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12/20/2021 09:35:38 AM \$463.00  
AUDITOR, Pierce County, WASHINGTON

RANGE	TOWNSHIP	SECTION	QUARTER	SERIAL NUMBER	PAGE NUMBER
04E	19N	04	03	020	57
DOCUMENT NUMBER				SERIAL NUMBER	PAGE NUMBER

After recording return to:

City of Puyallup  
333 South Meridian  
Puyallup, WA 98371

**Type of Document:** Storm Drainage Easement and Stormwater Management/BMP Facilities Agreement  
**Grantor:** Puyallup School District No. 3  
**Grantee:** City of Puyallup  
**Abbreviated Legal Description:** PTN SW1/4 S4 TWN19N R4E  
**Complete Legal:** Exhibit A and A-1  
**Assessor Parcel No.:** PTN 0419043117

**STORM DRAINAGE EASEMENT AND STORMWATER MANAGEMENT/  
BMP FACILITIES AGREEMENT**

THIS STORM DRAINAGE EASEMENT AND STORMWATER MANAGEMENT/BMP FACILITIES AGREEMENT ("Agreement") is made by and between PUYALLUP SCHOOL DISTRICT NO. 3, a Washington municipal corporation (the "District"), and the CITY OF PUYALLUP, a Washington municipal corporation (the "City").

**I. RECITALS**

A. The District is the owner of certain real property located between 17<sup>th</sup> Street Southwest and 39<sup>th</sup> Avenue Southwest, Puyallup, Pierce County, Washington, as legally described in Exhibit A attached hereto and incorporated herein by this reference and now known as the Puyallup School District South Hill Support Campus Site (the "District Property").

B. The District received approval and permits for the construction of certain improvements on the District Property, including stormwater facilities, depicted on Exhibit A-1, ( the "District's Project").

C. A requirement of permitting the District's Project was the construction by the District of certain half-street road improvements along the District's frontage on 17th Street Southwest, a public right-of-way.

D. The District has agreed, under the terms and conditions set forth herein, to

EXCISE TAX EXEMPT DATE 12/20/2021

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Pierce County

By [Signature] Auth. Sig.

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receive the stormwater discharge from that portion of 17th Street Southwest improved by the District as a condition of the District’s development requirements.

E. This Agreement sets forth the rights and obligations of the District and the City relating to stormwater facilities that are owned and operated separately by the parties. Stormwater facilities that are owned and operated separately by the District are subject to the Operations and Maintenance Manual, attached hereto as Exhibit B. Stormwater facilities that are owned and operated separately by the City are subject to the maintenance standards specified in the Stormwater Management Manual for Western Washington as adopted by the City. The terms, the “District” and the “City”, shall include each parties agents, successors and assigns.

## **II. AGREEMENT**

NOW, THEREFORE, for and in consideration of the mutual benefits described hereinbelow, and in consideration the covenants, terms, and conditions set forth herein, the District and the City agree as follows:

### 1. Stormwater Facilities.

1.1 The District has received approval from the City for discharge of stormwater into infiltration facilities by way of stormlines, structures, improvements and such other infrastructure related to development on the District Property in the areas known as the North Basins illustratively depicted on Exhibit C.

1.2 The District and the City also acknowledge that in conjunction with development of the District Property, a portion of 17th Street Southwest was improved by the District and approved to discharge public stormwater by way of stormlines, structures, improvements and such other infrastructure onto the District Property (collectively, the “City Stormwater Facilities”).

1.3 For purposes of this Agreement, the District stormwater facilities associated with the North Basin and any City Stormwater Facilities located on the District Property shall hereinafter collectively be referred to herein as the “District Stormwater Facilities”. Notwithstanding any language to the contrary, the City Stormwater Facilities which are located in the public right-of-way (a portion of 17th Street Southwest as described herein) shall not be deemed the District Stormwater Facilities for purposes of operation and management under this Agreement but shall be maintained by the City as required under this Agreement.

1.4 The District Stormwater Facilities shall receive stormwater discharge from the City Stormwater Facilities located within the public right-of-way. Specifically, that portion of 17<sup>th</sup> Street Southwest described below and illustratively depicted on Exhibit D attached hereto and incorporated herein by this reference (the “Contributory Area”).

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A PORTION OF THE SOUTHWEST QUARTER OF SECTION 4, TOWNSHIP 19 NORTH, RANGE 4 EAST OF THE WILLAMETTE MERIDIAN, PIERCE COUNTY, WASHINGTON MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE WEST 31.00 FEET OF THE WEST HALF OF THE SOUTHWEST QUARTER OF SAID SECTION 4 LYING SOUTH OF THE SOUTH RIGHT OF WAY LINE OF STATE ROAD 512 AS CONVEYED TO THE STATE OF WASHINGTON BY WARRANTY DEED RECORDED UNDER PIERCE COUNTY AUDITORS FEE NUMBER 9407070774 AND NORTH OF THE NORTH LINE AND NORTH LINE EXTENDED WESTERLY OF THAT PARCEL OF LAND CONVEYED TO GARY P. AND DEBRA S. LARSON BY STATUTORY WARRANTY DEED RECORDED UNDER PIERCE COUNTY AUDITORS FEE NUMBER 9408110456.

1.5 The District shall own, operate, and maintain, the District Stormwater Facilities.

1.6 The District and City agree that the District Stormwater Facilities shall be for the mutual benefit and joint use of the City and District.

2. Construction of Stormwater Facilities. The City and the District acknowledge and agree that the District Stormwater Facilities and the City Stormwater Facilities have been installed by the District, at the District's expense, in accordance with those certain plans and permits approved by the City in conjunction with the District's Projects.

3. Maintenance of Stormwater Facilities.

3.1 The District and the City agree the City Stormwater Facilities located within public right-of-way will be maintained by the City.

3.2 The District and the City agree the District Stormwater Facilities will be maintained by the District.

3.2.1 The District, at the District's sole cost and expense, shall be responsible at all times, for maintenance and repair of the District Stormwater Facilities consistent with and as described in the Stormwater Operations and Maintenance Manual attached hereto as Exhibit B. This includes all pipes and channels built to convey stormwater to the facilities, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the stormwater. Adequate maintenance is herein defined as good working condition so that the District Stormwater Facilities are performing their design functions. The District will perform the work necessary to keep the District Stormwater Facilities in good working order as appropriate. Any required maintenance schedule shall be followed by the District.

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3.2.2 The Annual Inspection Report, in the form prescribed in Exhibit B, shall be used to establish what good working condition is acceptable to the City. The District shall regularly inspect the District Stormwater Facilities and shall submit to the City an inspection report not less than annually. The purpose of the inspection(s) is to assure safe and proper functioning of the District Stormwater Facilities. Deficiencies shall be noted by the District on the inspection report.

3.2.3 Upon advance notice to the District as described herein, the District hereby grants permission to the City, its authorized agents and employees, to enter upon the District Property and to inspect the District Stormwater Facilities whenever the City deems necessary. The purpose of a City-conducted inspection is to follow-up on reported deficiencies, to respond to citizen complaints, and/or to assure proper operation and function of the District Stormwater Facilities. Except in the case of an emergency as set forth below under Paragraph 3.3, the City shall provide the District with at least forty-eight (48) hours written notice prior to entering onto the District Property for such inspections. The District shall be entitled to have its representative accompany the City during such inspection. The City shall provide the District with copies of inspection findings and any directive to commence with the repairs if found to be necessary.

3.3 Failure to Maintain Stormwater Facilities.

3.3.1 In the event that either the City fails to maintain the City Stormwater Facilities or the District fails to maintain the District Stormwater Facilities, as the case may be, in good working condition reasonably acceptable to the other party consistent with the Stormwater Operations and Maintenance Manual, Annual Inspection Report, and accepted engineering standards, the City or the District, as the case may be shall notify the other party in writing following identification of maintenance requirements or deficiencies.

3.3.2 The City, or the District, as the case may be, shall allow 60 days from date of written notification for the other party to correct deficiencies and complete required maintenance or submit an acceptable deficiency correction and maintenance plan. Provided, however, in the event of an emergency situation relating to either the City Stormwater Facilities or the District Stormwater Facilities, the City or the District, as the case may be, without notice to the other party, shall take whatever steps are reasonably necessary to correct such emergency situation subject to the right of reimbursement by the City or the District, as the case may be, from the other party and subject to the right of objection by the other party. An “emergency situation” shall be a condition or state of facts which if not immediately corrected would result in material damage to the City’s Municipal Separate Storm Sewer System (MS4), an illicit discharge to the MS4, or would result in personal injury or property damage. The provisions herein shall not be construed to allow the City to erect any structure of a permanent nature on the District Property. It is expressly understood and agreed that the City is under no obligation to routinely maintain or repair the District Stormwater Facilities, and in no event shall this Agreement be construed to impose any such obligation on the City.

3.3.3 In the event the City or the District, as the case may be, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like arising from the failure of the responsible party to perform required maintenance or repair of its Stormwater Facilities, the City or the District, as the case may be, shall reimburse the other party upon demand, within thirty (30) days of receipt thereof for all actual costs incurred by the other party.

4. Indemnification.

The District agrees to hold the City harmless from liability arising from or related to the District's design, construction, maintenance, repair or revisions to the District Stormwater Facilities, its obligations under this Agreement, or any failure of the District Stormwater Facilities to operate properly. However, the City shall be liable for any claims, actions, demands, injuries, or damages to person or property arising from or relating to any negligence or wrongful act of the City relating to or arising from, the City's stormwater discharge to the District Facilities, the City's own actions or obligations under this Agreement, or any failure of the City Stormwater Facilities to operate properly. Nothing herein shall require the District to hold the City harmless for any liability attributable to the negligence or wrongful act of the City arising from its own actions or use of the District Stormwater Facilities.

5. Miscellaneous.

5.1 Notice. All notices provided for herein may be sent by facsimile transmittal (with machine verification of receipt), sent by Federal Express or other overnight courier service, or delivered or mailed registered or certified mail, return receipt requested. If a notice is mailed, it shall be considered delivered three (3) days after deposit in such mail. If a notice is sent via facsimile, it shall be deemed received upon receipt of verification of transmission. If a notice is sent via overnight courier, it shall be deemed received upon the next business day. The addresses to be used in connection with such correspondence and notices are the following, or such other address as a party shall from time to time direct:

District: Puyallup School District No. 3  
302 2nd Street Southeast  
Puyallup, WA 98372  
Telephone: 253-841-8772  
Facsimile: 253-840-8951  
Attention: Mario R. Casello,  
Assistant Superintendent

City: City of Puyallup  
333 South Meridian  
Puyallup, WA 98371  
Telephone: 253-435-3640  
Facsimile: 253-840-6678  
Attention: Hans Hung, PE, City Engineer

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5.2 Venue. Should either party institute a legal proceeding for enforcement or interpretation of any provision contained herein, the venue of such proceeding shall be in Pierce County, Washington.

5.3 Attorneys' Fees. In the event that either party to this Agreement institutes a suit, action, arbitration, or other legal proceeding of any nature whatsoever relating to this Agreement or to the rights or obligations of the parties with respect thereto, the parties shall be responsible for their own attorney fees, costs and expenses in connection with such legal proceeding.

5.4 Cumulative Remedies. No remedy or election hereunder shall be deemed exclusive, but shall, wherever possible, be cumulative with all other remedies at law or in equity.

5.5 Nonwaiver of Breach. The failure of either party to insist upon strict performance of any of the covenants and agreements of this Agreement or to exercise any option herein contained in any one or more instances shall not be construed to be a waiver or relinquishment of any such, or any other, covenant or agreements; but the same shall be and remain in full force and effect.

5.6 Successors. This Agreement shall inure to the benefit of the assigns, successors and heirs of the parties; provided, however, the City may not assign this Agreement to a private party without the written consent of the District which consent shall be unreasonably withheld, conditioned, or delayed.

5.7 Construction. This Agreement shall not be construed more favorably to one party over another, notwithstanding the fact one party, or its attorney, may have been more responsible for the preparation of the document.

5.8 Governing Law. This Agreement is made pursuant to and shall be construed in accordance with the laws of the State of Washington.

5.9 Complete Agreement. This Agreement fully integrates the understanding of the parties. It supersedes and cancels all prior negotiations, correspondence and communication between the parties with respect to this Agreement. No oral modification of or amendment to this Agreement shall be effective; however, this Agreement may be modified or amended by written agreement signed by all the parties to the Agreement.


5.10 Covenant Running with the Land. This Agreement shall be recorded among the land records of Pierce County, WA, and shall constitute a covenant running with the land, and shall be binding upon the successors and assigns of the District and the City.

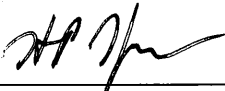
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IN WITNESS WHEREOF, this Agreement is executed on the date and year set forth below.

**DISTRICT**  
 PUYALLUP SCHOOL DISTRICT NO. 3

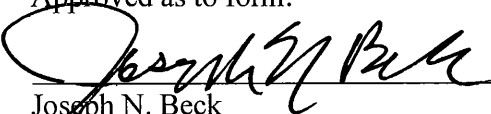
**CITY**  
 CITY OF PUYALLUP

By:   
 Dr. John A. Polm, Jr.  
 Its: Superintendent

By:   
 Hans P. Hunger  
 Its: City Engineer

Date: 10/18/2021

Date: 11/15/2021

Approved as to form:  
  
 Joseph N. Beck  
 City Attorney  
 Date: 11/10/2021

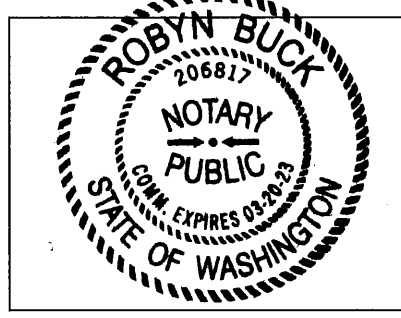
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STATE OF WASHINGTON )  
 ) ss  
 COUNTY OF PIERCE )

On this 15<sup>th</sup> day of November, 2021, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared Hans P. Hunger to me, known to be the City Engineer of City of Puyallup, the municipal corporation that executed the foregoing instrument and acknowledged the said instrument to be the free and voluntary act and deed of said municipal corporation, for the uses and purposes therein mentioned, and on oath stated that he is authorized to execute the said instrument and that the seal affixed is the corporate seal of said municipal corporation.

Witness under my hand and official seal this day of NOV 15, 2021.

[Signature]  
 Signature  
Robyn Buck  
 Print Notary Name



Use this space for Notary Seal

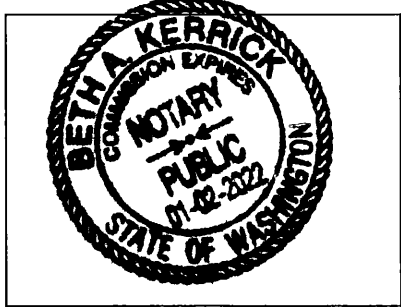
Notary Public in and for the State of Washington, residing at  
Puyallup, WA  
3-20-23  
 My commission expires

STATE OF WASHINGTON )  
 ) ss  
 COUNTY OF PIERCE )

On this 18<sup>th</sup> day of October, 2021, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared Dr. John A. Polm, Jr. to me, known to be the Superintendent of Puyallup School District No. 3, the municipal corporation that executed the foregoing instrument and acknowledged the said instrument to be the free and voluntary act and deed of said municipal corporation, for the uses and purposes therein mentioned, and on oath stated that he is authorized to execute the said instrument and that the seal affixed is the corporate seal of said municipal corporation.

Witness under my hand and official seal this day of October 18, 2021.

[Signature]  
 Signature  
Beth A. Kerrick  
 Print Notary Name



Use this space for Notary Seal

Notary Public in and for the State of Washington, residing at  
Puyallup, WA  
1-2-2022  
 My commission expires



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**LIST OF EXHIBITS**

- EXHIBIT A: Legal Description of District Property
- EXHIBIT A-1: Illustrative Map of District Stormwater Facilities
- EXHIBIT B: Stormwater Operations & Maintenance Manual
- EXHIBIT C: Illustrative Map of District Stormwater Basins
- EXHIBIT D: Illustrative Map of Portion of 17<sup>th</sup> Street Southwest (Contributory Area)

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**EXHIBIT A**  
**(Legal Description of Property)**

THE LAND IN THE COUNTY OF PIERCE, STATE OF WASHINGTON, DESCRIBED AS FOLLOWS:

THE WEST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER AND WEST HALF OF THE WEST HALF OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 4, TOWNSHIP 19 NORTH, RANGE 4 EAST OF THE WILLAMETTE MERIDIAN;

EXCEPT THE FOLLOWING DESCRIBED PROPERTY:  
 BEGINNING 30 FEET NORTH AND 15 FEET EAST OF THE SOUTHWEST CORNER OF SAID SECTION 4;  
 THENCE NORTH 553.14 FEET;  
 THENCE EAST 315 FEET;  
 THENCE SOUTH 553.14 FEET;  
 THENCE WEST 315 FEET TO THE POINT OF BEGINNING;

ALSO EXCEPT THE FOLLOWING DESCRIBED PROPERTY:  
 BEGINNING AT THE SOUTHWEST CORNER OF SAID SECTION 4;  
 THENCE NORTH 00°04'25"EAST ALONG THE WEST LINE OF SAID SECTION A DISTANCE OF 1148.90 FEET TO THE TRUE POINT OF BEGINNING;  
 THENCE NORTH 89°07'39"EAST A DISTANCE OF 162.00 FEET;  
 THENCE NORTH 00°04'25"EAST A DISTANCE OF 148.00 FEET;  
 THENCE SOUTH 89°07'39"WEST A DISTANCE OF 162.00 FEET TO THE WEST LINE OF SAID SECTION;  
 THENCE SOUTH 00°04'25"WEST 148.00 FEET ALONG THE WEST LINE OF SAID SECTION TO THE POINT OF BEGINNING;  
 EXCEPT 86TH AVENUE EAST RESERVED FOR COUNTY ROAD (ALSO KNOWN AS 17TH STREET S.W.);

ALSO EXCEPT THAT PORTION THEREOF CONVEYED TO THE STATE OF WASHINGTON BY INSTRUMENTS RECORDED UNDER RECORDING NUMBERS 2227151, 223840, 9407070774 AND 9407070775;

ALSO EXCEPT THE SOUTHERNLY 30 FEET THEREOF FOR 39TH AVENUE S.W. (ALSO KNOWN AS 112TH STREET EAST);  
 SITUATE IN THE CITY OF PUYALLUP, COUNTY OF PIERCE, STATE OF WASHINGTON.

See Exhibit A-1 for Illustrative Map of District Stormwater Facilities on the above-described Property which is the subject of this Agreement.

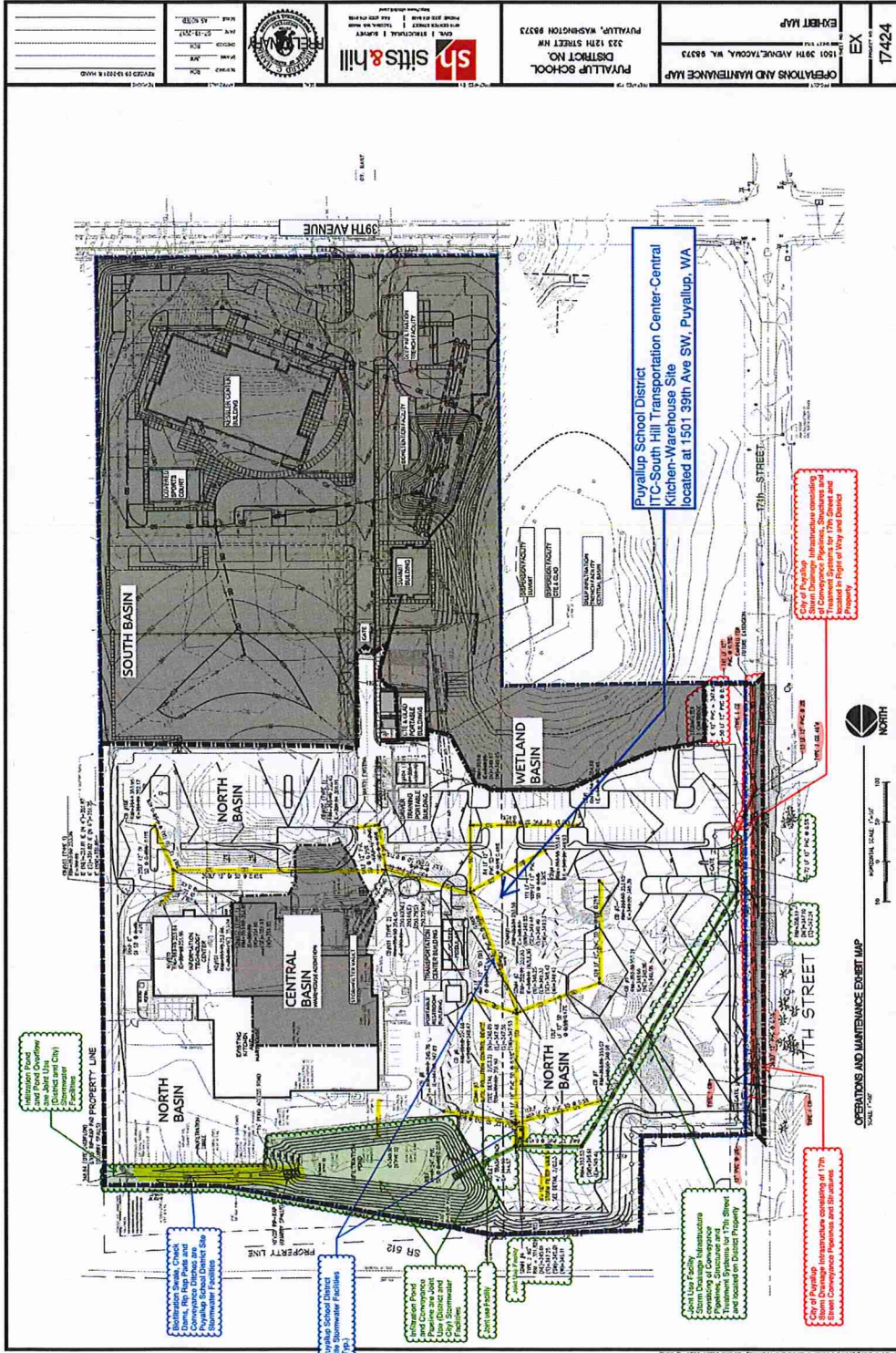
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**EXHIBIT A-1**

**PUYALLUP SCHOOL DISTRICT STORMWATER FACILITIES**

Operation & Maintenance Manual  
 For Stormwater Facilities located at Puyallup School District ITC/South Hill Transportation Center/Central Kitchen/Warehouse Site, 1501 39th Avenue SW, Puyallup, WA 98373

OVERALL SITE MAP



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**EXHIBIT B**

**STORMWATER OPERATIONS AND MAINTENANCE MANUAL**

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**Operations & Maintenance Manual  
For  
Stormwater Facilities located at  
Puyallup School District  
Information Technology Center  
South Hill Transportation Center/Central Kitchen/  
Warehouse Facilities Site,  
1501 39th Avenue Southwest  
Puyallup, Washington 98373**

**Prepared for:**

**Puyallup School District #3  
323 12<sup>th</sup> Street NW  
Puyallup, Washington 98371  
Contact: Gary Frentress  
Phone: 253-841-8641**

**Owner**

**Puyallup School District  
Operations & Maintenance  
323 12<sup>th</sup> Street NW  
Puyallup, Washington 98371  
Contact: Philip Anderson  
Phone: (253) 841-8777**

**Prepared by:**

**Sitts & Hill Engineers, Inc.  
4815 Center Street  
Tacoma, Washington 98409  
Contact: Rick Hand, P.E.  
Phone: (253) 474-9449**

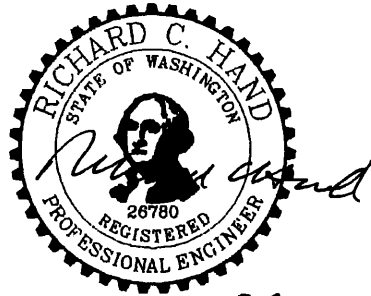
**September 2021**

**Project Number: 17,424**

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## PROJECT ENGINEERS CERTIFICATION

I hereby state that this Operations and Maintenance Manual for Stormwater Facilities located at the Puyallup School District Information Technology Center/South Hill Transportation Center/Central Kitchen/Warehouse Facilities Site, 1501 39<sup>th</sup> Avenue, Puyallup, WA 98373 has been prepared by me or under my supervision and meets the minimum standards of the City of Puyallup and current standards of the engineering practice.



*29 SEP 2021*

# Operation & Maintenance Manual

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Operation & Maintenance Manual  
 For Stormwater Facilities located at Puyallup School District ITC/South Hill Transportation Center/Central Kitchen/Warehouse Site, 1501 39<sup>th</sup> Avenue SW, Puyallup, WA 98373

**OPERATION AND MAINTENANCE MANUAL  
 FOR  
 STORMWATER FACILITIES LOCATED AT  
 PUYALLUP SCHOOL DISTRICT INFORMATION TECHNOLOGY  
 CENTER (ITC)/SOUTH HILL TRANSPORTATION CENTER/CENTRAL  
 KITCHEN/WAREHOUSE FACILITIES SITE,  
 1501 39<sup>th</sup> AVENUE SW, PUYALLUP, WA 98373**

**INTRODUCTION**

The purpose of this Stormwater Facility Operations and Maintenance Manual is to provide guidelines for limiting pollutants from mixing with stormwater runoff through Source Control Measures and to provide guidelines for maintaining stormwater facilities that collect, convey and treat stormwater prior to discharge from the site.

The Puyallup School District (referred to as the “District”) and the City of Puyallup (referred to as the “City”) each have separate stormwater facilities and they share a joint use stormwater facility on this site. The District and the City shall maintain stormwater facilities that are under their respective ownership. Joint use facilities shall be maintained by the District in accordance with the Stormwater Maintenance Agreement that is under separate cover. A map is provided in Appendix C that identifies District, City and Joint use stormwater facilities.

The District O&M office is located at 323 12<sup>th</sup> Street NW, Puyallup, WA 98371. The O&M Director contact person is Philip Anderson at 253-841-8777. A copy of the District Operations and Maintenance Manual will be provided at the 1501 39<sup>th</sup> Avenue SW, Puyallup, Washington 98373 site.

The City O&M office is located at 1100 39<sup>th</sup> Avenue SE, Puyallup, WA 98374. The O&M contact person is Jonathan Wikander at 253-770-3341. A copy of the Operations and Maintenance Manual will be provided at 1100 39<sup>th</sup> Avenue SE, Puyallup, WA 98374.

**FACILITIES DESCRIPTION**

**GENERAL**

The 1501 39<sup>th</sup> Avenue site consists of four drainage basins: North, Central, Wetland and South. Each drainage basin area is shown in Appendix C. The North Basin area includes the ITC/Original Warehouse/Central Kitchen building facility, the Transportation Center Office building, the Driver Training Portable Office building, paved bus and automobile parking areas, onsite roadway accesses located around these facilities, and a small portion of the adjacent offsite 17<sup>th</sup> Avenue roadway that fronts District property. The North Basin facilities are shown in Appendices C & D. The Central basin consists

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Operation & Maintenance Manual

For Stormwater Facilities located at Puyallup School District ITC/South Hill Transportation Center/Central Kitchen/Warehouse Site, 1501 39<sup>th</sup> Avenue SW, Puyallup, WA 98373

of the Warehouse Building Addition and some adjacent Central Kitchen/Original Warehouse/ITC building roof areas. The Wetland basin consists of some grass areas and the GLAD & CTE portable building roof areas. The South basin consists the Kessler Center site and bus driver training gravel area.

This O&M Manual addresses stormwater facilities located in the northern portion or the North drainage basin of the site. Please reference other separate O&M Manuals for other Basin O&M requirements.

The District stormwater facilities consist of, but are not limited to, area drains (smaller catch basin type of collection drains) catch basins and manholes, trench drains (linear collection drains), underground conveyance pipelines, debris barriers, energy dissipaters, underground StormFilter stormwater treatment facility, and an oil pollution control structure. The facilities are shown in Appendices C & D at the end of the Manual.

The City stormwater facilities consist of, but are not limited to, catch basins and manholes, underground conveyance pipelines, and an underground StormFilter stormwater treatment facility. The City facilities are located in the North Basin and generally located offsite along the 17<sup>th</sup> Street public right of way that fronts the District property. See Appendix C.

The District and the City share or have joint use of specific stormwater facilities. These facilities are located in the North Basin. The joint use facilities consist of a manhole, an underground conveyance pipeline, an energy dissipater rip rap pad, a retention or infiltration pond and an infiltration pond overflow. See Appendix C.

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## DISCUSSION OF MAINTENANCE

### GENERAL

All North basin stormwater facilities (District, City and Joint Use) require maintenance. District and Joint Use stormwater facilities shall be maintained by the District. City stormwater facilities shall be maintained by the City. Maintenance can be in the form of Source Control preventative measures as described in Appendix A. Maintenance can also be in the form of physical best management practices (BMP's) identified below and in Appendix B. Appendix B checklists and BMP's are taken from the 2005 Washington State Department of Ecology (WSDOE) Surface Water Manual Maintenance Standards. At the option of the respective owner, the stormwater facilities may be maintained through a private maintenance contract, or through self-service. Any questions about the existence of a problem should be directed to a Professional Engineer.

### AREA DRAINS

Area Drains are a smaller version of a catch basin. Site Area Drains are District facilities. Area drains are generally located at the upper end of the stormwater pipeline reach and they are generally located near building facilities to collect stormwater runoff from landscape areas. Area drains may or may not have sumps below the discharge pipeline outlet. Area Drain Maintenance requires removal of all debris in the sumps.

### CATCH BASINS

Catch basins that collect stormwater runoff are generally located in graded low spots and are provided with rectangular grates that allow stormwater collection. Catch basins that do not accept stormwater collection are fitted with either round or rectangular solid covers. All catch basin grates and covers are traffic rated and they may also be provided with locks. The locks consist of two 5/8" diameter stainless steel bolts with an Allen wrench head that bolts the grate or cover to an underlying frame. Access to and into the catch basin structure requires a 1/2" Allen wrench or some other custom modified tool that uses a 1/2" Allen wrench to allow quicker access.

Located below the catch basin grate or cover is a pre-cast concrete structure, rectangular or round in shape. Rectangular concrete structures typically have smaller pipelines that convey stormwater away from the structure. Round catch basin structures may have larger diameter pipelines or pipeline angle that requires a round structure. All catch basins are provided with a sump located below the outlet pipeline elevation. The sump functions like a sediment trap. As stormwater is collected the heavier sediments and debris in suspension drop out of the stormwater before it leaves the basin structure and enters the outlet pipeline. These sumps require maintenance to remove sediments and debris.

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## TRENCH DRAINS

Site Trench Drains are District facilities. Trench drains are linear in shape. Trench drain collection devices consist of a “U” shaped channel with a removable grate. Maintenance of these devices is required. The removable grates shall be removed and then the sediments and debris that collects in the channel shall be removed and disposed of properly. Then re-install the grate.

## CONVEYANCE PIPELINES

Conveyance pipelines are underground pipelines that convey stormwater from collection locations (catch basins) to discharge locations (stormwater treatment facilities and pond facilities). Conveyance pipelines need to be checked for sediment deposits in the channels and/or blockages. Occasionally, conveyance pipelines need to be jetted out so that conveyance capacity can be restored. Do not flush sediments downstream of the site or to infiltration trench or pond facilities. If the sediments are flushed downstream of the project limits, clean the downstream facilities at the owner’s expense.

## DEBRIS BARRIER

Debris barriers are typically located at culvert pipeline ends. Debris barriers prevent animal critters from entering the pipe end and from damage to the pipeline end from maintenance equipment. Debris Barriers are typically oval in shape. Debris barriers need to be checked to verify that no obstructions (vegetation and debris) are caught up in the debris barrier.

## ENERGY DISSIPATER

Energy dissipaters are located at the end of stormwater pipeline discharge locations to ponds. Typically, energy dissipaters consist of larger rip rap or quarry spall rocks. The purpose of the energy dissipaters is to dissipate water energy from the conveyance pipeline discharge flows prior to entering to a ditch or pond. Energy dissipaters minimize potential erosion that may occur at these locations. Maintenance involves checking the energy dissipaters to clean debris that may collect and interrupt flows, and replacing eroded or missing rocks.

## STORMWATER QUALITY FACILITIES

Drainage runoff from the vehicular surface areas, such as, automobile and bus parking and the service yard pavements are routed to stormwater treatment facilities prior to discharge from the site. There are three types of stormwater quality facilities on the site: a biofiltration swale, an oil pollution control device and two underground StormFilter vaults. Stormwater quality facilities are designed to treat stormwater runoff

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from water quality storm events (up to and including the 6-month storm event or approximately 1.28 inches of rainfall in 24 hours). Stormwater runoff from storm events that produce more than the water quality storm event are not required to be treated.

**BIOFILTRATION SWALE:**

The North Basin has one biofiltration swale. It is located north of the warehouse building facility and east of the infiltration pond area. The biofiltration swale is a District facility.

A biofiltration swale looks like a trapezoidal ditch that has check dams spaced at interval to spread the water flow through the swale. The concept is that sediments and pollutants are picked up by the grass lined swale in route to discharge. Typically flows through the bioswale are required to have a minimum residence time in the swale to capture the pollutants.

Maintenance access to the biofiltration swale is from the edge of paving. Maintenance activities will include mowing the grass and removing debris from the facility.

The stormwater runoff is conveyed through the biofiltration swale and will not top the bioswale banks unless there are blockages in the swale. Biofiltration swales are designed and constructed with enough freeboard to convey the 100-year, 24-hour storm event. The biofiltration swale shall have a vegetated surface height greater than or equal to four inches at all times, which exceeds the design depth during the design storm event. The riprap apron energy dissipation at the biofiltration swale inlet and outlet location shall be maintained and replaced if needed. The biofiltration swale consists of flow spreaders in the bottom of the bioswale to spread the flow over the entire bioswale width. The North Basin biofiltration swale discharge enters the infiltration pond.

**OIL POLLUTION CONTROL DEVICE:**

This device is a District facility. Because mobile fueling will take place in the bus parking area, an oil pollution control device is installed upstream of the StormFilter treatment device to provide a potential stop-point in the event of small accidental spill volumes. Larger fuel spill volumes shall be handled in accordance with Site Spill Prevention Control and Countermeasure (SPCC) procedures. Maintenance of this structure will consist of periodic visual checks, skimming off any collected oil pollutants, disposal of pollutant wastes and vector out the structure. Rainfall from the next storm event can fill the structure back with required water fluids.

**STORMFILTER VAULTS:**

There are two StormFilter vaults located In the North basin. See Appendix C. One is a District facility and one is a City facility. The District StormFilter facility is located west of the Warehouse/Central Kitchen Building and in the northern portion of the bus parking area. This StormFilter Vault treats collected and conveyed stormwater

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runoff of sediment debris, petroleum hydrocarbons, dissolved metals and fungicide/fertilizer contaminants prior to discharging to the North Basin infiltration pond. The stormwater runoff from the site bus and auto parking areas are routed to an underground Storm Filter Vault with 32 ZPG cartridges with a flow rate of 7.5gpm per cartridge. The vault measures 8' x18'. It has two solid covers with the "Contech" stamping on them.

The City StormFilter facility is located near 17<sup>th</sup> Street. This StormFilter Vault treats collected and conveyed stormwater runoff of 17<sup>th</sup> Street sediment debris, petroleum hydrocarbons, dissolved metals and fungicide/fertilizer contaminants prior to discharging to the North Basin infiltration pond. The stormwater runoff from the eastern half of the roadway is routed to an underground StormFilter Vault with 3 cartridges. The vault measures 4' in diameter and fits within the standard WSDOT manhole structure. It has one solid cover with the "Contech" stamping on it.

Required maintenance of these facilities is identified in Appendix B.

**INFILTRATION POND FACILITIES**

There is one site infiltration pond facility in the North basin. An infiltration pond is often referred to as a retention pond facility also.

The North Basin site infiltration pond is located in the northern portion of the site and northwest of the ITC/Warehouse/Central Kitchen building facility. This facility is a Joint Use facility. The North Basin infiltration pond is designed to contain the 100 year/24-hour storm event. The bottom of the pond is elevation 344.00. The 100 year/24hour water level is elevation 347.23. The overflow elevation is 348.84. The overflow location is at the east end of the northerly biofiltration swale or at the northeasterly most location of the site. As the pond fills to elevation 347.23, it will flood the North Basin biofiltration swale until it overflows at elevation 348.84. The top of the pond is elevation 349.00.

Performance of the infiltration pond facilities is a function of soil permeability and the underlying groundwater table elevation. Maintenance of the infiltration pond will be important. Infiltration pond facilities shall be kept clean. Cleaning means, cutting down all brush and tree vegetation growth over the year (removing brush and tree vegetation is even better) over the pond side slopes and bottom on a yearly basis. Mow grass growth to about 4" in height. Maintenance shall also include observing the sediment buildup in the bottom and sides of the pond. If the sediments become visible over the entire base of the pond, and stormwater seems to percolate more slowly out of the pond, these may be signs that the pond bottom needs to be cleaned of sediments from the bottom and/or that a seasonally high groundwater table may be present. The North infiltration pond access for maintenance vehicles will be from the southeast corner of the pond and from the adjacent vehicular parking area. Sediment and debris should be removed from the pond in such a way as to prevent damage to the pond bottom,

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drainage structures, and entrance. All sediment removed shall be disposed of at an approved off-site location.

Other pond maintenance observations should be made on an ongoing basis. Oil or petroleum sheen should not be visible on the surface of any stormwater stored in the pond. If present, the source of the pollution should be identified and corrected prior to cleaning the water in the pond. Contaminated stormwater shall be immediately cleaned with oil-absorbent pads, a “vactor” truck, or another approved method. Implement SPCC mitigation measures as required.

Quarry spall rock at energy dissipaters located at pond inlet pipes should be intact and functional. The entrance road should allow unobstructed access to the pond bottom and be free of damaging debris (glass or metal), vegetation growth, and signs of erosion. If repairs are needed, the pond should be restored according to the original design specifications.



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## MAINTENANCE FREQUENCY

### GENERAL

All facilities will be monitored and maintained according to their respective maintenance checklists. One form will be filled out for each maintenance activity. Checklists are provided in Appendix B.

Facilities shall be inspected annually. Stormwater facility observations should also occur during the fall/winter/spring seasons after larger storm event, such as, precipitation is greater than or equal to one inch in 24 hours, to verify system performance. When deficiencies are noted, the problems are to be corrected as soon as possible. Submit completed Annual Inspection Form to the address provided at the bottom of the Inspection Form.

Any spill of hazardous material (e.g., fuel, lubricant, herbicide, etc.) will be cleaned up immediately and will be reported to the Division of Emergency Management (1-800-258-5990). Contaminated material will be disposed of properly.

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### ESTIMATED ANNUAL MAINTENANCE COSTS

The estimated annual maintenance costs assume contracted services unless otherwise noted.

#### District Facilities that are Maintained by District

Task	Estimated Cost
Site Mowing (Including Biofiltration Swale) - Assume District Self Perform	\$0
Vactor Trench Drain, Catch Basins and Oil Pollution Flow Control Structure	\$2,500
StormFilter Vault Cartridge (Estimate annual cost based upon every other year cartridge removal and replacement cost)	\$3,000
<b>Total Annual Cost</b>	<b>\$5,500</b>

#### City Facilities that are Maintained by the City

Task	Estimated Cost
Vactor Catch Basins and Manholes	\$500 minimum
StormFilter Vault Cartridge (Estimate annual cost based upon every other year cartridge removal and replacement cost)	\$1,000
<b>Total Annual Cost</b>	<b>\$1,500</b>

#### Joint Use Facilities that are Maintained by District

Task	Estimated Cost
North Basin Infiltration Pond Observations and Vegetative Removal - Assume District Self Perform	\$0
Sediment Removal from North Basin Infiltration Pond – Assume none	\$0
Vactor Catch Basin/Manhole Structure	\$500 minimum
Pond Inlet, Energy Dissipater, Trash Rack, Access Road	\$100
<b>Total Annual Cost</b>	<b>\$600</b>

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## APPENDIX A - SOURCE CONTROL MEASURES

### SOURCE CONTROL

Employees shall receive basic instruction regarding the control of pollution from commercial operations. Contact the Department of Ecology for assistance in completing this task.

The following activities are Commercial Source Control Best Management Practices (BMP's) relevant to this site and should be used as a guideline for preventing pollutants from entering the storm drainage system and / or groundwater.

### TREATMENT

The system shall be maintained in conformance with requirements stated herein. The North basin has biofiltration swale, two underground StormFilter Vaults and one Oil Pollution Control Device for treatment of pollution generating surface areas. The biofiltration swale contains a special seed mixture for treating contaminants.

### BMP'S TO CONSIDER FOR ALL ACTIVITIES

Suggested BMP's include:

- 1) Avoid the activity or reduce its occurrence.
- 2) Sweep an indoor or outdoor work area instead of hosing it into the storm drain or other drainage conveyance.
- 3) Store items inside if possible.
- 4) Use less material. Don't buy or use more material than you really need.
- 5) Use the less toxic materials available. Investigate the use of materials that are less toxic than what you use now. Perhaps a caustic type detergent or a solvent could be replaced with a more environmentally friendly product.
- 6) Maintain vegetated areas near activity locations.
- 7) Locate activities as far as possible from surface drainage paths. Activities located as far as possible from known drainage paths, ditches and drains will be less likely to pollute, since it will take longer for material to reach drainage features.
- 8) Keep storm drainage systems clean.

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- 9) Be an advocate for stormwater pollution prevention. Help friends, partners and business associates find ways to reduce stormwater pollution in their activities.
- 10) Report violators. In the City of Puyallup, call the Pollution Hotline to report violators.

**BMP'S TO CONSIDER FOR CLEANING AND WASHING ACTIVITIES**

Required BMP's include:

- 1) Illicit connections to the storm drainage system must be eliminated.
- 2) Employees should be educated to control washing operations to prevent stormwater contamination.
- 3) All wash water must discharge to a holding tank, process treatment system or sanitary sewer, never to the storm drain system.
- 4) Pressure washing must be done in a designated area.

Suggested BMP's include:

- 1) If soaps or detergents are used, use the least toxic cleaner capable of doing the job. Use non-phosphate detergent, if possible, to reduce loadings at your local water treatment plant.
- 2) Limit the amount of water used in washing activities to reduce the potential of runoff carrying pollutants beyond the designated wash pad or capture system.
- 3) Recycle wash water for subsequent washings.
- 4) Pressure washing must be done in a designated area.

**BMP'S TO CONSIDER FOR LANDSCAPING AND VEGETATION MANAGEMENT ACTIVITIES, INCLUDING VEGETATION REMOVAL, HERBICIDE AND INSECTICIDE APPLICATIONS, FERTILIZER APPLICATIONS, IRRIGATION, WATERING, GARDENING AND LAWN CARE**

Required BMP's include:

- 1) Employees must be educated about the pollution potential of improper pesticide usage, improper disposal of lawn clippings, over fertilization and over watering. Emphasis on proper storage, handling, application and disposal practices is a must.

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- 2) Herbicide, insecticide and fungicide application must not be conducted within 100 feet of surface waters such as lakes, ponds, wetlands and streams. This buffer distance is specified in the "Washington State Department of Ecology Stormwater Management Manual for the Puget Sound Basin". All applications must follow manufacturer recommendations. Pesticides must not be applied when raining or windy. The use of aquatic herbicides requires a permit from the Department of Ecology on a site-by-site basis.
- 3) Pesticide containers and fertilizers, whether in open piles or bags, must be stored in protected places when not in use.
- 4) Areas where soils are temporary stripped bare for more than two weeks must comply with the project requirements. Call the City of Puyallup Public Works at 253-841-5505.
- 5) Avoid planting noxious plant species, such as reed canary grass, purple loosestrife or tansy, particularly near lakes, wetlands and riparian areas. Call the City of Puyallup Public Works at 253-841-5505 for information on noxious plants.

Suggested BMP's Include:

- 1) When watering, you should attempt to minimize the amount of water used. Never water to the point of runoff.
- 2) Grass clippings, leaves, sticks and other collected vegetation should be composted, ground and used as mulch or disposed of as garbage. Never pile or dump clippings in or near storm drains, streams, lakes, drainage ways or other water bodies. Several local companies take landscaping and land clearing waste and convert it to a high quality compost product suitable for landscaping use. See Recycling Services in the yellow pages of your phone book for companies nearest you. Vegetation cutting near open waters and in drainage ditches should be done carefully so that the cut material can be collected. Burning of cut vegetation is no longer an option in the urbanized area of Puyallup and Pierce County due to air quality regulations.
- 3) Where possible, fertilizer should be worked into the soil rather than dumped on the surface.
- 4) Sweep driveways, gutters and storm drains to remove accumulations of grass, leaves and twigs after trimming. Dispose of the material by composting, mulching or recycling.
- 5) Integrated pest management (IPM) is a comprehensive approach to the use of pesticides. IPM minimizes pesticide application and stresses selection of proper products and tailored application rates. It is a sensible long-term strategy rather

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than a hit and run operation and as such is probably the most effective BMP measure that can be practiced for herbicide, insecticide and fungicide use.

- 6) Fertilizers should be applied carefully. Soils should be tested to determine the proper application rate, type of fertilizer and timing for the type of soil and vegetation involved.
- 7) Use mechanical methods of vegetation removal rather than apply pesticides.
- 8) One of the most effective measures that can be taken to reduce the necessity for pesticide uses, excessive watering and removal of dead vegetation involves careful soil mixing and layering prior to planting. Quite often, the native vegetation is cleared, leaving the mineral soil exposed underneath. Many people tend to plant directly into this and then cover with bark mulch. This practice usually results in heavy plant mortality and excessive water usage. By using a topsoil mix or composted organic matter that is mixed into the soil, a transition layer is created that allows for healthier, deeper root development. This can improve the health of the plants, resulting in better disease and insect resistance and reduced water demand.
- 9) Mulching mowers are highly recommended. They add organic matter and nutrients directly back to lawns with no disposal hassles.

## VEHICLE AND EQUIPMENT PARKING AND STORAGE

Required BMP's:

- 1) The use of soaps or detergents to wash vehicles or equipment in any area that drains to a storm drain, ditch, stream or other water body is not allowed. Soapy wash waters must discharge to the sanitary sewer or suitable treatment system. Call the City of Puyallup Public Works at 253-841-5505.
- 2) Parking areas, storage areas and driveways shall be swept (not hosed to a storm drain) at least once per month to collect dirt, litter and debris. Make sure to dispose of these materials properly.
- 3) Gutters, drains and catch basins must be checked frequently for evidence of dirt and debris and cleaned as needed. Storm drain inlets and gutters on the property must be cleaned at least once per month without hosing sediments and other debris into the storm drain. Catch basins should be cleaned a minimum of twice per year and more frequently if needed.
- 4) An oil / water separator or oil absorbent pillow insert for catch basins or other treatment BMP must be installed for treatment of runoff if other measures do not sufficiently reduce the problem of contaminated runoff.

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**Suggested BMP's:**

- 1) Garbage cans with lids should be provided to reduce parking lot litter.
- 2) Divert runoff to vegetated areas near the parking lot.
- 3) Through the use of incentives and discounts, businesses should encourage employees and customers to car pool and use public transit.

**PAINTING, FINISHING AND COATING OF VEHICLES, PRODUCTS AND EQUIPMENT**

**Required BMP's:**

- 1) Employees shall be trained in the proper application methods of paints, coatings and finishes and handling, storage and disposal of these materials to avoid pollution problems.
- 2) If sanding, blasting or spraying occurs outdoors, heavy tarps or plastic sheets must be hung in a manner that surrounds the objects being treated so that wind blown spray can be contained. Contact your local fire prevention bureau for other requirements.
- 3) Drip cloths and pan must be used in locations where paints, finishes and other liquid materials are mixed, carried and applied. Place containers into pans to act as secondary containment in the event of a spill.
- 4) The activity must be swept (not hosed) at the end of each work day and the collected materials disposed of properly.
- 5) Painting, finishing and coating material must always be stored in areas protected from rain when not in use.
- 6) Spill cleanup materials shall be kept near the work area at all times in a location known to all and employees shall be trained in proper cleanup and disposal procedures.
- 7) Never clean brushes, containers or equipment into a street, gutter, storm drain, ditch, stream or other water body.
- 8) For water based paints, paint out brushes to the extent possible and rinse to the sanitary sewer.

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- 9) For oil based paints, thin out brushes to the extent possible and filter and reuse or recycle thinners and solvents.
- 10) With the exception of water based paints, dispose of excess fluids, sludges and residues as hazardous waste.

**Suggested BMP's:**

- 1) Move the activity indoors with appropriate fire protection provisions.
- 2) Cover the activity area. Conduct the activity in a designated area with provisions for prevention of stormwater run-on and also for containment of runoff if an onsite stormwater treatment facility, holding tank, sanitary sewer connection or process treatment system is not used for drainage.
- 3) Pave the activity area and slope the drainage to a central collection point.
- 4) Implement one of the following treatment BMP's in addition to the required BMP's:

- Catch basin filter inserts.
- Vegetated biofilters.

**STORAGE OF FOOD AND SOLID WASTES**

**Required BMP's include:**

- 1) All solid and food wastes must be stored in suitable containers. Piling of wastes without any cover is not acceptable.
- 2) Storage containers must be checked for leaks and replaced if they are leaking, corroded or otherwise deteriorating.
- 3) Storage containers must have leak proof lids or else be covered by some other means. Lids must be kept closed at all times. This is especially important for dumpsters, as birds can pick out garbage and drop it, promoting rodent, health and stormwater problems

OR

If lids cannot be provided for the waste containers or they cannot otherwise be covered, there is another option: a designated waste storage area must be provided with a containment berm, dike or curb and the designated area must drain to a sanitary sewer or holding tank for further treatment.



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- 4) Employees must be trained to frequently check storage containers for leaks and to ensure that the lids are on tightly.
- 5) The waste storage area must be swept or otherwise cleaned frequently to collect all loose solids for proper disposal in a storage container. Do not hose the area to collect or clean solids.
- 6) If you clean your containers, all rinse water from cleaning must be disposed of on a sanitary sewer or septic system.
- 7) Clean out catch basins on your property that receive drainage from your waste storage area.

Suggested BMP's include:

- 1) If the amount of waste accumulated appears to frequently exceed the capacity of the storage container, then another storage container should be obtained and utilized.
- 2) Store containers such that wind will not be able to knock them over.
- 3) Designate a storage area, pave the area and slope the drainage to a holding tank or sanitary sewer drain. If a holding tank is used, the contents must be pumped out before the tank is full and properly disposed of.
- 4) Compost appropriate wastes. Contact Pierce County Solid Waste at 593-2179 for more information on composting.
- 5) Recycle your solid wastes. The Industrial Material Exchange (IMEX) program facilitates the transfer of excess materials and wastes to those who can use them. IMEX can be reached at 206-296-4899 or use the IMEX computer bulletin board modem access number at 1-800-858-6625.

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## APPENDIX B – MAINTENANCE CHECKLISTS

### INSTRUCTION FOR USE OF MAINTENANCE CHECKLISTS

The following pages contain maintenance needs for most of the components that are part of site stormwater facilities as well as for some components that you may not have. Ignore the requirements that do not apply to your facilities. You should plan to complete a checklist for all stormwater facility components on the following schedule:

1. Annually.
2. After any major storm (use three inches in 24 hours as a guideline).

Using photocopies of these pages; check off the problems you looked for each time you did an inspection. Add comments on problems found and actions taken. Keep these “checked” sheets in your files.

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**ANNUAL INSPECTION REPORT**

Page \_\_\_\_\_ of \_\_\_\_\_

**Annual Inspection Report**  
 City of Puyallup - Stormwater BMP Facilities Inspection and Maintenance Log

Facility Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 Begin Date \_\_\_\_\_ End Date \_\_\_\_\_

Date	BMP ID#	BMP Facility Description	Inspected by:	Cause for Inspection	Exceptions Noted	Comments and Actions Taken

**Instructions:**  
 Record all inspections and maintenance for all treatment BMPs on this form. Use additional log sheets and/or attach extended comments or documentation as necessary. Submit a copy of the completed log with the Annual Independent Inspectors' Report to the City, and start a new log at that time.

BMP ID# — Always use ID# from the Operation and Maintenance Manual.  
 Inspected by — Note all inspections and maintenance on this form, including the required independent annual inspection.  
 Cause for inspection — Note if the inspection is routine, pre-rainy-season, post-storm, annual, or in response to a noted problem or complaint.  
 Exceptions noted — Note any condition that requires correction or indicates a need for maintenance.  
 Comments and actions taken — Describe any maintenance done and need for follow-up.

Return Form to: Stormwater Engineer/City of Puyallup  
 333 South Meridian  
 Puyallup, WA 98371

RANGE	TOWNSHIP	SECTION	COURSES	SERIAL NUMBER	PAGE NUMBER
042	19 N	04	03	020	35/57
DOCUMENT NUMBER				SERIAL NUMBER	PAGE NUMBER

City of Puyallup Stormwater Facilities Agreement

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**Annual Inspection Report**  
**City of Puyallup - Stormwater BMP Facilities Inspection and Maintenance Log**

Facility Name

Date	BMP ID#	BMP Facility Description	Inspected by:	Cause for Inspection	Exceptions Noted	Comments and Actions Taken

City of Puyallup Stormwater Facilities Agreement

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## DETENTION PONDS

### No. 1 – Detention Ponds

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
General	Trash & Debris	Any trash and debris which exceed 5 cubic feet per 1,000 square feet (this is about equal to the amount of trash it would take to fill up one standard size garbage can). In general, there should be no visual evidence of dumping.  If less than threshold all trash and debris will be removed as part of next scheduled maintenance.	Trash and debris cleared from site.
	Poisonous Vegetation and noxious weeds	Any poisonous or nuisance vegetation which may constitute a hazard to maintenance personnel or the public.  Any evidence of noxious weeds as defined by State or local regulations.  (Apply requirements of adopted IPM policies for the use of herbicides).	No danger of poisonous vegetation where maintenance personnel or the public might normally be. (Coordinate with local health department)  Complete eradication of noxious weeds may not be possible. Compliance with State or local eradication policies required
	Contaminants and Pollution	Any evidence of oil, gasoline, contaminants or other pollutants  (Coordinate removal/cleanup with local water quality response agency).	No contaminants or pollutants present.
	Rodent Holes	Any evidence of rodent holes if facility is acting as a dam or berm, or any evidence of water piping through dam or berm via rodent holes.	Rodents destroyed and dam or berm repaired. (Coordinate with local health department; coordinate with Ecology Dam Safety Office if pond exceeds 10 acre-feet.)

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**No. 1 – Detention Ponds (Continued)**

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
	Beaver Dams	Dam results in change or function of the facility.	Facility is returned to design function.  (Coordinate trapping of beavers and removal of dams with appropriate permitting agencies)
	Insects	When insects such as wasps and hornets interfere with maintenance activities.	Insects destroyed or removed from site.  Apply insecticides in compliance with adopted IPM policies
	Tree Growth and Hazard Trees	Tree growth does not allow maintenance access or interferes with maintenance activity (i.e., slope mowing, silt removal, vactoring, or equipment movements). If trees are not interfering with access or maintenance, do not remove  If dead, diseased, or dying trees are identified  (Use a certified Arborist to determine health of tree or removal requirements)	Trees do not hinder maintenance activities. Harvested trees should be recycled into mulch or other beneficial uses (e.g., alders for firewood).  Remove hazard Trees
Side Slopes of Pond	Erosion	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion.  Any erosion observed on a compacted berm embankment.	Slopes should be stabilized using appropriate erosion control measure(s); e.g., rock reinforcement, planting of grass, compaction.  If erosion is occurring on compacted berms a licensed civil engineer should be consulted to resolve source of erosion.
Storage Area	Sediment	Accumulated sediment that exceeds 10% of the designed pond depth unless otherwise specified or affects inletting or outletting condition of the facility.	Sediment cleaned out to designed pond shape and depth; pond reseeded if necessary to control erosion.
	<del>Liner (if Applicable)</del>	<del>Liner is visible and has more than three 1/4 inch holes in it</del>	<del>Liner repaired or replaced. Liner is fully covered.</del>

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**No. 1 – Detention Ponds (Continued)**

Maintenance Component	Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Pond Berms (Dikes)	Settlements	Any part of berm which has settled 4 inches lower than the design elevation.  If settlement is apparent, measure berm to determine amount of settlement.  Settling can be an indication of more severe problems with the berm or outlet works. A licensed civil engineer should be consulted to determine the source of the settlement.	Dike is built back to the design elevation.
	Piping	Discernable water flow through pond berm. Ongoing erosion with potential for erosion to continue.  (Recommend a Geotechnical engineer be called in to inspect and evaluate condition and recommend repair of condition.	Piping eliminated. Erosion potential resolved.
<del>Emergency Overflow/ Spillway and Berms over 4 feet in height.</del>	<del>Tree Growth</del>	<del>Tree growth on emergency spillways creates blockage problems and may cause failure of the berm due to uncontrolled overtopping.  Tree growth on berms over 4 feet in height may lead to piping through the berm which could lead to failure of the berm.</del>	<del>Trees should be removed. If root system is small (base less than 4 inches) the root system may be left in place. Otherwise the roots should be removed and the berm restored. A licensed civil engineer should be consulted for proper berm/spillway restoration.</del>
	<del>Piping</del>	<del>Discernable water flow through pond berm. Ongoing erosion with potential for erosion to continue.  (Recommend a Geotechnical engineer be called in to inspect and evaluate condition and recommend repair of condition.</del>	<del>Piping eliminated. Erosion potential resolved.</del>
Emergency Overflow/ Spillway	Emergency Overflow/ Spillway	Only one layer of rock exists above native soil in area five square feet or larger, or any exposure of native soil at the top of out flow path of spillway.  (Rip-rap on inside slopes need not be replaced.)	Rocks and pad depth are restored to design standards.
	Erosion	See "Side Slopes of Pond"	

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## INFILTRATION FACILITIES

### No. 2 – Infiltration

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
General	Trash & Debris	See "Detention Ponds" (No. 1).	See "Detention Ponds" (No. 1).
	Poisonous/Noxious Vegetation	See "Detention Ponds" (No. 1).	See "Detention Ponds" (No. 1).
	Contaminants and Pollution	See "Detention Ponds" (No. 1).	See "Detention Ponds" (No. 1).
	Rodent Holes	See "Detention Ponds" (No. 1).	See "Detention Ponds" (No. 1).
Storage Area	Sediment	Water ponding in infiltration pond after rainfall ceases and appropriate time allowed for infiltration.  (A percolation test pit or test of facility indicates facility is only working at 90% of its designed capabilities. If two inches or more sediment is present, remove).	Sediment is removed and/or facility is cleaned so that infiltration system works according to design.
<del>Filter Bags (if applicable)</del>	<del>Filled with Sediment and Debris</del>	<del>Sediment and debris fill bag more than 1/2 full.</del>	<del>Filter bag is replaced or system is redesigned.</del>
<del>Rock Filters</del>	<del>Sediment and Debris</del>	<del>By visual inspection, little or no water flows through filter during heavy rain storms.</del>	<del>Gravel in rock filter is replaced.</del>
Side Slopes of Pond	Erosion	See "Detention Ponds" (No. 1).	See "Detention Ponds" (No. 1).
<del>Emergency Overflow Spillway and Berms over 4 feet in height.</del>	<del>Tree Growth</del>	<del>See "Detention Ponds" (No. 1).</del>	<del>See "Detention Ponds" (No. 1).</del>
	<del>Piping</del>	<del>See "Detention Ponds" (No. 1).</del>	<del>See "Detention Ponds" (No. 1).</del>
Emergency Overflow Spillway	Rock Missing	See "Detention Ponds" (No. 1).	See "Detention Ponds" (No. 1).
	Erosion	See "Detention Ponds" (No. 1).	See "Detention Ponds" (No. 1).
<del>Pre-setting Ponds and Vaults</del>	<del>Facility or sump filled with Sediment and/or debris</del>	<del>6" or designed sediment trap depth of sediment.</del>	<del>Sediment is removed.</del>



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## OIL POLLUTION CONTROL/FLOW RESTRICTOR DEVICE

### No. 4 – Control Structure/Flow Restrictor

Maintenance Component	Defect	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
General	Trash and Debris (Includes Sediment)	Material exceeds 25% of sump depth or 1 foot below orifice plate.	Control structure orifice is not blocked. All trash and debris removed.
	Structural Damage	Structure is not securely attached to manhole wall.	Structure securely attached to wall and outlet pipe.
		Structure is not in upright position (allow up to 10% from plumb).	Structure in correct position.
		Connections to outlet pipe are not watertight and show signs of rust.	Connections to outlet pipe are water tight; structure repaired or replaced and works as designed.
		Any holes—other than designed holes—in the structure.	Structure has no holes other than designed holes.
	Contaminants and Pollution	Any evidence of oil, gasoline, petroleum contaminants or other pollutants. Determine source and volumes.	Remove and dispose of all volumes in accordance with local requirements. Coordinate significant removal/cleanup with local water quality response agency.
Overflow Pipe	Obstructions	Any trash or debris blocking (or having the potential of blocking) the overflow pipe.	Pipe is free of all obstructions and works as designed.
Manhole	Cover Not in Place	Cover is missing or only partially in place. Any open manhole requires maintenance.	Manhole is closed.
	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread (may not apply to self-locking lids).	Mechanism opens with proper tools.
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure. Intent is to keep cover from sealing off access to maintenance person.	Cover can be removed and reinstalled by one maintenance person.
	Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, misalignment, not securely attached to structure wall, rust, or cracks.	Ladder meets design standards. Allows maintenance person safe access.

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**No. 4 Flow Restrictor (Continued)**

Riser Tee	Obstructions	No stormwater flow through the manhole structure	Clear bottom of tee riser of debris or vector out sump of structure of all sediment and debris.
Gasketed Plug	Verify Installation	Flow through manhole without passing through the oil control tee riser	Install end plug

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## CATCH BASINS

### No. 5 – Catch Basins

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is performed
General	Trash & Debris	Trash or debris which is located immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%.	No Trash or debris located immediately in front of catch basin or on grate opening.
		Trash or debris (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of six inches clearance from the debris surface to the invert of the lowest pipe.	No trash or debris in the catch basin.
		Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height.	Inlet and outlet pipes free of trash or debris.
		Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	No dead animals or vegetation present within the catch basin.
	Sediment	Sediment (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of 6 inches clearance from the sediment surface to the invert of the lowest pipe.	No sediment in the catch basin
	Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch (Intent is to make sure no material is running into basin).	Top slab is free of holes and cracks.
		Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached	Frame is sitting flush on the riser rings or top slab and firmly attached.
	Fractures or Cracks in Basin Walls/ Bottom	Maintenance person judges that structure is unsound.	Basin replaced or repaired to design standards.
		Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.	Pipe is regouted and secure at basin wall.
	Settlement/ Misalignment	If failure of basin has created a safety, function, or design problem.	Basin replaced or repaired to design standards.
Vegetation	Vegetation growing across and blocking more than 10% of the basin opening.	No vegetation blocking opening to basin.	
	Vegetation growing in inlet/outlet pipe joints that is more than six inches tall and less than six inches apart.	No vegetation or root growth present.	

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**No. 5 – Catch Basins (Continued)**

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is performed
	Contamination and Pollution	See "Detention Ponds" (No. 1).	No pollution present.
Catch Basin Cover	Cover Not in Place	Cover is missing or only partially in place. Any open catch basin requires maintenance.	Catch basin cover is closed
	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread.	Mechanism opens with proper tools.
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure.  (Intent is keep cover from sealing off access to maintenance.)	Cover can be removed by one maintenance person.
Ladder	Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges.	Ladder meets design standards and allows maintenance person safe access.
Metal Grates (If Applicable)	Grate opening Unsafe	Grate with opening wider than 7/8 inch.	Grate opening meets design standards.
	Trash and Debris	Trash and debris that is blocking more than 20% of grate surface inletting capacity.	Grate free of trash and debris.
	Damaged or Missing.	Grate missing or broken member(s) of the grate.	Grate is in place and meets design standards.

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## DEBRIS BARRIERS/TRASH RACKS

### No. 6 – Debris Barriers (e.g., Trash Racks)

Maintenance Components	Defect	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
General	Trash and Debris	Trash or debris that is plugging more than 20% of the openings in the barrier.	Barrier cleared to design flow capacity.
Metal	Damaged/ Missing Bars.	Bars are bent out of shape more than 3 inches.	Bars in place with no bends more than 3/4 inch.
		Bars are missing or entire barrier missing.	Bars in place according to design.
		Bars are loose and rust is causing 50% deterioration to any part of barrier.	Barrier replaced or repaired to design standards.
	Inlet/Outlet Pipe	Debris barrier missing or not attached to pipe	Barrier firmly attached to pipe

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## ENERGY DISSIPATER

### No. 7 – Energy Dissipaters

Maintenance Components	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
External:			
Rock Pad	Missing or Moved Rock	Only one layer of rock exists above native soil in area five square feet or larger, or any exposure of native soil.	Rock pad replaced to design standards.
	Erosion	Soil erosion in or adjacent to rock pad.	Rock pad replaced to design standards.

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## BIOFILTRATION SWALE

### No. 8 – Typical Biofiltration Swale

Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Recommended Maintenance to Correct Problem
General	Sediment Accumulation on Grass	Sediment depth exceeds 2 inches.	Remove sediment deposits on grass treatment area of the bio-swale. When finished, swale should be level from side to side and drain freely toward outlet. There should be no areas of standing water once inflow has ceased.
	Standing Water	When water stands in the swale between storms and does not drain freely.	Any of the following may apply: remove sediment or trash blockages, improve grade from head to foot of swale, remove clogged check dams, add underdrains or convert to a wet biofiltration swale.
	Flow spreader	Flow spreader uneven or clogged so that flows are not uniformly distributed through entire swale width.	Level the spreader and clean so that flows are spread evenly over entire swale width.
	Constant Baseflow	When small quantities of water continually flow through the swale, even when it has been dry for weeks, and an eroded, muddy channel has formed in the swale bottom.	Add a low-flow pea-gravel drain the length of the swale or by-pass the baseflow around the swale.
	Poor Vegetation Coverage	When grass is sparse or bare or eroded patches occur in more than 10% of the swale bottom.	Determine why grass growth is poor and correct that condition. Re-plant with plugs of grass from the upper slope; plant in the swale bottom at 8-inch intervals. Or re-seed into loosened, fertile soil.
	Vegetation	When the grass becomes excessively tall (greater than 10-inches); when nuisance weeds and other vegetation starts to take over.	Mow vegetation or remove nuisance vegetation so that flow not impeded. Grass should be mowed to a height of 3 to 4 inches. Remove grass clippings.
	Excessive Shading	Grass growth is poor because sunlight does not reach swale.	If possible, trim back over-hanging limbs and remove brushy vegetation on adjacent slopes.
	Inlet/Outlet	Inlet/outlet areas clogged with sediment and/or debris.	Remove material so that there is no clogging or blockage in the inlet and outlet area.
	Trash and Debris Accumulation	Trash and debris accumulated in the bio-swale.	Remove trash and debris from bioswale.
	Erosion/Scouring	Eroded or scoured swale bottom due to flow channelization, or higher flows.	For ruts or bare areas less than 12 inches wide, repair the damaged area by filling with crushed gravel. If bare areas are large, generally greater than 12 inches wide, the swale should be re-graded and re-seeded. For smaller bare areas, overseed when bare spots are evident, or take plugs of grass from the upper slope and plant in the swale bottom at 8-inch intervals.

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## STORMFILTER

### No. 15 – Stormfilter™ ~~(leaf compost filter)~~

Maintenance Component	Defect	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed	
Below Ground Vault	Sediment Accumulation on Media.	Sediment depth exceeds 0.25-inches.	No sediment deposits which would impede permeability of the compost media.	
	Sediment Accumulation in Vault	Sediment depth exceeds 6-inches in first chamber.	No sediment deposits in vault bottom of first chamber.	
	Trash/Debris Accumulation	Trash and debris accumulated on compost filter bed.	Trash and debris removed from the compost filter bed.	
	Sediment in Drain Pipes/Clean-Outs	When drain pipes, clean-outs, become full with sediment and/or debris.	Sediment and debris removed.	
	Damaged Pipes	Any part of the pipes that are crushed or damaged due to corrosion and/or settlement.	Pipe repaired and/or replaced.	
	Access Cover Damaged/Not Working	Cover cannot be opened; one person cannot open the cover using normal lifting pressure, corrosion/deformation of cover.	Cover repaired to proper working specifications or replaced.	
	Vault Structure Includes Cracks in Wall, Bottom, Damage to Frame and/or Top Slab		Cracks wider than 1/2-inch or evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determine that the vault is not structurally sound.	Vault replaced or repairs made so that vault meets design specifications and is structurally sound.
			Cracks wider than 1/2-inch at the joint of any inlet/outlet pipe or evidence of soil particles entering through the cracks.	Vault repaired so that no cracks exist wider than 1/4-inch at the joint of the inlet/outlet pipe.
	Baffles	Baffles corroding, cracking warping, and/or showing signs of failure as determined by maintenance/inspection person.	Baffles repaired or replaced to specifications.	
Access Ladder Damaged	Ladder is corroded or deteriorated, not functioning properly, not securely attached to structure wall, missing rungs, cracks, and misaligned.	Ladder replaced or repaired and meets specifications, and is safe to use as determined by inspection personnel.		
Below Ground Cartridge Type	<del>Compost</del> Media ZPG	Drawdown of water through the media takes longer than 1 hour, and/or overflow occurs frequently.	Media cartridges replaced.	
	Short Circuiting	Flows do not properly enter filter cartridges.	Filter cartridges replaced.	



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**Important: Inspection should be performed by a person who is familiar with the StormFilter treatment unit.**

**StormFilter Maintenance Guidelines**

Maintenance requirements and frequency are dependent on the pollutant load characteristics of each site, and may be required in the event of a chemical spill or due to excessive sediment loading.

**Maintenance Procedures**

Although there are other effective maintenance options, CONTECH recommends the following two step procedure:

1. Inspection: Determine the need for maintenance.
2. Maintenance: Cartridge replacement and sediment removal.

**Inspection and Maintenance Activity Timing**

At least one scheduled inspection activity should take place per year with maintenance following as warranted.

First, inspection should be done before the winter season. During which, the need for maintenance should be determined and, if disposal during maintenance will be required, samples of the accumulated sediments and media should be obtained.

Second, if warranted, maintenance should be performed during periods of dry weather.

In addition, you should check the condition of the StormFilter unit after major storms for potential damage caused by high flows and for high sediment accumulation. It may be necessary to adjust the inspection/maintenance activity schedule depending on the actual operating conditions encountered by the system.

Generally, inspection activities can be conducted at any time, and maintenance should occur when flows into the system are unlikely.

**Maintenance Activity Frequency**

Maintenance is performed on an as needed basis, based on inspection. Average maintenance lifecycle is 1-3 years. The primary factor controlling timing of maintenance of the StormFilter is sediment loading. Until appropriate timeline is determined, use the following:

**Inspection:**

- One time per year
- After major storms

**Maintenance:**

- As needed
- Per regulatory requirement
- In the event of a chemical spill

**Inspection Procedures**

It is desirable to inspect during a storm to observe the relative flow through the filter cartridges. If the submerged cartridges are severely plugged, then typically large amounts of sediments will be present and very little flow will be discharged from the drainage pipes. If this is the case, then maintenance is warranted and the cartridges need to be replaced.

**Warning:** In the case of a spill, the worker should abort inspection activities until the proper guidance is obtained. Notify the local hazard control agency and CONTECH immediately.

To conduct an inspection:

1. If applicable, set up safety equipment to protect and notify surrounding vehicle and pedestrian traffic.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the access portals to the vault and allow the system vent.
4. Without entering the vault, visually inspect the inside of the unit, and note accumulations of liquids and solids.
5. Be sure to record the level of sediment build-up on the floor of the vault, in the forebay, and on top of the cartridges. If flow is occurring, note the flow of water per drainage pipe. Record all observations. Digital pictures are valuable for historical documentation.
6. Close and fasten the access portals.
7. Remove safety equipment.
8. If appropriate, make notes about the local drainage area relative to ongoing construction, erosion problems, or high loading of other materials to the system.
9. Discuss conditions that suggest maintenance and make decision as to whether or not maintenance is needed.

**Maintenance Decision Tree**

The need for maintenance is typically based on results of the inspection. Use the following as a general guide. (Other factors, such as regulatory requirements, may need to be considered)

1. Sediment loading on the vault floor. If >4" of accumulated sediment, then go to maintenance.
2. Sediment loading on top of the cartridge. If >1/4" of accumulation, then go to maintenance.
3. Submerged cartridges. If >4" of static water in the cartridge bay for more that 24 hrs after end of rain event, then go to maintenance.
4. Plugged media. If pore space between media granules is absent, then go to maintenance.
5. Bypass condition. If inspection is conducted during an average rain fall event and StormFilter remains in bypass condition (water over the internal outlet baffle wall or submerged cartridges), then go to maintenance.
6. Hazardous material release. If hazardous material release (automotive fluids or other) is reported, then go to maintenance.
7. Pronounced scum line. If pronounced scum line (say ≥ 1/4" thick) is present above top cap, then go to maintenance.
8. Calendar Lifecycle. If system has not been maintained for 3 years, then go to maintenance.

**Assumptions:**

- No rainfall for 24 hours or more.
- No upstream detention (at least not draining into StormFilter).
- Structure is online. Outlet pipe is clear of obstruction. Construction bypass is plugged.

**Maintenance**

Depending on the configuration of the particular system, workers will be required to enter the vault to perform the maintenance.

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**Important:** If vault entry is required, OSHA rules for confined space entry must be followed.

Filter cartridge replacement should occur during dry weather. It may be necessary to plug the filter inlet pipe if base flow is occurring.

Replacement cartridges can be delivered to the site or customers facility. Contact CONTECH for more information.

**Warning:** In the case of a spill, the worker should abort maintenance activities until the proper guidance is obtained. Notify the local hazard control agency and CONTECH immediately.

To conduct cartridge replacement and sediment removal:

1. If applicable, set up safety equipment to protect workers and pedestrians from site hazards.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the doors (access portals) to the vault and allow the system to vent.
4. Without entering the vault, give the inside of the unit, including components, a general condition inspection.
5. Make notes about the external and internal condition of the vault. Give particular attention to recording the level of sediment build-up on the floor of the vault, in the forebay, and on top of the internal components.
6. Using appropriate equipment offload the replacement cartridges (up to 150 lbs. each) and set aside.
7. Remove used cartridges from the vault using one of the following methods:

**Method 1:**

- A. This activity will require that workers enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Unscrew (counterclockwise rotations) each filter cartridge from the underdrain connector. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

Using appropriate hoisting equipment, attach a cable from the boom, crane, or tripod to the loose cartridge. Contact CONTECH for suggested attachment devices.

**Important:** Cartridges containing leaf media (CSF) do not require unscrewing from their connectors. Do not damage the manifold connectors. They should remain installed in the manifold and can be capped during the maintenance activity to prevent sediments from entering the under drain manifold.

- B. Remove the used cartridges (up to 250 lbs.) from the vault.

**Important:** Avoid damaging the cartridges during removal and installation.

- C. Set the used cartridge aside or load onto the hauling truck.
- D. Continue steps A through C until all cartridges have been removed.

**Method 2:**

- A. Enter the vault using appropriate confined space protocols.
- B. Unscrew the cartridge cap.
- C. Remove the cartridge hood screws (3) hood and float.
- D. At location under structure access, tip the cartridge on its side.

**Important:** Note that cartridges containing media other than the leaf media require unscrewing from their threaded connectors. Take care not to damage the manifold connectors. This connector should remain installed in the manifold and capped if necessary.

- E. Empty the cartridge onto the vault floor. Reassemble the empty cartridge.
- F. Set the empty, used cartridge aside or load onto the hauling truck.
- G. Continue steps a through E until all cartridges have been removed.
8. Remove accumulated sediment from the floor of the vault and from the forebay. Use vacuum truck for highest effectiveness.
9. Once the sediments are removed, assess the condition of the vault and the connectors. The connectors are short sections of 2-inch schedule 40 PVC, or threaded schedule 80 PVC that should protrude about 1" above the floor of the vault. Lightly wash down the vault interior.
  - a. Replace any damaged connectors.
10. Using the vacuum truck boom, crane, or tripod, lower and install the new cartridges. Take care not to damage connections.
11. Close and fasten the door.
12. Remove safety equipment.
13. Finally, dispose of the accumulated materials in accordance with applicable regulations. Make arrangements to return the used empty cartridges to CONTECH.

**Material Disposal**

The accumulated sediment must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals. Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads.

Sediments and water must be disposed of in accordance with applicable waste disposal regulations. Coordinate disposal of solids and liquids as part of your maintenance procedure. Contact the local public works department to inquire how they disposes of their street waste residuals.

RANGE	TOWNSHIP	SECTION	QUARTER	SERIAL NUMBER	PAGE NUMBER
04E	19 N	04	03	020	51/57
DOCUMENT NUMBER				SERIAL NUMBER	PAGE NUMBER

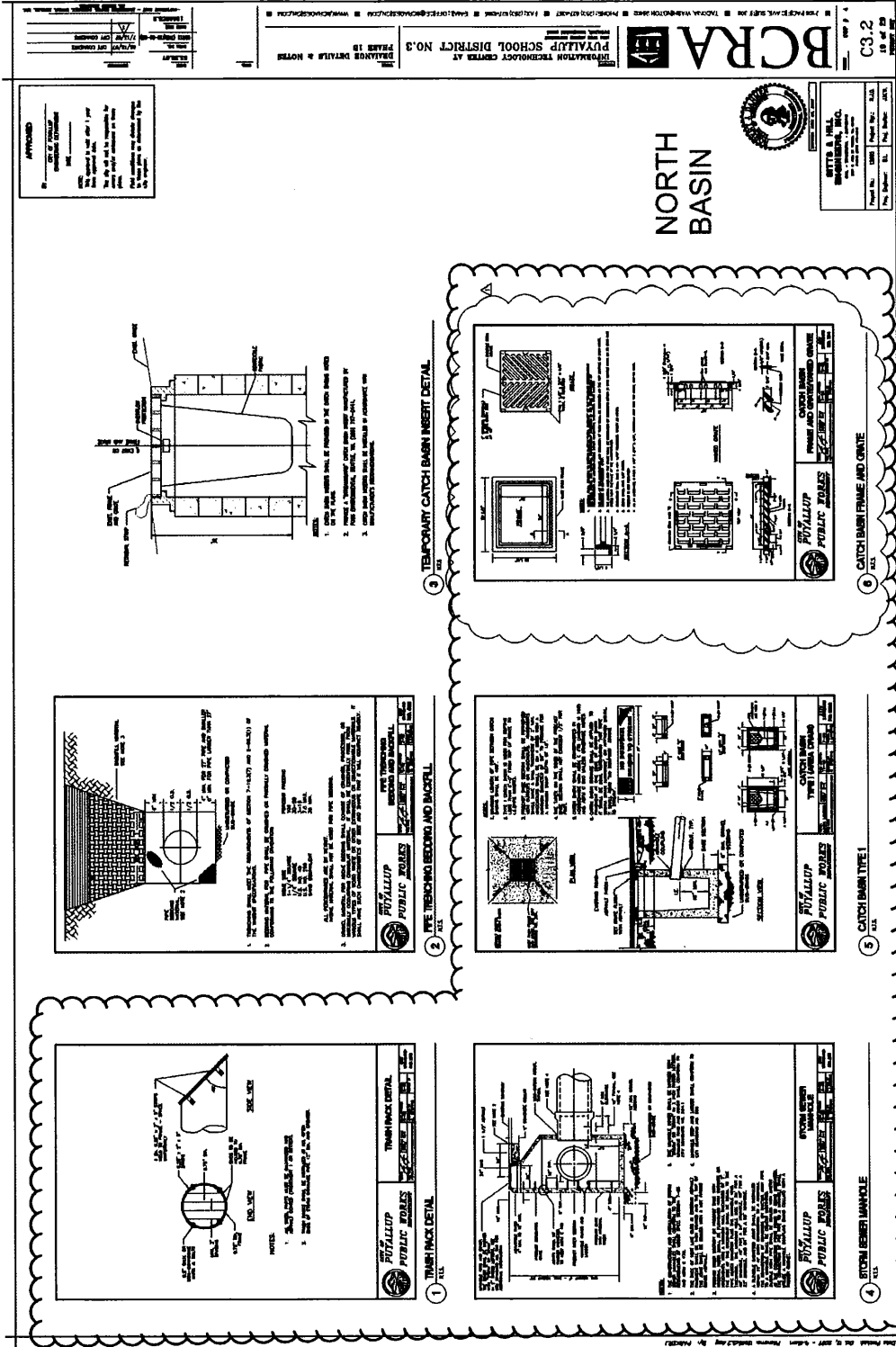
Operation & Maintenance Manual  
 For Stormwater Facilities located at Puyallup School District ITC/South Hill Transportation  
 Center/Central Kitchen/Warehouse Site, 1501 39<sup>th</sup> Avenue SW, Puyallup, WA 98373

**APENDIX C – OVERALL SITE STORMWATER FACILITY MAP FOR  
 1501 39<sup>TH</sup> AVENUE SW, PUYALLUP, WA 98373**

RANGE	TOWNSHIP	SECTION	QUARTER	SERIAL NUMBER	PAGE NUMBER
00E	19 N	04	03	020	57/57

Operation & Maintenance Manual  
For Stormwater Facilities located at Puyallup School District ITC/South Hill Transportation  
Center/Central Kitchen/Warehouse Site, 1501 39<sup>th</sup> Avenue SW, Puyallup, WA 98373

## APPENDIX D - NORTH BASIN DRAWINGS



**1 NORTH BASIN RETENTION POND**  
SCALE: 1/2" = 1'-0"

**2 STORM DRAINAGE STRUCTURE/OIL POLLUTION CONTROL DEVICE**

**3 FREESTANDING WALL FILTER**

**NORTH BASIN**

**RECOMMENDATION:**

1. The structure shall be constructed and finished in accordance with the City Standard Specifications for Construction.
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**4. APPROVED:**

\_\_\_\_\_  
 PROJECT ENGINEER

\_\_\_\_\_  
 PROJECT SUPERVISOR

**BCRA**

OPERATIONAL TECHNOLOGY CENTER AT PUYALLUP SCHOOL DISTRICT NO. 3

3833 11th St SW, Puyallup, WA 98373

PH: 253-863-3100 FAX: 253-863-3101

WWW.BCRA-WA.COM

**MANHOLE RING AND COVER**

**MANHOLE RING AND COVER**

1. The cover shall be made of cast iron or equivalent material and shall be of the standard design shown on the drawing. The cover shall be of the type that will not become dislodged by the passage of a vehicle over it.

2. The cover shall be of the type that will not become dislodged by the passage of a vehicle over it.

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**MANHOLE STOP AND LADDER**

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**ENTIRE SHEET ADDED**

**WATER QUALITY VAULT AREA DETAIL FROM CS10**

**MANHOLE RING AND COVER**

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**NORTH BASIN**



**RECORD DRAWINGS**

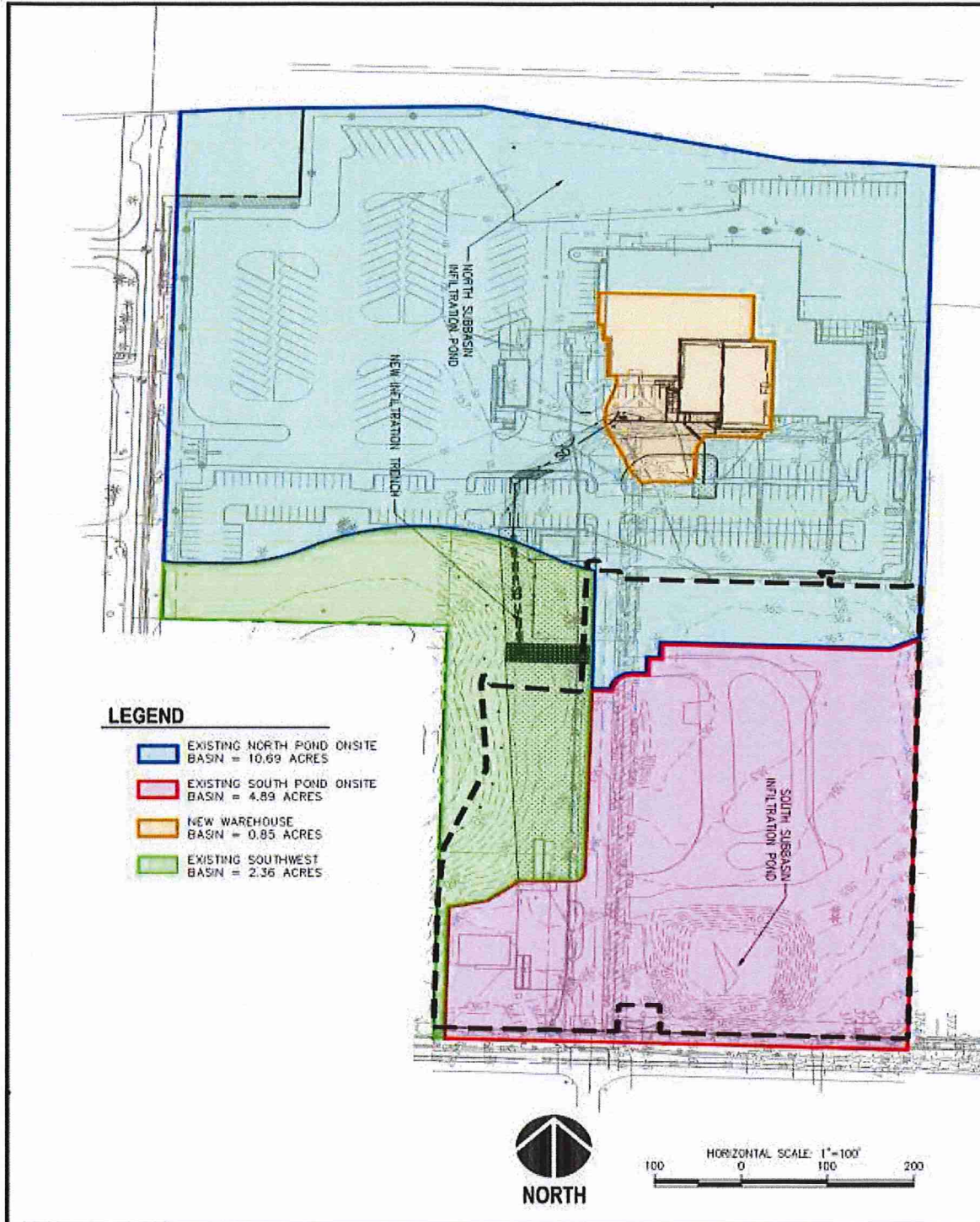
**BITTS & MULL**  
 ENGINEERS, INC.  
 1501 39<sup>th</sup> Avenue SW  
 Puyallup, WA 98373  
 Project No. 2008-0001  
 Date: 08/11/11  
 Scale: As Shown

**BCRA**  
 BAY COUNTY REGIONAL AUTHORITY  
 PUYALLUP SCHOOL DISTRICT #3  
 PLANS 18  
 C3.4  
 11 of 29

DATE	BY	APP'D

EXHIBIT C

ILLUSTRATIVE MAP OF DISTRICT STORMWATER BASINS





RANGE	TOWNSHIP	SECTION	QUARTER	
04E	19N	04	03	020 57/57
DOCUMENT NUMBER			SERIAL PAGE NUMBER	

EXHIBIT D

ILLUSTRATIVE MAP OF PORTION OF 17<sup>TH</sup> STREET SOUTHWEST  
(Contributory Area)

