ones have shown the while site 235 as a wetland.
Yes	Possible																											
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water																										
<input type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____																										
Soils: Prior Geotechnical Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Classification: _____ Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: _____ Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Soil infiltration classified as "poor". Soil is comprised of very gravelly sandy loam, and gravelly medial loam. Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Sketch

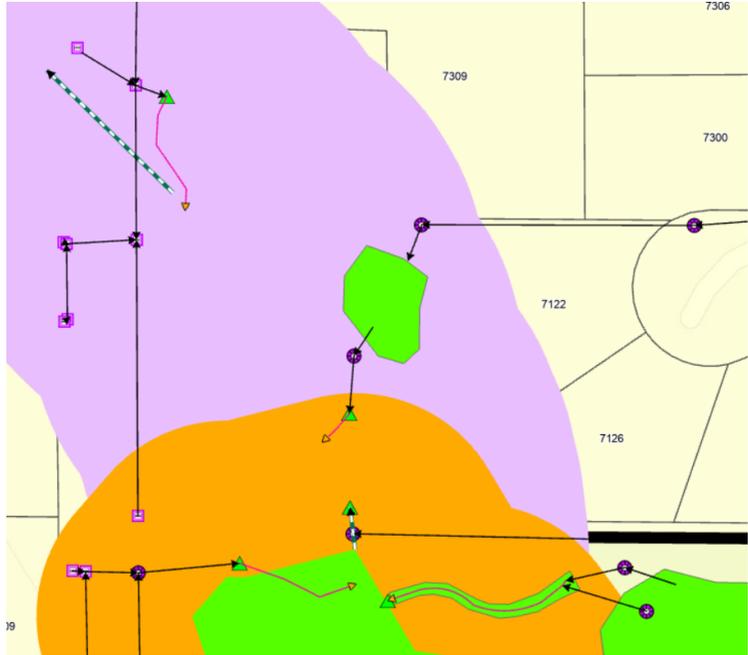


Tributary Area



Design or Delivery Notes

Stream buffer extends well beyond the pond parcel boundaries. Under current design criteria these lots would not have been permitted. This development was constructed in 1989.



Follow-up Needed to Complete Field Concept

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: | <input type="checkbox"/> Confirm soil types |

Initial Feasibility and Construction Considerations

Significant trees located in vicinity of existing pond

Is site candidate for further investigation? Yes No Maybe

Is site candidate for early action project(s)? Yes No Maybe

If no, is site candidate for other restoration project(s)? Yes No Maybe

If yes, type(s): Improved media in existing systems



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality Channel Protection Flow Control
 Infiltration Repair Other:

Existing Facility Computations (Storage)

Pond 1 = 99,702 cf
 Pond 2 = 31,613 cf
 Pond 3 ~ 136,070 cf
 Total = 267,385 cf

Bioswale = 140 LF

Retrofit Computations (Storage)

Total detention pond volume needed = 107,706 sf x 6' = 644,435 cf

Expansion of pond 3 ~ 220,788 cf

156,262 cf still needed

Proposed Treatment Option:

- Expanded Detention Wet Pond Constructed Wetland Bioretention/BSM
 Proprietary Media Filter Infiltration Swale Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

Clean existing ponds and improve existing conveyance systems, water quality treatment can be added at outfall.

Pond 3 can be widened to the east.

Note on sheet 9A to raise weir notch elevation in CB1 prior to further development.

Site Constraints

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Possible conflicts due to adjacent land use? Yes No

If yes, describe:

Access:

No Constraints

Constrained due to:

- Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown

Yes Possible

- Sewer
 Water
 Gas
 Cable
 Electric
 Electric to Streetlights
 Overhead Wires
 Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable

How many? _____

Approx. DBH: _____

Other Factors: _____

Soils:

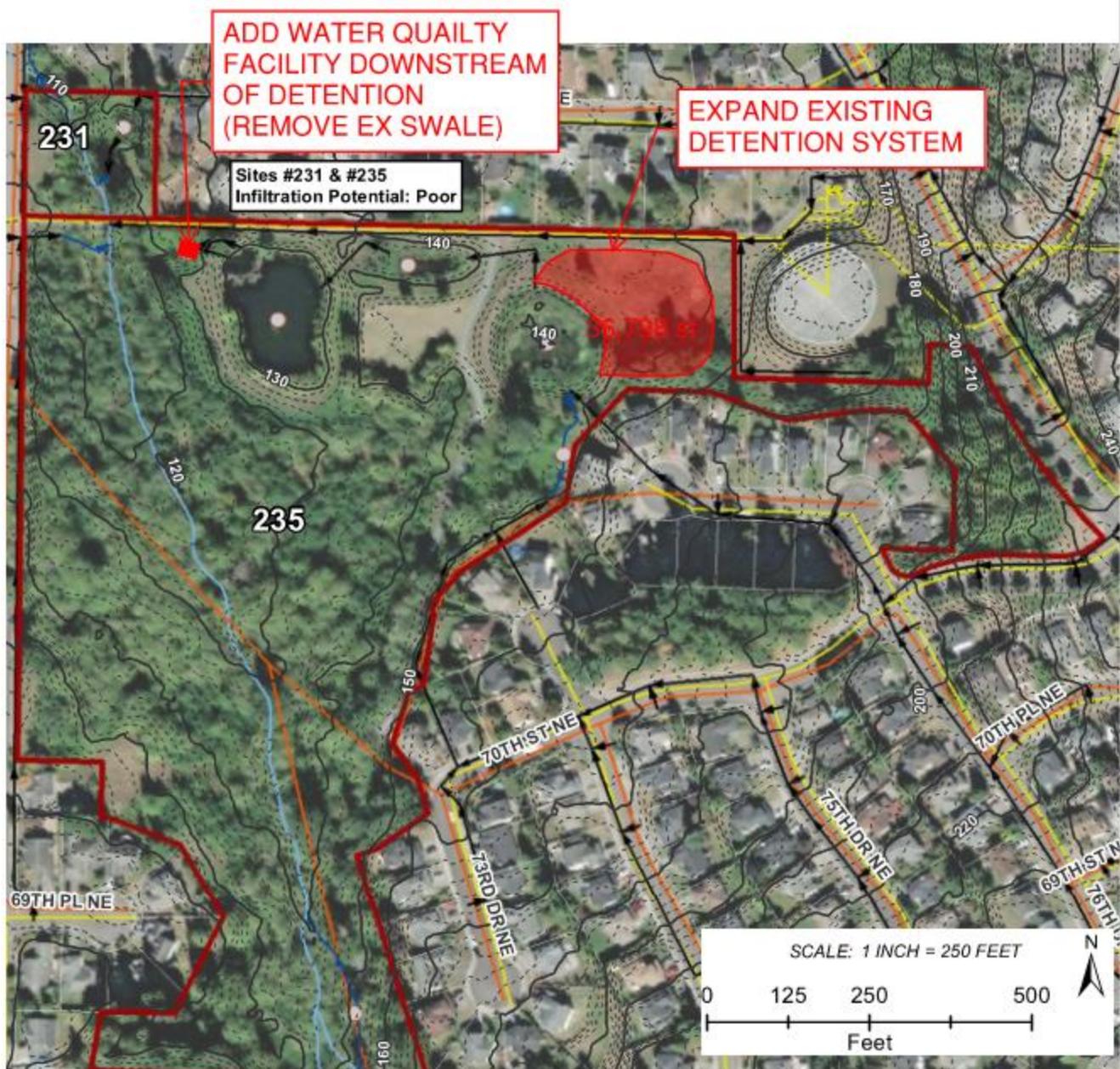
- Prior Geotechnical Analysis: Yes No
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

Soil Classification: _____

Comments:

Soil infiltration classified as "poor". Soil is comprised of very gravelly sandy loam, and gravelly medial loam.

Sketch



Tributary Area





Design or Delivery Notes

Space available to expand pond three and add water quality facility at pond outflow as shown. Conveyance should be checked for quality control.

Follow-up Needed to Complete Field Concept

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

Project is likely infeasible as ponds have been delineated as wetlands. Significant trees located in vicinity.
 Project is not considered for further investigation.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s): Improved media in existing systems			



Unique Site ID: 249	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/11/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: 00723000011000		
Location Notes: 67th Ave NE and 64st NE		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input checked="" type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 9.3 ac Imperviousness ≈ 46 % Impervious Area ≈ 4.28 ac	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: No drainage complaints, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: Coming down the hill on 64 th the system has a series of detention tanks. They were probably put in so the slope of the pipe wasn't too steep, but it should be adding some flow control. SD285 for reference.		
Existing Treatment Provided: <input checked="" type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown Year of Construction, if known:		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: A park is located on the parcel with plenty of open space for a detention facility.		
Approximate existing head available: ~4'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality Channel Protection Flow Control
 Infiltration Repair Other:

Existing Facility Computations (Storage)

Retrofit Computations (Storage)

Required ~ 74,040 cf

Available ~ 10,539 CF

Proposed Treatment Option:

- Expanded Detention Wet Pond Constructed Wetland Bioretention/BSM
 Proprietary Media Filter Infiltration Swale Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

Retrofit includes redirecting stormwater flow onsite and routing through a water treatment facility prior to entering seven 4' diameter 140 lf detention tanks.

Site Constraints

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Possible conflicts due to adjacent land use? Yes No

If yes, describe:

Access:

No Constraints

Constrained due to:

- Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown

Yes Possible

- Sewer
 Water
 Gas
 Cable
 Electric
 Electric to Streetlights
 Overhead Wires
 Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable

How many? _____

Approx. DBH: _____

Other Factors: _____

Soils:

- Prior Geotechnical Analysis: Yes No
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

Soil Classification: _____

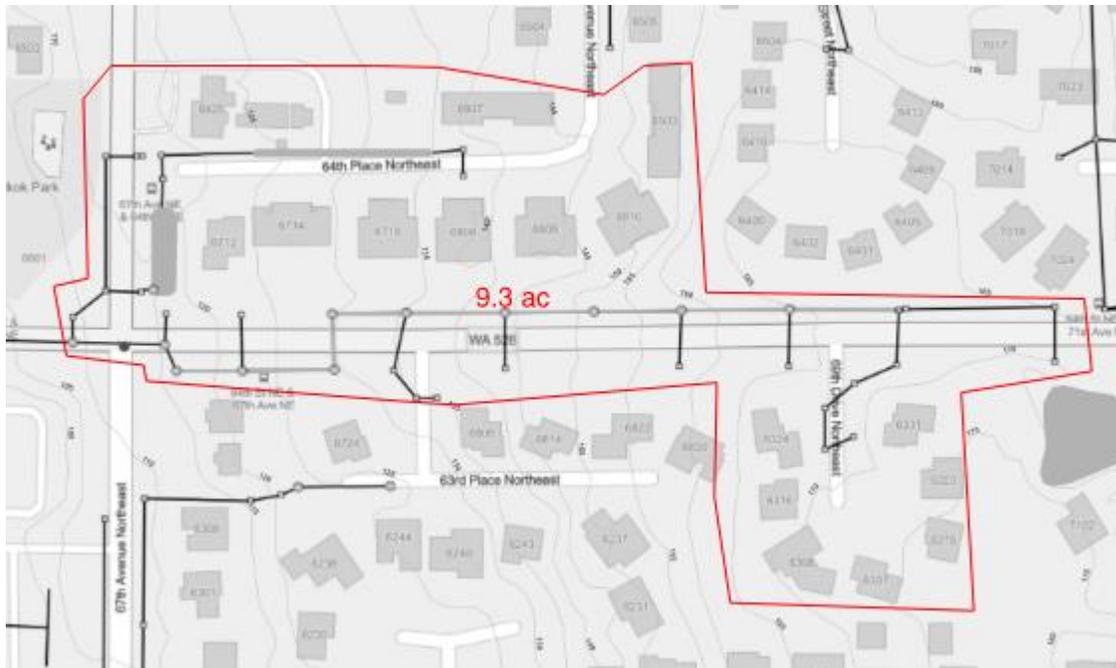
Comments:

Soil infiltration classified as "poor"
Groundwater should be expected at this site.

Sketch



Tributary Area





Design or Delivery Notes

Space available for either a pond or a below ground detention system. Infiltration was not evaluated as the site infiltration rate was described as "poor".

Follow-up Needed to Complete Field Concept

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Confirm concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: | <input type="checkbox"/> Confirm soil types |

Initial Feasibility and Construction Considerations

Site is easily accessible, rerouting existing pipes would cause disturbance in the ROW.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

Unique Site ID: 300	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/11/2022	Assessed By: Cassandra Steffen	
Site Description		
Name: _____		
Address: 00947400099800		
Location Notes: Parcel is located north of the intersection of 78th PI NE and 67th Ave NE		
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:		
Proposed Retrofit Location:		
Storage		
<input type="checkbox"/> Pond <input type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input checked="" type="checkbox"/> Other: Not a retrofit project		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 0.37 ac Imperviousness ≈ 9 % Impervious Area ≈ 0.03 ac	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes:		
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: 		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown Year of Construction, if known: 1996		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Standing water observed, stream extents seemed overgrown an in need of native vegetation.		
Approximate existing head available: ~6'		

Proposed Retrofit																												
Purpose of Retrofit / Treatment Targeted: <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Channel Protection <input type="checkbox"/> Flow Control <input type="checkbox"/> Infiltration <input type="checkbox"/> Repair <input type="checkbox"/> Other:																												
Existing Facility Computations (Storage)	Retrofit Computations (Storage)																											
Proposed Treatment Option: <input type="checkbox"/> Expanded Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Constructed Wetland <input type="checkbox"/> Bioretention/BSM <input type="checkbox"/> Proprietary Media Filter <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other:																												
Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance: Site is within a stream buffer																												
Site Constraints																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible conflicts due to adjacent land use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe:	Access: <input type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input type="checkbox"/> Space <input checked="" type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other:																											
Conflicts with Existing Utilities: <input type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; text-align: left;">Yes</th> <th style="width: 10%; text-align: left;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Sewer</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Water</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Gas</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Cable</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Electric</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric to Streetlights</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Overhead Wires</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Other:</td> </tr> </tbody> </table>	Yes	Possible		<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cable	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other:	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input checked="" type="checkbox"/> Probable <input type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH: _____ Other Factors:
Yes	Possible																											
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other:																										
Soils: Prior Geotechnical Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Classification: _____ Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Comments: _____ Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Infiltration classified as "moderate". Soil is comprised of Norma Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No loam. Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

Sketch





Tributary Area

A large, empty rectangular box with a thin black border, intended for drawing or describing the tributary area.



Design or Delivery Notes

Unlikely to need updated Civil, stream restoration could be a possibility.

Follow-up Needed to Complete Field Concept

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: | <input type="checkbox"/> Confirm soil types |

Initial Feasibility and Construction Considerations

Construction would take place in stream buffer as well as impact the ROW to redirect the existing storm conveyance system.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s): Stream side tree planting site. Neighbor encroachment on site. Need survey and possibly new fencing.			

Unique Site ID: 318	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/11/2022	Assessed By: Cassandra Steffen	
Site Description		
Name:	Cedarcrest Vista East Divisions 1 & 2 Pond #SD-DF-50	
Address:	8224 67th Ave NE	
Location Notes:	Creek basin near where 82nd St NE becomes 63rd Dr NE	
Ownership:	<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:	
Proposed Retrofit Location:		
Storage		
<input checked="" type="checkbox"/> Pond <input checked="" type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 22.44 ac	Drainage Area Land Use:	
Imperviousness ≈ 54 %	<input type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: No drainage complaints, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible		
If Yes, Describe: Existing stormwater flows into a detention pond, wet pond, with overflow to biofiltration swale		
Existing Treatment Provided: <input checked="" type="checkbox"/> Detention <input checked="" type="checkbox"/> Infiltration <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known: 1996		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Site appears to be flooded through, standing water observed. The existing swale is outside of the pond fencing.		
Approximate existing head available: ~8'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality
 Channel Protection
 Flow Control
 Infiltration
 Repair
 Other:

Existing Facility Computations (Storage)

Wet pond = 51,627 CF
 Infiltration pond ~ 4,662 CF
 Bioswale ~ 255 LF

Retrofit Computations (Storage)

Volume available = (2/3) * 6 * 21,182 = 84,728 cf
 Detention/Wetpond volume required = 175,948 cf
 Volume shown:
 Detention ~ 16,000 cf
 Wetland ~ 12,300 cf

Proposed Treatment Option:

- Expanded Detention
 Wet Pond
 Constructed Wetland
 Bioretention/BSM
 Proprietary Media Filter
 Infiltration
 Swale
 Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

Retrofit would add a proprietary detention pond separated by a berm from a wetland.

Site Constraints

Adjacent Land Use:

- Residential
 Commercial
 Institutional
 Industrial
 Transport-Related
 Park
 Undeveloped
 Other: _____

Possible conflicts due to adjacent land use?
 Yes
 No
If yes, describe: adjacent property owners may have a perception that
 That some of this property is theirs.

Access:

- No Constraints
 Constrained due to:
 Slope
 Space
 Utilities
 Tree Impacts
 Structures
 Property Ownership
 Other: Existing fence

Conflicts with Existing Utilities:

- None
 Unknown

Yes	Possible	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gas
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cable
<input type="checkbox"/>	<input type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other:

Potential Permitting Factors:

- | | | |
|------------------------------|--|--|
| Dam Safety Permits Necessary | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Wetlands | <input checked="" type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Impacts to a Stream | <input checked="" type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Floodplain Fill | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Forests | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Specimen Trees | <input checked="" type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |

How many? _____
 Approx. DBH: _____

Other Factors:

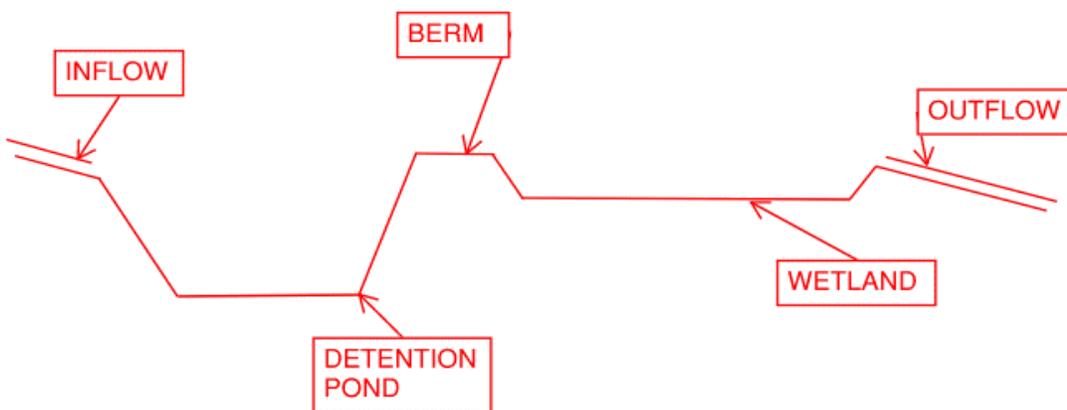
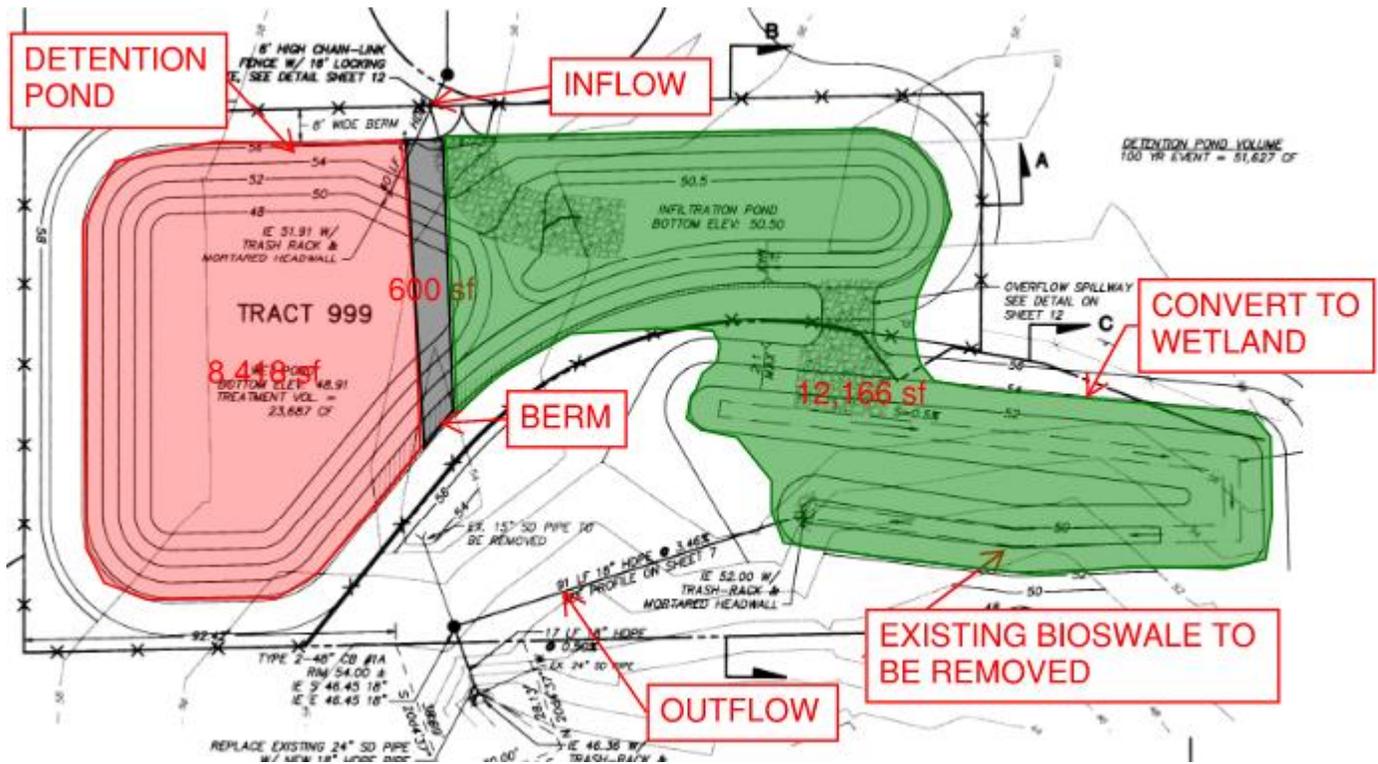
Soils:

- Prior Geotechnical Analysis:
 Yes
 No
 Soil auger test holes:
 Yes
 No
 Evidence of poor infiltration (clays, fines):
 Yes
 No
 Evidence of shallow bedrock:
 Yes
 No
 Evidence of high water table (gleying, saturation):
 Yes
 No

Soil Classification: _____

Comments:
 Infiltration rate described as "poor". Site soils are classified as Ragnar sandy loam

Sketch



Tributary Area





Design or Delivery Notes

Area to be replaced with a detention area and wetland separated by a berm.

Follow-up Needed to Complete Field Concept

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Confirm concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input checked="" type="checkbox"/> Other: Confirm that bioswale meets current design standards | |

Initial Feasibility and Construction Considerations

Minimal impacts to the ROW. Neighboring parcels may be affected by construction.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

Unique Site ID: 325	Subwatershed: Munson Creek	Watershed: Allen Creek
Date: 2/16/2022	Assessed By: J. Newman	
Site Description		
Name:	Cedarcrest Golf Course	
Address:	6810 84th St NE, Marysville, WA 98270	
Location Notes:		
Ownership:	<input checked="" type="checkbox"/> Public	<input type="checkbox"/> Private <input type="checkbox"/> Unknown
If Public, Government Jurisdiction:	<input checked="" type="checkbox"/> Local	<input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:
Proposed Retrofit Location:		
Storage		
<input checked="" type="checkbox"/> Pond	<input type="checkbox"/> Conveyance System	<input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault
<input type="checkbox"/> Outfall	<input type="checkbox"/> ROW	<input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault
<input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 24.77 ac	Drainage Area Land Use:	
Imperviousness ≈ 55 %	<input type="checkbox"/> Residential <input type="checkbox"/> Institutional	
Impervious Area ≈ 13.62 ac	<input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial	
Notes:	<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related	
One drainage complaint of flooding here. No UIC	<input type="checkbox"/> Townhouses <input checked="" type="checkbox"/> Park	
	<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped	
	<input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Existing Stormwater Management		
Existing Stormwater Practice:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Possible
If Yes, Describe:		
Bioswale, and detention pond.		
Existing Treatment Provided:	<input checked="" type="checkbox"/> Detention	<input checked="" type="checkbox"/> Infiltration <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> None <input type="checkbox"/> Unknown
Year of Construction, if known:	1996	
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.:		
Existing site has a failing bioswale system that has trees surrounding the bioswale.		
Approximate existing head available:		
Approximately 2.7'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:
 Water Quality Channel Protection Flow Control
 Infiltration Repair Other:

Existing Facility Computations (Storage) Estimated to be approximately 9000 CF—for the pond.	Retrofit Computations (Storage) 13.62 X 18,000 = 245,160 CF Detention Tank volume shown = 11,827 cf
--	--

Proposed Treatment Option:
 Expanded Detention Wet Pond Constructed Wetland Bioretention/BSM
 Proprietary Media Filter Infiltration Swale Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:
 Likely a 3-foot detention tank, and a water quality treatment vault. The vault may need to be located downstream of the tank and pond. Existing swales can be converted to infiltrating bioretention.

Site Constraints

Adjacent Land Use:
 Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____
Possible conflicts due to adjacent land use? Yes No
If yes, describe: The adjacent land use is the golf course. The

Access:
 No Constraints
 Constrained due to:
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other:

Conflicts with Existing Utilities:
 None
 Unknown

Yes	Possible	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water
<input type="checkbox"/>	<input type="checkbox"/>	Gas
<input type="checkbox"/>	<input type="checkbox"/>	Cable
<input type="checkbox"/>	<input type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other:

Potential Permitting Factors:
 Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH: _____
Other Factors: _____

Soils:
 Prior Geotechnical Analysis: Yes No **Soil Classification:** _____
 Soil auger test holes: Yes No **Comments:** _____
 Evidence of poor infiltration (clays, fines): Yes No Per USC the site consists of Tokul Gravelly Medial loam(56.7%) Everett very gravelly sandy loam (28.8%)
 Evidence of shallow bedrock: Yes No Norma Loam (11%)
 Evidence of high water table (gleying, saturation): Yes No

Sketch



Tributary Area





Design or Delivery Notes

Construction would need to be approved by the golf course; treatment options also available downstream.

Follow-up Needed to Complete Field Concept

- | | |
|--|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area impervious cover | <input checked="" type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Confirm concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: | <input checked="" type="checkbox"/> Confirm soil types |

Initial Feasibility and Construction Considerations

There is not a lot of head available for this site. Also the bioswales drain to the pond onsite and the pond discharges through an easement across the street

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

Unique Site ID: 328	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/11/2022	Assessed By: Cassandra Steffen	
Site Description		
Name:	SD-DF-34	
Address:	00779300010000	
Location Notes:	Creek bed near the cul-de-sac of 67th St NE	
Ownership:	<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:	
Proposed Retrofit Location:		
Storage		
<input checked="" type="checkbox"/> Pond <input checked="" type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 88.71 ac	Drainage Area Land Use:	
Imperviousness ≈ 46 %	<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: No drainage problems, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible		
If Yes, Describe: Flow is routed to a detention pond with overflow through a grass lined swale		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known: 1988		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.: Standing water observed, area overgrown. Pipe outfall protection still visible. The MS4 that comes into 67 th NE is a piped stream segment. The stream is intermittent but might have a higher flow than expected.		
Approximate existing head available: ~15'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality Channel Protection Flow Control
 Infiltration Repair Other:

Existing Facility Computations (Storage)

Storage volume = 3,507 CF

Retrofit Computations (Storage)

Storage volume for wetpond = 38,642 cf

Proposed Treatment Option:

- Expanded Detention Wet Pond Constructed Wetland Bioretention/BSM
 Proprietary Media Filter Infiltration Swale Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

Retrofit includes adding water quality facilities to the existing cb's just before the MS4 connects to the pond.

Site Constraints

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Possible conflicts due to adjacent land use? Yes No

If yes, describe:

Access:

No Constraints

Constrained due to:

- Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown

Yes Possible

- Sewer
 Water
 Gas
 Cable
 Electric
 Electric to Streetlights
 Overhead Wires
 Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable

How many? _____
 Approx. DBH: _____

Other Factors:

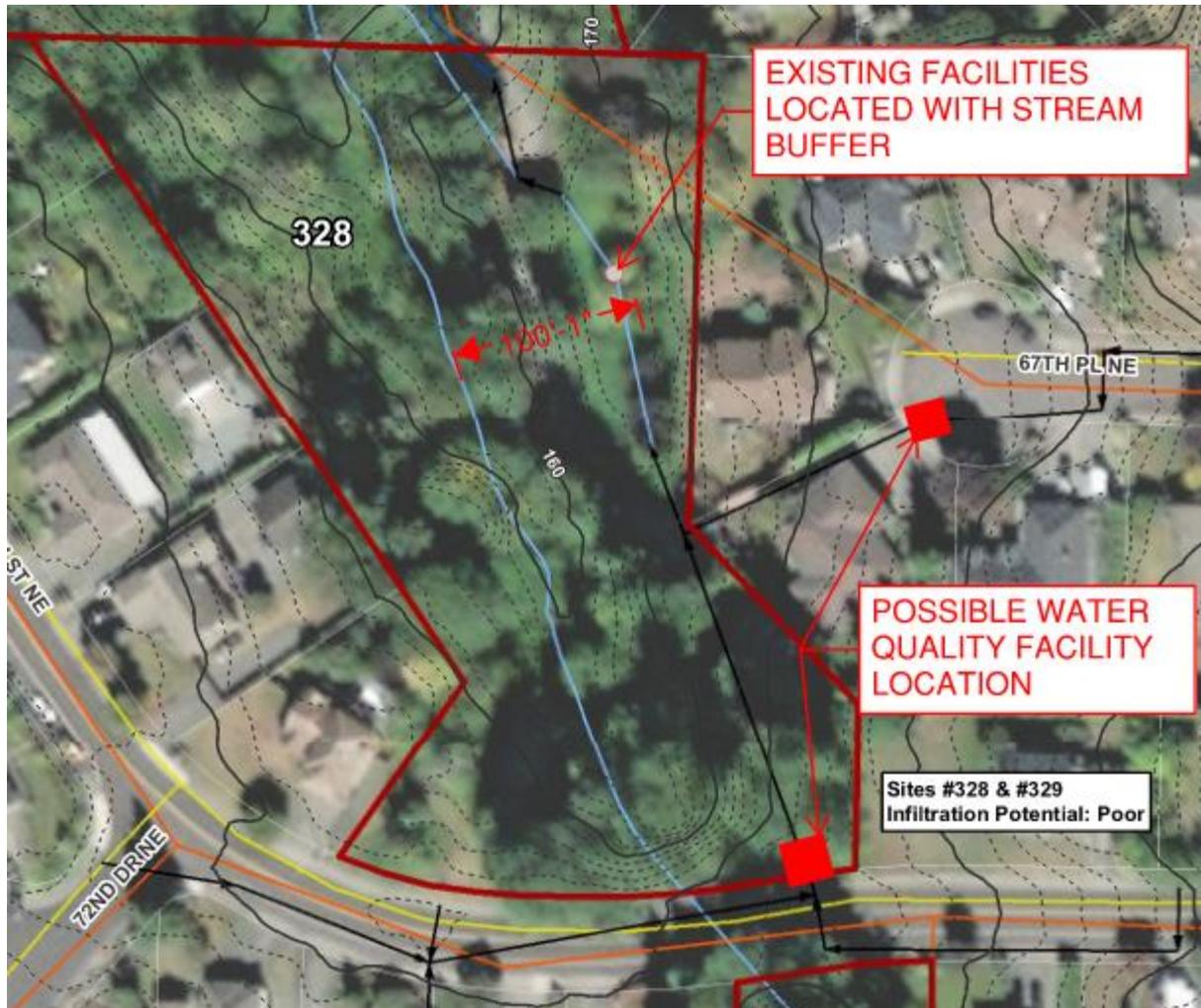
Soils:

- Prior Geotechnical Analysis: Yes No
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

Soil Classification: _____

Comments:
 Site infiltration classified as "poor". Soil classified as gravelly medial loam.

Sketch



Tributary Area





Design or Delivery Notes

Native vegetation should be added around the edges of pond, water seemed pooled and not draining properly.

Follow-up Needed to Complete Field Concept

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

Improvements need to stay out of the stream buffer, minimal surface area available for expansion.

Is site candidate for further investigation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Maybe
Is site candidate for early action project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If no, is site candidate for other restoration project(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Maybe
If yes, type(s):			

Unique Site ID: 329	Subwatershed:	Watershed: Munson Middle Allen Creek
Date: 3/11/2022	Assessed By: Cassandra Steffen	
Site Description		
Name:	SD-DF-32 Foothills Estates and SD-DS-26 Foothills East	
Address:	7203 65th PI NE	
Location Notes:	Creek bed near the intersection of 72nd Dr NE and 67th St NE	
Ownership:	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:	
Proposed Retrofit Location:		
Storage		
<input checked="" type="checkbox"/> Pond <input checked="" type="checkbox"/> Conveyance System <input type="checkbox"/> Vacant Parcel <input type="checkbox"/> Wetpond <input type="checkbox"/> Wet Vault <input type="checkbox"/> Outfall <input type="checkbox"/> ROW <input type="checkbox"/> Infiltration <input type="checkbox"/> Tank <input type="checkbox"/> Vault <input type="checkbox"/> Other:		
Drainage Area to Proposed Retrofit		
Drainage Area ≈ 5.61 ac	Drainage Area Land Use:	
Imperviousness ≈ 46 %	<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other:	
Notes: No drainage complaints, no UIC		
Existing Stormwater Management		
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible		
If Yes, Describe:		
Existing Treatment Provided: <input type="checkbox"/> Detention <input type="checkbox"/> Infiltration <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown		
Year of Construction, if known: 1988		
Describe existing site conditions, including existing site drainage, conveyance, visible problems, etc.:		
No stormwater infrastructure is located onsite. There are two detention ponds and a grass lines swale located directly to the west.		
Approximate existing head available: ~15'		



Proposed Retrofit

Purpose of Retrofit / Treatment Targeted:

- Water Quality Channel Protection Flow Control
 Infiltration Repair Other:

Existing Facility Computations (Storage)

Retrofit Computations (Storage)

Storage volume for detention pond = 43,987 cf

Proposed Treatment Option:

- Expanded Detention Wet Pond Constructed Wetland Bioretention/BSM
 Proprietary Media Filter Infiltration Swale Other:

Describe elements of proposed retrofit, including surface area, maximum depth of treatment, and conveyance:

Retrofit to the ponds adjacent would include adding depth and possibly expanding the current system. Could also add a water quality system upstream.

Site Constraints

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Access:

- No Constraints
 Constrained due to:
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Possible conflicts due to adjacent land use? Yes No

If yes, describe: These are on private properties. Easement to Maintain but extra ones would probably be required

Conflicts with Existing Utilities:

- None
 Unknown

Yes	Possible	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gas
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cable
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other:

Potential Permitting Factors:

- | | | |
|------------------------------|--|--|
| Dam Safety Permits Necessary | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Wetlands | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to a Stream | <input checked="" type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Floodplain Fill | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Forests | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Specimen Trees | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| How many? | _____ | |
| Approx. DBH: | _____ | |

Other Factors:

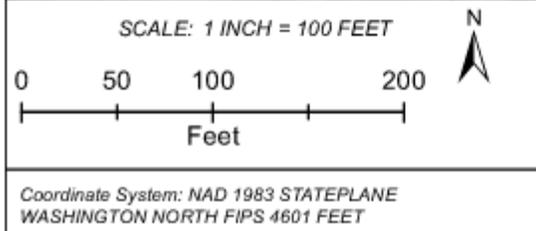
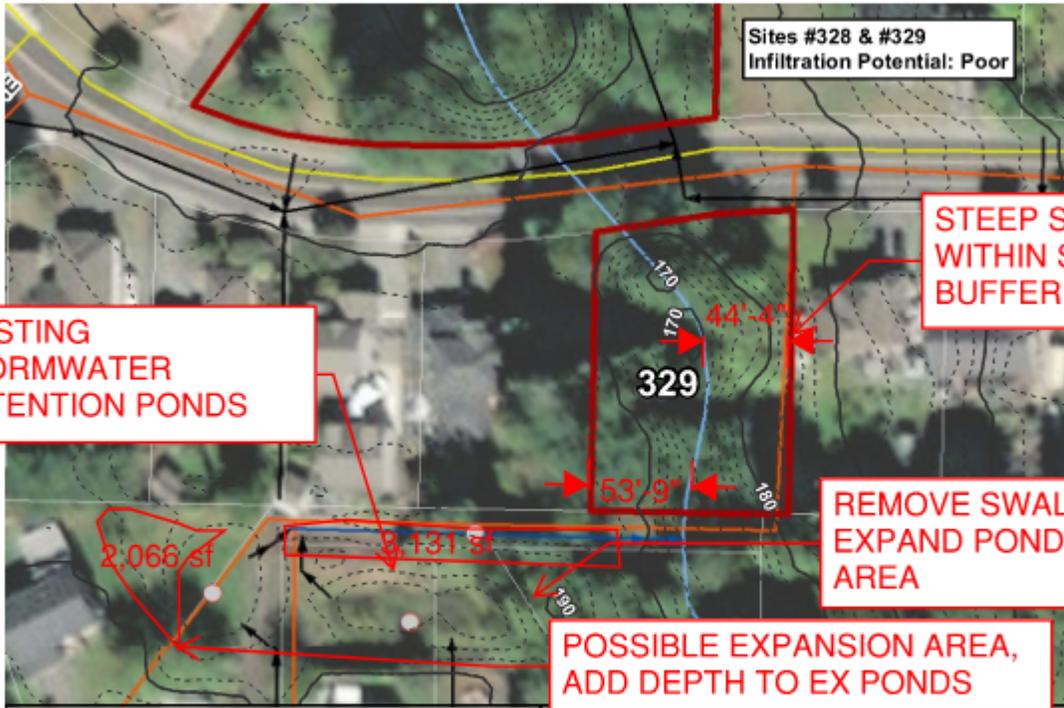
Soils:

- Prior Geotechnical Analysis: Yes No
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

Soil Classification: _____

Comments: Site infiltration classified as "poor". Soil classified as gravelly medial loam.

Sketch



MARYSVILLE WATERSHED PLANNING

DRAFT Munson Creek
Opportunity Site(s)
ID #328 & 329

Tributary Area





Design or Delivery Notes

Site 329 is not easily accessible. Any improvements would need to be to the existing systems directly to the west of the site.

Follow-up Needed to Complete Field Concept

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Confirm concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

Initial Feasibility and Construction Considerations

Improvements need to stay out of the stream buffer, minimal surface area available for expansion.
 Project is likely infeasible since it is on private property.

Is site candidate for further investigation? Yes No Maybe

Is site candidate for early action project(s)? Yes No Maybe

If no, is site candidate for other restoration project(s)? Yes No Maybe

If yes, type(s):

APPENDIX B

SITE FEASIBILITY RATINGS

SITE FEASIBILITY RATING FORM INSTRUCTIONS

The retrofit rating process looks at 4 criteria to evaluate and rank a project: Site Feasibility, Environmental Benefit, Public Stewardship, and Opportunity.

The potential retrofit rating matrix generates a site feasibility average rating of 1 to 5 based on rating each of 11 criteria on a scale of 1 to 5, with 1 being the worst and 5 being the best. A checkmark is made in the evaluation matrix for each criterion based on the score for that criteria. After completing the matrix, the average rating for the site is calculated by averaging the score for each criterion. A project score of 0-55 is also provided. This is a total of each of the feasibility points. The feasibility average rating can be determined by dividing the project score by the number of rating criteria (11). For example, a site receiving “5” for all feasibility criteria would receive a total of 55 points in the project score and an average feasibility rating of 5.

Final selection of preferred sites is then based on ranking of site ratings, with some consideration of outside factors.

Site Feasibility Rating

The first step in the project rating process is to evaluate each project site based on feasibility criteria. This is accomplished by a person with a good level of understanding of the site and the type of project, and a site reconnaissance report.

The site reconnaissance report includes the following:

- An evaluation of alternative Best Management Practices (BMPs) that might be suitable for the site.
- An assessment of permitting requirements.
- Identification of existing utilities and their potential impact on the project.
- Determination whether water quality, flow control, or a combination of these can be accomplished at the site.

Prior to completing this section, a project feasibility analysis should be completed. The feasibility analysis should provide information to score each of the following feasibility criteria, as well as alternative methods of providing runoff treatment, flow control, and habitat enhancements at the project location.

#	Criteria	Score (1 to 5)
F1.1	Potential Utility or Site Constraints	

Guidance

Existing utilities and other site constraints can make a stormwater retrofit project difficult and more expensive. Projects in urbanized areas are more likely to face these types of constraints; however, utility service in more rural areas can also be a constraint. A site visit should be conducted, and a utility

locate considered to identify the location of utilities in the project vicinity. Some examples of utility conflicts and site constraints to consider include:

1. Existing Sanitary Sewer or Water Mains.
2. Side sewer and water service lines (these are more easily relocated).
3. Electrical power lines (underground and overhead) and power service lines such as roadway lighting and landscape lighting.
4. Other franchise utility lines such as cable, gas, and phone. Locating these utility lines can frequently be difficult.
5. Existing fencing, structures, roads, gates, etc.
6. Existing drainfields, septic tanks, underground tanks, or structures.
7. Existing or abandoned water wells for drinking or irrigation.
8. Location of existing buildings and other structures and the type/location of foundations for those structures.
9. History of waste disposal or hazardous/dangerous waste handling or spillage at the location.

Scoring Guide

- No, or only minor utility, structure, or other site constraints exist in the project location. → **Score = 5**
- Minor utility, utility, structure, or site constraints exist, but are easily accommodated or relocated. → **Score = 4**
- Special construction practices and precautions will be required to avoid utility or structure impacts. → **Score = 3**
- Significant utility relocation of sewer or water mains or electrical power will be required to accommodate the project. → **Score = 2**
- Major utility conflicts exist that would require major efforts to accommodate construction or require relocating several utilities and service lines or result in loss of a significant structure or the site has a history of waste disposal that may require cleanup action. → **Score = 1**

#	Criteria	Score (1 to 5)
F1.2	Sufficiency of Space Given Setback Requirements, etc.	

Guidance

To evaluate this criterion, an idea of what type of BMP would be installed is necessary. For some BMPs such as infiltration, certain setback criteria must be met such as setbacks to property lines, structures, drinking water wells, steep slopes, etc. Also important is a rough estimate of the area required to install the BMP and still meet minimal treatment and flow control requirements for the project.

Scoring Guide

- Based on the type of BMP proposed, the site appears to have adequate space to provide for full treatment and/or flow control and meet all setback requirements. → **Score = 5**

- Site can meet all setback requirements, but may be limited in area to meet full flow control or treatment requirements, while still meeting a minimum level to support the project. → **Score = 4**
- Site constraints limit ability to meet full flow control and/or treatment, or limit type of BMPs allowed based on setback criteria, or special reports are required such as geotechnical or hydrogeologic (for depth to water table). → **Score = 3**
- Site has limited area and will severely constrain types and size of BMPs, but a project is still feasible. → **Score = 2**
- Site constraints may make project not feasible, or will require extensive specialty reports to determine feasibility. → **Score = 1**

#	Criteria	Score (1 to 5)
F1.3	Drainage Infrastructure Can be Reasonably Modified	

Guidance

Where stormwater is already collected in piping systems and other conveyances it becomes important whether the existing system can be reasonably modified to route flows to new BMPs for treatment and flow control without major system modification. Examples of circumstances that can cause problems include:

1. Deep burial conveyance piping – e.g., greater than 8 feet.
2. Existing infrastructure that is fragile and may be damaged by new connections.
3. System lacks structures or has long runs of pipe between existing structures.
4. Existing ponds or other treatment devices have been encroached upon by structures, roads, etc. and leave little room for expansion or improvement.

Scoring Guide

- Existing facilities and conveyance systems are easily modified to accommodate the project. → **Score = 5**
- Existing facilities and conveyance systems have limitations that may impact ability to implement the project. → **Score = 3**
- Existing facilities and conveyance systems have multiple limitations that will impact ability to implement the project. → **Score = 1**

#	Criteria	Score (1 to 5)
F1.4	Sufficient Head for Treatment/Flow Control Options	

Guidance

Many BMPs that might be used for a retrofit require some change in grade to function properly. A detention pond needs to have a change in grade that allows the discharge pipe to be at an elevation near the bottom of the pond, typically a grade change of 5 to 10 feet is necessary. Even proprietary BMPs such as storm filters will require some grade change to function – typically at least 2.3 feet from grate elevation to outlet elevation. Bioretention that uses an underdrain may also require a grade change to allow for infiltrated runoff to be conveyed to an outlet conveyance system. Grade change is also necessary to facilitate conveying stormwater runoff from the area from which stormwater is collected to get it to the BMP. The location of the BMP in relation to site contours should be evaluated in scoring this criterion.

Alternatively, in some instances, site grades may be too steep to allow use of certain BMPs. Swales typically need between 1% and 4% slopes to function for water quality treatment. Bioretention and infiltration is typically not feasible on slopes exceeding 10%.

Scoring Guide

- Site grades allow for conveyance of runoff to the BMP and grades in the vicinity of the BMP allow for proper functioning. → **Score = 5**
- Site and BMP location grades create limits on type, size, and location of BMPs and conveyance systems. → **Score = 3**
- Site and BMP location grades create severe limitations on conveyance and BMP design or may make a retrofit impractical without major re-grading. → **Score = 1**

Environmental Benefit Rating

The **F2** criteria are somewhat different from many others on the list as they score primarily for opportunity at each site, rather than strictly feasibility. These criteria were identified by the City of Marysville as factors considered in priority basin selection.

#	Criteria	Score (1 to 5)
F2.1	Infiltration Potential	

Guidance

On-site or infiltration-based stormwater BMPs (often referred to as low impact development (LID) or green stormwater infrastructure) are required to the maximum extent feasible by Ecology stormwater regulations. Minimum Requirement 5 of the Ecology stormwater management manual requires implementation of LID BMPs where feasible, and infiltration can significantly reduce detention volume required to meet flow control standards (Minimum Requirement 7). This criterion is scored based on infiltration suitability of the parcel.

Scoring Guide

- Site has high potential for concentrated or dispersed surface infiltration. → **Score = 5**
- Site has high potential for dispersed surface infiltration. → **Score = 4**
- Site has moderate surface infiltration potential and/or may be suitable for vertical drains (deep infiltration). → **Score = 3**
- Site has low surface infiltration potential. → **Score = 2**
- Site is not suitable for infiltration. → **Score = 1**

#	Criteria	Score (1 to 5)
F2.2	Level of Existing Flow Control for Stormwater	

Guidance

A retrofit project may be identified for an area that already receives some level of flow control. The level of existing flow control may be based on an old standard that is not considered adequate under current standards.

The feasibility of a retrofit project should be considered in part on whether the area currently receives significant, limited, or no flow control and to what standard it is provided.

Scoring Guide

- Retrofit site area has little or no existing flow control. If flow control facilities are present, they were not designed with a continuous model (pre 1990). → **Score = 5**

- Retrofit site area has some existing flow control but is not a system designed with a continuous runoff model (pre 1998 KCSWDM) or is no longer functioning. → **Score = 3**
- Project site provides significant flow control designed with a continuous model (1998 KCSWDM or more current standards. → **Score = 1**

#	Criteria	Score (1 to 5)
F2.3	Potential Area Tributary to Retrofit Site	

Guidance

Impervious surface is the primary indicator of the runoff generating potential of an area. Watersheds with greater than 25% impervious surface are typically urban in nature and impacts to streams within the watershed are virtually guaranteed. Projects that treat areas with large stormwater collection areas will be the most beneficial.

Scoring Guide

Scores are based on estimated area tributary to the retrofit site.

- Upstream area has more than 25 acres. → **Score = 5**
- Upstream area has 10-25 acres. → **Score = 4**
- Upstream area has 5-10 acres. → **Score = 3**
- Upstream area has 1-5 acres. → **Score = 2**
- Upstream area has less than 1 acres. → **Score = 1**

Public Stewardship Rating

#	Criteria	Score (1 to 5)
F3.1	Address/Correct Drainage Issue or Safety Concern	

Guidance

A stormwater retrofit project may correct a known drainage issue or address a public safety concern.

Scoring Guide

- Area has documented drainage issues that present large or reoccurring issues. Including road closure or flooding that endangers property. → **Score = 5**
- Area has some documented drainage issues, or staff have noticed issues in the area (with or without drainage complaints documented) → **Score = 3**
- Area has no documented drainage issues. → **Score = 1**

#	Criteria	Score (1 to 5)
F3.2	Ease of Long-Term Maintenance/ Replace an Aging Asset	

Guidance

Long term maintenance is an important factor in evaluating a retrofit project site. In some instances, the jurisdiction has preferred BMPs due to ease of maintenance. A stormwater retrofit project may also replace an aging asset or improve a drainage facility with a higher than normal maintenance requirement.

Scoring Guide

- Project site will require limited or moderate maintenance (1 x per year) and will replace/improve an aging or troublesome asset. → **Score = 5**
- Project will require moderate maintenance (up to 2 x per year). → **Score = 3**
- Proposed retrofit would require frequent maintenance and propriety materials which the city does not stock, etc. → **Score = 1**

Unique Opportunity

This factor recognizes the time sensitive nature of opportunity through partnerships and funding.

#	Criteria	Score (1 to 5)
F4.1	Opportunity to combine with another project	

Guidance

A stormwater retrofit project may be combined with another project and the other project provides an opportunity that may not occur again.

Scoring Guide

- Project site is within the area of a planned city project such as public facility, drainage improvement or roadway CIP and the opportunity will not be available later. → **Score = 5**
- Project site is located in an area where another jurisdiction plans a project and the project timeline makes the retrofit project more desirable to occur prior or in conjunction with the other project. → **Score = 3**
- Project site is not located within the area of an anticipated project. → **Score = 1**

#	Criteria	Score (1 to 5)
F4.2	Opportunity for Funding Partners/ Grants	

Guidance

A stormwater retrofit project may be combined with another project and the other project provides funding that in part would lower the cost of the retrofit project. Ecology grant funding may also be available for stormwater retrofit projects.

Scoring Guide

- Retrofit project has a high likelihood of receiving grant funding and may take advantage of funding designated for another project. → **Score = 5**
- Retrofit project has a moderate likelihood of receiving grant funding or the retrofit project may take advantage of funding designated for another project. → **Score = 3**
- Project site is not likely to receive grant funding or benefit from another project's funding. → **Score = 1**

STORMWATER RETROFIT RATING SUMMARY

SITE FEASIBILITY RATING MATRIX

Rank	Retrofit Site # - Location		Feasibility Score	Points (n / 55)	City Comments
1	170	Strawberry Vista, near 122nd St NE and 42nd Dr NE	3.36	37	list in plan, could be called out as enhanced maintenance
2	125	Parcel located at intersection of 124th PI NE and 41st Ave NE	3.36	37	list this parcel as a potential tree planting site
3	169	Strawberry Vista Pond 1, near 41st Ave NE and 122nd St NE	3.18	35	list in plan, could be called out as enhanced maintenance
4	28	ROW, 47th Dr NE between 118th St and 116th St NE	2.82	31	
5	188	Shoultes Park	2.73	30	list in plan, could be called out as enhanced maintenance
6	68	110th PI NE between creek outfall and 21st Ave NE	2.55	28	
7	69	Near intersection 110th St NE and 51st Ave NE	2.36	26	
8	70	Near intersection of 109th St NE and 51st Ave NE	2.36	26	
9	57	Shoultes Road between 101st PI NE and 100th St NE	2.36	26	
10	29	47th Dr NE between 121st PI NE and 118th St NE	2.27	25	

STORMWATER RETROFIT RATING FORM

PROJECT: 28												
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: ROW, 47th Dr NE between 118th St and 116th St NE		PROJECT DESCRIPTION				
						Date: 5/9/2022		Intercept drainage, provide water quality treatment and an infiltration vault within the culdesac				
	FEASIBILITY AVERAGE RATING (1-5):					2.82		5=HIGHEST; 1=LOWEST FEASIBILITY				
PROJECT SCORE (0-55):					31.00		55 = HIGHEST					
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE		X.X				
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY												
SITE FEASIBILITY RATING (1 TO 5)					Best Worst							
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS	
Site Feasibility	F1.1	Potential Utility or Site Constraints						X			2.82	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.							X			
	F1.3	Drainage Infrastructure Can be Reasonably Modified						X				
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)						X				
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)				X						
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)				X						
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)					X					
Safety	F3.1	Address/ Correct a drainage issue or safety concern								X		
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1				X						
Opportunity	F4.1	Opportunity to Combine with another project										
	F4.2	Opportunity to Receive Grant or other funding partners										

STORMWATER RETROFIT RATING FORM

PROJECT: 29												
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: 47th Dr NE between 121st Pl NE and 118th St NE		PROJECT DESCRIPTION				
						Date: 5/9/2022		Intercept drainage, provide water quality treatment and an infiltration vault within the 47th Dr NE				
	FEASIBILITY AVERAGE RATING (1-5):					2.27	5=HIGHEST; 1=LOWEST FEASIBILITY					
PROJECT SCORE (0-55):					25.00	55 = HIGHEST						
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE		X.X				
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY												
SITE FEASIBILITY RATING (1 TO 5)					Best Worst							
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS	
Site Feasibility	F1.1	Potential Utility or Site Constraints								X	2.27	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.						X				
	F1.3	Drainage Infrastructure Can be Reasonably Modified					X					
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X					
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)			X							
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)			X							
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)					X					
Safety	F3.1	Address/ Correct a drainage issue or safety concern						X				
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1							X			
Opportunity	F4.1	Opportunity to Combine with another project										
	F4.2	Opportunity to Receive Grant or other funding partners										

STORMWATER RETROFIT RATING FORM

PROJECT: 57											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Shoultes Road between 101st PI NE and 100th St NE		PROJECT DESCRIPTION Provide water quality at catch basins and provide detention tanks within Shoultes Road.			
	Date: 5/9/2022					Date: 5/9/2022		5=HIGHEST; 1=LOWEST FEASIBILITY			
	FEASIBILITY AVERAGE RATING (1-5):					2.36		55 = HIGHEST			
PROJECT SCORE (0-55):					26.00		55 = HIGHEST				
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE		X.X			
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS
Site Feasibility	F1.1	Potential Utility or Site Constraints						X		2.36	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.					X				
	F1.3	Drainage Infrastructure Can be Reasonably Modified							X		
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X				
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)			X						
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)			X						
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)					X				
Safety	F3.1	Address/ Correct a drainage issue or safety concern							X		
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1					X				
Opportunity	F4.1	Opportunity to Combine with another project									
	F4.2	Opportunity to Receive Grant or other funding partners									

STORMWATER RETROFIT RATING FORM

PROJECT: 68											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: 110th PI NE between creek outfall and 21st Ave NE			PROJECT DESCRIPTION		
						Date: 5/9/2022			Waterquality treatment and infiltration vault in culdesac		
	FEASIBILITY AVERAGE RATING (1-5):					2.55	5=HIGHEST; 1=LOWEST FEASIBILITY				
PROJECT SCORE (0-55):					28.00	55 = HIGHEST					
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE			X.X		
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS
Site Feasibility	F1.1	Potential Utility or Site Constraints						X		2.55	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.						X			
	F1.3	Drainage Infrastructure Can be Reasonably Modified					X				
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X				
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)			X						
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)			X						
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)						X			
Safety	F3.1	Address/ Correct a drainage issue or safety concern							X		
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1			X						
Opportunity	F4.1	Opportunity to Combine with another project									
	F4.2	Opportunity to Receive Grant or other funding partners									

STORMWATER RETROFIT RATING FORM

PROJECT: 69											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Near intersection 110th St NE and 51st Ave NE		PROJECT DESCRIPTION			
						Date: 5/9/2022		Waterquality treatment and infiltration vault in culdesac			
	FEASIBILITY AVERAGE RATING (1-5):					2.36	5=HIGHEST; 1=LOWEST FEASIBILITY				
PROJECT SCORE (0-55):					26.00	55 = HIGHEST					
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE		X.X			
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	
NOTES & INSTRUCTIONS											
Site Feasibility	F1.1	Potential Utility or Site Constraints							X		<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> 1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank. </div>
	F1.2	Sufficiency of Space Given Setback Requirements, etc.							X		
	F1.3	Drainage Infrastructure Can be Reasonably Modified						X			
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)						X			
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)				X					
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)				X					
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)						X			
Safety	F3.1	Address/ Correct a drainage issue or safety concern								X	
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1						X			
Opportunity	F4.1	Opportunity to Combine with another project									
	F4.2	Opportunity to Receive Grant or other funding partners									
2.36											

STORMWATER RETROFIT RATING FORM

PROJECT: 70											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Near intersection of 109th St NE and 51st Ave NE			PROJECT DESCRIPTION		
						Date: 5/9/2022			Waterquality treatment and infiltration vault in culdesac		
	FEASIBILITY AVERAGE RATING (1-5):					2.36	5=HIGHEST; 1=LOWEST FEASIBILITY				
PROJECT SCORE (0-55):					26.00	55 = HIGHEST					
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE			X.X		
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS
Site Feasibility	F1.1	Potential Utility or Site Constraints						X		2.36	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.						X			
	F1.3	Drainage Infrastructure Can be Reasonably Modified					X				
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X				
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)			X						
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)			X						
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)						X			
Safety	F3.1	Address/ Correct a drainage issue or safety concern							X		
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1					X				
Opportunity	F4.1	Opportunity to Combine with another project									
	F4.2	Opportunity to Receive Grant or other funding partners									

STORMWATER RETROFIT RATING FORM

PROJECT: 125											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Parcel located at intersection of 124th PI NE and 41st Ave NE		PROJECT DESCRIPTION			
						Date: 5/9/2022		Infiltration facility at parcel			
	FEASIBILITY AVERAGE RATING (1-5):					3.36	5=HIGHEST; 1=LOWEST FEASIBILITY				
PROJECT SCORE (0-55):					37.00	55 = HIGHEST					
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE		X.X			
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst					RANK	NOTES & INSTRUCTIONS
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1		
Site Feasibility	F1.1	Potential Utility or Site Constraints				X					1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.				X					
	F1.3	Drainage Infrastructure Can be Reasonably Modified				X					
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)						X			
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)				X					
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)				X					
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)						X			
Safety	F3.1	Address/ Correct a drainage issue or safety concern							X	3.36	
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1				X					
Opportunity	F4.1	Opportunity to Combine with another project									
	F4.2	Opportunity to Receive Grant or other funding partners									

STORMWATER RETROFIT RATING FORM

PROJECT: 169											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Strawberry Vista Pond 1, near 41st Ave NE and 122nd St NE		PROJECT DESCRIPTION			
						Date: 5/9		Convert water quality pond and infiltration pipe to upstream water quality media treatment with intration pond and below grade infiltration structure.			
	FEASIBILITY AVERAGE RATING (1-5):					3.18	5=HIGHEST; 1=LOWEST FEASIBILITY				
PROJECT SCORE (0-55):					35.00	55 = HIGHEST					
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE		X.X			
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS
Site Feasibility	F1.1	Potential Utility or Site Constraints			X					3.18	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.				X					
	F1.3	Drainage Infrastructure Can be Reasonably Modified			X						
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X				
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)			X						
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)					X				
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)						X			
Safe	F3.1	Address/ Correct a drainage issue or safety concern					X				
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1			X						
Opportunity	F4.1	Opportunity to Combine with another project									
	F4.2	Opportunity to Receive Grant or other funding partners									

STORMWATER RETROFIT RATING FORM

PROJECT: 170										
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Strawberry Vista, near 122nd St NE and 42nd Dr NE		PROJECT DESCRIPTION		
						Date: 5/9/2022				
	FEASIBILITY AVERAGE RATING (1-5):					3.36		5=HIGHEST; 1=LOWEST FEASIBILITY		
PROJECT SCORE (0-55):					37.00		55 = HIGHEST			
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE		X.X		
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY										
SITE FEASIBILITY RATING (1 TO 5)					Best Worst					
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK
NOTES & INSTRUCTIONS										
Site Feasibility	F1.1	Potential Utility or Site Constraints			X					<div style="background-color: #333; color: white; padding: 10px; border-radius: 5px;">3.36</div> <p style="font-size: small; margin-top: 10px;">1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.</p>
	F1.2	Sufficiency of Space Given Setback Requirements, etc.			X					
	F1.3	Drainage Infrastructure Can be Reasonably Modified			X					
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X			
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)			X					
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)					X			
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)					X			
Safe	F3.1	Address/ Correct a drainage issue or safety concern					X			
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1			X					
Opportunity	F4.1	Opportunity to Combine with another project								
	F4.2	Opportunity to Receive Grant or other funding partners								

STORMWATER RETROFIT RATING FORM

PROJECT: 188											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Shoultes Park			PROJECT DESCRIPTION Upgrade existing system, add water quality system and expand to meet new requirements,		
	Date: 5/9/2022										
	FEASIBILITY AVERAGE RATING (1-5): 2.73					5=HIGHEST; 1=LOWEST FEASIBILITY					
PROJECT SCORE (0-55): 30.00					55 = HIGHEST						
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE			X.X		
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS
Site Feasibility	F1.1	Potential Utility or Site Constraints			X						1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.			X						
	F1.3	Drainage Infrastructure Can be Reasonably Modified								X	
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X				
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)			X						
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)								X	
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)					X				
Safety	F3.1	Address/ Correct a drainage issue or safety concern						X		2.73 Give Project a Score of 1 to 5 based on best overall judgment of all factors.	
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1			X						
Opportunity	F4.1	Opportunity to Combine with another project									
	F4.2	Opportunity to Receive Grant or other funding partners									

STORMWATER RETROFIT RATING FORM

PROJECT: 241											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Jennings Park Parking Lot and SD-DF-223 Parkview Estates			PROJECT DESCRIPTION		
						Date: 5/9			Provide water quality and flow control at two outlets prior to discharging to the creek within a public nature park.		
	FEASIBILITY AVERAGE RATING (1-5):					4.27	5=HIGHEST; 1=LOWEST FEASIBILITY				
					PROJECT SCORE (0-55):		47.00		55 = HIGHEST		
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE			X.X		
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS
Site Feasibility	F1.1	Potential Utility or Site Constraints			X					4.27	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.			X						
	F1.3	Drainage Infrastructure Can be Reasonably Modified			X						
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)			X						
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)							X		
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)			X						
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)			X						
Safety	F3.1	Address/ Correct a drainage issue or safety concern							X		
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1			X						
Opportunity	F4.1	Opportunity to Combine with another project			X						
	F4.2	Opportunity to Receive Grant or other funding partners			X						

STORMWATER RETROFIT RATING SUMMARY

SITE FEASIBILITY RATING MATRIX

Rank	Retrofit Site # - Location		Feasibility Score	Points (n / 55)	City Comments
1	219	Youth Peace Park, 76th St NE	3.73	41	Select for 10% Design
2	9	80th PI NE *Neighborhood on septic	3.55	39	Select for 10% Design
3	85	SD-DF-49 Cedar Crest Greens	3.45	38	
4	212	7516 64th Ave NE 30052700106600	3.36	37	
5	213	Grove St near the intersection of 61st Ave NE (library)	3.27	36	
6	7	74th St NE, between Grove St and 60th Dr NE	2.73	30	
7	71	61st Dr NE	2.64	29	
8	70	59th Dr NE ROW	2.45	27	
9	249	67th Ave NE and 64th St NE, 00723000011000	2.27	25	
10	318	Cedarcrest Vista East Divisions 1& 2, 8224 67th Ave NE	2.09	23	
11	325	Cedarcrest Golf Course	2.00	22	
12	328	Near cul-de-sac of 67th St NE	2.00	22	
	16	Armar Rd Retrofit	Not Scored		Project already in design. Disperse infiltration trenches in ROW was selected as design alternative.
	325	Cedarcrest Golf Course	Not Scored		Tree planting site
	328	Near cul-de-sac of 67th St NE	Not Scored		Tree planting site

STORMWATER RETROFIT RATING FORM

PROJECT: 7											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.				Location: 74th St NE, between Grove St and 60th Dr NE			PROJECT DESCRIPTION			
					Date: 5/9/2022			Intercept drainage, provide water quality treatment and an infiltration vault within the road			
	FEASIBILITY AVERAGE RATING (1-5):				2.73	5=HIGHEST; 1=LOWEST FEASIBILITY					
PROJECT SCORE (0-55):				30.00	55 = HIGHEST						
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE			X.X		
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	
NOTES & INSTRUCTIONS											
Site Feasibility	F1.1	Potential Utility or Site Constraints						X		2.73	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.				X					
	F1.3	Drainage Infrastructure Can be Reasonably Modified					X				
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X				
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)			X						
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)			X						
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)						X			
Safety	F3.1	Address/ Correct a drainage issue or safety concern							X		
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1					X				
Opportunity	F4.1	Opportunity to Combine with another project							X		
	F4.2	Opportunity to Receive Grant or other funding partners							X		

STORMWATER RETROFIT RATING FORM

PROJECT: 9											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: 80th PI NE *Neighborhood on septic		PROJECT DESCRIPTION			
						Date: 5/9/2022		Intercept drainage, provide water quality treatment and an infiltration vault within the 47th Dr NE			
	FEASIBILITY AVERAGE RATING (1-5):					3.55	5=HIGHEST; 1=LOWEST FEASIBILITY				
PROJECT SCORE (0-55):					39.00	55 = HIGHEST					
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE		X.X			
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst					RANK	NOTES & INSTRUCTIONS
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1		
Site Feasibility	F1.1	Potential Utility or Site Constraints					X				1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.							X		
	F1.3	Drainage Infrastructure Can be Reasonably Modified				X					
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)						X			
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)						X			
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)				X					
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)						X			
Safety	F3.1	Address/ Correct a drainage issue or safety concern								X	
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1						X			
Opportunity	F4.1	Opportunity to Combine with another project				X					
	F4.2	Opportunity to Receive Grant or other funding partners				X					
					3.55					Give Project a Score of 1 to 5 based on best overall judgment of all factors.	

STORMWATER RETROFIT RATING FORM

PROJECT: 70												
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: 59th Dr NE ROW		PROJECT DESCRIPTION				
						Date: 5/9/2022		Reroute drainage to the culdesac for water quality treatment and infiltration with overflow back to the outfall				
	FEASIBILITY AVERAGE RATING (1-5):					2.45	5=HIGHEST; 1=LOWEST FEASIBILITY					
PROJECT SCORE (0-55):					27.00	55 = HIGHEST						
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE		X.X				
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY												
SITE FEASIBILITY RATING (1 TO 5)					Best Worst							
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS	
Site Feasibility	F1.1	Potential Utility or Site Constraints							X		2.45	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.							X			
	F1.3	Drainage Infrastructure Can be Reasonably Modified								X		
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)						X				
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)				X						
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)				X						
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)						X				
Safety	F3.1	Address/ Correct a drainage issue or safety concern								X		
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1						X				
Opportunity	F4.1	Opportunity to Combine with another project								X		
	F4.2	Opportunity to Receive Grant or other funding partners								X		

STORMWATER RETROFIT RATING FORM

PROJECT: 71											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: 61st Dr NE		PROJECT DESCRIPTION Reroute drainage to the culdesac for water quality treatment and infiltration with overflow back to the outfall			
	Date: 5/9/2022										
	FEASIBILITY AVERAGE RATING (1-5):					2.64	5=HIGHEST; 1=LOWEST FEASIBILITY				
PROJECT SCORE (0-55):					29.00	55 = HIGHEST					
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE		X.X			
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	
NOTES & INSTRUCTIONS											
Site Feasibility	F1.1	Potential Utility or Site Constraints						X		2.64	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.						X			
	F1.3	Drainage Infrastructure Can be Reasonably Modified					X				
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X				
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)			X						
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)			X						
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)					X				
Safety	F3.1	Address/ Correct a drainage issue or safety concern							X		
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1					X				
Opportunity	F4.1	Opportunity to Combine with another project							X		
	F4.2	Opportunity to Receive Grant or other funding partners							X		

STORMWATER RETROFIT RATING FORM

PROJECT: 85											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: SD-DF-49 Cedar Crest Greens			PROJECT DESCRIPTION		
	Date: 5/9/2022					Replace existing pond collecting flows from the Cedar Crest Subdivision with an underground infiltration tank.					
	FEASIBILITY AVERAGE RATING (1-5):					3.45	5=HIGHEST; 1=LOWEST FEASIBILITY				
PROJECT SCORE (0-55):					38.00	55 = HIGHEST					
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE			X.X		
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS
Site Feasibility	F1.1	Potential Utility or Site Constraints			X						1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.				X					
	F1.3	Drainage Infrastructure Can be Reasonably Modified					X				
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X				
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)							X		
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)					X				
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)				X					
Safety	F3.1	Address/ Correct a drainage issue or safety concern						X		3.45 Give Project a Score of 1 to 5 based on best overall judgment of all factors.	
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1					X				
Opportunity	F4.1	Opportunity to Combine with another project			X						
	F4.2	Opportunity to Receive Grant or other funding partners			X						

STORMWATER RETROFIT RATING FORM

PROJECT: 212											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: 7516 64th Ave NE 30052700106600			PROJECT DESCRIPTION Waterquality treatmentand expanding existing detention pond.		
	Date: 5/9/2022										
	FEASIBILITY AVERAGE RATING (1-5): 3.36					5=HIGHEST; 1=LOWEST FEASIBILITY					
PROJECT SCORE (0-55): 37.00					55 = HIGHEST						
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE			X.X		
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS
Site Feasibility	F1.1	Potential Utility or Site Constraints			X						<p>1 = WORST, 5 BEST</p> <p>Assess each criteria and check applicable box. If not applicable, leave blank.</p>
	F1.2	Sufficiency of Space Given Setback Requirements, etc.					X				
	F1.3	Drainage Infrastructure Can be Reasonably Modified					X				
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)							X		
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)							X		
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)							X		
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)			X						
Safe	F3.1	Address/ Correct a drainage issue or safety concern					X			<p style="font-size: 24px; color: #0070C0;">3.36</p> <p>Give Project a Score of 1 to 5 based on best overall judgment of all factors.</p>	
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1			X						
Opportunity	F4.1	Opportunity to Combine with another project			X						
	F4.2	Opportunity to Receive Grant or other funding partners			X						

STORMWATER RETROFIT RATING FORM

PROJECT: 213											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Grove St near the intersection of 61st Ave NE (library)		PROJECT DESCRIPTION Runoff from the ROW to be piped onsite to an infiltration facility prior to outfall into the creek.			
	Date: 5/9/2022					FEASIBILITY AVERAGE RATING (1-5): 3.27		5=HIGHEST; 1=LOWEST FEASIBILITY			
	PROJECT SCORE (0-55): 36.00					55 = HIGHEST					
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE		X.X			
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS
Site Feasibility	F1.1	Potential Utility or Site Constraints						X		3.27	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.			X						
	F1.3	Drainage Infrastructure Can be Reasonably Modified					X				
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X				
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)			X						
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)			X						
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)				X					
Safe	F3.1	Address/ Correct a drainage issue or safety concern						X			
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1			X						
Opportunity	F4.1	Opportunity to Combine with another project							X		
	F4.2	Opportunity to Receive Grant or other funding partners							X		

STORMWATER RETROFIT RATING FORM

PROJECT: 219										
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Youth Peace Park, 76th St NE			PROJECT DESCRIPTION Detention and water quality facility at a public park	
	Date: 5/9/2022									
	FEASIBILITY AVERAGE RATING (1-5):					3.73		5=HIGHEST; 1=LOWEST FEASIBILITY		
PROJECT SCORE (0-55):					41.00		55 = HIGHEST			
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE			X.X	
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY										
SITE FEASIBILITY RATING (1 TO 5)					Best Worst					
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK
NOTES & INSTRUCTIONS										
Site Feasibility	F1.1	Potential Utility or Site Constraints					X			1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.			X					
	F1.3	Drainage Infrastructure Can be Reasonably Modified					X			
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X			
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)							X	
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)			X					
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)				X				
Safe	F3.1	Address/ Correct a drainage issue or safety concern						X		
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1			X					
Opportunity	F4.1	Opportunity to Combine with another project			X					
	F4.2	Opportunity to Receive Grant or other funding partners			X					
<div style="display: flex; justify-content: space-between; align-items: center;"> 3.73 </div>										

STORMWATER RETROFIT RATING FORM

PROJECT: 249												
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: 67th Ave NE and 64th St NE, 00723000011000			PROJECT DESCRIPTION Provide detention or water quality. Likley cannot do both with limited head.			
	Date: 5/9/2022											
	FEASIBILITY AVERAGE RATING (1-5): 2.27					5=HIGHEST; 1=LOWEST FEASIBILITY						
PROJECT SCORE (0-55): 25.00					55 = HIGHEST							
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE			X.X			
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY												
SITE FEASIBILITY RATING (1 TO 5)					Best Worst					NOTES & INSTRUCTIONS		
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1		RANK	
Site Feasibility	F1.1	Potential Utility or Site Constraints				X					1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.	
	F1.2	Sufficiency of Space Given Setback Requirements, etc.						X				
	F1.3	Drainage Infrastructure Can be Reasonably Modified								X		
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)								X		
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)								X		
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)			X							
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)					X					
Safe	F3.1	Address/ Correct a drainage issue or safety concern								X		Give Project a Score of 1 to 5 based on best overall judgment of all factors.
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1			X							
Opportunity	F4.1	Opportunity to Combine with another project								X		
	F4.2	Opportunity to Receive Grant or other funding partners								X		
2.27												

STORMWATER RETROFIT RATING FORM

PROJECT: 318											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Cedarcrest Vista East Divisions 1& 2, 8224 67th Ave NE		PROJECT DESCRIPTION			
						Date: 5/9/2022		Convert wet pond/infiltration pond and swale to a combined wet detention pond or constructed wetland pond.			
	FEASIBILITY AVERAGE RATING (1-5):					2.09	5=HIGHEST; 1=LOWEST FEASIBILITY				
PROJECT SCORE (0-55):					23.00	55 = HIGHEST					
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE		X.X			
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS
Site Feasibility	F1.1	Potential Utility or Site Constraints						X		2.09	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.						X			
	F1.3	Drainage Infrastructure Can be Reasonably Modified					X				
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)					X				
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)							X		
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)					X				
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)				X					
Safety	F3.1	Address/ Correct a drainage issue or safety concern						X			
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1							X		
Opportunity	F4.1	Opportunity to Combine with another project							X		
	F4.2	Opportunity to Receive Grant or other funding partners							X		

STORMWATER RETROFIT RATING FORM

PROJECT: 325											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Cedarcrest Golf Course			PROJECT DESCRIPTION		
						Date: 5/9/2022			Improve existing bioswale and detention pond. Space available for detention tank and water quality treatment vault		
	FEASIBILITY AVERAGE RATING (1-5):					2.00	5=HIGHEST; 1=LOWEST FEASIBILITY				
PROJECT SCORE (0-55):					22.00	55 = HIGHEST					
NOTE: GRAY BOX = DATA INPUT					X	PINK BOX=CALCULATED VALUE			X.X		
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS
Site Feasibility	F1.1	Potential Utility or Site Constraints						X		2.00	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.							X		
	F1.3	Drainage Infrastructure Can be Reasonably Modified							X		
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)							X		
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)					X				
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)					X				
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)				X					
Safety	F3.1	Address/ Correct a drainage issue or safety concern						X			
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1					X				
Opportunity	F4.1	Opportunity to Combine with another project							X		
	F4.2	Opportunity to Receive Grant or other funding partners							X		

STORMWATER RETROFIT RATING FORM

PROJECT: 328											
SUMMARY	THIS FORM SHOULD BE USED WITH IN CONJUNCTION WITH THE STORMWATER RETROFIT PROJECT RATING FORM INSTRUCTIONS AND WORKSHEETS DOCUMENT TO SCORE PROJECTS FOR PLACEMENT ON THE CAPITAL FACILITIES PLAN.					Location: Near cul-de-sac of 67th St NE			PROJECT DESCRIPTION		
	Date: 5/9/2022					5=HIGHEST; 1=LOWEST FEASIBILITY		Add water quality facilities to the existing catch basins.			
	FEASIBILITY AVERAGE RATING (1-5): 2.00					55 = HIGHEST					
PROJECT SCORE (0-55): 22.00					NOTE: GRAY BOX = DATA INPUT			X	PINK BOX=CALCULATED VALUE		X.X
PREPARE FEASIBILITY ANALYSIS PRIOR TO RANKING SITE FOR FEASIBILITY											
SITE FEASIBILITY RATING (1 TO 5)					Best Worst						
FEASIBILITY CRITERIA - RATE CRITERIA 1 TO 5					5	4	3	2	1	RANK	NOTES & INSTRUCTIONS
Site Feasibility	F1.1	Potential Utility or Site Constraints							X	2.00	1 = WORST, 5 BEST Assess each criteria and check applicable box. If not applicable, leave blank.
	F1.2	Sufficiency of Space Given Setback Requirements, etc.							X		
	F1.3	Drainage Infrastructure Can be Reasonably Modified				X					
	F1.4	Sufficient Head for Treatment/Flow Control Options (yes = 5, neutral = 3, no =1)				X					
Environmental	F2.1	Infiltration Potential (Good = 5, Moderate = 3, Poor = 1)							X		
	F2.2	Ex Level of Flow Control (5 = none, 3 = moderate, 1 = significant)				X					
	F2.3	Potential Area Tributary to Retrofit Site (25+ acres = 5, 25-10 ac. = 4, 10-5 ac. = 3, 5-1 ac. = 2, < 1 ac. =1)			X						
Safety	F3.1	Address/ Correct a drainage issue or safety concern						X			
	F3.2	Ease of maintenance long term/ Replace aging asset Low Maintenance = 5, Moderate Maintenance = 3, High Maintenance = 1							X		
Opportunity	F4.1	Opportunity to Combine with another project							X		
	F4.2	Opportunity to Receive Grant or other funding partners							X		

APPENDIX C

PROJECT SUMMARY SHEETS

Watershed Planning Stormwater Retrofit Project



MARYSVILLE
WASHINGTON

Jennings Park

West of 55th Drive NE and parking lot north of 64th Street NE



BOARDWALK

Description

This project would add an open “boxless” media filter, similar to a raingarden, west of 55th Drive NE and a below grade media filter under the parking lot off of 64th Street NE. Existing pond will be reconstructed as a stormwater wetland to provide additional water quality treatment and native habitat.

This project would treat stormwater runoff from approximately 118 acres of upstream area.



STORMWATER EDUCATION

Project Goals

Improve water quality and contribute to a healthier Allen Creek.



STORMWATER ART

QR Code

City of Marysville website
Stormwater Management Action Plan

Watershed Planning Stormwater Retrofit Project



MARYSVILLE
WASHINGTON

Jennings Park

West of 55th Drive NE and parking lot north of 64th Street NE



Design Elements

- Install runoff treatment to filter stormwater.
- Construct stormwater wetland to treat stormwater.
- Reconnect to downstream stormwater system.
- Provide boardwalk, interpretive signage, and artwork.

Potential Benefits

- Improve water quality in Allen Creek.
- Enhance native habitats.
- Provide stormwater education.

Potential Impacts

- Neighborhood access impacts during construction.
- Noise associated with construction activities.
- Temporary closure or rerouting of adjacent trail.
- Temporary closure of portion of parking lot.

What's Next?

The City of Marysville will seek your input to refine each project. We will also need to secure funding before moving to construction. For more information, and to provide input in future phases, contact **Brooke Ensor** at **(360) 363-8288** or at ensor@marysvillewa.gov, or visit the [City of Marysville's website](#).

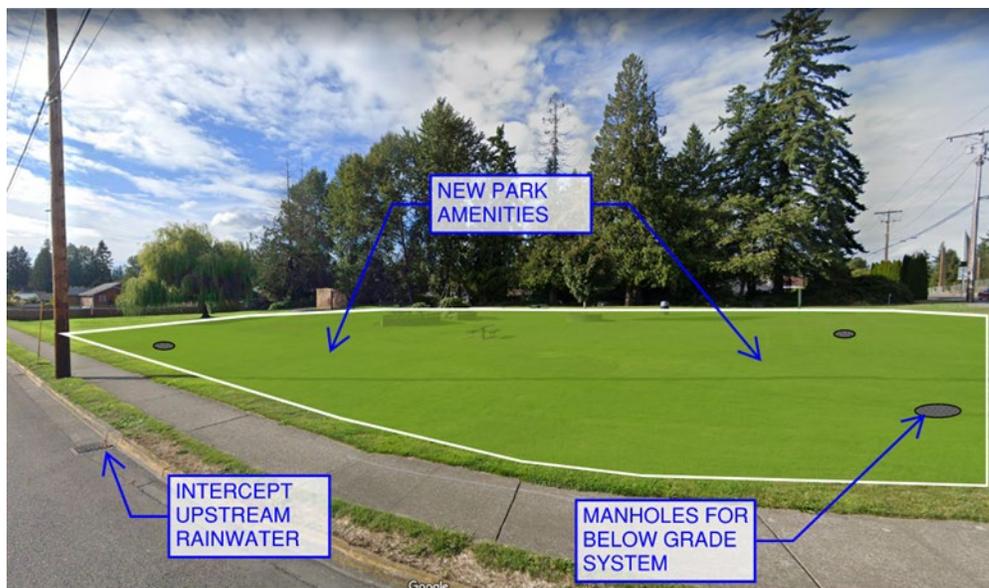
Watershed Planning Stormwater Retrofit Project



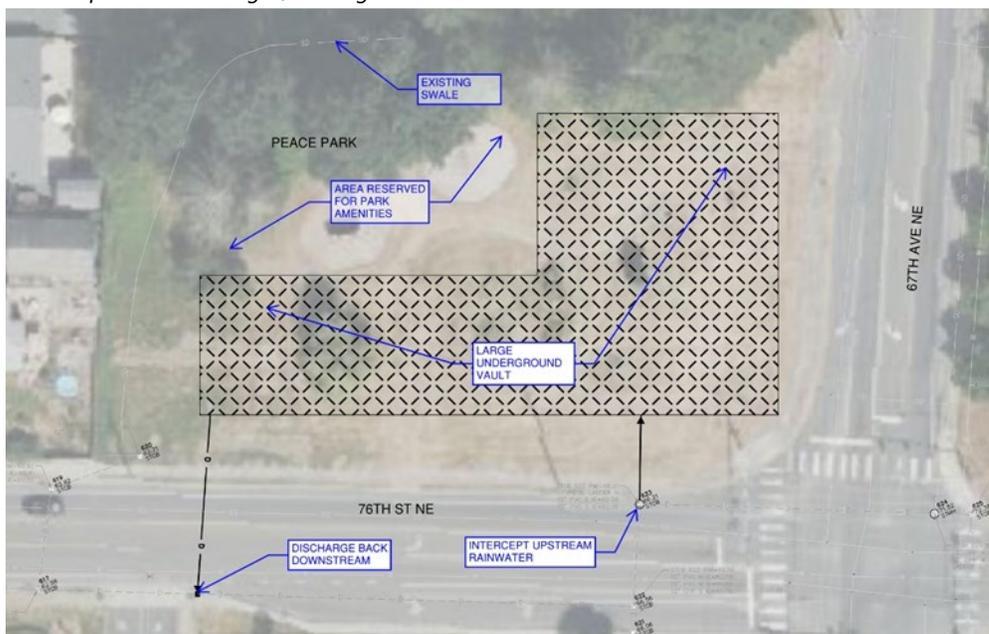
MARYSVILLE
WASHINGTON

Peace Park

Northwest corner of 76th Street NE and 67th Avenue NE



▲ Proposed site changes, looking northwest.



Description

This project would add an underground flow control/water quality vault in the existing park.

This project would treat stormwater runoff from approximately 12.3 acres of upstream area.

Project Goals

Improve water quality and reduce damage to Munson Creek from runoff during large storms.



QR Code

City of Marysville website
Stormwater Management Action Plan

Project Manager

Brooke Ensor

Phone: (360) 363-8288

Email: bensor@marysvillewa.gov

Watershed Planning Stormwater Retrofit Project

Peace Park

Northwest corner of 76th Street NE and 67th Avenue NE



Design Elements

- Install vault to provide flow control and runoff treatment.
- Reconnect to downstream stormwater system.

Potential Benefits

- Improve water quality and reduce high flow impacts to Munson Creek.
- Project can coincide with park improvements.

Potential Impacts

- Noise associated with construction activities.
- Temporary closure of park.

What's Next?

The City of Marysville will seek your input to refine each project. We will also need to secure funding before moving to construction. For more information, and to provide input in future phases, contact **Brooke Ensor** at **(360) 363-8288** or at ensor@marysvillewa.gov, or visit the [City of Marysville's website](http://www.cityofmarysvillewa.gov).

Watershed Planning Stormwater Retrofit Project



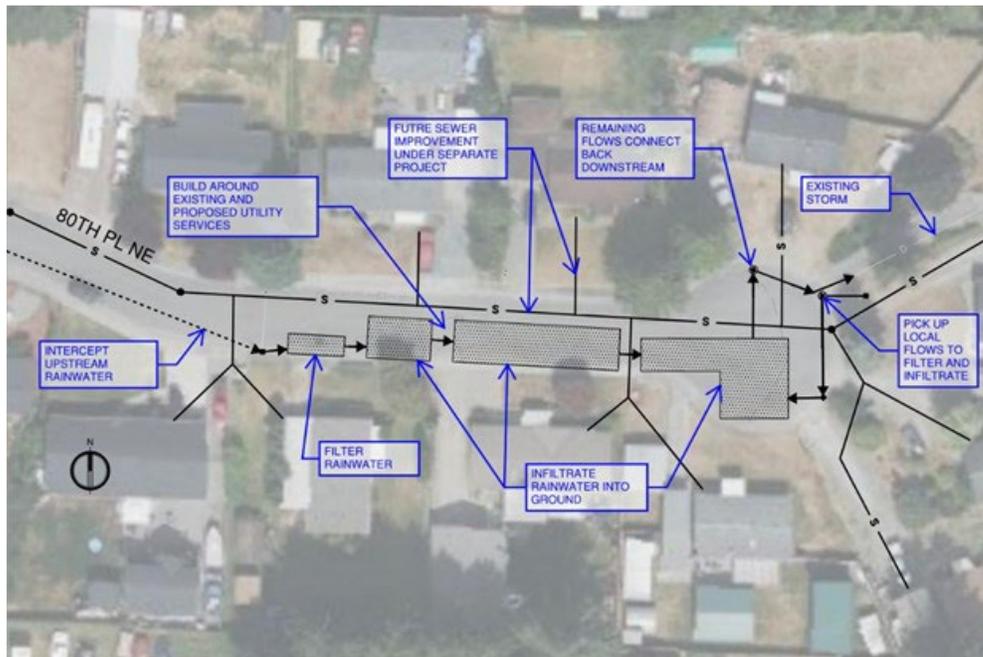
MARYSVILLE
WASHINGTON

80th Place NE

Cul-de-sac located east of 60th Drive NE



▲ Proposed site changes, looking east.



Description

This project would add a water quality vault and an infiltration system below the roadway.

This project would treat rainwater runoff from approximately 8.7 acres of upstream area.

Project Goals

Improve water quality and reduce damage to Munson Creek from runoff during large storms.



QR Code

City of Marysville website
Stormwater Management Action Plan

Project Manager

Brooke Ensor

Phone: (360) 363-8288

Email: ensor@marysvillewa.gov

Watershed Planning

Stormwater Retrofit Project



MARYSVILLE
WASHINGTON

80th Place NE

Cul-de-sac located east of 60th Drive NE



Design Elements

- Install runoff treatment vault to filter stormwater.
- Construct large underground infiltration vault to reduce flows downstream.
- Reconnect to downstream stormwater system.

Potential Benefits

- Improve water quality and reduce high flow impacts to Munson Creek.
- Project can include a sewer line extension.
- New asphalt pavement within roadway.

Potential Impacts

- Neighborhood access impacts during construction.
- Noise associated with construction activities.
- Access would be needed for periodic maintenance.

What's Next?

The City of Marysville will seek your input to refine each project. We will also need to secure funding before moving to construction. For more information, and to provide input in future phases, contact **Brooke Ensor** at **(360) 363-8288** or at ensor@marysvillewa.gov, or visit the [City of Marysville's website](#).

APPENDIX D

RETROFIT CONCEPT PLANS



TACOMA · SEATTLE · SPOKANE · TRI-CITIES
 2215 North 30th Street, Suite 300, Tacoma, WA 98403
 253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

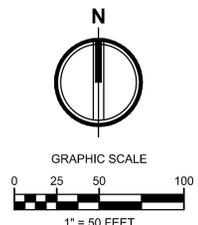
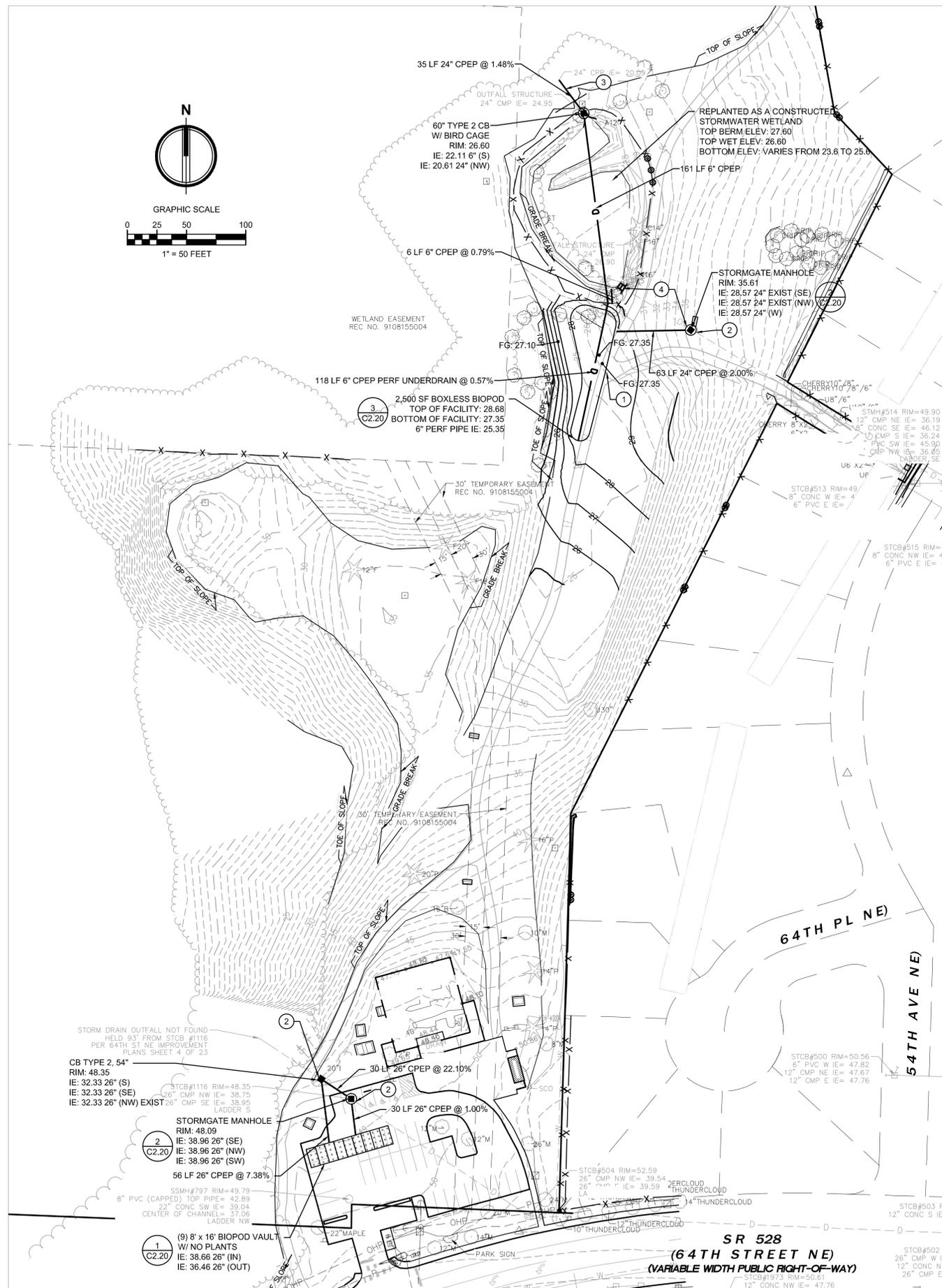
Project Title:
**JENNINGS PARK
 STORMWATER
 RETROFIT**

Client:
**PUGET SOUND
 REGIONAL COUNCIL**
 1011 WESTERN AVENUE
 SUITE 500
 SEATTLE, WA 98104

Project No.
 2210410.10

Issue Set & Date:
10% CONCEPTUAL DESIGN
 01/24/2023

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PROPOSED LEGEND:

- XXX PROPOSED CONTOUR MINOR
- XXX PROPOSED CONTOUR MAJOR
- D STORM DRAIN
- CATCH BASIN, TYPE 1
- CATCH BASIN, TYPE 2
- AREA DRAIN

EXISTING LEGEND:

- FOUND MONUMENT AS NOTED
- △ SET NAIL AND WASHER
- BOLLARD
- SIGN
- SCO - SANITARY SEWER CLEANOUT
- SANITARY SEWER MANHOLE
- STORM CATCH BASIN
- STORM MANHOLE
- GAS METER
- GAS VALVE
- TRAFFIC SIGNAL POLE W/ LIGHT
- GUY ANCHOR
- UTILITY POWER POLE
- JUNCTION BOX
- POWER VAULT
- IRRIGATION CONTROL VALVE
- WATER METER
- CONIFEROUS TREE AS NOTED
- DECIDUOUS TREE AS NOTED
- LEFT TURN ARROW
- HANDICAP STALL
- D --- STORM LINE
- S --- SEWER LINE
- W --- WATER LINE
- G --- GAS LINE
- E --- ELECTRICAL LINE
- T --- COMMUNICATION LINE
- OHP --- OVERHEAD UTILITIES
- FENCE
- DRIPLINE
- ASPHALT
- CONCRETE
- WALL

KEYNOTES

- ① SEE LANDSCAPE PLANS FOR SITE FEATURE.
- ② CONNECT TO EXISTING PIPE
- ③ EXISTING PIPE TO BE DEMOLISHED
- ④ EXISTING PIPE TO BE PROTECTED IN PLACE

NOTES

1. ALL CATCH BASINS ARE TYPE 1 UNLESS OTHERWISE SPECIFIED. ALL LIDS SHALL BE LOCKING.
2. ALL STORM DRAINAGE STRUCTURES SHALL BE INSTALLED WITH A STANDARD FRAME AND VANED GRATE PER WSDOT STANDARD PLAN B-30.30-00 UNLESS OTHERWISE NOTED.
3. ALL STORMWATER PIPE MATERIAL SHALL BE CPEP UNLESS OTHERWISE NOTED.
4. NORTHING AND EASTING COORDINATES ON STORM STRUCTURES IF SHOWN REFERENCE THE CENTER OF STRUCTURE.
5. SEE LANDSCAPE PLANS AND SPECIFICATIONS FOR THE REQUIRED SOIL QUALITY AND DEPTHS. ALL AREAS SUBJECT TO CLEARING AND GRADING THAT HAVE NOT BEEN COVERED BY IMPERVIOUS SURFACE SHALL PROVIDE MINIMUM SOIL QUALITY AND DEPTH PER DETAIL.



Revisions:

Sheet Title:
**GRADING &
 DRAINAGE PLAN**

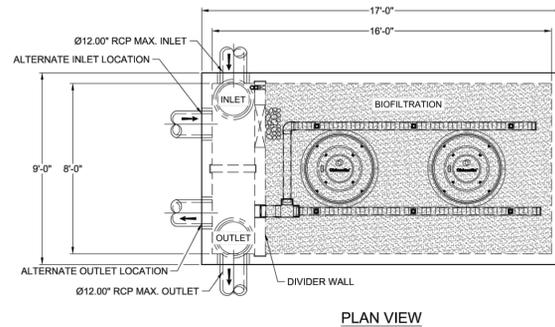
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Checked by: BPS

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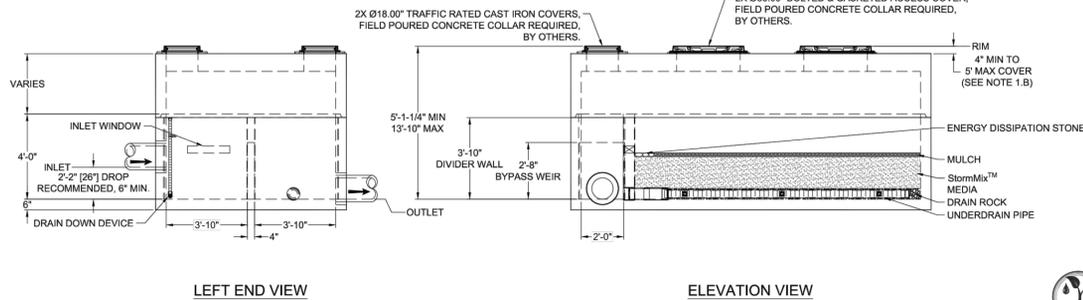
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10% DESIGN CONCEPT

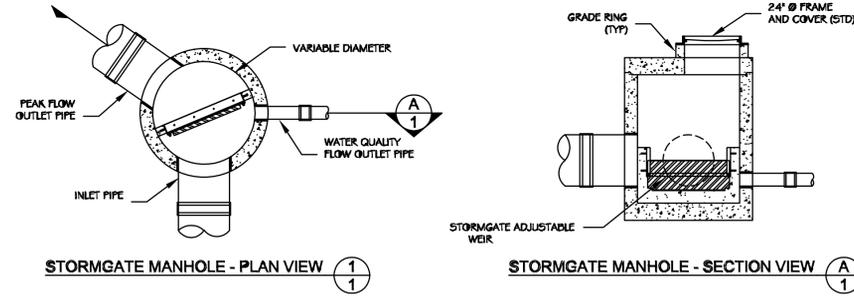
SITE SPECIFIC DATA				
Structure ID	ID			
Model Size	8x16			
Orientation (Left or Right)	-			
Treatment Flow Rate (cfs)	-			
Peak Flow Rate (cfs)	6.70 cfs			
Rim Elevation	X.XX'			
Pipe Data	Pipe Location	Pipe Size	Pipe Type	Invert Elevation
Inlet	XXX	XX"	XXX	X.XX'
Outlet	XXX	XX"	XXX	X.XX'
Notes:				
-				
PERFORMANCE SPECIFICATIONS				
Treatment Flow Capacities:				
NJDEP 80% Removal, 75 micron	0.432 cfs			
WA Ecology GULD - Basic, Enhanced & Phosphorus	0.385 cfs			
*Contact Oldcastle for alternative treatment flow capacities.				



- NOTES:
- DESIGN LOADINGS:
 - A. ASHTO HS20-44 W/IMPACT
 - B. STANDARD DESIGN FILL OF MAXIMUM
 - C. ASSURED WATER TABLE \pm ABOVE BASE SLAB ELEVATION
 - D. DRAINED LATERAL EARTH PRESSURE (LEP) = 45 PCF
 - E. LATERAL LIVE LOAD SURCHARGE = 80 PSF (APPLIED TO 8' BELOW GRADE)
 - F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALLS, PIERS, OR FOUNDATIONS.
 - CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 5000 PSI MINIMUM.
 - STEEL REINFORCEMENT: REBAR, ASTM A615 OR A706, GRADE 60.
 - CEMENT: ASTM C150 SPECIFICATION.
 - REQUIRED ALLOWABLE SOIL BEARING PRESSURE = 2,500 PSF. CONTRACTOR OR RESPONSIBLE TO ENSURE ADEQUATE BEARING SURFACE IS PROVIDED (I.E. COMPACTED AND LEVEL PER PROJECT SPECIFICATIONS).
 - REFERENCE STANDARD:
 - A. ASTM C260-19
 - B. ASTM C913
 - C. A23.1R-14
 - INTERNAL SHALL CONSIST OF UNDERDRAIN PIPE, ROCK, STORMMAX™ MEDIA, MULCH, DIVIDER WALL, BYPASS WEIR AND DRAIN DOWN. THIS CONFIGURATION PROVIDES OPTIMIZED POLLUTANT REMOVAL.
 - INLET AND OUTLET HOLES WILL BE FACTORY CORRECTED PER PLANS/CUSTOMER REQUIREMENTS. INLET AND OUTLET LOCATIONS CAN BE MISREAD.
 - MAXIMUM PICK WEIGHT = 20,000 LBS. (COMBINED WEIGHT OF BASE, BYPASS WEIR, DIVIDER WALL, ROCK & MEDIA). SECTION HEIGHTS, SLAB WALL THICKNESSES AND KEYWAYS ARE SUBJECT TO CHANGE.
 - FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT OLDCASTLE INFRASTRUCTURE.



1 BIPOD VAULT
NOT TO SCALE



2 STORMGATE MANHOLE
NOT TO SCALE

Oldcastle Infrastructure
BioPod™ Biofilter System (STANDARD)
Underground Vault with Internal Bypass

PROJECT NAME: _____
SHEET TITLE: Specifier Drawing
SHEET NO.: BPU-810B
1 OF 1



3 BOXLESS BIPOD
NOT TO SCALE



TACOMA · SEATTLE · SPOKANE · TRI-CITIES
2215 North 30th Street, Suite 300, Tacoma, WA 98403
253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:
**JENNINGS PARK
STORMWATER
RETROFIT**

Client:
**PUGET SOUND
REGIONAL COUNCIL**
1011 WESTERN AVENUE
SUITE 500
SEATTLE, WA 98104

Project No.
2210410.10
Issue Set & Date:
10% CONCEPTUAL DESIGN
01/24/2023

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Revisions:

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DRAINAGE DETAILS

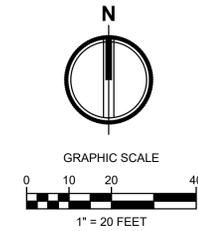
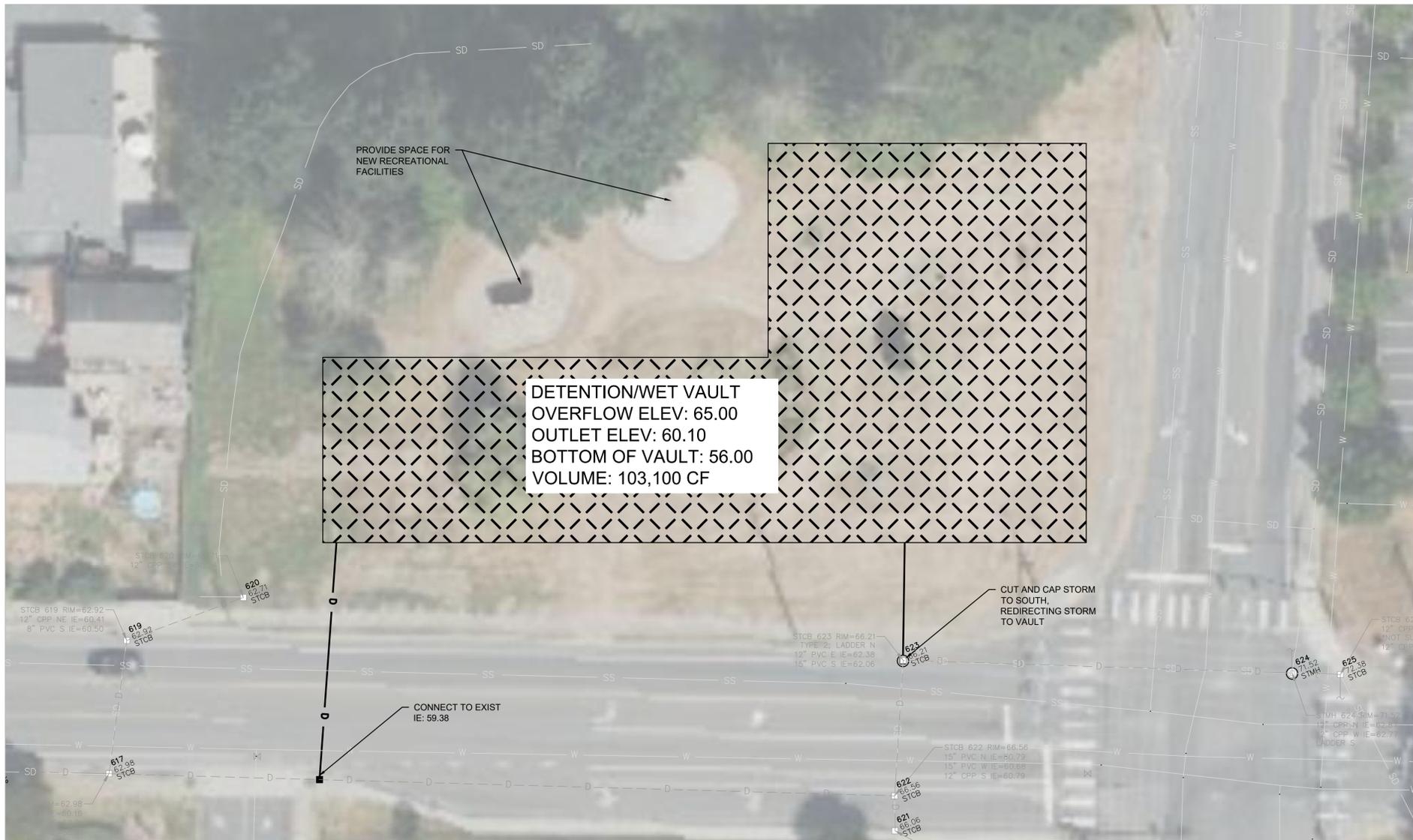
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Sheet No.

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TACOMA · SEATTLE · SPOKANE · TRI-CITIES

1200 6th Avenue, Suite 1620 Seattle, WA 98101
206.267.2425 TEL 206.267.2429 FAX www.ahbl.com WEB

Project Title:
**MARYSVILLE
STORMWATER RETROFIT
SITE 219**

Client:
CITY OF MARYSVILLE

1049 STATE AVE.
MARYSVILLE, WA 98270

Project No.
2200304.10

Issue Set & Date:
10% CONCEPTUAL DESIGN
01/24/2023

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PROJECT SPECS

TRIBUTARY AREA	12.246 AC
PERCENT IMPERVIOUS	35.80%
REQUIRED FLOW CONTROL VOLUME	256,500 CF
WATER QUALITY FLOW RATE	0.41 CFS
WATER QUALITY VOLUME	3,669 AC-FT

△ _____
△ _____
△ _____
△ _____

Revisions:

Sheet Title:

**STORMWATER
RETROFIT
CONCEPT**

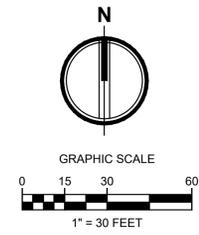
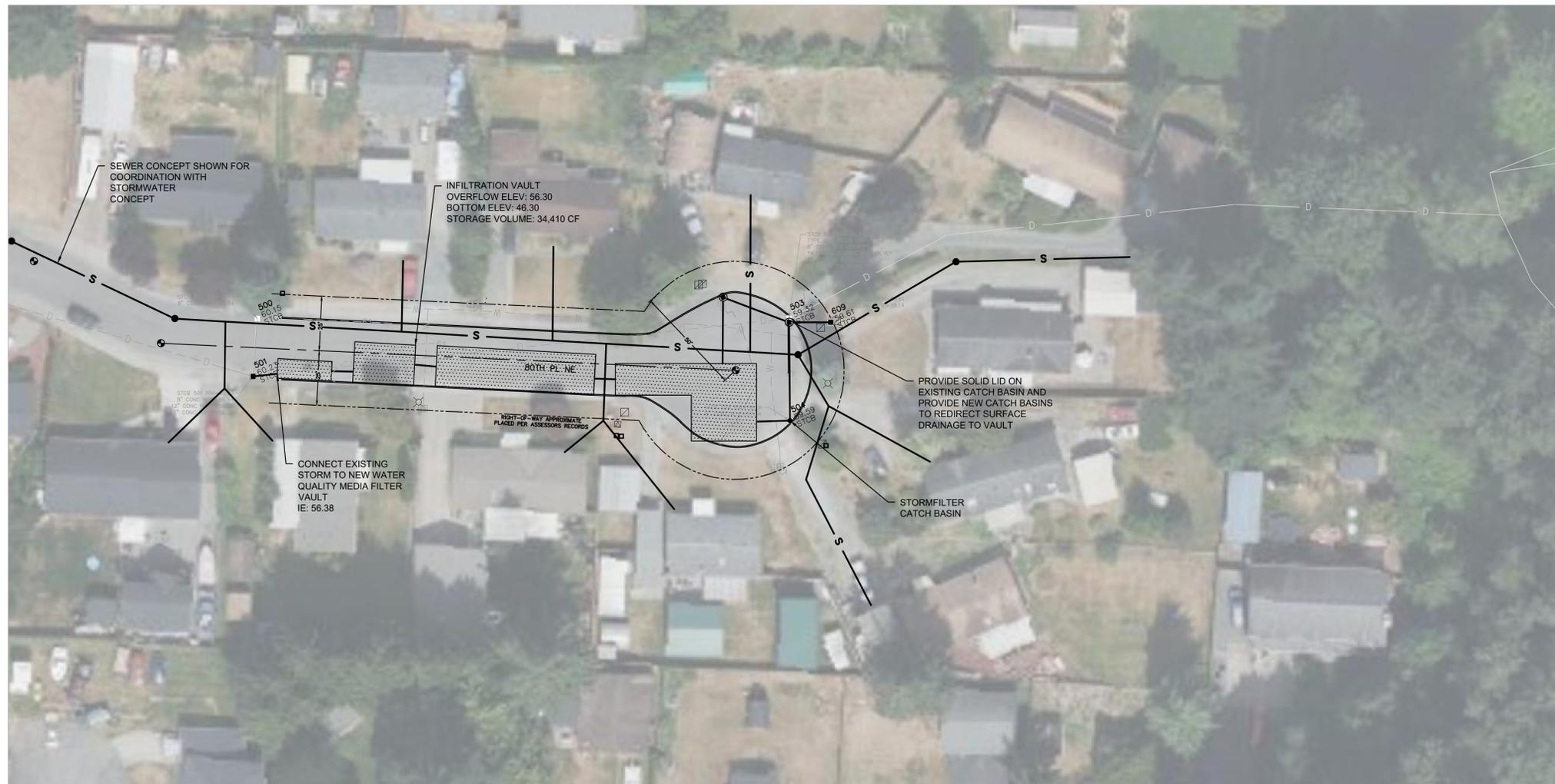
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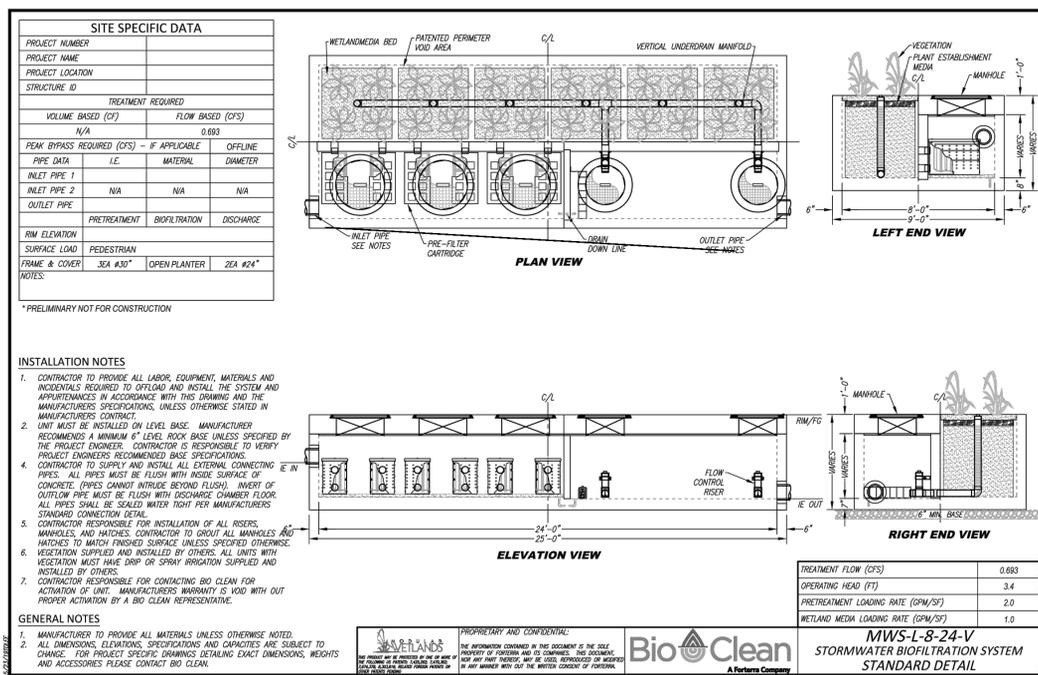
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PROJECT SPECS

TRIBUTARY AREA	8.68 AC
PERCENT IMPERVIOUS	21.75%
REQUIRED FLOW CONTROL VOLUME	60,000 CF
ASSUMED INFILTRATION RATE	2 IPH
WATER QUALITY FLOW RATE	0.38 CFS
RUNOFF TREATMENT BENEFIT	8.68 AC
FLOW CONTROL BENEFIT	4.98 AC

Revisions:

Sheet Title:

**STORMWATER
RETROFIT
CONCEPT**

Designed by: Drawn by: Checked by:

CMS CMS BPS

Sheet No.

C-1.0