SPOKANE COUNTY
STORMWATER MANAGEMENT PROGRAM
2022 PLAN

Eastern Washington Phase II Municipal Stormwater Permit
Permit WAR 04-6506

Permit Cycle – August 1, 2019, to July 31, 2024

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INTRODUCTION

1.1 Background

"Stormwater runoff is a leading pollution threat to lakes, rivers, streams, and marine water bodies in urbanized areas of Washington State... In urban areas, the large amount of impervious surfaces interrupts infiltration and groundwater recharge, concentrates surface flows, and increases the frequency and quantity of runoff sent to receiving waters." – Fact Sheet for the Phase 1, Western Washington Phase II, and Eastern Washington Phase II Municipal Stormwater Permits. Washington State Department of Ecology, August 15, 2018.

Since the passing of the Clean Water Act in 1972, national and regional water pollution control efforts have focused primarily on point source water discharges from facilities such as industrial sites and wastewater treatment plants. Recognizing that nonpoint source discharges may contribute to water pollution, the Environmental Protection Agency (EPA) promulgated a rule in 1999 that requires urbanized municipalities with populations fewer than 100,000 people (where population density is greater than 1,000 persons per square mile) to develop a Stormwater Management Program addressing runoff that discharges to surface waters.

The Washington State Department of Ecology (Ecology) enforces federal environmental programs in the state of Washington, regulating municipalities through the National Pollution Discharge Elimination System (NPDES). Ecology also implements the State of Washington Water Pollution Control Law (chapter 90.48 RCW), which addresses discharges to groundwater as well as surface waters of the state; the requirements of both sets of regulations are incorporated into the Eastern Washington Phase II Municipal Stormwater Permit, which is issued and enforced by the Washington State Department of Ecology. Spokane County (County) was issued coverage under the Eastern Washington Phase II Municipal Stormwater Permit ( Permit)¹, Permit No. WAR 04-6506, effective February 16, 2007. The Permit is renewed every five years,

with the most recent version of the Permit taking effect on August 1, 2019, and expiring on July 31, 2024.

The Permit authorizes stormwater discharges from the regulated Municipal Separate Storm Sewer System\(^2\) to Waters of the State under the condition that no discharge shall cause a violation of water quality standards in the receiving waters. This includes both surface waters and groundwater. Drywells, which discharge stormwater below the ground, are legally referred to as Underground Injection Control (UIC) wells, and are regulated under the State of Washington’s Underground Injection Control Program (Chapter 173-218 WAC)\(^3\). To use resources efficiently, Spokane County includes the municipal UICs in its Stormwater Management Program (SWMP) due to their interconnectivity with Permit-regulated structures, and the requirements pertaining to monitoring, maintenance, and spill response.

1.2 Purpose

The purpose of this Stormwater Management Program Plan (Plan) is to describe the programs and practices used by the County to operate and maintain the Municipal Separate Storm Sewer System (MS4), to operate and maintain municipal UICs, and to implement related Permit programs. This Plan:

- is updated annually to describe upcoming Permit year activities;
- describes on-going programs in place to comply with Permit conditions;
- outlines staffing and funding responsibilities for Permit programs; and
- applies to the 5-year duration of the current Permit cycle (expiring July 31, 2024).

Spokane County’s Stormwater Management Program is designed to uphold the County’s long-term commitment to minimizing pollutants discharged to Waters of Washington State.

1.3 Authorization

This Plan was prepared by the Spokane County Stormwater Utility (Stormwater Utility), a section within the Spokane County Department of Public Works. The Stormwater Utility was established by the Board of County Commissioners in 1992 and funded through the Stormwater Rate Ordinance passed by the Board during that year. Section 2 of this Plan details the administrative and legal authority given to the County to carry out the responsibilities of the Permit. Although the Stormwater Utility is the lead entity on Permit management, the work of many County departments is necessary to meet Permit requirements. Appendix 2A of this Plan details internal coordination and program administration.

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\(^2\) A Municipal Separate Storm Sewer system is the municipally owned stormwater conveyance system including curbs, roads, catch basins, etc. and it is not connected to the sanitary sewer system.

\(^3\) The UIC Program requires jurisdictions to manage drywells through one of three approaches: include drywell operations and management in the jurisdiction’s Stormwater Management Program as a whole, create and implement a separate and distinct Stormwater Management Program for municipal drywells, or create a stormwater site plan for each individual municipal drywell.
1.4 Area of Coverage

The area subject to the Permit is defined by Special Condition S1.A.2 of the Permit:

“For all Counties required to obtain coverage under this Permit, the geographic area of coverage is the urbanized areas and the unincorporated urban growth areas associated with permitted Cities within the urbanized areas that are under the jurisdictional control of the County. The geographic area of coverage also includes any urban growth areas that are contiguous to urbanized areas that are under the jurisdictional control of the County.” – Eastern Washington Phase II Municipal Stormwater Permit. Washington State Department of Ecology, July 1, 2019.

Consistent with this language, the activities described in this Plan will be conducted within the urban growth areas of Spokane County. A map of the Spokane County NPDES Permit coverage area is included as an appendix to this section (Appendix 1A). If conditions exist where a watershed contributing runoff to the regulated MS4 extends beyond the urban growth area boundary, SWMP activities will also be conducted in the extended watershed area.

This Plan applies to the areas served by municipally owned or operated UICs in Spokane County; that is, the area contributing stormwater runoff to the drywell.

Coordination with the municipalities of the City of Spokane and the City of Spokane Valley helps all parties to reach stormwater-related goals. Ecology particularly encourages coordination such as this amongst Permittees for development and implementation of programs involving Public Education and Outreach, stormwater-related policies, and projects within adjoining shared areas.

1.5 Reporting Period

The requirements addressed in this Plan apply to the 5-year effective period of the Permit, valid from August 1, 2019, to July 31, 2024. The Permit requires annual reports for the following reporting periods:


This Plan outlines program goals for the 2022 calendar year

1.6 Required Stormwater Management Program Components

The EPA’s NPDES Program, which is encompassed by Title 40 of Federal Regulations, establishes six essential SWMP components. To the extent allowable under state and federal law, the following components are mandatory for each Permittee covered under the Permit:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination (IDDE)
4. Construction Site Stormwater Runoff Control
5. Post-Construction Stormwater Management for New Development and Redevelopment
6. Municipal Operations and Maintenance (O&M)

Additional requirements are detailed in Special Conditions 7-9 of the Permit and address the following:

7. Compliance with Total Maximum Daily Load (TMDL) Requirements
8. Monitoring and Assessment
9. Reporting and Recordkeeping

This Plan is organized according to these required program components which may be found in Special Conditions S5.B, S7, S8, and S9 of the Eastern Washington Phase II Municipal Stormwater Permit. This Plan is published concurrently with the County’s submittal of its Annual Report to Ecology, and many sections within this Plan provide additional details to responses to the Annual Report Questions for Cities, Towns, and Counties (Permit Appendix 3). The County’s Annual Report is posted on its website at Water Quality and Permits | Spokane County, WA (https://www.spokanecounty.org/5100/Water-Quality-and-Permits) in the National Pollutant Discharge Elimination System (NPDES) section.
2 – STORMWATER MANAGEMENT PROGRAM ADMINISTRATION

2.1 Introduction

This section documents the County’s legal authority to conduct Stormwater Management Program activities and the County’s means for establishing further authority as Permit changes occur. This section also describes coordination mechanisms for Permit administration.

2.2 Spokane County – Stormwater Utility and Internal Coordination

The Stormwater Utility was formed in 1992 to prepare and to implement stormwater basin management plans. The Stormwater Utility is funded through stormwater service charges which are calculated by quantifying the impervious surface area on developed parcels. On January 17, 2006, the Board of County Commissioners adopted the Comprehensive Stormwater Management Plan along with individual Capital Improvement Plans for the Glenrose, North Spokane, and West Plains basins. Each individual basin plan emphasizes protection of natural drainage features as the most cost-effective and environmentally conscientious means of stormwater management. More information about the Stormwater Utility as well as Spokane County’s Comprehensive Stormwater Management Plan may be found at: Background & History | Spokane County, WA (https://www.spokanecounty.org/928/History-of-the-Stormwater-Utility).

While the Stormwater Utility is the lead entity for addressing stormwater concerns within the unincorporated areas of Spokane County, multiple County departments perform essential activities to operate and maintain the Municipal Separate Storm Sewer System. The following table lists the departments within the County that coordinate to meet Permit requirements and more information may be found in Appendix 2A.

<table>
<thead>
<tr>
<th>Permit Condition</th>
<th>Title</th>
<th>Contributing Departments</th>
</tr>
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| G3               | Notification of Discharge Including Spills | • Stormwater Utility  
• Environmental Services  
• Roads Maintenance  
• Facilities  
• Parks, Recreation, and Golf  
• Risk Management |
| G4               | Bypass Prohibited | • Stormwater Utility  
• Environmental Programs  
• Roads Maintenance  
• Bridge Maintenance  
• Capital Projects |
| G10              | Removed Substances | • Stormwater Utility  
• Operations and Maintenance |
| G19              | Certification and Signature | • Stormwater Utility  
• Chief Executive Officer |
| G20              | Non-Compliance Notification | • Public Works |
| S5.B.1 | Public Education and Outreach | - Stormwater Utility  
- Water Resources  
- Public Information and Outreach  
- Regional Solid Waste System |
|--------|-------------------------------|--------------------------------------------------|
| S5.B.2 | Public Involvement and Participation | - Stormwater Utility  
- Building and Planning  
- Information Technology  
- Public Information and Outreach  
- Spokane County Commissioners |
| S5.B.3 | Illicit Discharge Detection and Elimination | - Public Works  
- Building and Planning  
- Environmental Services  
- County Assessor  
- County Auditor  
- Information Technology  
- Purchasing  
- Risk Management  
- Spokane County Commissioners  
- Prosecuting Attorney |
| S5.B.4 | Construction Site Stormwater Runoff Control | - Stormwater Utility  
- Development Services  
- Building and Planning  
- Information Technology  
- Spokane County Commissioners  
- Prosecuting Attorney |
| S5.B.5 | Post-Construction Stormwater Management for New Development and Redevelopment | - Stormwater Utility  
- Development Services  
- Building and Planning  
- Information Technology  
- Spokane County Commissioners |
| S5.B.6 | Municipal Operations and Maintenance | - Public Works  
- Environmental Services  
- Parks, Recreation, and Golf  
- Facilities Maintenance  
- Fair and Expo Center |
| S8 | Monitoring and Assessment | - Stormwater Utility |
| S9 | Reporting | - Stormwater Utility  
- Information Technology  
- Chief Executive Officer |
2.3 Legal Authority

The Stormwater Management Program applies to aspects of peoples’ everyday activities, such as traveling County roads; financial decisions, like the purchase or construction of a house; and the preservation of the natural landscape for recreational use and resource protection. With such broad application, sufficient legal authority is necessary to implement the SWMP and achieve standards set by the Washington State Department of Ecology and for the residents of Spokane County.

Since stormwater management addresses runoff from impervious surfaces in urbanized areas, legal authority is needed to regulate the creation, maintenance, and use of these built surfaces. Protection of water quality is required by numerous Washington State RCW and WAC sections, as well as Federal regulations, which in turn are incorporated into Spokane County ordinances and other legal mechanisms discussed below.

Spokane County has adopted engineering design standards and stormwater Best Management Practices (BMPs) as described within the Spokane Regional Stormwater Manual (SRSM). The SRSM was approved by the Board of County Commissioners on April 15, 2008, and became law on June 1, 2008, replacing the existing Spokane County – Guidelines for Stormwater Management. The SRSM is considered included as part of the Spokane County Code of Ordinances as stated in Chapter 9.14.010. In 2020 the SRSM was deemed “technically equivalent” to the Core Elements of Appendix 1 of the 2019 Municipal Permit and to the Core Elements of Chapter 2 in the 2019 Stormwater Management Manual for Eastern Washington (SWMMEW). The City of Spokane, City of Spokane Valley, and Spokane County have completed revisions to the 2008 edition of the SRSM and these updates are currently under review by Ecology. After Ecology’s evaluation of the SRSM, it will go through the legal proceedings for approval and acceptance by the three regional jurisdictions.

Spokane County Code of Ordinances, Title 9, Roads and Bridges, Chapter 14 – Roads, Approach, and Drainage in New Construction, is the primary reference document for stormwater management standards for new construction, which is defined as projects applying for County approval January 1, 1981, or later (9.14.340). Amendments to Chapter 9.14 were developed and approved in 2008 (Resolution No. 09-0672) to amend illicit discharge regulations and include:

- prohibition of illicit discharges to the MS4;
- spill control, dumping, and disposal of materials other than stormwater to the MS4;
- compliance with conditions in ordinances related to stormwater discharges; and
- inspection and monitoring procedures necessary to determine compliance and to enforce the prohibition of illicit discharges to the MS4.

In addition to the regulatory mechanisms to protect water quality that are found in Title 9, Spokane County Code Title 8, Health and Sanitation, also includes various sections that address surface water protection, waste disposal, and illicit discharges within Spokane County. The

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4 [https://library.municode.com/wa/spokane_county/codes/code_of_ordinances](https://library.municode.com/wa/spokane_county/codes/code_of_ordinances)

chapter addresses notices of violation, enforcement, and penalty as well. Relevant chapters include Chapter 8.03 – Sanitary Sewer, Chapter 8.26 – Litter and Discriminate Dumping, and Chapter 8.26.020 – Litter in General.

2.4 Additional Required Legal Authority

Spokane County is required to evaluate legal authority following new legislation or executive action, such as the enactment of new Permit requirements. If review of current regulations and ordinances identifies deficiencies in the ability to implement stormwater management programs, the stormwater utility works with the County legal team to draft new ordinances and present them to the Board of County Commissioners for approval. In 2022, Spokane County will review ordinances relating to Illicit Discharge Detection and Elimination, Construction Site Stormwater Runoff Control, and Post-Construction Stormwater Management for New Development and Redevelopment. Please see sections 5, 6, and 7 of this Plan for additional information regarding these topics.

2.5 Stormwater Utility Funding

As the lead entity on NPDES Permit implementation, the Stormwater Utility is the primary financer of the County NPDES program. Stormwater fees are collected throughout the Stormwater Service Area to finance maintenance activities, design, construction, staff time, Permit program implementation, and other Utility programs. County Code Chapter 9.70 – Charges for Stormwater Management and Benefits, details the stormwater rate structure utilized by the County. Staffing and funding for each SWMP element is further detailed in each chapter of this Plan.

Spokane County receives additional funding through grant programs offered by state and federal organizations. Ecology’s Stormwater Capacity Grant assists municipalities in Permit implementation, providing funding on a recurring two-year cycle. The current Capacity Grant application was filed in 2021 and is currently in review by Ecology. If issued, the anticipated grant amount is $70,000 and may be utilized for qualifying projects through March 31, 2023. Additional grants include Washington State’s Stormwater Financial Assistance Program (SFAP), which assists municipalities with large scale retrofit and construction projects. Ecology evaluates submitted project proposals, ranks submissions based on multiple factors, and then distributes available funding following a negotiation period. Funding for this program is allocated by the Washington State legislature on a biennial basis.

2.6 Performance Standards and Training

Spokane County enforces guidelines set by two concurring regional stormwater manuals: the Stormwater Management Manual for Eastern Washington (SWMMEW) and the Spokane Regional Stormwater Manual (SRS). These manuals serve as the primary guidance documents for information pertaining to the design, operation, and maintenance of stormwater treatment and

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6 A map of the Stormwater Service Area is included as Appendix 2B.
disposal structures. Training materials are developed following regulatory changes such as new Permit requirements or manual revisions.

In 2013, the Eastern Washington Low Impact Development (LID) Guidance Manual was developed as a supplemental guidance for the design, construction, and maintenance of LID stormwater Best Management Practices (BMPs). Spokane County worked in conjunction with Eastern Washington municipalities, the Washington Stormwater Center, consultants, Ecology, and regional LID experts on the implementation of this manual, which is now included in the SWMMEW. Information regarding LID is addressed in the SRSM updates as well.

Spokane County incorporates elements of Washington Department of Transportation’s Highway Runoff Manual (HRM) into stormwater management, planning, and design. The HRM is a Washington State guidance manual that establishes minimum design and maintenance requirements for highways, highway maintenance facilities, parking lots, and related highway infrastructure.

2.7 Annual Administrative Objectives

As with all municipal agencies, Spokane County seeks to conduct its work in the most efficient way possible, including SWMP activities and their administration. In 2022, the County plans to:

- Review County Ordinance 9.14 Roads, Approach, and Drainage in New Construction for Permit requirement equivalency. Illicit discharge detection and elimination; construction site stormwater runoff control; and permanent stormwater control BMP design, installation, and maintenance will be the focus of this process.
- Review departmental responsibility for Permit programs and compliance activities. This involves Building and Planning, Facilities Management, Parks and Recreation, the County Prosecutor’s office, Public Works, and Risk Management. This includes operational procedures, training, record keeping, and reporting.
1. Permit Requirements

The 2019 Eastern Washington Phase II Municipal Stormwater Permit Special Condition S5.A.6.b is:

“The [Stormwater Management Program] shall ... include coordination mechanisms among departments within each jurisdiction to eliminate barriers to compliance with the terms of this Permit. Permittees shall include a written description of internal coordination mechanisms in the Annual Report, due no later than March 31, 2021.”

By enumerating Permit requirements and identifying the relevant departments and their contributions to Permit compliance, Spokane County hereby meets this Permit condition. This report was initially submitted on March 30, 2021, in compliance with condition S5.A.6.b; this second edition provides additional details.

2. County Department Involvement

For coordination of Spokane County’s NPDES Municipal Stormwater Permit compliance actions, the Stormwater Utility, a section within the Spokane County Department of Public Works, performs a function similar to that of a Lead Agency. As such, Stormwater Utility interacts with the Washington Department of Ecology to stay current with updates to Permit requirements and to receive guidance for Permit interpretation. Stormwater Utility then employs this knowledge to evaluate County programs associated with stormwater management and facilitate Permit compliance.

Nearly every department in Spokane County government plays a role in fulfilling the Municipal Stormwater Permit conditions. A detailed discussion of the listed departments’ roles will follow.

- Public Works
  - Stormwater Utility
  - Engineering and Roads
  - Development Services
  - Maintenance and Operations
  - Fleet Management
- Building and Planning
- Environmental Services
  - Regional Solid Waste System
  - Wastewater/Sewer
  - Water Resources
- Chief Officers
- Parks, Recreation, and Golf
- Facilities Maintenance
- Fair and Exposition Center
- Information Technology
- Communications
- Cooperative Extension
- Risk Management
- Purchasing
- Board of County Commissioners
  - Elected Officials
  - Assessor
  - Auditor
  - Clerk
  - Prosecuting Attorney
  - Emergency Management
  - Treasurer

Table 1 at the end of this document provides a summary of NPDES Permit sections, and the Spokane County departments primarily responsible for compliance with each section.
3. Coordination Efforts

3.1. General Conditions

3.1.1 G3 – Notification of Discharge Including Spills

In the case of a spill or illicit discharge, the Stormwater Utility has the responsibility to determine if there is interaction with the MS4. If so, Stormwater Utility acts to correct or minimize threat to human health, welfare, or the environment, and Stormwater Utility immediately notifies the Ecology regional office. If the reported or discovered spill or discharge is not into or from the MS4, Stormwater Utility relays the information to the appropriate department or agency. This is typically the Maintenance District, Environmental Services (sewer and waste management), or Risk Management/ Emergency Management, or an outside agency such as the regional Health District, the state Department of Fish and Wildlife, or the Washington Department of Ecology.

3.1.2 G4 – Bypass Prohibited

The implementation of training, field inspections, and inventory procedures serve to prohibit the bypass of existing treatment BMPs in the MS4. Stormwater Utility facilitates the provision of training to staff persons whose primary job responsibilities could lead them to encounter a prohibited bypass, including members of Operations and Maintenance, Development Services, and Stormwater Utility field technicians.

3.1.3 G10 – Removed Substances

Stormwater Utility facilitates the testing of the collected solids from MS4 maintenance to determine disposal protocols. Public Works Maintenance implements the disposal plan.

3.1.4 G19 – Certification and Signature

The Spokane County CEO is the Responsible Official for Permit submittals. Stormwater Utility oversees the process to designate duly authorized representatives to sign formal submittals to the Department of Ecology.

3.1.5 G20 – Non-Compliance Notification

If it is discovered that Spokane County is out of compliance with a Permit regulation, Stormwater Utility leads the creation of a plan to return to compliance, formally submits notice of non-compliance to Ecology, monitors or implements the correction plan, and notifies the Department of Ecology when compliance is restored. This requires Stormwater Utility to maintain communication with all of the other Spokane County departments that play roles in the fulfillment of Permit conditions. It also necessitates that the County Engineer, Commissioners, and associated officials substantiate the authority of the Stormwater Utility to involve itself in the operations of other County departments.
3.2. Special Conditions

3.2.1 S5.B – Stormwater Management Program Requirements

S5.B.1 – Public Education and Outreach

Special Condition S.5.B.1 requires education and outreach programs targeting specific audiences – the general public, businesses, and construction and design with their affiliated support industries.

The Water Resources section of Spokane County’s Environmental Services (wastewater) division provides a great deal of this program material for the general public, including school age children. Stormwater Utility provides funding, as well as staff and support for programs. The Master Gardeners at the Cooperative Extension Service serve as a consultable expert reference for the County’s Public Education and Outreach Residential Soil Test Kit program. The Cooperative Extension Service also provides information about water conservation practices to homeowners, which informally supports the County’s Public Education and Outreach work.

The Spokane County Regional Solid Waste department participates in the publication of the Spokane Kootenai Waste and Recycle Directory. This resource provides education to the general public and business audiences about the proper disposal of waste.

Spokane County Building and Planning provides educational materials to designers, contractors, builders, etc., when applications for development projects are made. For technical support, additional assistance, or further information, Building and Planning is able to refer the applicant to Stormwater Utility or to Development Services.

S5.B.2 – Public Involvement and Participation

There are three primary areas in which the provision of opportunities for public involvement and participation is facilitated by internal coordination.

Public Works hosts meetings to share municipal development plans with and receive input from the public. Spokane County’s participants in these meetings include members of all departments within Public Works, Building and Planning, and elected officials or their representatives. The County Communications department, as well as the Communications and Administrative sections within Public Works and other County departments, facilitate the logistics of these meetings – securing venues, publicizing meeting reports, issuing follow-up mailings, and so forth.

The Board of County Commissioners holds public hearings when code revisions are proposed, including stormwater-related aspects such as rate changes and service area adjustments. The office of the Board of Commissioners publicizes notice of these hearings and invites public attendance and comment.

Stormwater Utility compiles the Annual Report to Ecology and writes the County’s annual Stormwater Management Program Plan document and posts them both publicly on the Spokane County website. Webpage maintenance and information technology support is provided by the Information Technology department.
S5.B.3 – Illicit Discharge Detection and Elimination

This Permit section’s tasks are prevention, detection, characterization, tracing, and elimination of illicit connections and illicit discharges into the MS4.

Prevention manifests as system mapping and legal proscription against illicit discharge and illicit connections. MS4 mapping is a joint accomplishment between Stormwater Utility, IT, the County Assessor, and the County Auditor. The Auditor’s office is responsible for reliable recording of plats, engineering plans, covenants, and other legal agreements that dictate responsibility for stormwater management. These filings, in turn, shape how the Stormwater Utility represents and describes stormwater facilities in the MS4 map. The Assessor’s office reliably maintains the County’s parcels map. Parcel map characteristics include land use and zoning information and ownership, each relevant to complete MS4 mapping. Staff from Stormwater Utility collect field data for the MS4 map. Fleet Management supports their work by maintaining the vehicles used, and Purchasing facilitates the provision of field supplies and telecommunications service to the field crews. Coordination with Information Technology is the most essential aspect of successful MS4 mapping. IT maintains the network, troubleshoots the remote applications used by technicians, and works with members of Stormwater Utility to develop programs utilizing the map data for stormwater management tasks.

Spokane County Ordinances prohibiting illicit discharge and illicit connections were established in 2001, with subsequent updates in 2009 and 2016. Public Works generates ordinance content, which is then instated by Commissioners’ Resolution. Once in place, it is enforced by Public Works, Building and Planning, and the prosecuting attorneys.

Illicit Discharge and Illicit Connection detection has many components. Field screening is cooperatively performed by Environmental Services (wastewater/sewer), Operations and Maintenance, and Stormwater Utility. As staff persons with daily field operations, they are the individuals most likely to discover ICID. Stormwater Utility is responsible for providing training to these departments for successful recognition of illicit discharge or an illicit connection to the MS4. Stormwater Utility’s ability to perform land use evaluation depends on map data maintained by the County Assessor and computer programs and applications maintained by IT. Public Works’ administrative staff interact with the public and receive complaint reports, which are then used by Stormwater Utility to identify potential problem areas. County Outreach publicizes the spill hotline phone number to social media, and Water Resources includes the spill hotline number on numerous items distributed at outreach events, including pencils and children’s activity books.

If discovered, illicit discharge is characterized by staff of either Stormwater Utility or Environmental Services. Some laboratory work is possible through the facilities at the Spokane County Wastewater Reclamation Facility. Otherwise, work is done by a third-party agency. In these cases, the contract for laboratory services is facilitated by the Purchasing Department.

ICID are traced by members of the Stormwater Utility Department with the assistance and support of Operations and Maintenance, and Environmental Services. If source tracing were to require entry to private property, this right of entry established by County ordinance would be supported by County attorneys.

Elimination of contaminants from the MS4 is done by Stormwater Utility with the assistance of Public Works Operations and Maintenance staff and the support of the Purchasing Department.
when contracted operators’ services are used for waste disposal. When ICID elimination is sought by legal mechanisms, Building and Planning may deny a permit application, Public Works administration may issue a stop work order or issue fines, the Assessor may record a lien against a property, and the prosecuting attorney’s office may file action against a violator.

Illicit Discharge Detection and Elimination training is coordinated and tracked by the Stormwater Utility. Training is provided by Public Works staff or Facilities Maintenance.

Required records of ICID response are kept by the Stormwater Utility. IT maintains the network for file storage and its imaging department provides scanning services for record retention as needed.

**S.5.B.4 – Construction Site Stormwater Runoff Control**

Spokane County is required to initiate construction site runoff pollution reduction programs with prohibition through ordinances. Ordinances meeting these requirements were established in 1998 by Resolution of the County Commissioners. If amendments to existing ordinances are necessary, Public Works generates ordinance content, which is then instated by Commissioners’ Resolution. Once in place, it is enforced by Public Works, Building and Planning, and the prosecuting attorney.

Site plan review is performed by Building and Planning, and by Development Services within the Public Works Traffic and Transportation Department. Plans are reviewed for sufficiency of Stormwater Site Plans and pollution prevention BMPs to ensure that projects meet the standards documented in both the *Stormwater Management Manual for Eastern Washington* (SWMMEW) and *Spokane Regional Stormwater Manual* (SRSM). The same departments review plans under the same standards in the case of County Capital Improvement Projects.

Building and Planning tracks permit issuance and inspection records in SmartGov, a browser-based application for municipal operations. Development Services and Stormwater Utility can access existing records in SmartGov, as well as enter additional inspection information. The SmartGov application facilitates the coordination between both Public Works and Building and Planning’s administrators’ and field technicians’ work to ensure compliance with ESC requirements. Its operation is maintained by IT, and its content is accessible to other County departments.

Enforcement action, if necessary, is initiated by Stormwater Utility. Coordination with Development Services and Building and Planning allows for implementation of enforcement actions, such as stop-work orders and imposition of fines and penalties.

Internal training is led and tracked by Stormwater Utility; technical support is provided by IT.

Stormwater Utility provides information to the public about available trainings by means of directing individuals to the Department of Ecology’s CESCL training directory. Building and Planning does work related to this by providing brochures about erosion and sediment control to designers and developers at the time of application for a building permit and referring applicants to Stormwater Utility if they have further questions.

Plans, including construction site stormwater pollution prevention plans, are retained in physical format by Public Works and Building and Planning. The Information Technology imaging
technicians convert documents to digital form for archiving, and IT supports the network required for document preservation. Inspection and enforcement records are retained in SmartGov and in internal network files, enabling sharing among departments when coordinated response actions are needed.

S.5.B.5 – Post-Construction Stormwater Management for New Development and Redevelopment

The ordinances requiring post-construction stormwater management for new development and redevelopment were incorporated into County Code in 1980, with updates in 2001 and 2016. The content of these ordinances was composed by Engineering and Roads, Traffic and Transportation, and Stormwater Utility, with the support of the County’s attorneys. After review, the County Commissioners gave approval to the proposed ordinances. Enforcement is implemented by Stormwater Utility, Development Services, Public Works Administration, and the Assessor’s Office.

When Development Services reviews plans for private development, stormwater regulation conformity is evaluated. Development Services also distributes plans to other departments in Public Works for further review and comment, allowing coordination with Stormwater Utility. This interaction provides an opportunity for Stormwater Utility to share Permit requirement updates with Development Services and other departments within Public Works, which improves internal coordination.

Inspection of stormwater management facilities in new development is shared by Traffic and Transportation and Stormwater Utility. In the course of his inspection of new roads, the Traffic and Transportation Development Inspector also inspects new stormwater facilities during the construction phase and at the time of roads’ approval. After acceptance, Stormwater Utility assumes responsibility for inspections and coordination of maintenance.

Enforcement is fulfilled by Development Services during plan review and by Building and Planning during the construction/pre-acceptance phase. Plans are not approved for construction without suitable stormwater management, and building permits are not issued unless plans meet standards.

Within Public Works, Stormwater Utility distributes information about opportunities for training to staff whose tasks include plan review and inspection of post-construction stormwater management facilities.

Public Works Engineering and Roads Department, with the support of IT and the imaging department, maintains the records of new development and redevelopment projects, including inspection records and documentation of enforcement actions.

S.5.B.6 – Operations and Maintenance

Significant internal coordination among County departments enables fulfillment of the Permit’s Operations and Maintenance requirements. Facilities Maintenance; all departments within Public Works; the County Assessor; County Auditor; Parks, Recreation, and Golf; the Fair and Exposition Center; Risk Management; and Purchasing all play roles in meeting requirements.

The County’s Operations and Maintenance Plan applies to all of the County resources – the public
roadways, County-owned parcels, physical assets such as vehicle fleets and equipment, County parks, and material resources such as gravel pits. General management of these resources is overseen directly by Facilities Maintenance and Public Works Maintenance and Operations. Stormwater Utility contributes its regulatory knowledge and practical experience in stormwater management to the creation of and updates to the Operations and Maintenance Plan. Individual sites often have site-specific O&M Plans. Stormwater Utility coordinates with these individual sites to review O&M Plans for Permit compliance and to provide practical knowledge for implementation of the plan’s stormwater pollution prevention aspects. This is the case for vehicle storage and maintenance, equipment storage and maintenance, and materials storage areas.

Stormwater Utility implements the Operations and Maintenance program for the County’s MS4. It designates the inspection procedures and schedule, directs maintenance and repair as needed, tracks activity and maintains records. To accomplish this, Stormwater Utility’s cooperative activities are: accepting notice from Development Services that additions have been made to the MS4; scheduling inspections for stormwater facilities on County property operated by Parks or the Fairgrounds; scheduling maintenance with Public Works Operations and Maintenance department and receiving reports of completed work; coordinating with the Maintenance District Managers to ensure that adequate training is provided to individuals performing Operations and Maintenance tasks; working with IT for application development and support for inspection software, network storage, and GIS performance; and corresponding with the Purchasing department to maintain service contracts when outside companies are hired to perform work.

### 3.2.2 S8 – Monitoring and Assessment

The activities for compliance with Permit Special Condition Eight are performed by the Stormwater Utility in coordination with other municipalities and outside consulting agencies.

### 3.2.3 S9 – Reporting

The Spokane County Stormwater Utility compiles and submits the Annual Report to the Department of Ecology. To do so, Stormwater Utility collects information from other departments in Public Works; the Parks, Recreation, and Golf Department; Environmental Services; Facilities Maintenance; Purchasing; IT; the County Auditor; and the County Assessor.

The authority to sign and submit the Annual Report is granted by the County Chief Executive Officer. Technical support to file electronically is provided by IT, which also provides the technical support to retain records in digital format and to post the Annual Report and Stormwater Management Program Plan to the public on the Spokane County website.
Table 1 – Internal Coordination Summary

<table>
<thead>
<tr>
<th>Permit Condition</th>
<th>Title</th>
<th>Contributing Departments</th>
</tr>
</thead>
</table>
| G3               | Notification of Discharge Including Spills | • Stormwater Utility  
                    |                             | • Environmental Services  
                    |                             | • Roads Maintenance  
                    |                             | • Facilities  
                    |                             | • Parks, Recreation, and Golf  
                    |                             | • Risk Management |
| G4               | Bypass Prohibited                         | • Stormwater Utility  
                    |                             | • Environmental Programs  
                    |                             | • Roads Maintenance  
                    |                             | • Bridge Maintenance  
                    |                             | • Capital Projects |
| G10              | Removed Substances                        | • Stormwater Utility  
                    |                             | • Operations and Maintenance |
| G19              | Certification and Signature               | • Stormwater Utility  
                    |                             | • Chief Executive Officer |
| G20              | Non-Compliance Notification                | • Public Works |
| S5.B.1           | Public Education and Outreach             | • Stormwater Utility  
                    |                             | • Water Resources  
                    |                             | • Public Information and Outreach  
                    |                             | • Regional Solid Waste System |
| S5.B.2           | Public Involvement and Participation       | • Stormwater Utility  
                    |                             | • Building and Planning  
                    |                             | • Information Technology  
                    |                             | • Public Information and Outreach  
                    |                             | • Spokane County Commissioners |
| S5.B.3           | Illicit Discharge Detection and Elimination | • Public Works  
                    |                             | • Building and Planning  
                    |                             | • Environmental Services  
                    |                             | • County Assessor  
                    |                             | • County Auditor  
                    |                             | • Information Technology  
                    |                             | • Purchasing  
                    |                             | • Risk Management  
                    |                             | • Spokane County Commissioners  
<pre><code>                |                             | • Prosecuting Attorney |
</code></pre>
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Departments</th>
</tr>
</thead>
</table>
| S5.B.4  | Construction Site Stormwater Runoff Control | • Stormwater Utility  
          |                                           | • Development Services  
          |                                           | • Building and Planning  
          |                                           | • Information Technology  
          |                                           | • Spokane County Commissioners  
          |                                           | • Prosecuting Attorney |
| S5.B.5  | Post-Construction Stormwater Management for New Development and Redevelopment | • Stormwater Utility  
          |                                           | • Development Services  
          |                                           | • Building and Planning  
          |                                           | • Information Technology  
          |                                           | • Spokane County Commissioners |
| S5.B.6  | Municipal Operations and Maintenance     | • Public Works  
          |                                           | • Environmental Services  
          |                                           | • Parks, Recreation, and Golf  
          |                                           | • Facilities Maintenance  
          |                                           | • Fair and Expo Center |
| S8      | Monitoring and Assessment                | • Stormwater Utility |
| S9      | Reporting                                | • Stormwater Utility  
          |                                           | • Information Technology  
          |                                           | • Chief Executive Officer |
3 – PUBLIC EDUCATION AND OUTREACH

3.1 Introduction
An effective stormwater management program begins with public knowledge of “the impacts of stormwater discharges to water bodies and the steps to take to reduce pollutants in stormwater.” A well-educated populace is enabled to make choices to prevent or minimize stormwater pollution and protect the valuable water resources of Washington. This in turn reduces operations and maintenance costs, and can reduce or eliminate spill and dumping clean-up costs.

The Municipal Permit identifies three target audiences for educational programs in Special Condition S5.B.1. These target audiences are the general public; businesses; and engineers, construction contractors, developers, development review staff, and land use planners.

3.2 Public Education and Outreach Program Elements
Spokane County’s Water Resources Program leads public education programs aimed at informing the general public about stormwater and regional water quality. Some highlights of the Water Resources Center’s education program include:

- **Stream Table** – The Stream Table, located at the Water Resources Center, demonstrates the dynamic nature of a river within a watershed. The flow of water in the stream table can be increased or decreased to mimic the real-world effects of rain and stormwater runoff. The Stream Table simulates a stream flowing through the shallow spots, deep channels, and stream banks that face rapid erosion if trees or other vegetation are lacking. Stormwater staff can mimic development that occurs in the watershed by adding houses or removing trees, and then increase or decrease the flow and the volume of water, like what happens when storms generate massive amounts of runoff. This shows how these changes affect the stream and downstream properties – often worsening stream bank erosion and increasing downstream deposits of sediment. The Stream Table is equally enjoyed by grade school and high school groups, as well as teachers, parents, civic groups, and members of other organizations.

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7 https://www.spokanecounty.org/4626/Water-Resource-Center
• **Stormwater Games** – The County’s education materials include several different educational games to demonstrate the sources of stormwater pollution, the fate of stormwater, and the impact of an individual’s actions on stormwater infrastructure. One of these is **Stormwater Plinko** – the participant drops a ping-pong ball into the Plinko board to discover the various possible destinations of stormwater: a swale, a storm drain, or bare soils. The County staff member then teaches why the ideal scenario is swale treatment – plants slow flow over the surface and reduce erosion, and the roots and soil system clean water as it infiltrates.

More of the programs presented to the general public, and more information about the programs described above, may be found in Appendix 3A.

The Spokane Regional Health District’s **Pollution Prevention Assistance** program provides education to businesses in Spokane County. As described by its website, the “Spokane Regional Health District (SRHD) provides dangerous waste management evaluation and education to area small businesses as a member of Washington State’s Pollution Prevention Partnership. Pollution prevention specialists identify potential sources of pollution and share best management practices to help businesses make improvements that protect human health and the environment. … A local pollution prevention specialist [meets with the] organization to evaluate current activities and practices. They will discuss concerns, observations, solutions, and work directly [with the small business] to help solve common challenges around dangerous wastes, stormwater, solid waste, and spill prevention.” More information about the educational work done by the SRHD is available in Appendix 3B.

The **Spokane Kootenai Waste & Recycle Directory** is a component of Spokane County’s public education and outreach to businesses. As one of its

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8 [Pollution Prevention | SRHD](https://srhd.org/programs-and-services/local-source-control-pollution-prevention)

9 [Spokane Recycling & Waste/Kootenai Recycling & Waste - Find Services Spokane Kootenai Waste & Recycle Directory](https://spokaneriver.net/wastedirectory/)
sponsors, Spokane County uses the Waste and Recycle Directory to provide information to businesses about the proper management and disposal of waste.

Stormwater pollution awareness and prevention education is presented to members of the construction and development design sector through the zoning, land use, and building and grading permit application processes, and the development plan review and inspection processes. Building and Planning offers a series of brochures addressing erosion and sediment control, and Development Services in the Public Works Department directs construction and development community members to the Spokane Regional Stormwater Manual, Standards for Road and Sewer Construction, and Eastern Washington Low Impact Development Guidance Manual for information about technical standards, UIC criteria, LID, and stormwater BMPs. This year’s revision of the SRSM is an opportunity to implement a strategic schedule of education to this audience. The County’s Stormwater Utility webpage also guides members of the construction and development sector to educational opportunities. Along with reference materials defining and showing examples of ESC BMPs, the webpage provides a link for a user to find Ecology’s CESCL training schedule, and a link to Washington Stormwater Center’s Construction Training Series, which teaches about erosion and sediment control BMPs and their use.

3.3 Program Evaluation and Resource Direction

Building on knowledge gained from the 2019 Stormwater Awareness Survey, Spokane County developed a program to encourage homeowners to reduce the amount of fertilizer used on the lawn if the results of a soil test kit were to support the behavioral change. After completing an initial survey about their typical lawn care practices, a soil test kit was mailed to participants along with a follow-up postcard survey asking if there was a behavior change based on the soil test results. The survey was offered at the Interstate Fair in September 2021 with non-conclusive initial results. Spokane County Stormwater Utility will conduct the survey again at the Inland Empire Garden Expo in May 2022. Ideally, a larger audience will provide a greater survey population, and interest in the topic of lawn fertilization may be greater in the spring as compared to that in autumn. The County hopes that a larger survey population size will yield utilizable data for further program development.

The County has also used the measurements from the 2019 survey results to evaluate a regional Public Education and Outreach program proposed and led by the City of Spokane. It is a multimedia campaign with a strong social media component that aims to develop a grassroots knowledge of stormwater management in general and stormwater swale maintenance in particular. Because infiltration swales in residential neighborhoods are a significant part of Spokane County’s stormwater management system, and survey results indicate that County

10 https://www.spokanecounty.org/5103/Erosion-and-Sediment-Control
residents have a preference for receiving educational messages through the internet, participating in the campaign is considered an efficient use of County resources.

The measurement of homeowners’ understanding of the importance of proper fertilizer use and evaluation of behavior change fulfill Permit requirement S5.B.1.b. Further information about the Residential Soil Test Kit Program as well as more details regarding the County’s decisions about ongoing Public Education and Outreach resources may be found in Appendices 3C and 3D.

### 3.4 2022 Education and Outreach Program Activities and Goals

Spokane County’s primary education and outreach goal is to enhance its program targeting the construction and design sector, while maintaining effective, efficient educational programs for the general public and businesses. Other specific goals and activities planned for 2022 include:

- Spokane County will present the “Don’t Drip and Drive” (https://fixcarleaks.org/) vehicle pollution prevention program cooperatively with the City of Spokane. This Ecology-grant funded program supports discounts for regional car inspections and leak repairs.
- Stormwater education will be provided at two large elementary school events:
  - **Liberty Lake Outdoor Environmental Education** – This collaboration with Central Valley School District educates almost all 5th grade classes in the school district. Over 20-24 days in April and May, this adds about 90 direct education hours translating to over 1,500 contact hours (hours x students).
  - **Bear Lake Outdoor Environmental Education** – This collaboration with Mead School District educates almost all 5th grade classes in the school district. Over 10 days in May and June, this adds about 35 direct education hours translating to about 1,000 contact hours (hours x students).
- Installation of new “Aquifer Defender” interactive educational materials at the Water Resources Center teaching behavioral best practices to prevent stormwater pollution and protect the aquifer is scheduled for completion this year.

Artist’s rendering of the Aquifer Defender interactive exhibit.
- The County will conduct the Residential Soil Test Kit Survey at one or more outreach event. Through the survey Spokane County will be able to measure homeowners’ understanding and adoption of the behavioral best management practice of “using only the amount of fertilizer needed.” The County is currently registered as an exhibitor at the Inland Empire Garden Expo on May 14, 2022, at Spokane Community College.
- The County plans to participate in a regional social media grassroots education campaign led by the City of Spokane if the subject matter is applicable to the County SWMP.
- The County will continue to support the Pollution Prevention Assistance educational programs provided by the Spokane Regional Health District to the business audience.
- The public comment period that is part of the Commissioners’ Hearing process for the Spokane Regional Stormwater Manual will be utilized as an outreach and education mechanism. Comments received from members of the construction and development sector will be used to evaluate public knowledge, and the County will be able to tailor its educational program to better reach this target audience.

### 3.5 Permit Requirements

The Public Education and Outreach Permit requirements are:

| S5.B.1 | Implement a Public Education and Outreach program to reach target audiences identified in S5.B.1.a. The PE&O program may be regional or local. |
| S5.B.1.a.i | Educate the General Public - Importance of protecting waters of the state, impacts from stormwater pollution, individual actions that can be taken, and methods for reducing stormwater pollution. |
| S5.B.1.a.ii | Educate Businesses - Information on illicit discharges: what they are, how to prevent, best waste management practices, and the use and storage of hazardous chemicals. |
| S5.B.1.a.iii | Educate Engineers, contractors, developers - Information about technical standards, low impact development (LID), municipal codes and requirements, and stormwater BMPs. |
| S5.B.1.b | Measure the understanding and adoption of targeted behaviors for one of the target audiences in one subject area and use the results to direct PE&O resources by December 31, 2021. |
2021 Education and Outreach Year End Review
Spokane County Water Resource Center

COVID-19 IMPACTS CONTINUE
COVID-19 continued to affect the 2021 education program. Community events were still few and far between and public school policies continued with COVID restrictions. The comfort level of staff was considered as there were spikes of the coronavirus in Spokane County. WRC educators all received vaccinations when available for personal reasons but also in the event schools would require them for visitors.

VIRTUAL vs IN-PERSON EDUCATION
There was a stark difference in school policy from the 2020-2021 academic year to the 2021-2022 academic year. In Winter and Spring 2021, all public school education was virtual. In Fall 2021, almost all education was in the classroom and in-person.

WRC: OPEN FOR BUSINESS
The Water Resource Center (WRC) remained open to visitors during all of 2021. The groups that took advantage of this were primarily private schools and homeschool groups who were not constrained by the formal school district protocols. Masks were required and cleaning protocols were in place for disinfecting materials after groups. A few public schools did visit late in the year.

EVENTS
- In 2021, we did 112 events, more than double the 51 events we did in 2020. In pre-COVID years, our stretch goal has been to accomplish 150+ events.
- In the 112 events, we reached 2,220 students, 25% more than 2020, and 386 adults, 47% fewer than 2020.
  - The number of students did not double like the events because in 2020 we participated in an event at the West Valley Outdoor Learning Center in which we saw approximately 400 students. We did not have a similar large event in 2021.
  - The adult percentage compared to 2020 is much lower because during 2020 we often were reaching parents right alongside the students which normally doesn't happen. A more normal adult-student ratio returned in 2021.

WRC IMPROVEMENTS
We are very excited about two new interactive exhibits were designed and installed at the Water Resource Center.
- Human Water Cycle exhibit – This exhibit is the first thing visitors see and helps us teach all ages about where our water comes from, how it is used and how it is cleaned.
- Magnified Membrane exhibit – This helps visitors understand how the SCRWRF treatment facility’s membrane filtration system works and helps understand what is filtered out to create Class A Reclaimed Water.
**Stormwater Detail**
Because we are tasked with stormwater education, these numbers are broken out of the larger numbers above to honestly reflect when we really focus on stormwater. However, keep in mind that when we are teaching the water cycle lesson (not reflected in the numbers below), we frequently explain what stormwater is and that we want to keep our streets clean.

- Of the 112 events, 59 included a dedicated stormwater component/lesson.
- In the 59 events that included a dedicated stormwater lesson, we reached about 1064 students, 20% more than 2020 and about 163 adults, about 55% fewer than 2020.

The lesson content – wastewater, stormwater, water cycle, aquifer, watershed, etc. – is determined by the teacher request, the student age, and/or corresponding Next Generation Science Standards (NGSS). The later elementary ages – 4th, 5th, and 6th grades -- are the optimum grades for teaching about stormwater, in great part because human impacts on the environment are in the teacher’s curriculum.

**PROGRAM HIGHLIGHTS**
- We send quarterly “You Otter Know” MailChimp newsletters to many teachers and parents. Here is a sample of one of the newsletters - [https://mailchi.mp/spokanecounty/fall-water-education](https://mailchi.mp/spokanecounty/fall-water-education). We are pleased that our open rate and click rate (indicating the percentage of people opening and clicking on a link in the email) are much higher than industry standards, per MailChimp analytics. We are careful not to over-contact our teachers and parents and believe this pays off.
- We ran a second Spokane County Scavenger Hunt which was an eco-challenge scavenger hunt (organized and run by our AmeriCorps volunteer Jack Rumery) that helped teach area residents about environmental topics. While the community participation was significantly lower than the one in 2020, it is still worth noting that we had over 1,000 submissions with about 50 active teams.
- We continue to participate in the [SAJB Virtual Science Fair Extravaganza](https://mailchi.mp/spokanecounty/fall-water-education). Here is a direct link to our booth.
- The current AmeriCorps volunteer, Emily Schirmacher, has been stellar in both her roles as assistant educator and social media manager. She has increased the quality of postings on the Water Resource Center Facebook page (@spocowrc) immeasurably. Her term ends on July 31, 2022, and we may be scrambling to maintain our social media presence.
- 12 small, hands-on aquifer models were purchased from National Groundwater Association (NGWA). A lesson was developed that has been a hit with students and teachers. They can really see the aquifer-river connection and how pollution can move from the surface to the river and to groundwater.
- A Stormwater Putt-Putt activity for outreach events was created to engage all ages. While the person is doing the activity, the educator can engage them about storm drains and actions they can take to minimize their impact on stormwater pollution.
- We again hosted the teacher workshop by the Northwest Natural Resources Institute. Laura Goff taught the section on Project WET which is water education teacher training. Stormwater was briefly introduced as a topic.
- We continued our partnership with City of Spokane Parks and Recreation, teaching summer youth adventure camp groups at Riverside State Park. Two of the five dates were unfortunately cancelled due to excessive heat/smoke.
COMMUNITY OUTREACH EVENTS

- Climate Change Awareness at Riverfront Park sponsored by Braided Education/Mobius
  - Aquifer Models focused on quantity with some discussion of unconfined aquifer being susceptible to surface pollutants.
- National Night Out
  - Stormwater Squirt Guns (swales/pollution discussion) and Stormwater Putt-Putt
  - Handed out Storm Drain Dan coloring books among other items
- Unity in the Community/Earth Art Fest
  - Stormwater Relay (swales/pollution discussion) and Stormwater Putt-Putt
  - Handed out Storm Drain Dan coloring books among other items
- Spokane County Fair, September 10-19 – The fair was a very disappointing event in 2021 due to the issues surrounding COVID-19 protocols. Attendance was poor around our booth.
  - Stormwater Putt-Putt
  - Handed out Storm Drain Dan coloring books among other items
  - Promoted Soil Testing Program (natural yard care)

OTHER accomplishments/notes:

- Laura Goff was the graphic designer on five (5) interpretive signs for Stormwater Utilities. The signs are for Otis Orchards Elementary, Browne Mountain Stormwater Facility, and Ben Burr Wetlands.
- The education program continues to be a partner in EnviroKids club, a regional cooperative environmental education program for K-6 students. Part of that is creating one of the quarterly newsletters each year.
- As part of her contribution to the Aquifer Atlas, Toni Taylor obtained funding from the Spokane River Regional Toxics Task Force to help pay for a professional graphic designer to design the atlas update. The Atlas is a valuable outreach item and educational document containing information on most topics that the County water education program teaches.
- A van was purchased for use by all of Water Programs, allowing the education program to carry materials and equipment in a lockable vehicle.

2022 PLANNING

Through March 2022, the program is just slightly ahead of 2021 regarding number of events. Unlike 2021, however, almost all events have been in person as opposed to virtual via Zoom. With the restarting of the outdoor education programs (see below), we should see a considerable increase in events in 2022.

Outdoor Education Returns

The biggest impact we foresee in 2022 is that two very large events will resume after the 2-year COVID hiatus.

- **Liberty Lake Outdoor Environmental Education** – This collaboration with Central Valley School District educates almost all 5th grade classes in the school district. Over 20-24 days, this adds about 90 direct education hours translating to over 1,500 contact hours (hours x students). This always includes a stormwater lesson.
- **Bear Lake Outdoor Environmental Education** – This collaboration with Mead School District educates almost all 5th grade classes in the school district. Over 10 days, this adds about 35 direct education hours translating to about 1,000 contact hours (hours x students). This always includes a stormwater lesson.

*(Note: Student groups are typically larger at Bear Lake than at Liberty Lake creating larger contact hours each day.)*
**Relationship Development with Homeschool Groups**
With the boom in homeschooling during COVID, we believe we can grow this audience significantly and will work to that end.

**WRC Exhibits**
The Water Resource Center makeover continues. Two more exhibits – one focused on the aquifer-river interchange and one focused on stormwater education – should be designed, built and installed by the end of 2022.

**Aquifer Atlas**
The Aquifer Atlas update should be completed in 2022. Toni Taylor has been the lead in hiring a professional graphic designer. A designer will be hired by the end of March 2022 and an 8-month contract period will begin.

**Social Media**
The WRC social media presence relies heavily on our AmeriCorps volunteer skills. We will again look for a volunteer who has good English and creativity skills, an eager personality and social media experience.

**Spokane County Interstate Fair**
Educators will decide later this spring if they will participate in the Spokane County Fair. If so, they will reach out to the departments – Solid Waste, Stormwater, and Water Programs – for agreement in splitting the cost again.
Spokane Regional Health District
Pollution Prevention Visits located within Spokane County

January 1, 2021- December 31, 2021

Site Visit Information

<table>
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<th>Number of</th>
<th>Site Visits During the Reporting Period:</th>
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<tr>
<td>Screening</td>
<td>3</td>
</tr>
<tr>
<td>Follow-up</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Number of Site Visits During the Reporting Period: 13

Sector Focus Areas

We focused on the following sectors
- High Schools with Foam Mats- gathering information for Ecology product replacement study
- Gyms with Foam Mats- gathering information for Ecology product replacement study
- Restaurants/Grocery Stores
- Hotel/Motel
- Property Management
- Automotive

Site Visit Definitions

- Initial Site Visit- occurs at the actual site and results in a completed ‘checklist’ (or enough data gathered to complete data entry into the Pollution prevention Database
- Screening Visit- an attempted visit to the site, but the business declined or put off the visit and unable to gather complete data, or the business does not exist anymore.
- Follow-up Visit- Should occur within 90 days of the initial visit. The follow-up visit must be conducted to resolve high priority environmental issues.
Spokane County Stormwater Utility Residential Soil Test Kit Program

The Spokane County Interstate Fair was held September 10 – 19, 2021. According to the Fair Director, 112,347 tickets were sold, in comparison to 2019 tickets sales of 206,615 (the Interstate Fair was not held in 2020). Otherwise, the year with the fewest attendees since 2000 was in the year 2017, when 178,270 tickets were sold.

A Community Outreach booth was designed by the Water Resources Department and scheduled to be staffed by Water Resources, Environmental Services, and Stormwater Utility. Due to COVID-19 rates at the time of the Fair, Stormwater Utility did not participate in booth staffing. The booth offers educational activities and information about responsible care for water resources – pollution prevention, water conservation, and so forth. In addition to the educational materials presented in 2021, Stormwater Utility initiated a Public Education and Outreach project to “measure the understanding and adoption of … targeted behaviors.” Project responses will be used to “direct ongoing education and outreach resources” (2019 EW Ph 2 Municipal SW Permit S5.B.1.b).

The Stormwater Utility Public Education and Outreach project is based on information gathered from a 2019 Stormwater Awareness Survey of residents in the Stormwater Service Area. Survey responses indicate a willingness to test soil to determine the appropriate fertilizer application rate. This points to the target audience – homeowners – and the target behavior – adjust fertilizer use to eliminate stormwater runoff pollution. The cost and effort of acquiring a soil test kit is a potential obstacle to homeowners, so the Stormwater Utility project provides a basic soil test kit to introduce homeowners to the process. This project uses a series of print surveys to gather information which will allow measurement of understanding and behavior adoption.

The Fair booth initial contact survey asks the following questions:

- Do you live in Spokane County?
- Do you care for your own lawn, hire lawn care service, or both?
- How many times per year do you fertilize? Answer options: zero, once, twice, three or more
- Do you test the soil before fertilizing?
- Have you ever used a soil test kit?
- Do you think your lawn would look good if less fertilizer is used?

Thirty-six surveys were completed at the Fair. One survey is for a Stevens County address and two are for the same residence in Spokane County. Since the survey’s intention is to discover the attitudes toward soil testing and fertilizer rate determination in the Spokane region, these responses are retained for analysis.
Who cares for respondent's lawn?

- **Self**: 78% (28 responses)
- **Lawn care service**: 8% (3 responses)
- **Both**: 14% (5 responses)

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<thead>
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<th>Do you:</th>
<th>Number of Responses</th>
</tr>
</thead>
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<tr>
<td>care for your own lawn:</td>
<td>28</td>
</tr>
<tr>
<td>hire lawn care service:</td>
<td>3</td>
</tr>
<tr>
<td>both:</td>
<td>5</td>
</tr>
</tbody>
</table>
How many times per year do you fertilize? | Number of Responses
---|---
zero | 13.5*
once | 5.5*
twice | 9
three or more | 8

* One respondent marked both “zero” and “once,” this was recorded as one half-response for each choice.
Do you test the soil before fertilizing? | Number of Responses
---|---
yes | 0.5*
no | 34
not sure | 1.5*

* One respondent marked “yes” and also wrote in “I think they do.” The response to question 2 indicates that this respondent hires a lawn care service.
Have you ever used a soil test kit?

<table>
<thead>
<tr>
<th>Have you ever used a soil test kit?</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>4</td>
</tr>
<tr>
<td>no</td>
<td>31</td>
</tr>
<tr>
<td>no answer</td>
<td>1</td>
</tr>
</tbody>
</table>

- Yes: 11% (4 responses)
- No: 86% (31 responses)
- No answer: 3% (1 response)
Do you think your lawn would look good with less fertilizer?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>3</td>
</tr>
<tr>
<td>no</td>
<td>7</td>
</tr>
<tr>
<td>not sure</td>
<td>26</td>
</tr>
</tbody>
</table>

Not sure: 72%
No: 20%
Yes: 8%
Of respondents, 5.5% apply fertilizer two or more times per year and do not think the lawn would look as good if less were used. A person with this opinion might be willing to try reducing the amount of fertilizer used, but additional information may be necessary to persuade the individual to do so.

Thirty-six percent of respondents (13 out of 36) apply fertilizer two or more times per year and are “not sure” how the lawn would look if less were used. This suggests a willingness to try at least once and to consider the results, and perhaps to adopt a change in behavior. This group reports fertilizing the lawn at least 32 times per year – if the members of this group were to reduce fertilizer application by a single repetition per year, it could yield a 27% reduction in total annual fertilizer use by the sample population. (8 x 3 applications/year + 9 x 2 applications/year + 6 x 1 application/year = 48 fertilizer applications. 13 fewer fertilizer applications/48 reported applications = 27% reduction) Soil test kit results indicating an adequate supply of nutrients may be sufficient motivation for this group to attempt a fertilizer use reduction, and if the resultant lawn condition is still satisfactory, then long term behavior change may follow as well.
Next Steps

Each Spokane County address has been sent a soil test along with an instruction packet, contact information for the WSU/Spokane County Extension Service Master Gardeners, and a postage-paid postcard survey to return to Stormwater Utility.

The postcard survey requests the following information:

1. I used the soil test kit:      ☐ Yes ☐ No
2. Using the test kit was:       ☐ Easy ☐ Difficult
3. Understanding the results was: ☐ Easy ☐ Difficult
4. The amount of fertilizer used on my yard has been:  ☐ too little ☐ just right ☐ too much
5. The next time my yard is fertilized, I will adjust the amount used: ☐ Yes ☐ No
6. I would use a soil test kit again: ☐ Yes ☐ No
Additional Survey

Survey participants will be sent a closing survey in the spring. It will ask if the homeowner adjusted the fertilizer rate and if the resulting lawn condition is satisfactory. Closing survey information will attempt to measure the homeowner’s understanding of how to reduce fertilizer runoff pollution and the degree of behavior change. For example:

- I used the soil test kit: Yes No
- I adjusted the amount of fertilizer for the lawn: Yes No
- I reduced the amount of fertilizer: Yes No
- The lawn looks: worse fine the same okay pretty good great!
- If you reduced the amount of fertilizer, will you continue to use the lesser amount? Yes No

Additional Venues

Stormwater Utility will continue this project by presenting the initial contact survey at additional events. The same soil test kit, one similar, or a discount coupon/cost-sharing for a more expensive soil testing option may be offered. Possible venues in 2022 include:

- Custer Enterprises Spokane Home and Yard Show
  February 24 – 27, 2022

- Spokane Home Builders Association Spokane Home & Garden Show
  March 11 – 13, 2022

- Spokane Bike Swap & Expo
  April 9, 2022

- The Inland Empire Gardeners Garden Expo
  May 14, 2022

Preliminary Results

As of December 31, 2021, three (3) postcard surveys were received by Spokane County Stormwater Utility. All respondents used the soil test kit, reported that it was easy to use, and the results were easy to understand. General conclusions cannot be made based on such a small sample size, but Spokane County does observe that the respondent who reported that the fertilizer amount typically used is “just
right” will not change the application rate, and that the respondent reporting that the past fertilizer amount used is “too much” plans to reduce the amount used next time.

<table>
<thead>
<tr>
<th>Who cares for lawn?</th>
<th>Annual fertilizer applications.</th>
<th>Do you test soil?</th>
<th>Have you ever used a soil test kit?</th>
<th>Do you think lawn would look as good with less fertilizer?</th>
<th>Has the fertilizer amount has been correct?</th>
<th>I will adjust fertilizer rate next time.</th>
<th>I will use a soil test kit again.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lawn care company</td>
<td>3+</td>
<td>no</td>
<td>no</td>
<td>not sure</td>
<td>just right</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>self</td>
<td>2</td>
<td>no</td>
<td>no</td>
<td>not sure</td>
<td>not sure</td>
<td>no response</td>
<td>yes</td>
</tr>
<tr>
<td>self</td>
<td>0</td>
<td>not sure</td>
<td>no</td>
<td>no</td>
<td>too much</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

The low percentage of postcard surveys returned suggests several possible conclusions to consider: One, it is important to send another follow up survey to all participants; two, conducting the survey in a different season (i.e. spring instead of autumn) would yield greater results; or three, a different target audience might be more responsive. Spokane County will be able to assess these possible conclusions as this program continues since another mailing will be sent to respondents, the survey will be offered again in May 2022, and the venue for the next survey is the Inland Empire Garden Expo, which attracts a target audience demonstrating interest in landscaping and lawn care.
Spokane County Ongoing Stormwater Public Education and Outreach Assessment

In order to meet the requirement of Permit section S5.B.1.b to “measure the understanding and adoption of the targeted behaviors for at least one target audience in at least one subject area” and “use the resulting measurements to direct ongoing education and outreach resources most effectively, as well as to evaluate changes in adoption of the targeted behaviors,” Spokane County has utilized data collected and evaluated in its 2019 Stormwater Awareness Survey. The 2019 survey correlates exactly with a 2011 survey conducted by Spokane County, providing the opportunity for longitudinal evaluation of behavior change. The survey target audience is the “general public,” specifically “home owners,” and the subject area is “methods for avoiding, minimizing, reducing, and/or eliminating the adverse impacts of stormwater discharges.” Specific behaviors considered include pet waste pick-up, lawn fertilizing frequency, used motor oil handling and disposal, rain barrel use, and other similar behavioral best practices typically employed by individuals at home.

The probable effectiveness of directed education and outreach resources relating to each topic was evaluated, based on the respondent’s reported willingness to make a change combined with the magnitude of the impact of such a change, and two topics were identified as the best choices towards which to direct ongoing resources. These topics are 1) encouraging individual citizens to keep storm system inlets clear of leaves and similar debris and 2) promoting the reduction of lawn chemical use. These topics are selected because only a moderate number of survey respondents indicate that they “already do” these practices (between 43% and 59%) and a significant portion of those who do not “already” do them would be “willing” to do them (between 46% and 56%).

Spokane County draws the conclusion, based on the measured target behaviors, that the direction of ongoing resources to materials featuring the topics of citizen-initiated storm drain clearing and reducing the use of lawn chemicals would be efficient and effective.

If all of those “willing” to keep storm drains and gutters clear were to do so, the measured adoption of this practice would exceed 80%.

If all of those “willing” to reduce chemical lawn fertilizers and herbicide applications were to do so, the practice adoption rate would approach 70%.

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**Q12a. Would you keep street gutters and storm drains in front of your residence clear of dirt, grass clippings, and leaves if you knew that it would help reduce water pollution?**

- **Already do this:** 48.6%
- **Willing to do:** 50.9%
- **Need more information:** 4.3%
- **Not willing to do:** 0.2%
- **Don’t know/Unsure:** 0.8%
- **No Answer:** 0.2%

**Q12b. Would you apply chemical fertilizers and/or weed killers only once or twice a year if you knew that it would help reduce water pollution?**

- **Already do this:** 32.5%
- **Willing to do:** 46.1%
- **Need more information:** 21.3%
- **Not willing to do:** 0.9%
- **Don’t know/Unsure:** 0.6%
- **No Answer:** 0.1%
The survey results not only provide data upon which to base decisions about what topics to present in educational programs, they also offer guidance for choosing effective strategies for public education and outreach programs. In response to the question “How would you prefer to receive information about activities that you can do to improve water quality in your community? Please select all that apply,” 48% selected internet/e-mail, 48% selected community newsletter, 37% selected television, and 32% selected the local newspaper. Other choices, none of which was selected by more than 20% of respondents, include radio, educational workshops, movie theater advertisements, billboards, or materials presented at local schools. Respondents’ top two selections – internet/e-mail and community newsletter – are cost-effective communications methods, making them practical media to utilize for public education and outreach programs. Additionally, preferences for these two media increased from 2011 to 2019, whereas the percentage of respondents who selected local newspaper or television decreased.

Based on measurements provided by survey results, Spokane County will utilize community newsletters and internet/e-mail communications to provide public education and outreach.
In addition to the generalized, overall resource direction discussed above, and the upcoming opportunity to maximize resource allocation through work with a state Outreach Coordinator through the Washington Stormwater Center, there have been two specific instances in which Spokane County has utilized the measurements taken by the 2019 Stormwater Survey to make decisions regarding Public Education and Outreach. Development of a soil test kit promotion to provide education and outreach about reducing pollution from lawn chemical application is one example, and another is the decision to participate in the application for a GROSS grant seeking funding for a regional multimedia campaign to enhance local residents’ knowledge about stormwater system function and how it relates to actions they can do to improve water quality.

Evaluation of the 2019 survey results indicated that the target audience would be receptive to a campaign to promote a reduction of lawn chemical use. While minimal runoff of irrigation water from residential lawns is a permissible discharge to the Municipal Separate Storm Sewer System, water contaminated by lawn care products is a prohibited discharge to the MS4. The most effective way to prevent the illicit discharge of fertilizer from residential lawns is to employ an operational Best Management Practice -- in this case, carefully using only the amount required to yield the desired results. Ninety-three (93) percent of respondents do not test soil to determine fertilizer requirements. Seventy-two (72) percent are either “willing to” test the soil to determine fertilizer requirements or would accept “more information” on the subject. Further, 67% of survey respondents have some degree of willingness to minimize the use of chemical input on lawns.

Because so few residents currently test soil to determine fertilizer requirements, yet over two-thirds express willingness to both test the soil and alter their behavior if it is justified, the survey’s measured results indicate that directing Education and Outreach resources to a program that supplies soil test kits and educational support to residents is a good choice.

A program to encourage behavior change, by providing residents with a soil test kit, was developed in 2021, and in September, Spokane County initiated the program at the Interstate Fair. Individuals were asked to complete a very brief questionnaire to document initial conditions and allow measurement of behavior change as the program progresses. A soil test kit was sent to each person, along with a postcard survey. A final survey in the spring of 2022 is planned to allow comparison of initial attitudes to later viewpoints on lawn care choices. By continuing to measure the adoption of this behavior change, Spokane County will be able to assess program effectiveness and determine how best to continue directing Public Education and Outreach resources (requirements of S5.B.1.b).

Spokane County has also used the measurements yielded by the 2019 survey as a factor in its decision to participate in the Spokane Regional Grassroots Stormwater Stewardship Campaign GROSS grant application. This multimedia public education and outreach campaign, led by the City of Spokane, makes significant use of digital media to inform the local audience of ways in which their behavior can positively impact water quality. Survey results point to a strong receptiveness to education offered through the internet and email, so Spokane County concluded that participation would likely be an effective and efficient use of resources.

While the grant application did not receive funding in 2021, the City of Spokane has indicated an intention to proceed with the educational campaign. Specific subject areas are currently under review, and Spokane County is favorably inclined to join the regional program if the program materials it generates are suitable for its subgroup of the local audience. For example, if messages were to address the topic of combined sewer overflows, this would deter Spokane County’s participation since Spokane County has no combined sewer system, but messages focusing on property owner responsibility for grassed swale maintenance would be highly suitable for County audiences, and campaign participation would be probable. Survey respondents’ preference for internet-provided information encourages Spokane County’s participation in the Grassroots Stormwater Stewardship campaign if the subject matter corresponds to County MS4 characteristics.
4 – PUBLIC INVOLVEMENT AND PARTICIPATION

4.1 Public Involvement and Participation Objectives

Overall, the objectives of Public Involvement and Public Participation are to:

a) Provide opportunities for public participation in the decision-making process related to the development of stormwater management plans and regulations.
b) Make the Annual Report (including the SWMP Plan) available online for public review and comment.

4.2 Public Involvement and Participation Activities

Spokane County offers public involvement and participation opportunities as part of its general course of operations and procedures, including the following:

a) Requests for Investigation (RFIs): Citizens can contact Spokane County directly to report stormwater related concerns. Every call or comment received is investigated by a Spokane County employee and subsequently evaluated in terms of monitoring, maintenance, and potential design.
b) PPPG: Under the State’s Growth Management Act, Spokane County has adopted the Public Participation Program Guidelines (PPPG), which outline procedures to ensure opportunities for public participation in land use decisions. The County uses the PPPG 11 in the development of stormwater code.
c) Public Meetings and Open Houses: Spokane County engages the public in decision making processes including, but not limited to, code updates, plan amendments, and capital construction project proposals at public meetings and workshops. Public meetings and workshops are conducted according to State and local public participation and noticing guidelines. Examples include the SEPA (State Environmental Policy Act) review, the GMA (Growth Management Act) protocols, and the NPDES Permit renewal processes.
d) Hearing Examiner: The Spokane County Hearing Examiner conducts public hearings on land use applications, land use determination appeals submitted by Public Works departments, and certain other quasi-judicial matters. Stormwater and drainage comments pertaining to review of design standards are frequently received at this time.

e) **Website:** In addition to maintaining and updating the website content, the County provides an [online comment form](https://www.spokanecounty.org/FormCenter/Engineering-Roads-14/Contact-Stormwater-Utility-61) where the public can share feedback and/or submit questions regarding the Stormwater Utility’s programs.

f) **SWMP Plan and Annual Report**[^13]: The SWMP Plan and Annual Report are made available for review and/or download on the Spokane County webpage. In 2022, the County’s goal is to post a draft 2023 SWMP Plan before December 31, 2022, and to publicize its posting through social media and webpage announcements. This target publication date will facilitate the incorporation of public comment into the SWMP Plan that accompanies the Annual Report submitted to the Department of Ecology each spring.

### 4.3 2022 Public Involvement and Participation Activities and Goals

a) Notice is given to the public of upcoming Commissioners’ meetings through Spokane County social media posts and as announcements on the Spokane County website. Stormwater Utility reposts announcements pertaining to the County budget on its municipal webpage. Announcements of Commissioners’ meetings with agendas including budgetary decisions, ordinance updates, zoning changes, capital improvement plans, stormwater rate changes, or any other subject reasonably considered to be related to the SWMP will be reposted to the Stormwater Utility webpage in 2022.

b) Spokane County hosts open house presentations, conducts public surveys, and publicizes comment periods for Public Involvement and Participation in the development process for Capital Improvement Plans (CIPs). The [West Terrace Capital Improvement Plan](https://www.spokanecounty.org/4514/West-Terrace-Stormwater-Study) is the most significant project planned in Spokane County’s 2022 Stormwater Management Program. It can be found on the Spokane County Stormwater Utility webpage (link in footnote). The majority of these Public Involvement and Participation opportunities for the West Terrace CIP occurred in 2021, but as additional plan details are clarified in 2022, they too will be presented to the public and input and responses will be accepted for review. Since the planning process for these CIPs is nearly complete, the West Terrace CIP updates will be posted on Spokane County’s website; public notification

[^12]: [https://www.spokanecounty.org/FormCenter/Engineering-Roads-14/Contact-Stormwater-Utility-61](https://www.spokanecounty.org/FormCenter/Engineering-Roads-14/Contact-Stormwater-Utility-61)

[^13]: [https://www.spokanecounty.org/5100/Water-Quality-and-Permits](https://www.spokanecounty.org/5100/Water-Quality-and-Permits)

[^14]: [https://www.spokanecounty.org/4514/West-Terrace-Stormwater-Study](https://www.spokanecounty.org/4514/West-Terrace-Stormwater-Study)
(through social media, email, or postal mail) that updated plans are posted is planned; and responses from the public will be accepted.

Spokane County plans to implement this format for notifying the public of opportunities to participate in the planning process for its other projects undergoing development in 2022 as well. For more information about these additional projects, please visit the Stormwater Utility’s webpage\(^{15}\).

c) The Spokane Regional Stormwater Manual is currently undergoing revision; regional agencies’ revisions are under review by Ecology at this time. A public comment period will be part of the review process prior to the manual’s acceptance by the County Commissioners as part of the County Code of Ordinances. Spokane County will announce the comment period on its website and plans to direct particular notice of this opportunity to provide input to engineers, construction contractors, developers, and planners.

### 4.4 Permit Requirements

The Public Involvement and Participation Permit requirements are:

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5.B.2.a</td>
<td>Implement a program or policy directive to create opportunities for the public to provide input during the decision-making processes of the SWMP, including the development and adoption of ordinances and regulatory mechanisms.</td>
</tr>
<tr>
<td>S5.B.2.b</td>
<td>Post Annual Report and SWMP on your website no later than May 31st each year.</td>
</tr>
</tbody>
</table>

\(^{15}\) [https://www.spokanecounty.org/5028/Projects](https://www.spokanecounty.org/5028/Projects)
5 – ILLICIT DISCHARGE DETECTION AND ELIMINATION

5.1 Introduction

An “illicit discharge” is any material other than stormwater that enters the Municipal Separate Storm Sewer System (MS4). Protection of the MS4 from pollution in turn protects the groundwaters and surface waters of the state. The Illicit Discharge Detection and Elimination (IDDE) Program is designed to provide this protection to the MS4; its elements, required by Permit Special Condition S5.B.3, are:

a) Maintenance of a Geographic Information System (GIS) map of the regulated MS4.

b) Implementation of an ordinance or other regulatory mechanism to prohibit illicit discharge and authorize enforcement actions to prevent them.

c) Implementation of a program to detect and identify illicit discharges or illicit connections into the regulated MS4.

d) Implementation of an illicit discharge/spill/illicit connection response program.

e) Internal training.

f) Recordkeeping and reporting to Ecology.

The practices and principles outlined in this Plan include locating, assessing, characterizing, tracing, and eliminating illicit discharges. In 2010, Spokane County issued the IDDE Guidance Manual which directs personnel how to conduct field assessment activities on high-priority waterbodies. Update and revision of these documented procedures began in 2021 and will conclude in 2022.

5.2 Regulated Municipal Stormwater System Mapping

Spokane County’s stormwater system map will be required to include the following information as of August 1, 2023:

1. Known outfalls and discharge points.
2. The receiving water at outfalls.
3. Areas served by the MS4 that discharge to ground.
4. The location of permanent stormwater facilities owned or operated by Spokane County.
5. Connections to and from the County’s MS4 with privately-owned stormwater systems.
6. Connections to and from the County’s MS4 and other municipalities’ MS4s.

Spokane County’s regulated MS4 consists of collection, conveyance, treatment, and flow control facilities. Collection and conveyance are done by roads with curbed gutters, roads with ditches, catch basins, culverts, and piping systems. These collection and conveyance components direct stormwater to treatment facilities including swales, infiltration ponds, catch basins (especially catch basins with oil-water separators), and settling ponds and/or flow control facilities such as drywells or retention/detention ponds. Stormwater then infiltrates through the soil to

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16 There are a few specific exceptions, such as discharge from emergency firefighting activities, and conditional allowances, such as minimal runoff from lawn watering. Please see Permit section S5.B.3.b for details.
groundwater (discharge point) or enters a surface waterbody (outfall) such as a Department of Natural Resources-classified stream, river, wetland, pond, or lake, etc. These components are all mapped by the Stormwater Utility.

Washington’s Underground Injection Control Program requires a management plan for drywells (which by a legal technicality are not part of the regulated MS4), and the most efficient way for Spokane County to meet this requirement is to include its drywells in its Stormwater Management Program along with its regulated MS4. Because of this, drywells are included in Spokane County’s stormwater system map.

The stormwater mapping data is based on the surveys and fieldwork which have been conducted regularly within the Stormwater Service Area since the Stormwater Utility’s formation in 1992. As new development occurs, Stormwater Utility staff uses mobile mapping applications to add information to the database. Verifying the map’s accuracy and completion are priorities for Spokane County’s 2022 Plan. No later than August 1, 2023, all the above-listed components will be incorporated into the County’s regulated MS4 map.

The stormwater system map not only shows the locations of the stormwater system components, it shows how the system relates with the natural and built environment. Critical Areas, elevation contours, municipal and development zoning, floodplains, maintenance districts, etc. are all included in the MS4 map. Information can indicate a pollutant’s possible source, vulnerable waterbodies, and inventory specifications to expedite cleaning and repairs.

5.3 Prohibition of Illicit Discharge

Spokane County Ordinance 9.14.215 “Discharge of unauthorized waters and non-stormwater prohibited—Penalty” prohibits illicit discharges to the MS4, surface waters, and groundwaters of the state as well as prohibiting illicit (unauthorized) connections to the MS4. The ordinance provides a detailed list of prohibited discharges and the inspection, investigation, and enforcement policies of the County. Pollution of waterways is also prohibited in Section 6.14.070, which outlines activities that are prohibited in County Parks, and Section 9.14.185, which primarily regards pollution by erosion from construction sites but also addresses non-sediment illicit discharges.

The County Ordinances addressing illicit discharge and illicit connections will be reviewed in 2022 and amended if necessary to meet current Permit requirements.

5.4 Inspection Program Elements

Visual inspections are conducted on a regular basis by Stormwater Utility staff to determine the structural integrity of stormwater structures and identify maintenance needs, to discover the presence of any illicit connections, and to monitor potential water quality issues. Visual
observation is a useful indicator of potential illicit discharges, which may include unauthorized direct connections to the County MS4, illicit dumping activities, or structural issues leading to treatment structure bypass.

Each year, technicians and seasonal crews inspect roughly 50% of County facilities as part of the municipal operations and maintenance plan; in 2022 County staff will inspect approximately 5,000 structures. This O&M inspection constitutes a biennial screening of the MS4, facilitating detection of any illicit connections or illicit discharge. Members of the Spokane County Road Maintenance Department are also trained personnel who look for evidence of non-stormwater discharges by visually observing open channel sections.

In 2022 the Stormwater Utility plans to make a trial addition to its field screening process. Select water quality parameters will be measured in any dry weather flow observed at identified priority area discharge points. If field testing is an effective and efficient tool to improve illicit discharge detection, it will be formally added to the County’s screening procedures.

Supplementing the land use information provided by the County’s GIS map of the MS4, Stormwater Utility maintains a “Rain List” of potential problem areas. The Rain List is a database of sites throughout the County that receive increased attention. Sites on the rain list are visited during or following precipitation events to evaluate the severity and extent of any stormwater concerns. Some reasons why a site is added to the rain list include:

- A citizen’s Request for Investigation
- Flow observed during dry conditions
- Internal planning/project prioritization
- Suspected illicit discharge (i.e. dumping activities)
- Flooding concerns
- Structural concerns

In some instances, monitoring of rain list sites results in small works or capital projects for issues deemed high priority. Other issues are remediated by maintenance activities such as vactor cleaning or pipe cleaning.

5.5 Public Reporting Program Elements

Public reporting of spills through a hotline phone number is one of the most effective means of discovering an illicit discharge to the MS4. Public reporting of illicit discharges or other water quality problems is currently available through the following avenues:

a) Calls to Spokane County’s Illicit Discharge Reporting/Spill Hotline -- (509) 477-7525
b) Calls to Spokane County Public Works – (509) 477-3600
c) Emails via Stormwater Utility website\(^{17}\)
d) Calls to Spokane Regional Health District – (509) 314-1500
e) Calls to the Department of Ecology spill hotline – (509) 329-3400

\(^{17}\) [https://www.spokanecounty.org/formcenter/Public-Works-14/Contact-Stormwater-Utility-61](https://www.spokanecounty.org/formcenter/Public-Works-14/Contact-Stormwater-Utility-61)
Spokane County’s Spill Hotline phone number is publicized in numerous ways. It is featured on Spokane County’s website on the “Live, Visit, Play” drop-down menu, the Spokane County Public Works web page “Environmental” drop-down menu, it has been the topic of social media posts to Facebook, and it is the central design element of Stormwater Utility’s public education and outreach hand outs (pencils, fridge magnets, and pet waste bag holders).

5.6 Hazardous Waste Disposal Program

The County is responsible for providing the framework for solid waste disposal, recycling, and educational outreach (which includes the Household Hazardous Waste Pollution Prevention Program) within unincorporated Spokane County and has done so by establishing the Regional Solid Waste System. The Spokane County Comprehensive Solid Waste Management Plan guides the solid waste disposal decisions and activities of the System. The Regional Solid Waste Management System includes establishment of the Solid Waste Advisory Committee (SWAC), a regional collaborative policy-making committee involved in waste management. Programs operated by the Spokane Regional Health District, such as the Pollution Prevention Partnership program, which offers free assistance to businesses regarding the disposal of hazardous wastes, are a component of the regional pollution prevention strategy.

Spokane County Code Chapter 8.26 – Litter and Discriminate Dumping, Litter in General addresses the deposition of litter or material upon any public place or private property, or within any waters in Spokane County. Further information on the control of hazardous waste disposal is discussed in Plan Section 8 – Operations and Maintenance.

5.7 Spill Prevention and Response Program

Hazardous spill prevention and response programs and procedures are designed to address the safe storage, handling, containment, and cleanup of hazardous substances that have the potential to contaminate surface water or groundwater. Spokane County provides field staff with spill kits and training for the immediate protection of surface waters or stormwater structures that may be impacted by a spill. For protection of human health, property, and the environment, spill incidents exceeding the County’s capacity for in-house response are referred to appropriate emergency management services, including Department of Ecology notification (per Permit General Condition G3), spill response contractors, or 911 emergency services.

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18 https://www.spokanecounty.org/2032/Spokane-County-Comprehensive-Solid-Waste-Management-Plan
19 https://www.spokanecounty.org/2558/Solid-Waste-Advisory-Committee-SWAC
5.8 Training

Part of the standard training for field staff who inspect and maintain the MS4 is about how to recognize illicit discharge and what the appropriate response is. A section of the MS4 inspections procedure manual is dedicated to IDDE. Employees are trained in the use of spill kits, and a spill kit is carried in each of the crew’s vehicles.

5.9 Records and Reporting

County response to reported and discovered illicit discharge, spills, or illicit connections is tracked by the Stormwater Utility. Records are kept according to Permit requirements, and actions are reported through Ecology’s WQWebPortal.

5.10 2022 Program Goals

- Stormwater system map elements will be verified and updated to support priority area identification. This includes identifying connections to and from the regulated MS4, and completing and verifying the conveyance component inventory (pipes).

- Stormwater Utility plans to compare the effectiveness of several field-testing methods as part of this year’s illicit discharge/illicit connection screening process. Stormwater Utility will evaluate the outcomes of this testing to determine which methods are effective and efficient components to retain in its field screening procedures.

- The County’s goal for Spill Hotline publicization is four social media postings in the calendar year.

- The County Ordinances prohibiting Illicit Discharge and Illicit Connections to the MS4 will be reviewed for Permit compliance. Any updates, if needed, will be completed by February 2, 2023.

5.11 Permit Requirements

The Illicit Discharge Detection and Elimination Permit requirements are:

<table>
<thead>
<tr>
<th>S5.B.3.a</th>
<th>Maintain a map of MS4 including: known outfalls, discharge points, receiving waters, areas served by the MS4 that discharge to ground, stormwater facilities, connections to MS4.</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5.B.3.a.v</td>
<td>Document connections to the MS4 authorized or approved after August 1, 2019.</td>
</tr>
<tr>
<td>S5.B.3.a.viii</td>
<td>Provide maps and mapping info to Ecology upon request.</td>
</tr>
<tr>
<td>S5.B.3.b.vi</td>
<td>Implement IDDE compliance that includes informal compliance actions such as education and technical assistance, as well as the enforcement provisions. Must include a) SWMMMEW BMPs, and b) Maintenance standards.</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>S5.B.3.b.vii</td>
<td>Prohibit via ordinance or other regulatory mechanism, non-stormwater discharges to MS4. Define allowable discharges or conditionally allowable discharges. Authorize enforcement actions including on private property. Revise regulatory mechanism if necessary by Feb 2, 2023.</td>
</tr>
<tr>
<td>S5.B.3.c</td>
<td>Implement a program to detect and identify illicit discharges/connections to the MS4.</td>
</tr>
<tr>
<td>S5.B.3.c.i</td>
<td>Implement procedures for investigating or field screening the MS4 to identify potential sources.</td>
</tr>
<tr>
<td>S5.B.3.c.ii</td>
<td>Implement procedures for locating priority areas likely to have illicit discharges. Evaluate land uses, documented areas with IDDE complaints, areas with material storage that has the potential to spill.</td>
</tr>
<tr>
<td>S5.B.3.c.iii</td>
<td>Field assess outfalls, discharge points, and stormwater facilities that serve priority areas to detect illicit connections/discharges during dry weather.</td>
</tr>
<tr>
<td>S5.B.3.c.iv</td>
<td>Field assess 12%, on average, of the MS4 within the coverage area each year to verify outfall and discharge point locations to detect illicit discharges. Track total percentage.</td>
</tr>
<tr>
<td>S5.B.3.c.v</td>
<td>Maintain a public hotline for reporting of spills and other illicit discharges.</td>
</tr>
<tr>
<td>S5.B.3.c.vi</td>
<td>Train field staff on how to identify and respond to illicit discharges/connections including reporting, responding, and follow-up, if necessary. Document and record trainings.</td>
</tr>
<tr>
<td>S5.B.3.c.vii</td>
<td>Inform public employees/businesses/general public of hazards associated with illicit discharges and improper waste disposal.</td>
</tr>
<tr>
<td>S5.B.3.d</td>
<td>Implement ongoing program to address illicit discharges and connections to the MS4.</td>
</tr>
<tr>
<td>S5.B.3.d.i</td>
<td>Implement procedures for characterizing illicit discharges and any threat they pose to public safety or the environment.</td>
</tr>
<tr>
<td>S5.B.3.d.ii</td>
<td>Implement procedures for tracing the source of an illicit discharge including visual inspections, opening manholes, using detection equipment, collecting samples when necessary.</td>
</tr>
<tr>
<td>S5.B.3.d.iii</td>
<td>Implement procedures for eliminating the discharge, notifying appropriate authorities and property owner (if applicable). Provide technical assistance, follow-up inspections, and compliance strategy (including enforcement).</td>
</tr>
<tr>
<td>S5.B.3.d.iv.b</td>
<td>Investigate complaints, reports, monitoring info that indicates a potential illicit discharge within 7 days.</td>
</tr>
<tr>
<td>S5.B.3.d.iv.c</td>
<td>Initiate an investigation of any report or discovery of a suspected illicit connection to determine nature of connection within 21 days.</td>
</tr>
<tr>
<td>S5.B.3.d.iv.d</td>
<td>Upon confirmation of an illicit connection, use a compliance strategy to document the effort to eliminate the illicit connection within 6 months.</td>
</tr>
<tr>
<td>S5.B.3.e</td>
<td>Train responsible staff on how to identify, investigate, cleanup, report, etc., illicit discharges/connections. Document and record trainings.</td>
</tr>
</tbody>
</table>
6 – CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

6.1 Introduction

When construction activity changes the natural landscape and soils become exposed to wind, rain, and vehicle traffic, it can be a significant source of stormwater pollution. Many construction sites are regulated by the Construction Stormwater General Permit, issued and enforced by Ecology, and the County Code of Ordinances also regulates Erosion and Sediment Control at construction sites (9.14.185). This SWMP Plan section describes the construction site engineering design standards and Best Management Practice programs required by Special Condition S5.B.4 and Appendix 2 of the Municipal Permit and enacted by County Codes and procedures.

6.2 NPDES Construction Stormwater General Permit

As specified in Special Condition 1 of the Construction Stormwater General Permit (CSGP), any project “that results in the disturbance of one or more acres...and discharges stormwater to surface waters of the State; and [projects] on sites smaller than one acre that are part of a larger common plan of development or sale, if the common plan...will ultimately disturb one acre or more and discharge stormwater to surface waters of the State” shall seek coverage under the NPDES Construction Stormwater General Permit from Ecology prior to beginning any construction activities. Further conditions of the Construction Permit extend coverage to include discharges to storm sewer systems that drain to surface waters of the State as well. Building and Planning informs project applicants of Ecology’s criteria for determining whether a site requires CSGP coverage, and Development Services is incorporating a requirement for documentation of application for CSGP coverage into its plan review process.

6.3 Spokane Regional Stormwater Manual

In 1980, Spokane County Commissioners approved Resolution No. 80-1592, which included the Guidelines for Stormwater Management (GSM). The GSM provided engineers and developers with information regarding drainage requirements for land development in Spokane County. Amendments to this document include the adoption of “Erosion and Sediment Control” components in 1998.

Then in June 2008, the Board of County Commissioners adopted the Spokane Regional Stormwater Manual (SRSM) to replace the GSM. In 2020, the SRSM was determined by Ecology to be technically equivalent to the Core Elements of Appendix 1 of the 2019 Permit (Minimum Technical Requirements for Stormwater Management at New Development and Redevelopment Sites).

The SRSM establishes standards for stormwater management to protect water quality, natural drainage systems, and downstream/down-gradient properties as urbanized development occurs. The purpose of the SRSM is not only to protect surface and groundwater quality, but also to control stormwater runoff and to reduce adverse impacts from flooding. The SRSM describes

recommended design criteria for BMPs that are applied to new development and redevelopment. The SRSM also details practices and procedures that reflect current LID practices in stormwater design. BMPs include criteria for wetlands, bioinfiltration swales, biofiltration channels, oil-water separators, implementation and evaluation of emerging technologies, and so forth. All proposed development and redevelopment projects must comply with the standards described in the SRSM (or equivalent manual), and the public is made aware of these standards when applying for project approval and permitting.

The SWMMEW and the Permit each received updates in 2019, necessitating review of the SRSM. The County collaborated with the City of Spokane and the City of Spokane Valley to update the SRSM, and it is currently under review by Ecology. The target adoption date for the SRSM is December 31, 2022.

6.4 Erosion and Sediment Control Plan – General Requirements

The Permit requires that a Construction Stormwater Pollution Prevention Plan (SWPPP) must be submitted with each project application for any development that proposes to disturb more than one acre of land, and for projects of less than one acre that are part of a common plan of development or sale that will discharge stormwater to the MS4. Spokane County Code Chapter 9.14.185 – Erosion and Sediment Control requires Erosion and Sediment Control Plans for projects that meet this regulatory threshold. The Spokane Regional Stormwater Manual, with technical equivalency to the requirements of Chapter 2 of the Stormwater Management Manual of Eastern Washington, accepts Erosion and Sediment Control (ESC) Plans as equivalent to Construction SWPPPs. The ESC Plans detail the stormwater BMPs for the site to protect water quality, and BMP inspectors in Spokane County are required to have Certified Erosion and Sediment Control Lead (CESCL) training.

6.5 Construction Site BMP Elements

Construction site engineering design standards and BMPs are described within the SWMMEW and the SRSM. Proven practices are addressed in these manuals, and newly developed technologies are included in manual revisions. The SRSM includes language to accept, by reference, any BMP authorized by the SWMMEW. In addition, the following chapters of Spokane County Code include provisions on
6.6 Education for Construction Activities

When a landowner or developer submits a development application to the County, the applicant is notified of the requirement to prepare a drainage plan that meets state and local regulatory requirements (including but not limited to County Code sections 9.14.170, 9.14.180, and 9.14.200). Public notification and County approval of the prepared plan is required for construction to move forward. Spokane County conveys ESC and BMP requirements for development and redevelopment to contractors and construction site operators through the SRSM, the planning and permitting processes, brochures, publications, and via the County website.

Existing outreach and education materials for the construction site management program continue to be reviewed and updated as necessary. Various materials for the construction site management program are available through Ecology, the EPA, and Spokane County’s website. The Stormwater Utility provides a link to Washington Stormwater Center’s video lessons about ESC BMPs on its webpage. Spokane County offers printed materials to developers and contractors during the land-use application process.

6.7 Internal Training

Construction Site Runoff Control inspection training is based on Stormwater Utility’s Procedure #7: Construction Erosion and Sediment Control. It includes enforcement strategies, timelines, specific references to County Code, and instructions on when to contact relevant Ecology personnel.

Additionally, the County provides CESCL training to on-staff engineers and technicians whose responsibilities include management or inspection of construction sites. CESCL training is an Ecology-approved program that provides education and up-to-date methods for preventing contaminated runoff from leaving construction sites. Spokane County employees who design, manage, and implement County construction projects receive additional training on pollution prevention BMPs and training specific to the various departments’ operations and functions. Refresher/recertification training is provided to County staff as requested or as needed.

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6.8 2022 Activities and Goals

- The County Erosion and Sediment Control ordinance(s) will be reviewed for Permit concurrence and updated, if needed, no later than December 31, 2022, as specified in Permit Special Condition S5.B.4.

- Completion of the Spokane Regional Stormwater Manual revisions and public notification of its updates will be used to facilitate education of construction site operators on the subject of erosion and sediment control.

- Coordination among County departments responsible for ESC education, inspection, and enforcement will be improved for greater efficiency and effectiveness.

6.9 Permit Requirements

The Construction Site Stormwater Management Permit requirements are:

<table>
<thead>
<tr>
<th>S5.B.4</th>
<th>Implement and enforce a program to reduce stormwater pollutants from construction activities (public or private) disturbing one acre or more, or part of a larger development.</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5.B.4.b</td>
<td>Implement procedures for site plan review which incorporates water quality considerations.</td>
</tr>
<tr>
<td>S5.B.4.b.i</td>
<td>Review construction SWPPPs prior to clearing and construction pursuant to Core Element 2.</td>
</tr>
<tr>
<td>S5.B.4.c</td>
<td>Implement procedures for site inspection and enforcement of construction pollution control measures.</td>
</tr>
<tr>
<td>S5.B.4.c.i</td>
<td>Inspect prior to clearing and grading if high risk is identified, and during construction to verify proper installation/maintenance of ESC controls. Compliance determined by achieving 80% inspection rate.</td>
</tr>
<tr>
<td>S5.B.4.d</td>
<td>Train staff responsible for plan review, site visits, inspections, and enforcement. Document and maintain records of training.</td>
</tr>
<tr>
<td>S5.B.4.e</td>
<td>Provide info to construction site operators about ESC and BMP training.</td>
</tr>
<tr>
<td>S5.B.4.f</td>
<td>Keep records of all projects, site plan review, inspections, enforcement actions, trainings, correspondence.</td>
</tr>
<tr>
<td>S5.B.4.a</td>
<td>Review ordinance or other regulatory mechanism that requires ESC and other construction pollution controls. Must adopt ordinance compliant to this section no later than December 31, 2022.</td>
</tr>
</tbody>
</table>
7 – POST-CONSTRUCTION STORMWATER MANAGEMENT FOR NEW DEVELOPMENT AND REDEVELOPMENT

7.1 Introduction

Experience demonstrates that stormwater management in new development and redevelopment is necessary to prevent flooding and erosion. When development increases the land area that is paved or covered by roofs, stormwater runoff increases and is observably dirtier. Common sense guides us to include collection and conveyance systems in new roads to slow the water down and send stormwater to a treatment area, like a swale or pond, where plants and soil can clean the water that soaks into the ground. These common-sense tactics to protect water quality and control the volume and rate of flow are formalized in numerous laws and regulatory guidance in Spokane County.

At the state level, the Stormwater Management Manual for Eastern Washington presents standard, consistent guidance for design, construction, and operations and maintenance of stormwater systems. It is approved by the Department of Ecology, so its guidance may be relied upon for regulatory compliance. Together with the requirements of Special Condition S5.B.5 of the Municipal Stormwater Permit, Ecology has published standards for design, installation, and operations and maintenance of permanent stormwater management facilities.

Locally, Spokane County Ordinances (including but not limited to sections 9.14.170, 9.14.180, and 9.14.200) require project developers to account for stormwater runoff conditions and to include stormwater management in proposals submitted to the County for approval. Both facility design for volume and treatment capacity and a perpetual maintenance plan with procedures as well as funding are required. Project proposals without a drainage plan are not approved.

Additionally, the Spokane Regional Stormwater Manual provides consistent guidance to local project proponents. Weather, soil types, and economic activities are similar in Spokane County, the City of Spokane, and the City of Spokane Valley. Regional waterbodies flow through multiple jurisdictions and must be protected equally in all areas; the SRSM facilitates consistent regional stormwater management planning by engineers, developers, construction site operators, and members of the general public who design and maintain stormwater BMPs. Spokane Regional Stormwater Manual updates were completed in late 2021 and Ecology is currently reviewing the regional manual for approval, which is expected before December 2022.

7.2 Post-Construction General Requirements and Site Inspection Elements

Spokane County enforces post-construction stormwater control regulations through the authority provided in section 170 of Chapter 9.14 of the County Code of Ordinances. Chapter 9.14, via reference to the SRSM, requires proper design and maintenance of permanent stormwater control and treatment structures.

For structures not owned or operated by Spokane County, routine inspection and maintenance responsibilities are delegated to a legally designated party; it may be an individual, a commercial business, or a Homeowners Association (HOA). Finalized plats contain language designating responsibility for specified maintenance tasks for a completed project. The County conducts an
inspection of privately-owned and operated stormwater facilities once every five years, as required by Permit section S5.B.5.d.ii. If a stormwater facility is found to be deficient, notice is sent to the responsible party detailing what maintenance is required, establishing a date by which restoration of facility conditions is due, and informing the party that the County may perform maintenance work and charge for reimbursement, if necessary.

Another enforcement program implemented by the County is the swale bond program. This program ensures that swales are built and maintained according to submitted plans. Swale construction is a permit-regulated action in Spokane County. Permit application requires submittal of site plans and payment of a bond. Inspectors determine if swales have been built according to the approved plan and if they have impacted by construction activities. A flood test ensures that infiltrative capacity meets design criteria and the bond is released if the swale performs at design capacity. Otherwise, the builder is required to repair the swale or the County uses the retained bond money to do so.

7.3 Privately Owned and Operated Stormwater Systems Inventory

Stormwater Utility’s mapping of privately owned and maintained stormwater structures began in 2020 and continued through 2021. Thus far the Stormwater Utility has mapped, inspected, and inventoried all known privately owned and maintained stormwater structures within the County’s area of NPDES Permit coverage that were approved for construction between 2011 and 2018, and any known, fully-constructed facilities approved since 2018. In 2022 the Stormwater Utility will continue inventorying new facilities as construction is completed. The County has established procedures in place to map and inventory County stormwater structures; the same procedures are used to inventory private stormwater structures and to initiate a five-year inspection cycle. Spokane County will hire temporary staff to assist with summer inventory operations.

7.4 Public Education and Training Elements of the Post-Construction Stormwater Control Program

Spokane County provides information to construction operators on stormwater design requirements for development and redevelopment through the SRSM, the planning and permitting processes, brochures, publications, and via the County’s webpage.

7.5 2022 Program Goals and Activities

- Privately-owned and operated stormwater facilities approved prior to 2011 will be inspected and mapped. The County’s goal is to map new stormwater facilities in 26 plats this year.
- Public comment on the SRSM updates will provide an educational opportunity to interact with land use planners, designers, developers, and other project proponents on the subject of post-construction stormwater control.
- Ordinances relating to post-construction stormwater controls will be reviewed and updated, if necessary, no later than December 31, 2022.

### 7.6 Permit Requirements

The Post-Construction Stormwater Management for New Development and Redevelopment Permit requirements are:

<table>
<thead>
<tr>
<th>Section</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5.B.5</td>
<td>Implement and enforce a program for post-construction stormwater management at new and redevelopment projects meeting the regulatory threshold that would yield runoff to the permittee's MS4.</td>
</tr>
<tr>
<td>S5.B.5.a</td>
<td>Implement an ordinance that requires post-construction stormwater controls at new development and redevelopment project. Implement before December 31, 2022.</td>
</tr>
<tr>
<td>S5.B.5.c</td>
<td>Implement procedures for site plan review that incorporates water quality impacts. Plans must contain SWPPPs.</td>
</tr>
<tr>
<td>S5.B.5.d</td>
<td>Implement procedures for site inspection and enforcement of post-construction stormwater controls.</td>
</tr>
<tr>
<td>S5.B.5.d.i</td>
<td>Inspect structural BMP at least once during installation and upon final installation or upon completion of the project.</td>
</tr>
<tr>
<td>S5.B.5.d.ii</td>
<td>Inspect structural BMPs at least once every 5 years after final install, or more frequently if deemed necessary.</td>
</tr>
<tr>
<td>S5.B.5.d.iii</td>
<td>If an inspection is performed and problems are identified, permittee shall require and confirm that necessary corrections are performed as soon as possible. SWMMEW contains recommended operating standards.</td>
</tr>
<tr>
<td>S5.B.5.e</td>
<td>Provide adequate training for all staff involved in permitting, planning, review, inspection, and enforcement.</td>
</tr>
<tr>
<td>S5.B.5.f</td>
<td>Provide information to design professionals about training available on how to comply with the requirements of Appendix 1 and apply SWMMEW BMPs</td>
</tr>
<tr>
<td>S5.B.5.g</td>
<td>Keep records of all projects disturbing one acre or more for 5 years or until project is complete. O&amp;M and site plans shall be kept indefinitely. Keep records of any information that was distributed to design professionals.</td>
</tr>
</tbody>
</table>
8 – OPERATIONS AND MAINTENANCE

8.1 Introduction

The Operations and Maintenance Program is an essential responsibility shared between several Spokane County departments, including the Stormwater Utility; Public Works Maintenance and Operations; Environmental Services; Facilities Maintenance; Parks, Recreation, and Golf; Fair and Expo; Human Resources; and Sheriff. While the Permit primarily addresses stormwater infrastructure, it also identifies minimum performance criteria for the operation and maintenance of all publicly owned facilities. Facilities and activities are divided into the following categories:

a) Stormwater collection and conveyance systems
b) Roads, highways, and parking lots
c) Vehicle fleets
d) Municipal buildings
e) Parks and open space
f) Construction projects
g) Industrial activities
h) Material storage areas, heavy equipment storage areas, and maintenance areas
i) Flood management projects
j) Other facilities that would reasonably be expected to discharge contaminated runoff

Spokane County Municipal Government maintains a Stormwater Operations and Maintenance Plan, as required by the Permit, to address activities performed at County facilities. The Public Works Maintenance and Operations Department has primary responsibility for maintaining County road infrastructure. Both the Permit as well as the Stormwater Management Manual for Eastern Washington (SWMMEW) were updated in 2019, prompting the Stormwater Utility to initiate review of the Operations and Maintenance (O&M) Plan for updates. The Stormwater Utility will continue O&M Plan revisions throughout 2022.

8.2 Stormwater Facilities and Conveyance Systems; Roads

Spokane County operates and maintains a MS4 with 456 miles of roads, 7,555 stormwater treatment and flow control facilities, and a conveyance system with 1,837 culverts and maintenance junctions within the Permit boundary. The stormwater treatment and flow control facilities within the Permit boundary are inspected at least once every two years as required by the Permit. The County will hire and train seasonal employees in 2022 to perform these BMP inspections. Routine inspection helps to develop maintenance cycles with adequate frequencies for catch basins, drywells, pipe connections, and culverts. Data is collected using the County’s Stormwater Inspection and Maintenance web application, discussed in section 5 – IDDE (mapping requirements). The Stormwater Utility regularly consults with the Maintenance Department and Public Works Information Technology on procedures for tracking and reporting stormwater facility maintenance activities.

The Stormwater Utility works with County Road Maintenance crews to implement preventative maintenance activities and to update the inventory of these facilities when necessary. Inspectors flag structures to prioritize those that need immediate maintenance, and a vactor crew responds to these alerts. The vactor truck collects material that has accumulated in stormwater facilities, the resulting slurry is transferred to the Regional Decant Facility for water treatment and eventual material disposal. In 2020, the Decant Facility was upgraded to allow for increased separation of materials from liquids, resulting in improved water quality of the separated liquid prior to infiltration, as well as more efficient decanting procedures. In 2022, the County will continue the vactor program, dedicating two maintenance staff members to the operation of one vactor truck from May to October. Cleaning conveyance system culverts will be the operations and maintenance focus for 2022.

Waste collected from cleaning activities for catch basins, drywells, swales, conveyance systems, and other stormwater facilities is transported to the decant facility. The decant facility allows water to separate from the solids as treatment prior to infiltration or evaporation. Dried solids are then disposed of according to applicable waste regulations. The County completed improvements to the Decant Facility in 2020, resulting in more efficient procedures and also preserving the lifespan of the treatment swale on site.
Street sweeping is a pollution prevention practice that removes materials that would otherwise be deposited in stormwater structures such as catch basins, drywells, and swales. The 1,400 miles of paved County streets are cleaned on a priority basis, while County parking lots are swept twice per year (spring and fall). In 2022, the County plans to maintain the current rate of street sweeper activity, which prioritizes high-ADT roadways and roads which receive winter sanding/salting operations. Spokane County tracks sweeping activities using GPS mapping tools (see example below).
8.3. Material Storage, Heavy Equipment Storage, Maintenance Areas, and Vehicle Fleets

The Stormwater Utility reviews operations and maintenance activities to encourage environmentally responsible practices. Spokane County has developed Stormwater Pollution Prevention Plans (SWPPPs) for required facilities in accord with Permit Special Condition S5.B.6. SWPPPs are site-specific stormwater plans that provide guidance to employees about stormwater regulations and requirements. The 2019 Permit established new regulatory guidelines and SWPPP updates were completed on January 2, 2020. Updated SWPPPs were implemented to the greatest extent practicable in 2020, 2021, and site implementation will continue in 2022.

Staff are trained on the additional requirements regarding pollution prevention and good housekeeping practices at vehicle and heavy equipment maintenance shops. SWPPPs directly reference BMPs and pollution prevention guidance provided in the SWMMEW. For example, if a facility does not have an adequate wash station on site, equipment is taken either to another County facility or to a contracted wash station for cleaning.

In 2015/2016, Spokane County Public Works compiled a six-year capital plan to update and build six equipment maintenance shops for road field operations. The facilities are designed to treat stormwater in accordance with SRSM, which meets the regulatory requirements of Appendix 1 of the Permit. All on-site stormwater runoff will be collected and treated according to Permit, manual, and UIC guidelines prior to discharge. To date, four of the six maintenance shops have been constructed -- the Denison, Eden, Craig, and Old Corral Shops. Facility updates for the Central Shop are in the preliminary planning stages.

8.4 Municipal Buildings, Parks, and Open Space

Municipal buildings, parks, golf courses, and natural conservation areas all require maintenance, and this presents the potential for environmental impact. Maintenance activities require an operational BMP approach to effectively prevent stormwater pollution. Careful application of chemicals such as cleaners, fertilizers, herbicides, pesticides, and deicers prevents these materials from contaminating runoff and entering downstream receiving waters. Proper performance of maintenance activities such as washing windows, sweeping sidewalks and parking lots, mowing grass, and maintaining structures prevents contamination of surface waters with harmful pollutants, including sediments, metals, and nutrients. Pollution prevention and good housekeeping practices are essential recurring activities that require responsible management to protect water resources. The Spokane County Stormwater Operations and Maintenance Plan details specific sources of pollution and the operational BMPs to prevent pollution. The County will review its O&M Plan in 2022 to ensure that it meets current Permit and SWMMEW requirements.

Like sites for material storage, heavy equipment storage, maintenance areas, and vehicle fleets, the Facilities Maintenance and the Parks and Recreation Maintenance sites are subject to regulatory guidelines presented by the Permit. Stormwater Pollution Prevention Plan updates were completed on January 2, 2020, for these sites as well. Updated SWPPPs were implemented to the greatest extent practicable in 2020, 2021, and site implementation will continue in 2022.
8.5 Industrial Facilities

Spokane County owns a wastewater treatment plant, the Spokane County Regional Water Reclamation Facility (Facility or SCRWRF), which provides advanced treatment for sewage before discharging reclaimed water to the Spokane River. The Facility is currently regulated under the provisions of a Municipal Wastewater NPDES Permit, Permit WA-0093317, effective December 1, 2011.

8.6 Municipal Waste Management

The Spokane Regional Solid Waste System was created by an Interlocal Agreement between Spokane County and the City of Spokane on October 11, 1988. Ten more regional cities and towns, as well as Fairchild Air Force Base, have subsequently joined the Spokane Regional Solid Waste System by executing Interlocal Agreements with the City and County of Spokane.

Spokane County monitors five closed landfills situated within the NPDES Permit boundary. These landfills, which no longer accept waste, are undergoing post-closure activities to prevent any potential impacts to the environment. The County operates two waste transfer stations which began operation in 1991: the North County Transfer Station and the Valley Transfer Station. The Valley Transfer Station is located within the municipal boundary of the City of Spokane Valley. The North County Transfer Station is located outside of the NPDES Permit boundary. Both stations have separated areas for customers to dispose of municipal solid waste, yard debris, refrigerant, appliances, scrap metal, non-burnable materials, recyclable materials, and moderate-risk waste.

The vactor waste decant facility construction project described in section 8.2 was completed in 2015 at the Old Corral site, located at 15 E Farwell Rd., Spokane, WA 99260. Procedures for using the decant facility are detailed in the site’s O&M Plan, with formal training conducted in 2015 to teach proper operational procedures. Supplemental training is provided as needed.

8.7 Construction Projects

The County is responsible for new road construction and improvements to existing roads, including selection, installation, and retrofit of stormwater BMPs. The Stormwater Utility works with the Public Works’ Construction Department and Environmental Programs Department to ensure that all proposed road projects comply with the design, operation, and maintenance requirements outlined in the SRSM and SWMMEW. Future maintenance needs are considered when designing any new stormwater treatment and disposal structure within County right-of-way.

Spokane County continues to comply with applicable standards for pollution prevention control measures related to construction activities. The local and regional stormwater manuals detail engineering design standards which include implementation of effective construction stormwater BMPs. Sections 6 and 7 of this Plan address construction and post-construction stormwater management objectives.

If a County construction project meets Ecology’s regulatory threshold, the County applies for Construction Stormwater General Permit coverage. Environmental Program’s Environmental
Permit coordinator facilitates this process for County projects. Application for coverage by the Construction Stormwater Permit requires the submittal of stormwater pollution prevention plans and requires implementation of sediment, erosion, and pollution prevention measures. Permittees must conduct site monitoring and runoff testing after rain events, and are subject to inspection and enforcement by Ecology. Spokane County fulfills these requirements at its CSGP Permitted sites.

8.8 Flood Management Projects
The Environmental Programs Department is the lead entity on floodplain management in Spokane County. Responsibilities include review of plans, implementation of local, state, and federal floodplain management requirements, and mitigation enforcement when floodplain violations are committed. Proper floodplain management can protect water quality by preventing uncontrolled construction within a floodplain, requiring proper design, and promoting floodplain maintenance. Coordination occurs between Spokane County’s Environmental Programs Department and permitting entities, such as the Army Corps of Engineers, to prevent human activities from significantly and adversely affecting the environment.

One of Spokane County’s public works projects beginning in 2022 will mitigate flooding at the intersection of Nevada Street and Newport Highway (SR-2) caused by failing stormwater structures. Additionally, it will address a lack of treatment at the intersection and upstream on Nevada Street between Newport Highway (SR-2) and Hawthorne Road. The current stormwater infrastructure consists of 4 drywells with no treatment and a catch basin that feeds to a fifth drywell. These drywells are failing, causing much of the stormwater to collect and flood at the intersection.

The plan is to provide 100% treatment of stormwater along Nevada Street and eliminate the flooding at the intersection. Treatment will be provided by a Filterra at the low point of the basin (the intersection) and swales upstream of the Filterra along the road. The flooding will be mitigated by both surface infiltration in the swales, and by subsurface infiltration via 3 new type B drywells. These drywells will be hydraulically connected to each other and to the outlet of the Filterra. To further prevent future flooding, the Filterra and 3 new drywells will be able to prevent flooding up to the 25-year design storm, even if all upstream structures completely fail. This flood mitigation project is currently in the design phase. Funding through County, regional, and Ecology grant sources will be pursued through 2022, and construction would ideally begin in 2023.

8.9 2022 Operations and Maintenance Program Activities and Goals

- Spokane County will review its Operation and Maintenance Plan for Permit compliance. It will update the O&M Plan if needed.
  - This review includes any necessary SWPPP updates.
  - This review includes any necessary procedures updates.
  - The review and updates will be completed no later than December 31, 2022.

- The current Operations and Maintenance Plan will be implemented in 2022 until revisions are complete.
### 8.10 Permit Requirements

The Operations and Maintenance Permit requirements are:

<table>
<thead>
<tr>
<th>S5.B.6</th>
<th>Implement an Operations and Maintenance program that includes a training component and has the goal of preventing/reducing pollutant runoff from Municipal operations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5.B.6.a</td>
<td>Implement an O&amp;M Plan and update no later than December 31, 2022. BMPs shall reduce pollutants to MEP, AKART. BMPs shall be at least as protective as those in SWMMEW and must control the following sources.</td>
</tr>
<tr>
<td>S5.B.6.a.i.a</td>
<td>Maintain Stormwater Collection and Conveyance systems including cleaning, inspection, disposal of waste, and recordkeeping.</td>
</tr>
<tr>
<td>S5.B.6.a.i.b</td>
<td>Maintain roads, highways, and parking lots including cleaning, deicing, snow disposal areas, material storage areas, all season BMPs to reduce road and parking lot debris and other pollutants.</td>
</tr>
<tr>
<td>S5.B.6.a.i.c</td>
<td>Maintain vehicle Fleets including storage, washing, maintenance, repair, and fueling of vehicles.</td>
</tr>
<tr>
<td>S5.B.6.a.i.d</td>
<td>Maintain municipal buildings including cleaning, washing, painting, and other maintenance.</td>
</tr>
<tr>
<td>S5.B.6.a.i.e</td>
<td>Maintain parks and open space including fertilizer application, pesticide/herbicide application, pet waste BMPs, ESC, landscaping and vegetation disposal, trash management, and building cleaning BMPs.</td>
</tr>
<tr>
<td>S5.B.6.a.i.f</td>
<td>Public construction projects shall comply with requirements applied to private projects. All construction projects owned by the permittee needing a NPDES construction permit shall have one and meet Appendix 1 requirements.</td>
</tr>
<tr>
<td>S5.B.6.a.i.g</td>
<td>All facilities owned/operated by the permittee that need an Industrial NPDES permit shall have one.</td>
</tr>
<tr>
<td>S5.B.6.a.i.h</td>
<td>Material Storage, heavy equipment storage, and maintenance areas shall possess a SWPPP which includes a drainage/discharge/pollutant site map, inventory of materials/equip on site, inventory of activities, spill plan, and description of BMPs on site including maintenance details.</td>
</tr>
<tr>
<td>S5.B.6.a.i.i</td>
<td>Assess water quality impacts in the design of all new flood management projects associated w/ the MS4.</td>
</tr>
<tr>
<td>S5.B.6.a.i.j</td>
<td>Maintain other facilities not specifically mentioned in this section that would reasonably be expected to discharge contaminated runoff.</td>
</tr>
<tr>
<td>S5.B.6.a.ii</td>
<td>Include a schedule of inspections and requirements for recordkeeping</td>
</tr>
<tr>
<td>S5.B.6.a.ii.a</td>
<td>Every two years, inspect a minimum of 95% of all known stormwater treatment and flow control facilities. Inspect problem facilities more frequently.</td>
</tr>
<tr>
<td>S5.B.6.a.ii.b</td>
<td>Inspect all catch basins and inlets every two years. Clean catch basins as needed. Use alternative catch basin inspection schedules if applicable (see details in S5.B.6.a.ii.b 1&amp;2).</td>
</tr>
<tr>
<td>S5.B.6.a.ii.c</td>
<td>Spot check treatment and flow control facilities for potential damage following a 10-year or greater storm, and repair as soon as practicable.</td>
</tr>
<tr>
<td>S5.B.6.b</td>
<td>Provide training to employees who have primary construction, operations, or maintenance job functions likely to impact stormwater quality.</td>
</tr>
</tbody>
</table>
9 – TOTAL MAXIMUM DAILY LOAD REQUIREMENTS

9.1 Definition and Applicability

The state of Washington recognizes the need for clean water for both economic development and a healthy environment. For waterbodies that do not meet current water quality standards, determination of a Total Maximum Daily Load (TMDL) and enforcement of compliance with that TMDL is one way to restore a healthy condition in the waterway.

A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards; the Washington State Department of Ecology is responsible for this calculation. TMDL programs describe the type, amount, and sources of water pollution in a waterbody, determine how much the pollution needs to be reduced to meet water quality standards, and provide targets and strategies to control the pollution. Several local waterbodies are designated as “impaired,” meaning that one or more water quality parameters does not meet State-established standards. Parameters of concern include dissolved oxygen, metals, phosphorus, and toxics.

In Spokane County’s Permit area, TMDLs exist for portions of Dartford Creek, Deadman Creek, Liberty Lake, Little Deep Creek, and the Little Spokane River. Permit Special Condition S7.B states that “For applicable TMDLs not listed in Appendix 2, compliance with this Permit shall constitute compliance with those TMDLs.” None of these is listed in Appendix 2, so the specific actions required by Appendix 2 do not apply to Spokane County. Spokane County’s Permit compliance constitutes compliance with the TMDLs for all of these waterbodies.

The County is aware that a TMDL is under development for portions of the Little Spokane River for dissolved oxygen and pH. When this TMDL is implemented, the County will comply with its terms.

9.2 Ongoing SWMP Actions and Activities

Spokane County’s Operations and Maintenance Plan for the regulated MS4 includes routine inspections of stormwater structures every two years. Areas of the MS4 in close proximity to waterbodies are inspected more frequently – typically every year. Known outfalls to surface water are also inspected more frequently than the rest of the MS4. This ensures that the County’s BMPs are protecting water quality to the maximum extent practicable, fulfilling Permit requirements and complying with TMDLs.

9.3 2022 Program Goals and Activities

- Spokane County is aware that a TMDL for dissolved oxygen, pH, and total phosphorus for the Little Spokane River is pending implementation. Spokane County will comply with requirements associated with this TMDL.
- The Stormwater Utility is in the preliminary stages of a small-works project to improve runoff treatment at Dartford Drive and Minidoka Trail, which is close to the Dartford bridge across the Little Spokane River.
In 2022, the Stormwater Utility will inspect all known outfalls at least one time. Inspections will indicate current conditions, potential maintenance issues, and if additional BMPs are needed.

As mapping to meet IDDE requirements (section 5) is performed, any outfalls created by new additions to the MS4 will be mapped.

9.4 Permit Requirements

The Total Maximum Daily Load Permit requirements are:

<table>
<thead>
<tr>
<th>S7.A</th>
<th>Comply with any applicable requirements identified in Appendix 2. Include status and activities in Annual Report.</th>
</tr>
</thead>
<tbody>
<tr>
<td>S7.B</td>
<td>For applicable TMDLs not listed in Appendix 2, overall compliance with this Permit shall constitute compliance with those TMDLs.</td>
</tr>
</tbody>
</table>
10 – STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS STUDIES

10.1 Introduction

One of the ways in which the Municipal Stormwater Permit differs from other types of stormwater general permits, such as the Industrial or Construction Stormwater General Permits, is that routine water quality testing of system discharge is not required for all Permit holders.24,25 Instead, Municipal Permittees, including Spokane County, conduct Effectiveness Studies to evaluate Stormwater Management Program elements. Program elements that demonstrate a greater degree of water quality protection, or that are found to be particularly efficient are retained, and any that are discovered to be ineffective may be discontinued. The effectiveness studies address topics including changing public behavior, decreasing inputs of target pollutants to the environment, compliance with NPDES Permit requirements, or developing new technologies, such as BMPs, that can be utilized by Permittees. The requirements for Effectiveness Study participation are presented in Permit Special Condition S8.A.

10.2 Planning and Development

Most Permitted cities and counties within Central and Eastern Washington participate in a working group, known as the Eastern Washington Stormwater Group (EWSG), to collaborate on NPDES program elements. In 2013, the EWSG began discussing how to cooperatively develop and implement studies to test the effectiveness of SWMP components. In 2013, the City of Spokane Valley was awarded two grants from Ecology for the period of 2013-2017 to lead coordination of Permittees in meeting this program component. The group selected eight studies relevant to stormwater management activities currently implemented, or of interest to, member jurisdictions. Key documents are published on the City of Spokane Valley’s website.26

Spokane County has served as Lead Entity on two of the eight active studies, and is working as a Contributing Entity with the City of Spokane and the City of Spokane Valley for the next Effectiveness Study. Spokane County will provide input during the study to support study performance in accordance with the QAPP, and is responsible for one third of the 25% match of the grant and one third of the cost of the effectiveness study. A brief description of the study was submitted to Ecology on June 24, 2021, and the study is scheduled to begin no later than December 31, 2023.

10.3 Effectiveness Study Projects

The two completed Effectiveness Studies led by Spokane County (1) evaluated sand filter sidewalk vault performance and (2) compared the effectiveness of different treatment soil depths in bioinfiltration swales. The next study will assess the performance of a bioinfiltration swale with treatment soil but without vegetation, as compared to a swale with vegetation.

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24 Permit Special Condition S4.F.3 describes Adaptive Management Responses, in which case monitoring may be required. Spokane County is not engaged in any Adaptive Management Responses.
25 Some municipalities utilize discharge monitoring, if it is part of a TMDL requirement as described in Permit Appendix 2. Spokane County is not subject to any TMDL requirements of Appendix 2.
26 https://www.spokanevalley.org/content/6836/6896/6914/8301/10121/default.aspx
The sand filter sidewalk vault study tested a modification of an approved BMP that is found in the Stormwater Management Manual for Eastern Washington – the sand filter vault. The tested BMP is modified for installation in a pedestrian sidewalk, facilitating retrofits in locations with space constraints.

For the bioretention soil media (BSM) thickness study, Spokane County evaluated reducing the BSM depth from 18 inches to 12 inches. This is because current bioretention research has suggested that total suspended solids (TSS) and dissolved metals removal typically occurs in the top 6 inches of the BSM mix. Additionally, studies have indicated that the BSM itself leaches nutrients and that the higher the content of compost, the higher the concentration of nutrients leached from the media. The goal of this study has been to develop a modified bioretention BMP that uses the existing 60:40 sand to compost ratio BSM mix to a minimum of 12 inches to provide for the treatment of TSS, dissolved copper, and dissolved zinc.

The proposed Effectiveness Study builds on the bioretention soil media thickness study. The bioinfiltration swale BMP as defined in the SWMMEW has vegetative cover. In the Spokane region’s climate, this vegetation can be challenging to maintain, especially during arid summers. The proposed study compares the effectiveness of unvegetated swales to the conventional vegetated swale. If the performance of the treatment soil in the unvegetated swale meets applicable water quality standards, then a request for its inclusion in the SWMMEW’s BMPs would be justified.

Appendices 10A and 10B provide further details of the Sand Filter Sidewalk Vault Study and the Bioretention Soil Media Thickness Study. A brief description of the proposed Non-vegetated Bioretention Cell Study is included as Appendix 10C.
10.4 2022 Effectiveness Study Activities

- The sand filter sidewalk vault BMP effectiveness study was completed in 2021 and no further action in 2022 is planned. The complete Technical Evaluation Report is available through the Spokane County website at https://www.spokanecounty.org/DocumentCenter/View/37317.

- The bioretention soil media thickness study was completed in 2021 as well, and no further action is planned in 2022. The complete Technical Evaluation Report is available through the Spokane County website at https://www.spokanecounty.org/DocumentCenter/View/42030/TER-Gonzaga-Bioretention-Soil-Media-FINAL?bidId=.

- Spokane County will participate in the development of the detailed study proposal which will be submitted to Ecology no later than September 30, 2022. When approved, Spokane County’s expected activities will include assigned study duties, meeting participation, project review, and funding designation.

10.5 Permit Requirements

The Stormwater Management Program Effectiveness Studies Permit requirements are:

| S8.A.1  | Continue to participate in implementation of the eight Ecology-approved studies that were selected pursuant to Section S8.B in the 2014 Permit. |
| S8.A.2  | Coordinate with other Permittees in your Urban Area to plan and begin an additional SWMP effectiveness study. Must be either a lead entity, funding provider, or contribute staff time to be considered a participant. Submit a brief description of the study with a list of project participants and associated roles to Ecology by June 30, 2021. |
| S8.A.2.c | Submit a detailed study design proposal to Ecology on or before September 30, 2022. |
| S8.A.2.d | Submit a completed QAPP on or before July 31, 2023. |
| S8.A.2.e | Begin to conduct the study on or before December 1, 2023. |
| S8.A.2.f | Include effectiveness study activities in the updated SWMP. |
| S8.B.1  | Lead Entities shall follow reporting requirements and timelines in the approved QAPP for the study. |
| S8.B.1.a | Enter all applicable data collected during the study into Ecology's EIM database. Submit non-applicable data in the Annual Report. |
| S8.B.1.b | Publish a final report with the results and recommended future actions within 60 days of completing the study. |
| S8.B.1.c | Produce a fact sheet summarizing the findings and recommendations within 90 days of completing the study. |
Sand Filter Sidewalk Vault BMP

Effectiveness Study Fact Sheet
**Study Introduction**

This project is one of eight Eastern Washington stormwater effectiveness studies conducted to meet Spokane County’s NPDES MS4 2014-2019 permit requirements (S8. Monitoring and Assessment). An effectiveness study evaluates the effectiveness of permit-required stormwater management program activities and best management practices (BMPs). The purpose of this study was to evaluate the stormwater treatment performance of a new sand filter BMP, the *sand filter sidewalk vault*. The results of the study were intended to be used to justify the development of a new BMP approved for general use on future projects, if Technology Assessment Protocol – Ecology (TAPE) treatment performance goals were met.

Constructing BMPs at sites with space constraints is a challenge for projects located in built urban areas, where the right-of-way abuts property lines or where there is limited space between the sidewalk and roadway. The proposed *sand filter sidewalk vault* BMP is a variation of the basic sand filter vault BMP defined by the Ecology stormwater manuals for Washington State. The 4-foot by 5-foot *sand filter sidewalk vault* is installed below the sidewalk and receives runoff through a curb cut located in the street gutter. Since the BMP is contained and provides treatment within the vault, it can be connected to existing (or new) storm drain networks. This BMP could eliminate (or reduce) the need for constructing a treatment BMP downstream and subsequently reduce the overall cost of stormwater management on future projects.

**Preliminary BMP Design and Maintenance Guidance**

Prior to the field study, BMP design and maintenance guidance was developed for the proposed *sand filter sidewalk vault* BMP. The guidance was based on the results from column testing and modifying the design guidance defined in the Eastern Washington Stormwater Management Manual for the basic sand filter BMP (Ecology, 2019). The column test included simulated rainfall events using a synthetic stormwater solution. The column testing system was designed to be representative of the new BMP constructed in the field. Results from the column test indicated that a design infiltration rate of 50 inches/hour and a hydraulic loading of 1.6 gallons/minute were appropriate for the sand filter media.

**Water Quality Sampling**

Automated monitoring equipment was installed at the *sand filter sidewalk vault* BMP site in 2018 to collect composite influent and effluent water quality samples, flow rate, temperature, and precipitation depth. Through two wet seasons, a total of 24 storm events were collected. The storm events were evaluated to determine whether the TAPE storm event guidelines and sample collection requirements were met. The water quality data obtained was used to evaluate the reduction of the following stormwater runoff target pollutants: total suspended solids (TSS), dissolved copper and zinc, and oils.
**Water Quality Treatment Performance**

The water quality treatment performance of the sand filter sidewalk vault was evaluated against Ecology treatment performance goals for basic, dissolved metals, and oil treatment using the bootstrap statistical method per TAPE. The results are summarized in the table below:

<table>
<thead>
<tr>
<th>ECOLOGY TREATMENT PERFORMANCE GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance Goal</strong></td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>Basic Treatment</td>
</tr>
<tr>
<td>Dissolved Metals</td>
</tr>
<tr>
<td>Treatment</td>
</tr>
<tr>
<td>Oil Treatment</td>
</tr>
</tbody>
</table>

1. Treatment performance criteria shown reflects the criteria for typical influent concentration ranges at the site.
2. Insignificant difference was found between influent and effluent concentrations.

**Operation and Maintenance Cycle**

The infiltration and sediment accumulation data collected during the study provided an estimate of operation and maintenance frequency for the sand filter sidewalk vault. An analysis of infiltration over time indicated that maintenance would be required twice per year for a basin area of 0.41 acres and once every 2.5 years for an area of 0.08 acres. An estimate of sediment accumulation rate indicated a rate of 1.66 lb sediment/inch precipitation could be anticipated.

**Recommendations**

If the study is repeated, the test site should be modified to include a catch basin with a sump upstream of the BMP (see Recommended Sand Filter Sidewalk Vault figure on previous page) to reduce the sediment accumulation rate, which will ultimately reduce the maintenance cycle frequency. Including a sump in the BMP design allows a vactor truck to clean the catch basin, a practice that maintenance staff often perform.

Based on the PSD results, the sand filter media can be improved by reducing the media pore size distribution (i.e. the different sizes of empty spaces in the media). For example, instead of using coarse sand media, a mix of medium grain and coarse sand could be used to reduce the pore size distribution. Alternatively, adding high carbon fly ash to the sand mix will reduce the media pore size distribution while still allowing for high infiltration rates and enhance the dissolved metals removal.

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**OSBORN CONSULTING RESEARCH TEAM:**
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nicolec@osbornconsulting.com

**SPOKANE COUNTY | OSBORN CONSULTING**
Gonzaga Bioretention Soil Media Thickness

Effectiveness Study Fact Sheet
Study Goal

Bioretention research by others suggests that TSS and dissolved metals removal typically occurs in the top 6-inches of the bioretention soil media (BSM) mix. Additionally, studies have indicated that the Ecology 60:40 BSM leaches nutrients and that the higher the content of compost the higher the concentration of nutrients leaching from the media. Because of these findings and a desire to reduce the cost of constructing bioretention BMPs if the additional BSM depth is not needed, there is an interest in reducing the BSM depth from the 18-inches required by Ecology to a 12-inch depth. The goal of this study was to justify development of a modified bioretention BMP that uses the existing 60:40 bioretention mix to a minimum depth of 12-inches (rather than the current required 18-inch depth) for providing treatment of TSS and dissolved metals. Effectiveness evaluation of the modified BMP will be based upon:

- Pollutant removal efficiency of the 60:40 BSM mix at a depth of 18-inches compared to 12-inches.
- Change in the infiltration rate and saturated hydraulic conductivity of each cell over the duration of the study.
- Achievement of treatment performance goals for basic (TSS), metals (dissolved Cu and Zn), and oils, by comparing study results to the Technology Assessment Protocol Ecology (TAPE) treatment performance goals.

Study Description

The goal of this study was accomplished through field monitoring and sampling following the TAPE protocol as summarized in the Eastern Washington Effectiveness Study QAPP Template for Structural BMPs. The test site consists of a dual-cell bioretention area that contains 18-inches and 12-inches of the 60:40 mix in each cell shown in Figure 1. The test site was constructed in 2014, the automated monitoring equipment was installed in 2017, and field testing was conducted from Fall 2018 to Spring 2021.

The automated monitoring system collected flow weighted composite samples, rainfall depth, and flow rate (influent and effluent). The primary work associated with field monitoring and sampling included: daily monitoring of the weather forecast to identify when qualifying rainfall events are likely to occur, operating and maintaining the equipment, collecting three composite flow weighted water quality samples for each rainfall event (one influent and two effluent), as well as duplicates for 10% of the samples, delivering the samples to the lab for analysis, and downloading data from the data logger (precipitation depth and runoff flow rate). The influent and effluent water quality samples were tested for TSS, dissolved metals (Cu and Zn), total phosphorus, oils, PSD, Orthophosphate, Hardness, and pH. Samples of the BSM mix were collected when the site was constructed and from the ponds in 2018. The samples were submitted to an Ecology certified lab for analysis to evaluate changes in the physiochemical properties. Data was collected from 17 qualifying and potentially qualifying storm events over two wet seasons starting in 2018.

![Figure 1. Cross Section of the Bioretention Cells: 12-inch BSM (cell 1) and 18-inch BSM (cell 2)](image-url)
Study Location

The test site location is in the City of Spokane on the campus of Gonzaga University located south of the Rudolf Fitness Center, east of Luger Soccer Field, and north of the Law School. The location of the test site is shown in Figure 2. The contributing basin area is 0.53 acres of a paved parking lot and 0.08 acres from sidewalks and the access road to the parking lot.

Study Objectives

Objective 1: Determine the pollutant removal efficiency of the BSM mix at a depth of 18-inches compared to 12-inches.

No statistically significant difference was noted between the treatment performance of the 18-inch BSM depth compared to the 12-inch depth for TSS, dissolved copper, or dissolved zinc. A statistically significant difference was measured for leaching of TP; the 18-inch BSM depth leached more TP (-381%) on average than the 12-inch depth (-198%). As shown in Table A, TSS and dissolved zinc were removed by the cells, while dissolved copper was observed to be leaching from the cells. Oils were not evaluated as the concentrations were not detectable. The physiochemical properties of the BSM were measured when the cells were constructed and approximately five years after installation. A comparison of the data indicates that copper was not being retained in the BSM, while zinc was retained. The measurements of copper and zinc retained in the BSM support the water quality findings that dissolved copper is leaching from the BSM while dissolved zinc is removed by the BSM shown in Table A.

Objective 2: Determine whether the TAPE treatment performance goals were achieved.

The bootstrap statistical method was used to assess whether the TAPE treatment performance goals were met by the 12-inch cell and 18-inch cell shown in Table A. Both the 12-inch cell and 18-inch cell met TAPE treatment performance goals for TSS (influent concentrations were below 100 mg/L), but neither met the treatment performance goals for dissolved copper and zinc. The treatment performance goal for oils was not assessed due to the number of non-detect results received during the study.

Objective 3: Determine change in infiltration rate and saturated hydraulic conductivity of each cell over study duration.

Changes in the infiltration rate and saturated hydraulic conductivity of each cell was measured by performing modified falling head tests and examining effluent flow rates, respectively. Saturated hydraulic conductivity decreased for both cells (60% for the 12-inch cell and 78% for the 18-inch cell) from 2014 to 2019. Results from the infiltration testing indicate that the rate appeared to slightly increase from 2018 to 2020. These results may be due to the freeze thaw cycle, which has been reported to increase infiltration rates over time. However, infiltration rate data was only collected following the installation of the monitoring equipment in 2017, missing the initial years after the BSM was installed and when infiltration rates are reportedly highest. It is possible that if a similar number of storm events were collected prior to the installation of the equipment as were collected after installation, the trend in infiltration rate would show a decline over the lifespan of the bioretention cells (consistent with the saturated hydraulic conductivity results).

Future Action Recommendations

Recommendations for future actions focused on additional research based on the findings from this study. Specifically, analysis of influent concentrations in EWA, research of the effects of cold climate conditions on bioretention treatment and infiltration performance, development of BSM to reduce leaching and support non-vegetated cells, revaluation of qualifying storm event guidelines (minimum influent concentration limit and storm duration criteria) that are better suited for EWA conditions, and research alternative PSD laboratory analysis methods that maybe more readily available than the method defined in TAPE.

Table A. Summary of Results

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Percent Reduction 12-inch</th>
<th>Percent Reduction 18-inch</th>
<th>Statistically Significant Difference?</th>
<th>Treatment Goals Achieved?</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSS</td>
<td>74.5%</td>
<td>71.1%</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Dissolved Copper</td>
<td>-50.3%</td>
<td>-93.4%</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Dissolved Zinc</td>
<td>39.5%</td>
<td>34.9%</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>TP</td>
<td>-198.4%</td>
<td>-381.4%</td>
<td>Yes</td>
<td>N/A</td>
</tr>
</tbody>
</table>

LEAD ENTITY: Spokane County

CONTRIBUTING ENTITY:
City of Pullman
City of Moses Lake
City of Pasco
City of Spokane Valley
Wall Walla County
Yakima County

This study was conducted to support the lead and participating entities in meeting NPDES MS4 Phase II Permit requirements for S8. Monitoring & Assessment.
Brief Description of Non-Vegetated Bioretention Cell Effectiveness Study

Study Title
Non-vegetated Bioretention Cell Study: An Evaluation of Stormwater Treatment of a Non-vegetated Bioretention Cell in Variable Seasonal Conditions

Study Description
This study will evaluate the treatment efficacy of a non-vegetated retention cell, or cells, across the wet and dry seasons in a semi-arid climate at a location in Spokane, Washington. The study aims to satisfy the approval conditions of the Ecology TAPE program, as well as fulfill the effectiveness study requirement in Section S8.A.2.b of the permit, and will consist of two phases.

Phase 1 (BMP Development)
The goal of Phase 1 is to develop a modified structural bioretention best management practice (BMP) that is entirely non-vegetated and provides basic, metals, and potentially phosphorous treatment, in addition to oil control for contaminated stormwater runoff. The bioretention soil media (BSM) that will be used will be selected from one or more of the following options:

- BSM created following the guidelines in the Stormwater Management Manual for Eastern Washington (i.e. 60:40 mix);
- high performance BSM (HPBSM) detailed in Guidance on Using New High Performance Bioretention Soil Mixes (Ecology publication #21-10-023); and/or,
- custom BSM with an aggregate to compost ratio of 80:20 that is comprised of the same constituents as the 60:40 mix.

The BMP design will include either 1) installing like BSM in separate, equally sized bioretention cells, one vegetated and one non-vegetated, or 2) installing different BSMs in two separate, equally sized, non-vegetated cells. Surface dressings similar to mulch will be applied to any non-vegetated cells in lieu of typical stormwater treatment plantings. The option(s) selected will be defined in detail in the Detailed Study Design Proposal. If the bioretention cell(s) meet TAPE performance criteria, the study results will be used to recommend that the respective BMP(s) be approved for a general use level designation through TAPE.

Phase 2 (Treatment Efficacy)
The goal of Phase 2 is to build upon the work in Phase 1 and evaluate the treatment performance of the BSM(s) across the dry and wet seasons. The dry season (April-September) can exhibit high temperature extremes and have large episodic rain events followed by long antecedent periods with no rainfall. The wet season can have moderate amounts of precipitation to include rain and snow, and exhibit extreme cold climate conditions for intermittent periods of time. The seasonal conditions vary significantly and may affect BSM treatability differently. The BSM(s) will be evaluated using one or more of the following options:
• comparing the data collected from each cell during Phase 1 at the test site across seasons (e.g., wet vs dry);
• conducting controlled experiments at the test site and comparing to the data collected during the respective seasons; and/or,
• comparing the data to data from a field study in Western Washington that used the same BSM (if available).

The selected option(s) will be defined in detail in the Detailed Study Design Proposal. Results from Phase 2 will be presented in accordance with an Ecology-approved QAPP, and will be used to write a final report in order to satisfy the effectiveness study permit requirement.

**Lead and Contributing Entities**
See Table 1 for jurisdiction names, key project team members, as well as their roles and responsibilities.

**Funding sources**
The Lead and Participating Entities intend to apply for Stormwater Financial Assistance Program (SFAP) grant to pay for Phase 1 (BMP Development). Phase 2 will be paid for directly by the municipalities through mechanisms to be determined, but could include reimbursement through Ecology’s Capacity Grant program, or from internal budgets derived from the collection of utility rates, among other mechanisms. The fees for the Phase 1 SFAP 25% match and for Phase 2 will be split equally between the three jurisdictions. Table 1 identifies the project team members and jurisdictions.

**Table 1: Project Team Members**

<table>
<thead>
<tr>
<th>Name &amp; Organization</th>
<th>Role</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trey George</td>
<td>Lead Entity (^1)</td>
<td>Phone Number: <strong>509-625-7908</strong> Email: <a href="mailto:jgeorge@spokanecity.org">jgeorge@spokanecity.org</a></td>
</tr>
<tr>
<td>City of Spokane</td>
<td></td>
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</tr>
<tr>
<td>Bill Galle</td>
<td>Contributing Entity (^2)</td>
<td>Phone Number: <strong>509-477-3600</strong> Email: <a href="mailto:bgalle@spokanecounty.org">bgalle@spokanecounty.org</a></td>
</tr>
<tr>
<td>Spokane County</td>
<td></td>
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<tr>
<td>Chad Phillips</td>
<td>Contributing Entity (^2)</td>
<td>Phone Number: <strong>509-720-5013</strong> Email: <a href="mailto:cphillips@spokanevalley.org">cphillips@spokanevalley.org</a></td>
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<tr>
<td>City of Spokane Valley</td>
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<tr>
<td>Consultant - TBD</td>
<td>Principal Investigator (^3)</td>
<td>Phone Number: TBD Email: TBD</td>
</tr>
</tbody>
</table>

Notes:

\(^1\) Lead Entity: Responsible for ensuring the study is conducted as described in the QAPP. The Project Manager is the primary point of contact for the lead entity responsible for coordinating contracts with consultant and contributing entities. Lead Entity is responsible for one third of the 25% match of the grant, and one third of the cost of the effectiveness study.

(continued next page)
2 **Contributing Entity:** Responsible for providing input during the study to support study performance in accordance with the QAPP. Contributing Entities are responsible for one third of the 25% match of the grant, and one third of the cost of the effectiveness study.

3 **Principal Investigator:** Responsible for developing the Ecology approved Detailed Study Design Proposal, Quality Assurance Project Plan (QAPP), Technical Evaluation Report (TER), and Fact Sheet; conducting the study; and uploading the data from the study to International BMP Database.

A Detailed Study Design Proposal for this effectiveness study that defines in detail the components in the above brief description and the option selected will be developed and submitted to Ecology on or before September 30, 2022.
DEFINITIONS AND ACRONYMS

“40 CFR” means Title 40 of the Code of Federal Regulations, which is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

“ADT” means Average Daily Traffic.

“AKART” means All Known, Available, and Reasonable methods of prevention, control, and Treatment. See also the State Water Pollution Control Act, sections 90.48.010 RCW and 90.48.520 RCW.

“All known, available, and reasonable methods of prevention, control, and treatment” refers to the state Water Pollution Control Act, RCW 90.48.010 and 90.48.520.

“Applicable TMDL” means a TMDL which has been approved by EPA on or before the issuance date of this permit, or prior to the date that Ecology issues coverage under this permit, whichever is later.

“Avenue Daily Traffic” means the expected number of vehicles using a roadway. Projected average daily traffic volumes are considered in designing a roadway or roadway improvement. ADT volumes shall be estimated using “Trip Generation” published by the Institute of Transportation Engineers or from a traffic study prepared by a professional engineer or transportation specialist with expertise in traffic volume estimation. ADT volumes shall be estimated for the design year or expected life of the project (the intent is for treatment facilities to be added in the soonest period of disruptive construction). For project sites with seasonal or varied use, evaluate the highest period of expected traffic impacts.

“Best Management Practices” are the schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices approved by Ecology that, when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State.

“BMP” means Best Management Practice.

“Certified Erosion and Sediment Control Lead” means an individual who is knowledgeable in the principles and practices of erosion and sediment control. The CESCL shall have the skills to assess: the site conditions and construction activities that could impact the quality of stormwater; and the effectiveness of erosion and sediment control measures used to control the quality of stormwater discharges. The CESCL shall have current certification through an approved erosion and sediment control training program that meets the minimum training standards established by Ecology (see BMP C160 in the Stormwater Management Manual for Eastern Washington (2004)).

“CESCL” means Certified Erosion and Sediment Control Lead.


“Co-Permittee” means any owner or operator of a regulated small MS4 that is in a cooperative agreement with at least one other applicant for coverage under this permit.
A Co-Permittee owns or operates a regulated small MS4 located within or in proximity to another regulated MS4. A Co-Permittee is only responsible for complying with the conditions of this permit relating to discharges from the MS4 the Co-Permittee owns or operates. See also 40 CFR 122.26(b)(1)


“Director” means the Director of the Washington State Department of Ecology, or an authorized representative.

“Entity” means a governmental body or a public or private organization. “EPA” means the U.S. Environmental Protection Agency

“Existing conditions” are the impervious surfaces, drainage systems, land cover, native vegetation and soils that exist at a site prior to any changes associated with achieving the proposed development conditions. Approved permits and engineering plans may be required. If sites have impervious areas and drainage systems that were built without approved permits, then the existing condition is defined as those that existed prior to the issue date of this Permit. Existing conditions may be verified by using aerial photography or other records. Existing conditions are used for hydrologic analysis at the site unless a City or County imposes other requirements.

“General Permit” means a permit which covers multiple dischargers of a point source category within a designated geographical area, in lieu of individual permits being issued to each discharger.

“Ground water” means water in a saturated zone or stratum beneath the surface of the land or below a surface water body. Refer to chapter 173-200 WAC.

“Hazardous substance” means any liquid, solid, gas, or sludge, including any material, substance, product, commodity, or waste, regardless of quantity, that exhibits any of the physical, chemical, or biological properties described in WAC 173-303-090 or WAC 173-303-100.

“Heavy equipment maintenance or storage yard” means an uncovered area where any heavy equipment, such as mowing equipment, excavators, dump trucks, backhoes, or bulldozers are washed or maintained, or where at least five pieces of heavy equipment are stored on a long term basis.

“High ADT Roadways and Parking Areas” are any road with ADT greater than 30,000 vehicles per day; and parking areas with more than 100 trip ends per 1,000 SF of gross building area or greater than 300 total trip ends are considered to be high-use traffic areas. Examples include commercial buildings with a frequent turnover of customers and other visitors.

“High-Use Sites” generate high concentrations of oil due to high traffic turnover or the frequent transfer of oil and/or other petroleum products. High-use sites are land uses where sufficient quantities of free oil are likely to be present such that they can be effectively removed with special treatment. A high-use site is any one of the following:

- A road intersection with expected ADT of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway,
excluding projects proposing primarily pedestrian or bicycle use improvements; or

- A commercial or industrial site with an expected trip end count equal to or greater than 100 vehicles per 1,000 square feet of gross building area (best professional judgment should be used in comparing this criterion with the following criterion); or

- A customer or visitor parking lot with an expected trip end count equal to or greater than 300 vehicles (best professional judgment should be used in comparing this criterion with the preceding criterion); or

- Commercial on-street parking areas on streets with an expected total ADT count equal to or greater than 7,500; or

- Fueling stations and facilities; or

- A commercial or industrial site subject to petroleum storage and transfer in excess of 1,500 gallons per year (not including locations where heating fuel is routinely delivered to end users and the annual amount of heating oil used at the site is the sole basis for the site meeting this definition; heating fuel handling and storage facilities are subject to this definition); or

- A commercial or industrial site subject to use, storage, or maintenance of a fleet of 25 or more diesel vehicles that are over 10 tons gross weight (trucks, buses, trains, heavy equipment, etc.); or

- Maintenance and repair facilities for vehicles, aircraft, construction equipment, railroad equipment or industrial machinery and equipment; or

- Outdoor areas where hydraulic equipment is stored; or

- Log storage and sorting yards and other sites subject to frequent use of forklifts and/or other hydraulic equipment; or

- Railroad yards.

“Illicit connection” means any infrastructure connection to the MS4 that is not intended, permitted or used for collecting and conveying stormwater or non-stormwater discharges allowed as specified in this permit (S5.B.3 and S6.D.3). Examples include sanitary sewer connections, floor drains, channels, pipelines, conduits, inlets, or outlets that are connected directly to the MS4.

“Illicit discharge” means any discharge to a MS4 that is not composed entirely of storm water or of non-stormwater discharges allowed as specified in this permit (S5.B.3 and S6.D.3).

“LID” means Low Impact Development.

“Low ADT Roadways and Parking Areas” are urban roads with ADT fewer than 7,500 vehicles per day; rural roads and freeways with ADT less than 15,000 vehicles per day; and parking areas with less than 40 trip ends per 1,000 SF of gross building area or fewer than 100 total trip ends per day are considered to be low-use traffic areas. Examples include most residential parking, and employee-only parking areas for small office parks or other commercial buildings. Urban roads are located within designated Urban Growth Management Areas; rural roads are located outside designated Urban Growth Management Areas. Freeways, defined as fully controlled and partially controlled limited access highways, may be located either inside or outside of Urban Growth
“Low Density Residential Land Use” means, for the purpose of permit section S8 Monitoring and Assessment, one dwelling unit per 1 to 5 acres.

“Low Impact Development” means a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

“Material Storage Facilities” means an uncovered area where bulk materials (liquid, solid, granular, etc.) are stored in piles, barrels, tanks, bins, crates, or other means.

“Maximum Extent Practicable” refers to paragraph 402(p)(3)(B)(iii) of the federal Clean Water Act, which reads as follows: “Permits for discharges from municipal storm sewers shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques, and system, design, and engineering methods, and other such provisions as the Administrator or the State determines appropriate for the control of such pollutants.”

“MEP” means Maximum Extent Practicable.

“Moderate ADT Roadways and Parking Areas” are urban roads with ADT between 7,500 and 30,000 vehicles per day; rural roads and freeways with ADT between 15,000 and 30,000 vehicles per day; and parking areas with between 40 and 100 trip ends per 1,000 SF of gross building area or between 100 and 300 total trip ends per day are considered to be moderate-use traffic areas. Examples include visitor parking for small to medium commercial buildings with a limited number of daily customers. Urban roads are located within designated Urban Growth Management Areas; rural roads are located outside designated Urban Growth Management Areas. Freeways, defined as fully controlled and partially controlled limited access highways, may be located either inside or outside of Urban Growth Management Areas.

“Moderate-Use Sites” include moderate ADT roadways and parking areas (see definition above); primary access points for high-density residential apartments; most intersections controlled by traffic signals; and transit center bus stops. These sites are expected to generate sufficient concentrations of metals that additional runoff treatment is needed to protect water quality in non-exempt surface waters.

“MS4” means Municipal Separate Storm Sewer System.

“Municipal Separate Storm Sewer” means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State Law) having jurisdiction over disposal of wastes, storm water, or other wastes, including special districts under State Law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of Washington State;
(ii) designed or used for collecting or conveying stormwater;
(iii) which is not a combined sewer; and
(iv) which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.
(v) which is defined as “large” or “medium” or “small” or otherwise designated by Ecology pursuant to 40 CFR 122.26.

“National Pollutant Discharge Elimination System” means the national program for issuing, modifying, revoking, and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of the Federal Clean Water Act, for the discharge of pollutants to surface waters of the state from point sources. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington State Department of Ecology.

“New development” is the conversion of previously undeveloped or pervious surfaces to impervious surfaces and managed landscape areas not specifically exempt in the “Exemptions” or “Partial Exemptions” sections of Appendix 1. Projects that add new lanes on an existing roadway or otherwise expand the pavement edge are included in the definition of new development because they create new impervious surfaces; these projects are subject to the thresholds and requirements for new development as set forth in Appendix 1.

“NOI” means Notice of Intent.

“Non-Pollutant Generating Impervious Surfaces” are considered to be insignificant sources of pollutants in stormwater runoff. Roofs that are subject only to atmospheric deposition or normal heating, ventilation, and air conditioning vents are considered NPGIS, unless the roofing material is uncoated metal. The following may also be considered NPGIS: paved bicycle pathways and pedestrian sidewalks that are separated from and not subject to drainage from roads for motor vehicles, fenced fire lanes, infrequently used maintenance access roads, and “in-slope” areas of roads. Sidewalks that are regularly treated with sand, salt or other de-icing/anti-icing agents are not considered NPGIS.

“NPDES” means National Pollutant Discharge Elimination System. “NPGIS” means Non-Pollutant Generating Impervious Surfaces.

“Outfall” means point source as defined by 40 CFR 122.2 at the point where a discharge leaves the MS4 and discharges to waters of the State. Outfall does not include pipes, tunnels, or other conveyances which connect segments of the same stream or other surface waters and are used to convey primarily surface waters (i.e. culverts).

“Permittee” unless otherwise noted, includes Co-Permittee, Secondary Permittee, and New Secondary Permittee.

“PGIS” means Pollutant Generating Impervious Surfaces.

“Pollutant Generating Impervious Surfaces” are surfaces that are considered to be significant sources of pollutants in stormwater runoff. Such surfaces include those that are subject to vehicular use, industrial activities, or storage of erodible or leachable materials that receive direct rainfall or run-on or blow-in of rainfall. Metal roofs are considered to be PGIS unless coated with an inert, non-leachable material. Roofs that are subject to
venting of indoor pollutants from manufacturing, commercial or other operations or processes are also considered PGIS. A surface, whether paved or not, will be considered PGIS if it is regularly used by motor vehicles. The following are considered regularly-used surfaces: roads, unvegetated road shoulders, bike lanes within the traveled lane of a roadway, driveways, parking lots, unfenced fire lanes, vehicular equipment storage yards, and airport runways.

“QAPP” means Quality Assurance Project Plan.

“Qualified Personnel” means someone who has had professional training in the aspects of stormwater management for which they are responsible and are under the functional control of the Permittee. Qualified Personnel may be staff members, contractors, and/or volunteers.

“Quality Assurance Project Plan” means a document that describes the objectives of an environmental study and the procedures to be followed to achieve those objectives.

“RCW” means the Revised Code of Washington State.

“Redevelopment” is the replacement or improvement of impervious surfaces on a developed site. The project proponent shall identify what Core Elements in Appendix 1 apply to all of the new and replaced impervious surfaces created by the project. All new impervious surfaces added during a redevelopment project are subject to the Core Elements in Appendix 1. The requirements for redevelopment projects set forth in the Core Elements in Appendix 1 apply to the impervious surfaces altered or replaced by a redevelopment project. Impervious surface replacements defined as exempt activities in the “Exemptions” section of Appendix 1 and at other projects identified in the “Partial Exemptions” section of Appendix 1 have reduced requirements.

“Runoff” is water that travels across the land surface, or laterally through the ground near the land surface, and discharges to water bodies either directly or through a collection and conveyance system. See also “Stormwater.”

“Rural roads” are roads located outside designated Urban Growth Management Areas.

“Secondary Permittee” is an operator of a MS4 that is not a city, town or county. Secondary Permittees include special purpose districts and other public entities that meet the criteria in S1.B.

“Significant contributor” means a discharge that contributes a loading of pollutants considered to be sufficient to cause or exacerbate the deterioration of receiving water quality or instream habitat conditions.

Small Municipal Separate Storm Sewer System” or “Small MS4” is a conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, and/or storm drains which is not defined as a “large” or “medium” MS4 pursuant to 40 CFR 122.26(b)(4) & (7) or designated under 40 CFR 122.26 (a)(1)(v).

“Stormwater” means runoff during and following precipitation and snowmelt events, including surface runoff, drainage or interflow.

2004.

“Stormwater Management Program” means a set of actions and activities designed to reduce the discharge of pollutants from the MS4 to the MEP and to protect water quality, and comprising the components listed in S5 or S6 of this permit and any additional actions necessary to meet the requirements of applicable TMDLs pursuant to S7 Compliance with TMDL Requirements and S8 Monitoring and Assessment.


“SWMP” means Stormwater Management Program.


“TMDL” means Total Maximum Daily Load.

“TMDL waste load allocation” means the allowable load of a single pollutant from a single contributing point source.

“Total Maximum Daily Load” means a water cleanup plan. A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant’s sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The calculation shall include a margin of safety to ensure that the water body can be used for the purposes the state has designated. The calculation shall also account for seasonable variation in water quality. Water quality standards are set by states, territories, and tribes. They identify the uses for each water body, for example, drinking water supply, contact recreation (swimming), and aquatic life support (fishing), and the scientific criteria to support that use. The Clean Water Act, section 303, establishes the water quality standards and TMDL programs.

“Trip Ends” means the expected number of vehicles using a parking area. Projected trip end counts for a parking area are associated with the proposed land use. Trip end counts shall be estimated using “Trip Generation” published by the Institute of Transportation Engineers or from a traffic study prepared by a professional engineer or transportation specialist with expertise in traffic volume estimation. Trip end counts shall be made for the design year or expected life of the project (the intent is for treatment facilities to be added in the soonest period of disruptive construction). For project sites with seasonal or varied use, evaluate the highest period of expected traffic impacts.

“UA” means Urbanized Area.

“Urban Growth Area” means the designated area within which urban growth shall be encouraged and outside of which growth can occur only if it is not urban in nature, as defined at chapter 36.70A.110 RCW (Growth Management Act).

“Urbanized Area” is a federally-designated land area comprising one or more places and the adjacent densely settled surrounding area that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile. Urbanized Areas are designated by the U.S. Census Bureau based on the most recent decennial census.

“Urban roads” are roads located within designated Urban Growth Areas. Partially controlled limited access highways located inside of Urban Growth Management Areas are considered urban roads. Freeways, as defined above, are not considered urban roads for the purpose of
applying the Core Elements in Appendix 1.

“Waters of the state” includes those waters as defined as “waters of the United States” in 40 CFR 122.2 within the geographic boundaries of Washington State and “waters of the state” as defined in Chapter 90.48 RCW which includes: lakes, rivers, ponds, streams, inland waters, underground waters, salt waters and all other surface waters and water courses within the jurisdiction of the State of Washington.

“Waters of the United States” is as defined in 40 CFR 122.2.

“Water quality standards” means Surface Water Quality Standards, Chapter 173-201A WAC; Ground Water Quality Standards, Chapter 173-200 WAC; and Sediment Management Standards, Chapter 173-204 WAC.