Montana Department of Environmental Quality
WATER PROTECTION BUREAU

Agency Use
MTR04_____
Date Rec'd:
Amount Rec'd:
Check No.:
Rec'd By:

FORM
MS4-AR

MPDES Storm Water Small MS4 Annual Report Form

Reporting period is for the calendar year, January 1st through December 31st.
Check one. Annual Report is due by March 1st of the following year.

○ 2017	○ 2018	○ 2019	◉ 2020	○ 2021

Instructions: This Annual Report Form is to be completed by each permittee and co-permittee authorized to discharge storm water under the General Permit for Storm Water Discharges Associated with Small Municipal Separate Storm Water Sewer Systems (MS4s). All authorized permittees and co-permittees are required to complete this Annual Report Form for each calendar year reporting period. For co-permittees authorized under one permit authorization or for co-permittees with multiple authorizations, you are required to complete this form and submit separate required documents/information exclusively for your respective regulated Small MS4 area(s). This completed Annual Report Form must be electronically submitted to the Montana Department of Environmental Quality, Water Protection Bureau. Electronic submission is required through the web-based tool: NetDMR. Additional information is located on DEQ's website: http://deq.mt.gov/Water/WQINFO/ctss/netdmr.

Small MS4 Authorization Number: MTR04 0010

Small MS4 Classification	◉ **Traditional**	○ **Non-Traditional**

Small MS4 Name: Yellowstone County

Small MS4 Mailing Address: PO Box 35024

City, State, and Zip Code: Billings, MT 59107-5024

Small MS4 Contact Person (and Title): Mike Black, PE (Primary SWMP Coordinator)

Mailing Address: PO Box 35024

City, State, and Zip Code: Billings, MT 59107-5024

Phone Number: (406)-256-2735	**E-mail address:** mblack@co.yellowstone.mt.gov

Storm Water Management Team: Attach an organizational chart identifying a primary SWMP coordinator and the positions responsible for implementing each minimum measure. See Attachment A		
Requested above chart:	(•) Attached	( ) Not Attached
Has the permittee established and executed a formalized mechanism for regular communication between storm water management team members?	(•) Yes	( ) No

Permittee's SWMP Resources:

How many FTEs does the permittee designate to the MS4 permit? 0.75 If needed, provide an explanation. The number of FTEs increased in the past 1-2 years of the annual reporting (0.5 - 0.75). This number is expected to defined further in 2021 as the County is in the process of completing a operations and comparative analysis.

If more space is needed, submit on an additional page with corresponding reference or on a data storage device.

Answer the following five (5) questions on an additional page with corresponding reference or on a data storage device. See Attachment B

(1) What are the source(s) of funding for implementation of the MS4 permit and the estimated percentage of the total budget allocated from each source listed?

(2) Specific to the annual reporting calendar year, how did the permittee justify commitment of resources or budget allocations to the implementation of the MS4 permit to decision-makers and the public? Provide a summary of meetings and outcomes held with decision-makers and the public.

(3) Has the permittee demonstrated program effectiveness to obtain budget allocations for this annual reporting calendar year or previous years? Why or why not? If so, what program effectiveness metrics were presented?

(4) How was this annual reporting calendar year's approach to allocate resources different than the previous year's approach?

(5) Was the permittee successful in their request for budget allocations? Describe the outcome and factors that affected or resulted in that outcome.

Illicit Discharge Detection & Elimination: Per the IDDE MCM requirement (Part II (3)(c.i)), has the permittee reviewed, and updated if needed, the storm sewer map during the calendar year?	(•) Yes	( ) No
Per the IDDE MCM requirement (Part II (3)(e.i)), has the permittee dry weather inspected and screened outfalls during the calendar year?	(•) Yes	( ) No

Fill in the blanks with numbers. The permittee has inspected 7* outfalls during this calendar year. Since authorization under the 2017 General Permit, the permittee has inspected 27* total outfalls out of the 26* total MS4 outfalls.

* The total number of outfalls was revised following the storm water inventory review in 2020. Hence, there is a discrepancy in the inspected outfalls since 2017. See Section 3.2.5 of the SWMP for additional information.

Per the Illicit Discharge Detection & Elimination MCM (Part II (3)(e.i)), the permittee will complete the requirement to inspect and screen all outfalls during dry weather by the end of the permit cycle.	◉ Yes	○ No
Construction Site Storm Water Management: During the calendar year, how many construction storm water management plan reviews were completed (Part II (4)(b))? 0		
During the calendar year, how many construction projects were inspected for their storm water management controls (Part II (4)(c))? 0		
Pollution Prevention/Good Housekeeping for Permittee Operations: Has the permittee reviewed, and updated if needed, the inventory of permittee-owned/operated facilities and activities (Part II (6)(a.i))?	◉ Yes	○ No
Has the permittee reviewed, and updated if needed, the map that identifies the locations of facilities and known locations of activities (Part II (6)(a.ii))?	◉ Yes	○ No
Has the permittee conducted annual storm water pollution prevention training for permittee staff during the next permit year after development of each standard operating procedure (Part II (6)(a.v))? ***Not applicable during calendar year 2017, 2018, and 2019. Check "No" during these years.***	◉ Yes	○ No
Training: According to Part II (B) Training requirements, has the permittee conducted applicable training during the 1st and 4th calendar years? ***Not required during calendar year 2018, 2019, and 2021. Check "No" during these years.***	◉ Yes	○ No
According to Part II (B) Training requirements, has the permittee conducted applicable new employee training within 90 days of the hire date?	○ Yes	◉ No
*No new applicable employees were hired in 2020		
Special Conditions: Per **Pre-TMDL Approval (Part III.A) requirements**, attach the required information regarding identification of all outfalls that discharge to impaired waterbodies, the impaired waterbodies, and the associated pollutants of impairments. Summarize the BMPs implemented over the reporting period and a schedule of BMPs planned for the following year.		
◉ Attached See Attachment C, SWMP Section 5 and SWMP Appendix D	○ Not Attached	○ Not Applicable
Special Conditions: Approved TMDLs (Part III.B) requirements per calendar year below.		
Calendar Year 2017: The permittee has attached a Sampling Plan that includes strategy rationale, monitoring frequency, monitoring parameters, and monitoring locations.		
○ Attached	○ Not Attached	◉ Not Applicable

Calendar Year 2017: The permittee has attached all outfalls that discharge to impaired waterbodies and the associated pollutants of impairment.		
○ Attached	○ Not Attached	◉ Not Applicable
Calendar Year 2018: The permittee has attached all outfalls that discharge to impaired waterbodies and the associated pollutants of impairment.		
○ Attached	○ Not Attached	◉ Not Applicable
Calendar Year 2019: The permittee has attached all outfalls that discharge to impaired waterbodies and the associated pollutants of impairment.		
○ Attached	○ Not Attached	◉ Not Applicable
Calendar Year 2020: The permittee has attached all outfalls that discharge to impaired waterbodies and the associated pollutants of impairment.		
○ Attached	○ Not Attached	◉ Not Applicable
Calendar Year 2020: The permittee has attached the TMDL section of the SWMP that identifies the measures and BMPs it plans to implement, describes the MS4's impairment priorities and long term strategy, and outlines interim milestones for controlling the discharge of the pollutants of concern and making progress towards meeting the TMDL.		
○ Attached Pre-TMDL, See SWMP Section 5	○ Not Attached	◉ Not Applicable
Calendar Year 2021: The permittee has attached all outfalls that discharge to impaired waterbodies and the associated pollutants of impairment.		
○ Attached	○ Not Attached	○ Not Applicable
Calendar Year 2021: The permittee has evaluated the TMDL section of the SWMP based on monitoring results. The section has been revised, if needed, and is attached.		
○ Attached	○ Not Attached	○ Not Applicable
Monitoring: Per requirements in Part IV (B), has the permittee attached monitoring results, calculations, and evaluations?		
◉ Attached See Attachment C, SWMP Section 6 and SWMP Appendix K	○ Not Attached	○ Not Applicable

INSTRUCTIONS: The permittee will only fill out the Annual Report Attachments section below that corresponds to the calendar in which an Annual Report is being submitted for. Attach the requested documents/information.

2017 Annual Report Attachments (1st Calendar Year)		
Public Education and Outreach:		
Per requirements a.i in the referenced MCM, attach the required information regarding key target audiences and associated pollutants.		
◯ Attached	◯ Not Attached	
Public Involvement and Participation:		
Per requirements a.i in the referenced MCM, attach the required information regarding the public involvement approach and schedule of each key audience.		
◯ Attached	◯ Not Attached	
Illicit Discharge Detection & Elimination:		
Per requirements a.i in the referenced MCM, attach the required information regarding categories of non-storm water discharges or flows, associated pollutants, and local controls or conditions.		
◯ Attached	◯ Not Attached	
Per requirements b.i in the referenced MCM, attach the required information regarding occasional non-storm water discharges or flows, associated pollutants, and local controls or conditions.		
◯ Attached	◯ Not Attached	
Per requirements f.i in the referenced MCM, attach the required Illicit Discharge Investigation and Corrective Action Plan and any associated documents.		
◯ Attached	◯ Not Attached	
Construction Site Storm Water Management:		
Per requirements a.iii in the referenced MCM, attach progress towards an Enforcement Response Plan and associated documents.		
◯ Attached	◯ Not Attached	
Specific to Traditional MS4s and per requirements b.i in the referenced MCM, attach the construction storm water management plan review checklist.		
◯ Attached	◯ Not Attached	◯ Not applicable
Specific to Non-Traditional MS4s and per requirements b.iii in the referenced MCM, attach the construction storm water management plan review checklist.		
◯ Attached	◯ Not Attached	◯ Not applicable
Specific to Traditional MS4s and per requirements c.i in the referenced MCM, attach the construction storm water management inspection form or checklist.		
◯ Attached	◯ Not Attached	◯ Not applicable
Specific to Non-Traditional MS4s and per requirements c.ii in the referenced MCM, attach the construction storm water management inspection form or checklist.		
◯ Attached	◯ Not Attached	◯ Not applicable

Post-Construction Site Storm Water Management in New and Redevelopment		
Specific to Traditional MS4s and per requirements b.i in the referenced MCM, attach the post-construction storm water management plan review checklist.		
◯ Attached	◯ Not Attached	◯ Not applicable
Specific to Non-Traditional MS4s and per requirements b.ii in the referenced MCM, attach the post-construction storm water management plan review checklist.		
◯ Attached	◯ Not Attached	◯ Not applicable
Per requirements in b.iii in the referenced MCM, attach the performance standards and associated documents.		
◯ Attached	◯ Not Attached	

2018 Annual Report Attachments (2nd Calendar Year)

Public Education and Outreach:		
Per requirements b.i in the referenced MCM, attach the required information regarding outreach messages.		
◯ Attached	◯ Not Attached	
Per requirements c.i in the referenced MCM, attach the required information regarding a description of formats, distribution channels and schedule for key target audiences.		
◯ Attached	◯ Not Attached	
Public Involvement and Participation:		
Per requirements a.ii in the referenced MCM, attach the required information regarding participation and key target audience feedback on approaches.		
◯ Attached	◯ Not Attached	
Illicit Discharge Detection & Elimination:		
Per requirements a.i in the referenced MCM, attach the required information regarding categories of non-storm water discharges or flows, associated pollutants, and local controls or conditions.		
◯ Attached	◯ Not Attached	
Per requirements b.i in the referenced MCM, attach the required information regarding occasional non-storm water discharges or flows, associated pollutants, and local controls or conditions.		
◯ Attached	◯ Not Attached	
Specific to Traditional MS4s and per requirements d.i in the referenced MCM, attach the adopted ordinance or other regulatory mechanism to prohibit illicit discharges.		
◯ Attached	◯ Not Attached	◯ Not applicable
Specific to Non-Traditional MS4s and per requirements d.ii in the referenced MCM, attach the summary of legal authority to prohibit illicit discharges.		
◯ Attached	◯ Not Attached	◯ Not applicable
Per requirements d.iii in the referenced MCM, attach the required summary of the cooperative agreements.		

◯ Attached	◯ Not Attached	
Per requirements d.iv in referenced MCM, attach the Enforcement Response Plan and associated documents.		
◯ Attached	◯ Not Attached	
Per requirements e.ii in referenced MCM, attach the list of high priority outfalls.		
◯ Attached	◯ Not Attached	
Specific to Traditional MS4s and per requirements f.iii in the referenced MCM, attach the summary of investigations conducted and corrective actions taken per the required Illicit Discharge Investigation and Corrective Action Plan and any associated documents.		
◯ Attached	◯ Not Attached	◯ Not applicable
Specific to Non-Traditional MS4s and per requirements f.iv in the referenced MCM, attach the summary of investigations conducted and corrective actions taken per the required Illicit Discharge Investigation and Corrective Action Plan and any associated documents.		
◯ Attached	◯ Not Attached	◯ Not applicable
Post-Construction Site Storm Water Management in New and Redevelopment		
Specific to Traditional MS4s and per requirements c.i in the referenced MCM, attach the post-construction storm water management inspection form or checklist.		
◯ Attached	◯ Not Attached	◯ Not applicable
Specific to Non-Traditional MS4s and per requirements c.ii in the referenced MCM, attach the post-construction storm water management inspection form or checklist.		
◯ Attached	◯ Not Attached	◯ Not applicable
Per requirements in c.iii in the referenced MCM, attach the inventory of all new permittee-owned and private post-construction storm water management controls.		
◯ Attached	◯ Not Attached	
Per requirements in c.vi in the referenced MCM, attach an inspection frequency protocol.		
◯ Attached	◯ Not Attached	
Specific to Traditional MS4s and per requirements c.vii, attach the developed inspection program.		
◯ Attached	◯ Not Attached	◯ Not applicable
Pollution Prevention/Good Housekeeping for Permittee Operations		
Per requirements in a.iii in the referenced MCM, attach completed Standard Operating Procedures.		
◯ Attached	◯ Not Attached	

2019 Annual Report Attachments (3rd Calendar Year)

Public Education and Outreach:

Per requirements c.ii in the referenced MCM, attach the required information regarding outreach materials distributions.

◯ Attached	◯ Not Attached

Public Involvement and Participation:

Per requirements a.ii in the referenced MCM, attach the required information regarding participation and key target audience feedback on approaches.

◯ Attached	◯ Not Attached

Illicit Discharge Detection & Elimination:

Per requirements a.i in the referenced MCM, attach the required information regarding categories of non-storm water discharges or flows, associated pollutants, and local controls or conditions.

◯ Attached	◯ Not Attached

Per requirements b.i in the referenced MCM, attach the required information regarding occasional non-storm water discharges or flows, associated pollutants, and local controls or conditions.

◯ Attached	◯ Not Attached

Per requirements e.ii in referenced MCM, attach the list of high priority outfalls.

◯ Attached	◯ Not Attached

Per requirements e.iii in referenced MCM, attach the required summary of screening results.

◯ Attached	◯ Not Attached

Specific to Traditional MS4s and per requirements f.iii in the referenced MCM, attach the summary of investigations conducted and corrective actions taken per the required Illicit Discharge Investigation and Corrective Action Plan and any associated documents.

◯ Attached	◯ Not Attached	◯ Not applicable

Specific to Non-Traditional MS4s and per requirements f.iv in the referenced MCM, attach the summary of investigations conducted and corrective actions taken per the required Illicit Discharge Investigation and Corrective Action Plan and any associated documents.

◯ Attached	◯ Not Attached	◯ Not applicable

Construction Site Storm Water Management:

Specific to Traditional MS4s and per requirements a.i in the referenced MCM, attach the adopted ordinance or other regulatory mechanism to require construction storm water controls.

◯ Attached	◯ Not Attached	◯ Not applicable

Specific to Non-Traditional MS4s and per requirements a.ii in the referenced MCM, attach the legal authority summary.

◯ Attached	◯ Not Attached	◉ Not applicable

Per requirements a.iii in the referenced MCM, attach the adopted Enforcement Response Plan and associated documents.

◯ Attached	◯ Not Attached

Post-Construction Site Storm Water Management in New and Redevelopment

Per requirements in c.viii in the referenced MCM, attach findings and compliance actions regarding inspections of high priority post-construction storm water management controls.		
◯ Attached	◯ Not Attached	
Specific to Traditional MS4s and per requirements c.ix, attach the findings and resulting actions regarding inspections of high priority privately-owned post-construction storm water management controls.		
◯ Attached	◯ Not Attached	◯ Not applicable
Pollution Prevention/Good Housekeeping for Permittee Operations		
Per requirements in a.iii in the referenced MCM, attach the completed Standard Operating Procedures.		
◯ Attached	◯ Not Attached	

2020 Annual Report Attachments (4th Calendar Year)

Public Education and Outreach:		
Per requirements c.ii in the referenced MCM, attach the required information regarding outreach materials distributions.		
◉ Attached See Attachment C, SWMP Section 3.1 and SWMP Appendix C	◯ Not Attached	
Public Involvement and Participation:		
Per requirements a.ii in the referenced MCM, attach the required information regarding participation and key target audience feedback on approaches.		
◉ Attached See Attachment C, SWMP Section 3.1.2	◯ Not Attached	
Illicit Discharge Detection & Elimination:		
Per requirements a.i in the referenced MCM, attach the required information regarding categories of non-storm water discharges or flows, associated pollutants, and local controls or conditions.		
◉ Attached See Attachment C, SWMP Section 3.1.2	◯ Not Attached	
Per requirements b.i in the referenced MCM, attach the required information regarding occasional non-storm water discharges or flows, associated pollutants, and local controls or conditions.		
◉ Attached See Attachment C, SWMP Section 3.2.2	◯ Not Attached	
Per requirements e.ii in referenced MCM, attach the list of high priority outfalls.		
◉ Attached See Attachment C, SWMPP Section 3.2.3	◯ Not Attached	
Per requirements e.iii in referenced MCM, attach the required summary of screening results.		
◉ Attached See Attachment C, SWMP Section 3.2.5, SWMP Appendix D	◯ Not Attached	
Specific to Traditional MS4s and per requirements f.iii in the referenced MCM, attach the summary of investigations conducted and corrective actions taken per the required Illicit Discharge Investigation and Corrective Action Plan and any associated documents.		
◯ Attached	◉ Not Attached	◯ Not applicable
Specific to Non-Traditional MS4s and per requirements f.iv in the referenced MCM, attach the summary of investigations conducted and corrective actions taken per the required Illicit Discharge		

Investigation and Corrective Action Plan and any associated documents.		
◉ Attached See Attachment C,	○ Not Attached	○ Not applicable
Post-Construction Site Storm Water Management in New and Redevelopment		
Specific to Traditional MS4s and per requirements a.i in the referenced MCM, attach the adopted ordinance or other regulatory mechanism to require post-construction storm water controls.		
◉ Attached	○ Not Attached	○ Not applicable
Specific to Non-Traditional MS4s and per requirements a.ii in the referenced MCM, attach the legal authority summary.		
○ Attached	○ Not Attached	◉ Not applicable
Per requirements in a.iii in the referenced MCM, attach the Enforcement Response Plan and associated documents.		
◉ Attached See Attachment C, SWMP Section 3.4.5, SWMP Appendix H	○ Not Attached	
Per requirements in c.viii in the referenced MCM, attach findings and compliance actions regarding inspections of high priority post-construction storm water management controls.		
○ Attached	◉ Not Attached	
Specific to Traditional MS4s and per requirements c.ix, attach the findings and resulting actions regarding inspections of high priority privately-owned post-construction storm water management controls.		
○ Attached	◉ Not Attached	○ Not applicable
Per requirements in d.i in the referenced MCM, attach a summary of the discussion outcomes.		
◉ Attached See Attachment D, SWMP Section 3.4.1	○ Not Attached	
Pollution Prevention/Good Housekeeping for Permittee Operations		
Per requirements in a.iii in the referenced MCM, attach the completed Standard Operating Procedures.		
◉ Attached See Attachment C, SWMP Section 3.4.1, SWMP Appendix G	○ Not Attached	

2021 Annual Report Attachments (5th Calendar Year)

Public Education and Outreach:	
Per requirements c.ii in the referenced MCM, attach the required information regarding outreach materials distributions.	
○ Attached	○ Not Attached
Public Involvement and Participation:	
Per requirements a.ii in the referenced MCM, attach the required information regarding participation and key target audience feedback on approaches.	
○ Attached	○ Not Attached
Illicit Discharge Detection & Elimination:	
Per requirements a.i in the referenced MCM, attach the required information regarding categories of non-storm water discharges or flows, associated pollutants, and local controls or conditions.	

◯ Attached	◯ Not Attached	
Per requirements b.i in the referenced MCM, attach the required information regarding occasional non-storm water discharges or flows, associated pollutants, and local controls or conditions.		
◯ Attached	◯ Not Attached	
Per requirements e.ii in referenced MCM, attach the list of high priority outfalls.		
◯ Attached	◯ Not Attached	
Per requirements e.iii in referenced MCM, attach the required summary of screening results.		
◯ Attached	◯ Not Attached	
Specific to Traditional MS4s and per requirements f.iii in the referenced MCM, attach the summary of investigations conducted and corrective actions taken per the required Illicit Discharge Investigation and Corrective Action Plan and any associated documents.		
◯ Attached	◯ Not Attached	◯ Not applicable
Specific to Non-Traditional MS4s and per requirements f.iv in the referenced MCM, attach the summary of investigations conducted and corrective actions taken per the required Illicit Discharge Investigation and Corrective Action Plan and any associated documents.		
◯ Attached	◯ Not Attached	◯ Not applicable
Post-Construction Site Storm Water Management in New and Redevelopment		
Per requirements in c.viii in the referenced MCM, attach findings and compliance actions regarding inspections of high priority post-construction storm water management controls.		
◯ Attached	◯ Not Attached	
Specific to Traditional MS4s and per requirements c.ix, attach the findings and resulting actions regarding inspections of high priority privately-owned post-construction storm water management controls.		
◯ Attached	◯ Not Attached	◯ Not applicable
Pollution Prevention/Good Housekeeping for Permittee Operations		
Per requirements in a.iii in the referenced MCM, attach completed Standard Operating Procedures.		
◯ Attached	◯ Not Attached	
Attach any updates, changes, or improvements to the Small MS4 Storm Water Management Program per requirements in Part IV (E).		
◯ Attached	◯ Not Attached	◯ Not applicable

Annual Report Form Signature

This Annual Report Form must be completed, signed, and certified as follows:

- **For a corporation, by a principal officer of at least the level of vice president;**
- **For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or**

For a municipality, state, federal, or other public facility, by either a principal executive officer or rankir elected official.

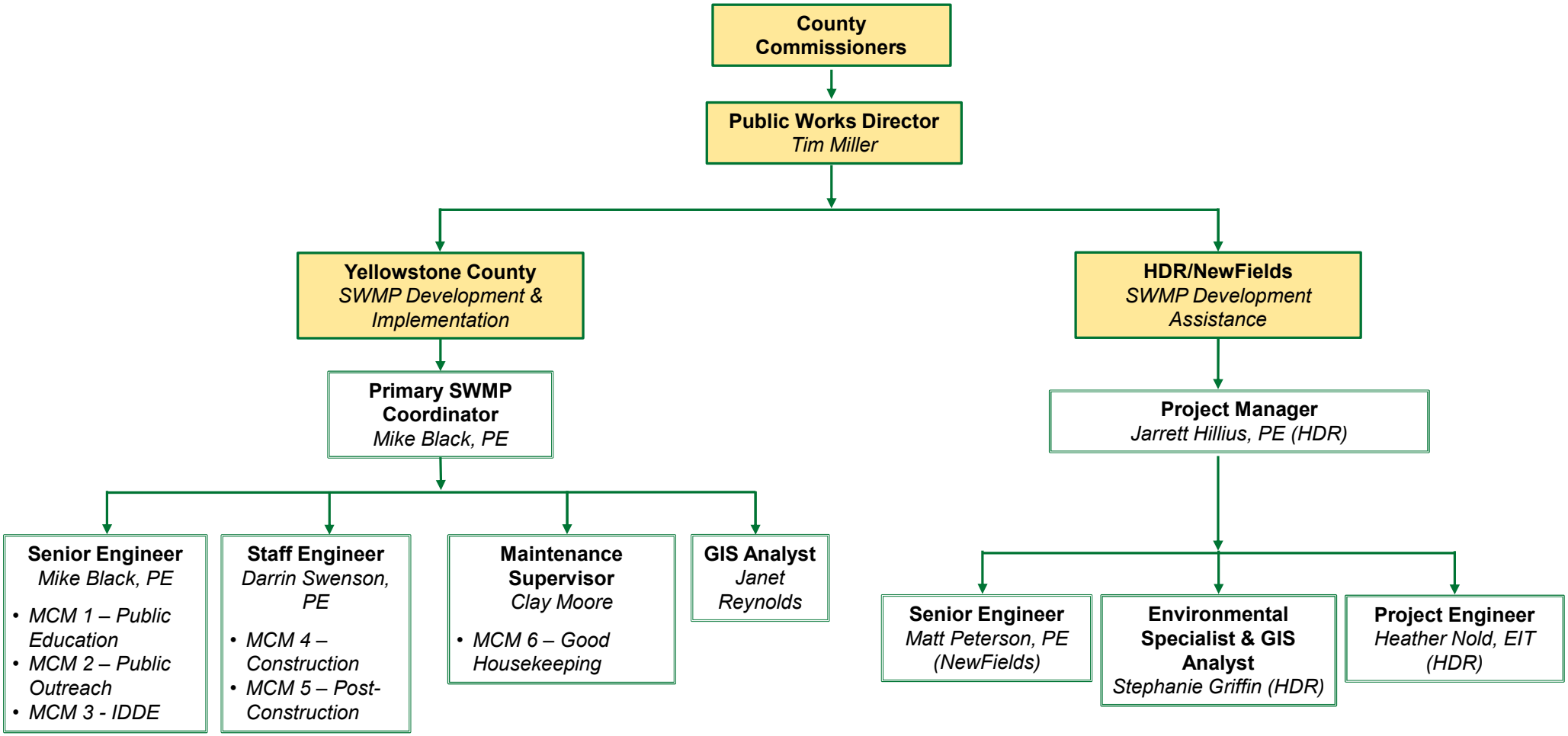
All Permittees Must Complete the Following Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information; including the possibility of fine and imprisonment for knowing violations. [75-5-633, MCA].

Certification of this form indicates conformance with the 2017 General Permit for Storm Water Discharge Associated with Small Municipal Separate Storm Sewer Systems and the required Annual Reporting upon receipt of permit coverage.

Name (Type or Print)	
Donald W. Jones	
Title (Type or Print)	**Phone Number**
Chair - Yellowstone County Commissioners	406-256-2701
Signature	**Date Signed**

Yellowstone County MS4 Program Organizational Chart



Attachment A

Attachment B-Funding and Budget Discussions

1. What are the source(s) of funding for implementation of the MS4 permit and the estimated percentage of the total budget allocated from each source listed?

   The road and bridge fund is the current funding source for MS4 permit implementation. A different funding source may be evaluated in the future, if necessary.

2. Specific to the annual reporting calendar year, how did the permittee justify commitment of resources or budget allocations to the implementation of the MS4 permit to decision-makers and the public? Provide a summary of meetings and outcomes held with decision-makers and the public.

   Discussions were held with the Yellowstone County commissioners following the results of the 2018 program audit and inspection results and the commissioners agreed to fund the program, by using consultants (to further understand options of in-house staff or use of consultants) to bring Yellowstone County back into compliance with the MS4 General Permit. In 2020 YC PW met with YC BOCC to discuss the future resource requirements for the MS4 program. As an outcome of these conversations, the County has contracted HDR to prepare an analysis of the staffing options for the program. The analysis will estimate the total FTEs needed for complete stormwater management program. It will also compare the options of staffing this the program through either a new position within the County Public Works Department or lead by a consultant. This analysis will be presented to the Board of County Commissioners in early 2021 to determine the next step in resource commitments required to implement the MS4 program

3. Has the permittee demonstrated program effectiveness to obtain budget allocations for this annual reporting calendar year or previous years? Why or why not? If so, what program effectiveness metrics were presented?

   No. The program is still being developed. Program effectiveness can be evaluated in the future to justify and obtain budget allocations.

4. How was this annual reporting calendar year's approach to allocate resources different than the previous year's approach?

   In years previous to 2018 our approach to allocating resources was minimal. Our program was inspected in June 2018 by Montana DEQ and it was apparent that we needed to allocate more resources to improve our program. As a result, we hired HDR, Inc. in October 2018 to be an integral part of our SWMP team and we began to re-structure our team's organizational chart (see Attachment 1) and program development

approach. We continue to use HDR in subsequent Task Orders to further our compliance efforts within existing legal constraints. In early 2021 the County has contracted HDR to prepare an analysis of the staffing options for the program comparing a County Staff lead option against a Consultant lead alternative.

5. Was the permittee successful in their request for budget allocations? Describe the outcome and factors that affected or resulted in that outcome.

   Yes. The audit results and violations were the primary factors in affecting the budget allocations, along with our commitment to move further into more compliance (within existing legal constraints).

Yellowstone County, Montana

MS4 Storm Water Management Program

Permit Years: 2017-2021

Updated February 22, 2020

Prepared by

HDR

Contents

Tables

Figures

Appendices

This page is intentionally left blank.

1 Introduction

Yellowstone County's storm drainage system is regulated by Montana's General Permit for Storm Water Discharges Associated with Small Municipal Separate Storm Sewer Systems (MS4), Permit Number MTR040000 (General Permit). The General Permit provides authorization to discharge storm water to waters of the state under the Montana Pollutant Discharge Elimination System (MPDES). The General Permit requires the County to develop, document, and maintain a Storm Water Management Program (SWMP) which includes management practices, control techniques, systems, designs, good standard engineering practices, and such other provisions necessary to reduce the discharge of pollutants from the permitted Small MS4 to the maximum extent practicable (MEP).

This SWMP describes Yellowstone County's (County) MS4 compliance program which includes best management practices (BMPs), control techniques, inventory of systems, designs, and engineering practices to comply with the requirements of the General Permit.

1.1 MS4 General Permit Compliance Status

On June 14th, 2018 Montana DEQ conducted an inspection of the County's SWMP to determine compliance with the General Permit. Montana DEQ concluded that the County's SWMP was deficient and identified violations in each of the following sections of the General Permit that were reviewed:

- Part II.A – Storm Water Management Program
- Part II.A.3 – Illicit Discharge Detection and Elimination
- Part II.B – Training
- Part II.C – Sharing Responsibility
- Part III – Special Conditions
  - Parts A and B
- Part IV – Monitoring, Recording, and Reporting Requirements
  - Parts A and B

The County developed a regulatory compliance schedule to address each violation and agreed to develop an updated SWMP that includes a plan and schedule to address all General Permit requirements over the remainder of the permit term. This SWMP addresses multiple violations and describes the County's plan to develop and implement a comprehensive SWMP over the remainder of the permit term (current Permit Term is January 1, 2017 to December 31, 2021). A copy of the regulatory compliance schedule and a progress update is provided in Section 8.

This SWMP document is updated and submitted with each annual report to document progress towards a fully developed program.

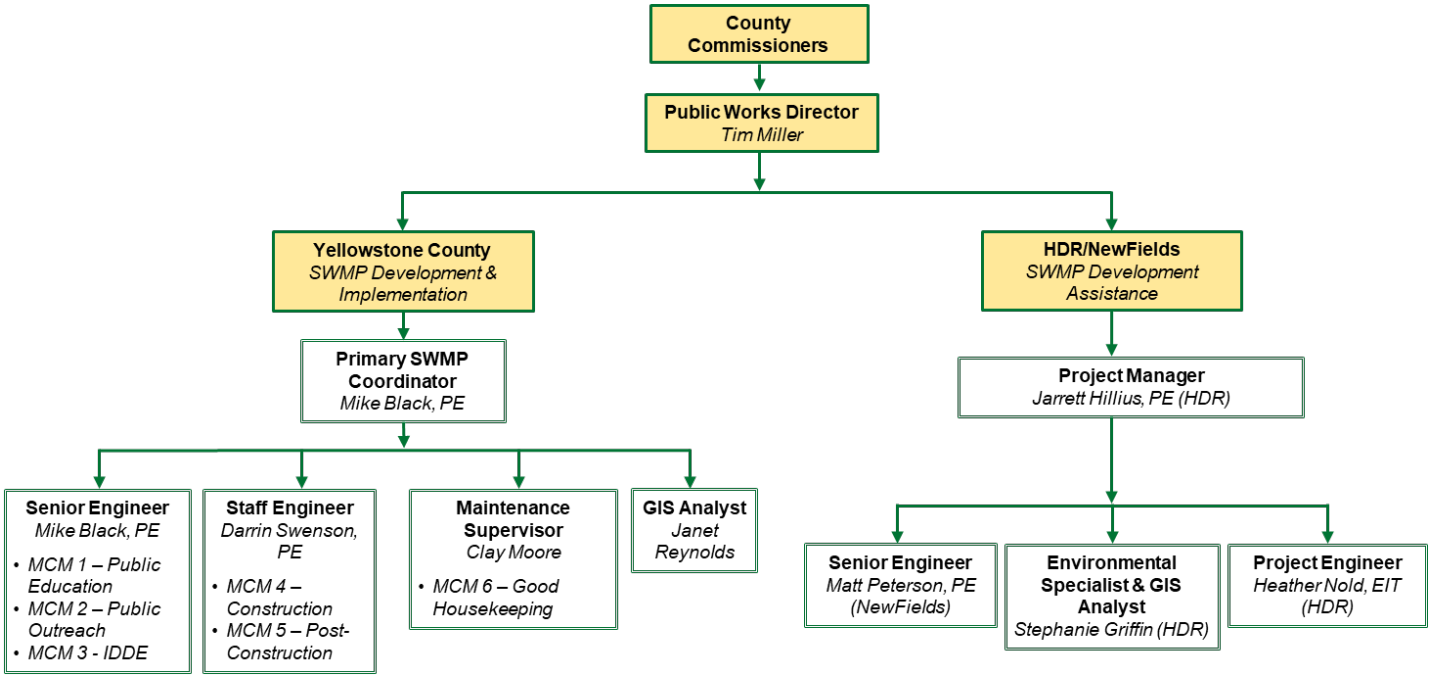
1.2 Storm Water Management Program Team

The County is responsible to develop and implement a coordinated storm water program that includes the development of a SWMP team comprised of persons responsible for implementation of the SWMP and the establishment of formal mechanisms for communication and coordination between team members (e.g., meetings, email updates, etc.) to ensure cooperation necessary to facilitate permit compliance and timely reporting. This section describes the County's SWMP team composition and coordination measures.

1.2.1 SWMP Team Composition

The County is governed by the Board of County Commissioners. The chair of the board, Donald W. Jones, is the certified official to sign documents for the General Permit. The Public Works Department is responsible to develop, implement, adhere to, and enforce the General Permit requirements.

The County has hired HDR Engineering, Inc.[1] to assist with development and implementation of the SWMP. County staff, HDR, and NewFields staff comprise the SWMP team. HDR and NewFields' staff members (hereafter referred to as HDR-NewFields) currently play a large role in the SWMP team. The long-term plan is for roles and responsibilities to transition to County staff members over the coming years. The current roles and responsibilities of SWMP team members will be evaluated in early 2021 to further assess the transition process and determine whether additional County staff members are needed to implement the program. The following organizational chart identifies current SWMP team members and General Permit responsibilities. This organizational chart will be updated annually.



1.2.2 SWMP Team Coordination

Routine communication between team members is an essential component to a successful SWMP. The SWMP team uses the following mechanisms for regular communication between team members:

- Meetings
  - Monthly SWMP check-in meetings are scheduled for 9:30AM on the first Wednesday of each month, or within the first week of the month to meet the team's schedule. The intent of these meetings is to provide a progress update on program development and implementation, as well as upcoming field work and reporting schedule. Staff members

[1] NewFields Companies, LLC (NewFields) subcontracted with HDR in 2020 to provide technical assistance as various components of the SWMP are developed.

from the County and HDR-NewFields attend these meetings. Additionally, HDR-NewFields SWMP team members coordinate on a weekly basis and will continue to do so in an effort to continue to work towards a fully developed County program.
    - Meetings are held in person at the Yellowstone County Public Works office, as well as via an online video meeting application.
    - Meeting summaries have been captured and will continue to be developed to document meeting discussions and action items.
- Direct communication between team members
    - Email
    - Phone
    - Text
    - In-person meetings as needed

In order to efficiently share information, the SWMP team has developed a file system using Microsoft OneDrive & Teams to allow access to team members. The main folder structure is provided below.

- 🗁 Yellowstone County MS4 Program (root file structure)
    - 🗁 Annual Reports
    - 🗁 Monitoring
    - 🗁 Storm Water System Inventory
    - 🗁 SWMP
    - 🗁 SWMP Team Communication
    - 🗁 Training

1.3 Sharing Responsibility

The General Permit allows MS4's to share responsibility to implement minimum control measures (MCMs) with other entities in order to satisfy permit requirements. In previous years, the County has partnered with other entities to implement General Permit requirements without engaging in formal agreements to share responsibilities. For example, over the course of this permit term the County and the City of Billings have coordinated a fair booth at the annual Montana Fair and a joint training session for post-construction storm water management.

The County's SWMP team is currently exploring opportunities to coordinate with the City of Billings and Montana Department of Transportation (MDT) regarding the detection and elimination of illicit discharges. The team has developed draft agreements for cooperation in the detection and elimination of illicit discharges and is in the process of coordinating discussions with both the City of Billings and MDT. Development of formal agreements to share other permit responsibilities is not anticipated for the current permit cycle.

NOTE: *The County has hired HDR-NewFields to help develop the SWMP; however, HDR-NewFields is not formally responsible for implementation of any single MCM. HDR-NewFields is considered to be an integral member of the SWMP team while the program is being developed. A description of HDR-Newfield's role on the SWMP team is provided in Section 1.2.1.*

2 Description of Permit Area

The County MS4 area is comprised of multiple small areas surrounding the City of Billings and a few larger tracts along the Yellowstone River. The County's storm drainage system is separated from the sanitary sewer system, with storm water drainage facilities discharging into local streams and rivers.

This section describes the geographic area of General Permit coverage and receiving County MS4 waterbodies.

2.1 MS4 Boundary

The County's geographic area of General Permit coverage includes the U.S. Census designated urbanized areas for Yellowstone County in accordance with the 2010 census, with the exception of areas in the City of Billings limits. As of December 2020 the County's geographic area of General Permit coverage encompasses 16.07 square miles, shown in Figure 2-1.

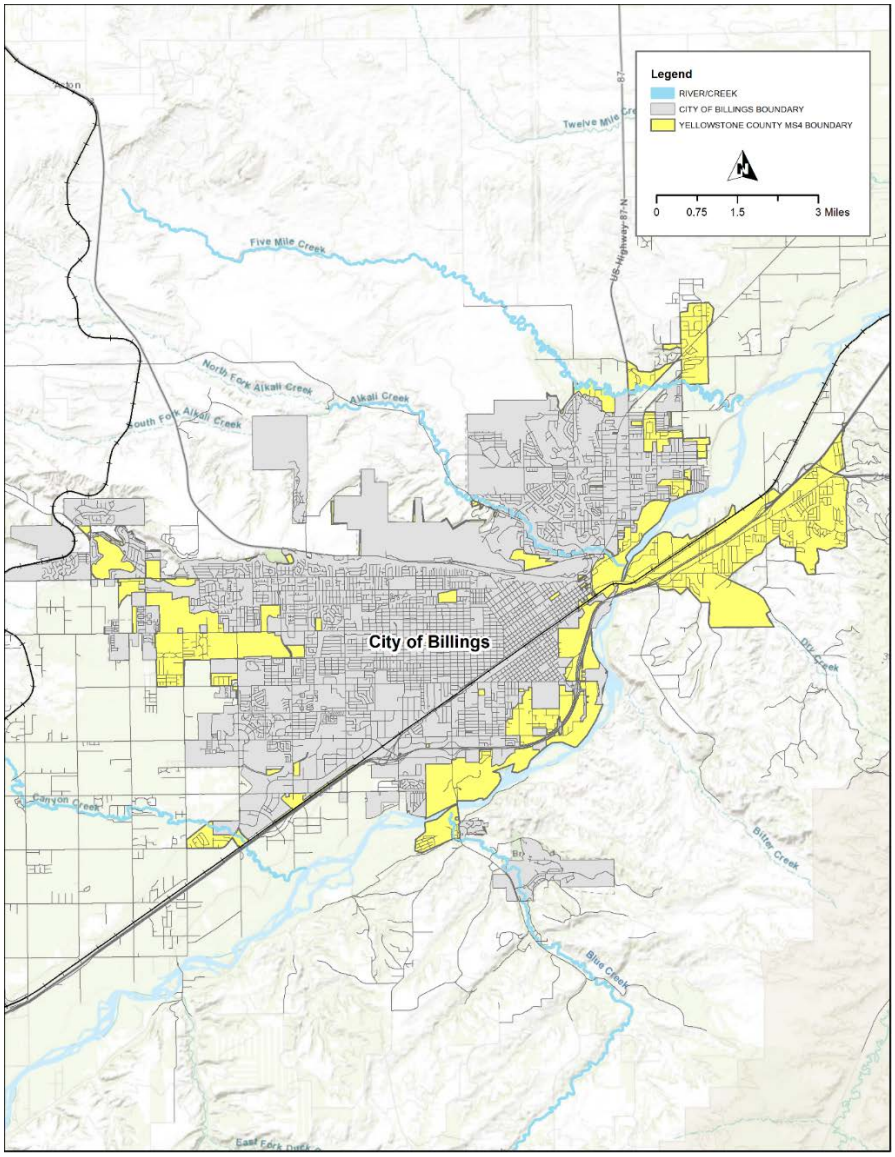


Figure 2-1. Geographic Area of General Permit Coverage

2.2 Receiving Waterbodies

According to the National Hydrography Dataset (NHD), the General Permit coverage area for the County includes eight watersheds:

- Alkali Creek
- Brockway Coulee-Yellowstone River
- City of Billings-Yellowstone River
- Five Mile Creek
- Hogan's Slough
- Lower Blue Creek
- Lower Canyon Creek
- Sevenmile Creek-Yellowstone River

In 2019, the SWMP team conducted a storm sewer system field investigation to identify and map storm sewer features within each of these watersheds. During the investigation the team identified and mapped 139 surface water features and 9 receiving waterbodies. The County's list of surface waters and receiving waterbodies has been updated and is provided in Appendix A. Further discussion on the field investigation, receiving waterbodies, and MS4 outfalls is provided in Section 3.2.3.

3 Minimum Control Measure Management Program

The General Permit requires the County to develop, implement, and manage appropriate types of BMPs in order to minimize the discharge of pollutants to receiving waterbodies. These BMPs are required to be selected, designed, installed, implemented, inspected, and maintained in accordance with good engineering, hydrologic, and pollution control practices. To assist with the development, implementation, and management of BMPs, the General Permit outlines six MCMs which are the fundamental elements of this SWMP:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Storm Water Management
5. Post-Construction Site Storm Water Management in New and Redevelopment
6. Pollution Prevention/Good Housekeeping for Permittee Operations

The following sections provide a description of the MCMs along with the associated requirements for General Permit compliance and current progress for each requirement. An action plan has been developed that details the anticipated activities that will take place over the remainder of the General Permit term.

3.1 MCM 1 and 2: Public Education, Outreach, Involvement, and Participation

Elements of Education and Outreach Program
☑ Identify Key Target Audiences
☑ Identify Potential Pollutants
☑ Develop Outreach Strategy/Outreach Material (ongoing)
☑ Distribute Outreach Material (ongoing)
☑ Update Storm Water Website (ongoing)

Public education, outreach, and participation are essential to preventing storm water pollution and protecting local waterbodies. Part II.A.1 and Part II.A.2 of the General Permit require the County to implement a storm water public education program and to develop a strategy to involve key target audiences. The intent of the program is to provide educational materials and outreach activities to key target audiences within the County to help raise awareness about the impacts of storm water discharges on local waterbodies. The program is also intended to educate the audiences about certain behaviors and activities that have the potential to pollute storm water while at the same time motivating a change in these behaviors and activities in order to reduce storm water pollution. The following sections provide a specific schedule and engagement results of the activities the SWMP team has initiated.

3.1.1 Key Target Audiences

Per Part II.A.1.a.i of the General Permit, the County has evaluated businesses, industries, and community behaviors to identify key target audiences for public education, outreach, and participation. The list of target audiences is provided in Table 3-1.

Table 3-1 Summary of Key Target Audiences

Key Target Audience	Description	Rationale	Potential Pollutants
Construction Industry	▪ Business managers ▪ Contractors ▪ Trades workers	Construction sites have a high potential to release pollutants if not managed properly.	Sediment, concrete washout, trash & debris, paint, equipment chemicals
Automotive Maintenance Facilities	▪ Commercial car-care ▪ Retail businesses ▪ Commercial car washes ▪ Gas stations	Facilities have a high potential to release significant pollutants.	Oil, fuel, cleaning chemicals, hazardous chemicals
Landscaping Companies	▪ Business that develop and maintain commercial and private landscape areas	Residual chemicals and debris have a high potential to be released into the MS4.	Fertilizers, pesticides, landscape debris, sediment
County Residents	▪ Residents within Yellowstone County MS4	Household maintenance, car maintenance, and pet waste have a high potential to release significant pollutants.	Landscape debris, household chemicals, pet waste, automotive chemicals

3.1.2 Outreach Strategy

The County has developed a public outreach plan to guide interactions with the public, document strategies for public education and involvement, and comply with Part II.A.1.c and Part II.A.2.a of the General Permit. The plan, presented in this section, documents strategies that will engage key target audiences using two types of engagements: passive engagement and active engagement.

- Passive engagements focus on educating the public by distributing information through formats that do not require personal interaction. Passive strategies allow SWMP team members to educate a large number of people using limited resources.

- Active engagements provide the public with both education and involvement opportunities through direct interaction with SWMP team members or other personnel assisting with implementation of the storm water management program.

Table 3-2 provides a summary of active and passive engagement strategies implemented by the County SWMP team and the remainder of this section describes the County's approach to implement each engagement strategy.

Table 3-2 Summary of Public Outreach and Involvement Strategies

Engagement Type	Engagement Strategy	Applicable Key Target Audience
Passive	▪ Storm water website ▪ Educational fliers ▪ Pet waste stations	▪ Construction industry ▪ Automotive maintenance facilities ▪ Landscaping companies ▪ County residents
Active	▪ Public contact program ▪ Industry conferences and training seminars ▪ Public interviews ▪ County fair storm water booth	▪ Construction industry ▪ Automotive maintenance facilities ▪ Landscaping companies ▪ County residents

Passive Engagement Strategies

- **Storm Water Website:** The County website serves as a public communication mechanism for key target audiences that provides information on storm water pollution prevention, the MS4 program, illegal dumping and reporting, and links to new public outreach material. The website is located at the following address: http://www.co.yellowstone.mt.gov/publicworks/StormWater.asp
  - **Target Audiences:** Construction industry, automotive maintenance facilities, landscaping companies, County residents
  - **Target Pollutants:** Sediment, trash and debris, automotive chemicals, nutrients, yard waste, pet waste, household chemicals
  - **Strategy and Schedule:**
    - ☑ 2019 – Comprehensive update to website
    - ☑ 2020 – Upcoming events section was added to the website. This section was intended to provide regular updates to communicate storm water outreach events. Most in-person outreach events were postponed due to COVID-19.
    - ☐ 2021 – Update the website with upcoming events to communicate outreach events, storm water pollution prevention plan (SWPPP) classes, the Montana Fair booth, and other storm water activities if in-person contact can resume. If in person-contact cannot resume online SWPPP classes will be advertised on the website.
  - **Treatment Area:** Yellowstone County
  - **Distribution Method:** Website content is available to anyone with internet access
  - **Method to Document Participation and Collect Feedback:** *Google Analytics* will be used to track website page visits.
  - **Participation and Feedback Results:**
    - 2017 & 2018 – Unknown (not tracked in 2017)
    - 2019 – Comprehensive website update implemented in December 2019

- 2020 – Results revealed an average of nine visits per month, with an average of seven of those being unique views. Viewers visited the page for an average of 2 minutes. Figure 3-1 shows monthly page views from April to December 2020.

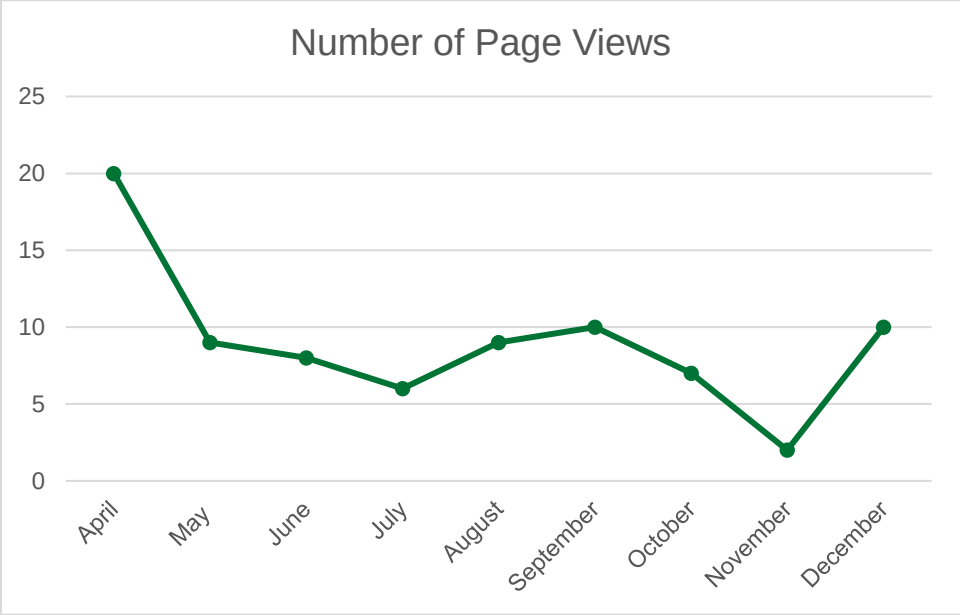


Figure 3-1. Google Analytics Statistics Collected from Storm Water Website

- 2021- Results will be presented, analyzed, and compared to 2020 statistics.

- **Educational Fliers:** Storm water fliers provide valuable information to key target audiences about storm water pollutants, pollutant generating activities, and pollution prevention techniques. The SWMP team has developed four storm water fliers that target each of the key target audiences identified in Table 3-1, three of these fliers were distributed in 2020. Each of the four fliers are available on the County storm water website and a copy of each flier is provided in Appendix C.
  - **Target Audiences:** Construction industry, automotive maintenance facilities, landscaping companies, County residents
  - **Target Pollutants:** Sediment, trash and debris, automotive chemicals, nutrients, yard waste, pet waste, household chemicals
  - **Strategy and Schedule:**
    - ☑ 2019 – Developed four storm water fliers and distributed at Montana Fair
    - ☑ 2020 –One bulk flier was mailed to 800 residential addresses within the County MS4 area. The bulk flier, available in Appendix C, is a compilation of the automotive, landscaping, and residential fliers developed in 2019.
    - ☐ 2021 – The SWMP Team is planning to distribute the bulk flier to an additional 800 residential addresses.
  - **Treatment Area:** Yellowstone County
  - **Distribution Method:** Electronic format available on website, hardcopy format available at County Office and County Shops. Fliers will be mailed directly to County residents.

- **Method to Document Participation and Collect Feedback:** The number of educational fliers distributed will track progress. The SWMP Team's initial goal of distributing 25 fliers per industry in 2020 has been revised; rather than distribute individual fliers to industries the team plans to distribute a bulk flier (discussed above) to one-quarter of the County's approximately 3,000 residential addresses annually.
- **Participation and Feedback Results:**
  - 2017 – N/A
  - 2018 – N/A
  - 2019 – Limited results because of limited distribution opportunities
  - 2020 – Fliers were distributed and mailed successfully. Feedback results were not measured.

- **Pet Waste Stations:** Pet waste stations were installed in 2011 at Zimmerman Park and Two Moon Park to help maintain the parks cleanliness and to reduce storm water pollution. These stations are located at the main entrance to these parks and consist of PVC containers with plastic bags. Signs are posted above each station to promote awareness and to encourage visitors to help maintain the parks cleanliness. These stations are managed by the County Parks Board with assistance from volunteers within the Yellowstone River Parks Association (YRPA).
  - **Target Audiences:** County residents
  - **Target Pollutants:** E. coli, nitrogen, phosphorus
  - **Strategy and Schedule:**
    - ☑ 2019 – Documented the number and location of pet waste stations
    - ☑ 2020 – The County discussed potential future locations for pet waste stations.
    - ☐ 2021 – Evaluate effectiveness of pet waste stations and MetraPark animal waste removal plan (see MetraPark SOP)
  - **Treatment Area:** Yellowstone County
  - **Distribution Method:** Physical distribution of bags for owners to retrieve pet waste
  - **Method to Document Participation and Collect Feedback:** The number of bags utilized at each pet waste station will be documented to determine efficacy.
  - **Performance:**
    - 2017 – Unknown
    - 2018 – Unknown
    - 2019 – Unknown
    - 2019 – Limited results because of limited distribution opportunities
    - 2020 – Estimated pet waste removed by County Parks staff
      - Zimmerman Park: 200 pounds/week
      - Two Moon Park: 100 pounds/week
      - Norm's Island Park: 120 pounds/week

Active Engagement Strategies

- **Public Contact Program:** The County has provided various ways for businesses and residents to contact MS4 staff members. This allows the County to track storm water complaints, address questions or concerns relating to storm water, and it provides the

opportunity for community members to be involved. To spread awareness of the storm water program, the County will investigate opportunities to engage in a series of presentations at local schools.

- **Target Audiences:** County residents (students and families)
- **Target Pollutants:** Illegal dumping, sediment, trash and debris, automotive chemicals, nutrients, yard waste, pet waste, household chemicals
- **Strategy and Schedule:**
  - ☑ 2019 – County contact information provided on website and outreach material
  - ☑ 2020 – The County coordinated internally with staff at the County Weed District because they are already performing educational outreach at local schools. Due to COVID-19, limited opportunity to visit the schools was available to provide outreach activities to teach the impact of storm water pollutants and explain best management practices.
  - ☐ 2021 – The SWMP team will coordinate outreach presentation with schools within Yellowstone County through virtual video meeting options.
- **Treatment Area:** Yellowstone County
- **Distribution Method:** School presentations
- **Method to Document Participation and Collect Feedback:** The total number of community complaints, questions, and concerns received from the Public Contact Program will be tracked. For educational outreach, the number and size of student presentations will determine efficacy.
- **Performance:**
  - 2017 – Unknown
  - 2018 – Unknown
  - 2019 – The public contact program received two inquiries regarding construction storm water.
  - 2020 – The public contact program received zero inquiries.

- **Industry Conferences and Training Seminars:** Storm water conferences and training seminars take place each year for individuals and businesses within the public and private sector. These conferences and training seminars provide the opportunity educate the public about program updates and new requirements within Yellowstone County. Examples of conferences and trainings include SWPPP administrator training, the Montana Storm Water Conference, and the Montana Contractors Association (MCA) Annual Convention.
  - **Target Audiences:** Construction industry, landscaping companies
  - **Target Pollutants:** Sediment, trash and debris, nutrients, yard waste
  - **Strategy and Schedule:**
    - ☑ 2019 – Identify and evaluate storm water conferences, training, and organization involvement opportunities
    - ☑ 2020 – Due to COVID-19 the County had limited opportunities to participate in SWPPP trainings with local contractors and encourage attendance. The County's Primary SWMP Coordinator attended local Homebuilder's Association meetings as able due to COVID-19 disruptions and provided updates on upcoming training opportunities. Upcoming virtual SWMP training

offerings are posted on the County storm water website. These postings include direct links for contractors to register for SWPPP trainings.
    - ☐ 2021 – Participate in industry conferences
  - **Treatment Area:** Yellowstone County
  - **Distribution Method:** Upcoming events are posted on the website and communicated during in person Homebuilder's Association meetings.
  - **Method to Document Participation and Collect Feedback:** Annual increase in Yellowstone County's participation at SWPPP trainings, community meetings like the Homebuilder's Association meetings, and community events like the Montana Fair booth.
  - **Performance:**
    - 2017 – Unknown
    - 2018 – Unknown
    - 2019 – Website, Montana Fair booth
    - 2020 – Website, Montana Fair booth, Homebuilder's Association meetings

- **Public Interviews:** Interviews with local news broadcasting stations provides the opportunity to broadcast storm water awareness considerations and to announce program updates to key target audiences.
  - **Target Audiences:** County residents
  - **Target Pollutants:** Sediment, trash and debris, nutrients, yard waste, pet waste, household chemicals
  - **Strategy and Schedule:**
    - ☑ 2019 – Interview to discuss the County MS4 program on May 28th with KULR-8 News Station broadcasted on live television
    - ☐ 2020 – No progress out was made in regard to public interviews in 2020
    - ☐ 2021 – Request follow-up interview and collaboration with the City of Billings Storm Water Program (program updates and storm water awareness)
  - **Treatment Area:** Yellowstone County
  - **Distribution Method:** Public interviews are available to anyone with television or internet access
  - **Method to Document Participation and Collect Feedback:** Number of TV viewers will be used to document effectiveness.
  - **Performance:**
    - 2018 – Unknown
    - 2017 – Unknown
    - 2019 – Unknown
    - 2020 – New interview was not conducted. One is planned for 2021
- **County Fair Storm Water Booth:** The annual Montana Fair at MetraPark serves as a public outreach opportunity to promote awareness about storm water and applicable pollution prevention techniques. For the past 12 years, the County has partnered with the City of Billings to operate and manage a Storm Water Booth with poster boards, placard hand-outs, and contact information.
  - **Target Audiences:** Construction industry, County residents
  - **Target Pollutants:** Sediment, trash and debris, nutrients, yard waste, pet waste, household chemicals

- **Strategy and Schedule:**
  - ☑ 2019 – Operate and manage booth
  - ☑ 2020 – Operate and manage booth
  - ☐ 2021 – Operate and manage booth
- **Treatment Area:** Yellowstone County
- **Distribution Method:** Fliers are available for residents to review and take with them at the booth
- **Method to Document Participation and Collect Feedback:** The number of fliers taken from the booth and the number of booth visitors will be tracked when County or City of Billings personnel are operating the booth.
- **Performance:**
  - 2017 – Unknown
  - 2018 – Unknown
  - 2019 – Unknown
  - 2020 – Yellowstone County Storm Water Public Works and City of Billings Public Works personnel operated the booth together for several days during the Montana Fair. An estimated 290 individuals stopped by the both during this time while staffed. Another 450 individuals were estimated to visit while the booth was unmanned, equating to an estimated 740 total booth visitors.

3.1.3 Storm Water Website

The County has a storm water webpage that provides information to the public about storm water. Access is available through the County's Public Works website for key target audiences, interested stakeholders, and the general public. Per Part II.A.1.a.ii and Part II.A.2.b of the General Permit, the website includes the following information:

- A copy of the General Permit
- Access/links to outreach material
- Current outreach event information
- Upcoming storm water events
- SWMP documents and updates
- Copies of the annual reports
- An effective mechanism for providing continued public input for the SWMP
- Information on how to identify sources of illicit discharges
- Procedures on how to report an illicit discharge
- A summary of County's requirements for covered construction activities
- Instructions on how to submit construction project complaints

3.2 MCM 3: Illicit Discharge Detection and Elimination

Administrative Rule of Montana (ARM) 17.30.1102(7) defines an illicit discharge as any discharge to a MS4 that is not composed entirely of storm water except discharges pursuant to an MPDES permit and discharges resulting from firefighting activities. Part II.A.3 of the General Permit requires the County to develop, implement, and enforce a program to detect and eliminate illicit discharges. The following sections describe the current status of the County's illicit discharge detection and elimination (IDDE) program and the activities that will take place over the remainder of the permit term.

NOTE: The following sections outline Yellowstone County's plan for developing an IDDE program. Implementation of this program is dependent upon the County's ability to establish legal authority through a storm water ordinance or other regulatory mechanism which is currently being evaluated. Research and legal progress towards establishing allowable legal authority is included in Appendix I. and discussed in Section 3.2.4.

3.2.1 Illicit Discharge Program Overview

Elements of IDDE Program
☑ Non-Storm Water Discharge Evaluation
☑ Occasional Incidental Non-Storm Water Discharge Evaluation
☐ Storm Water Sewer Inventory (95% complete)
☐ Illicit Discharge Prohibitions and Enforcement
☐ Outfall Inspections (>30% complete)
☐ Illicit Discharge Investigations (ongoing)
☐ Investigation and Enforcement Documentation

The SWMP team is actively working to develop an IDDE program that addresses all General Permit requirements. To accomplish this, the County has identified five key objectives that will be used to build the IDDE program. These objectives are shown in Figure 3-2.

To achieve these objectives, the primary elements of the IDDE program consist of evaluating non-storm water discharges and occasional incidental non-storm water discharges, developing a storm water sewer inventory, establishing illicit discharge prohibitions, conducting outfall inspections, and conducting illicit discharge investigations. Once the program is developed, documentation will be provided in Appendix D and any updates or investigations will be documented in each annual report.

Figure 3-2. IDDE Program Key Objectives

The following sections describe the IDDE program in detail and document the current status of each requirement. For requirements that have yet to be addressed, a plan is provided that details future activities and the anticipated schedule for these activities in order to achieve compliance.

3.2.2 Non-Storm Water Discharge Evaluations

Per Part II.A.3.a.i and Part II.A.3.b.i of the General Permit, the County is required to annually evaluate non-storm water discharges and occasional incidental non-storm water discharges within the MS4 boundary. The purpose of this evaluation is to:

1. Determine if the non-storm water discharge is suspected of being a significant contributor of pollutants;
2. Identify what the potential associated pollutants are for each discharge; and,
3. Identify what local storm water management controls or conditions are or will be implemented to reduce pollution.

The 2020 non-storm water discharge and occasional incidental non-storm water discharge evaluations are provided in Table A-1 and Table A-2 in Appendix A. The SWMP team did not identify any significant contributors of pollutants to the MS4; however, the following non-storm water discharges were identified as potential contributors:

- Rising ground waters
- Irrigation water
- Individual residential car washing
- Dechlorinated swimming pool discharges

- Street wash water

The SWMP team will evaluate this list in 2021 to determine whether they are significant contributors of pollutants to the MS4 and consider local BMPs which could be implemented to reduce the potential for discharge of pollutants to the MS4.

3.2.3 Storm Water Sewer Inventory

Major Milestone	Schedule & Deadline
▪ Submit Preliminary Map	☑ March 2019
▪ Phase 1 Field Investigation	☑ Summer 2019
▪ Submit Updated Map	☑ March 2020
▪ Analyze Phase 1 data	☑ Summer/Fall 2020
▪ Submit 2020 SWMP with updated Map	☑ March 2021
▪ Phase 2 Field Investigation	☐ Summer 2021
▪ Final Map	☐ Fall/Winter 2021

Per Part II.A.3.c of the General Permit, the County is required to inventory storm water sewer infrastructure to thoroughly track illicit discharges, contain spills, and determine high priority areas. The 2018 inspection by Montana DEQ determined that the County's storm water inventory was deficient. As a result, the County developed an inventory analysis plan and schedule to develop a system-wide storm sewer system inventory. The plan and schedule is shown in Table 3-3.

Table 3-3. Storm Water Inventory Analysis Plan & Schedule

Task	Description	Dates
1. Confirm area to be mapped (County MS4 boundary)	Identify 2010 U.S. Census designated urbanized area and City of Billings MS4 boundaries	Sept 2018 (completed)
2. Identify items to be mapped	**Items to be mapped:** *MCM 3*: outfalls, surface waters that receive discharges from outfalls, inlets, open channels, subsurface conduits/pipes, dry wells, conveyances, high priority areas *MCM 5:* High priority existing post-construction storm water management controls, all new (post 2017) storm water management controls *MCM 6:* Location of permittee owned facilities and known activities that have the ability to release contaminants to the MS4	Sept 2018 (completed)
3. Desktop analysis and interviews	Review available hard-copy and digital data and interview field staff to create preliminary base map. Identify areas and data to be gathered during field investigation.	Nov 2018 to Apr 2019 (completed)
4. Submit preliminary map to DEQ	Results of desktop analysis with description of upcoming field investigation will be submitted with 2018 annual report	Mar 2019 (completed)
5. Field investigation (phase 1)	County and/or consultant staff will collect storm water inventory data using handheld GPS units. Use of intern(s) will be considered to maximize efficient use of funds. GPS data will be GIS compatible for integration with the County's GIS mapping platform.	May 2019 to Aug 2019 (completed)
6. Field data analysis (phase 1)	Field data will be added to the preliminary base map by County or consultant staff. Preliminary high priority areas will be identified. Additional field investigation needs will be identified, if necessary.	Sept 2019 to Apr 2020 (completed)

Task	Description	Dates
7. Submit updated map to DEQ	Results of phase 1 field investigation will be submitted with 2019 annual report. Description of upcoming field investigation will also be provided (if necessary).	Mar 2020 (completed)
7.a. Collaborative Field Data Analysis	Further organize & define dataset features, ownership, O&M responsibilities, and analyze County ROW extent.	Summer/Fall 2020[1]
7.b. Submit 2020 SWMP with updated Map	Verified data added to updated Phase 1 maps.	Mar 2020[1]
8. Field investigation (phase 2) (if necessary)	County and/or consultant staff will collect remaining items for storm water inventory data.	June 2021 to Aug 2021[2]
9. Field data analysis (phase 2) (if necessary)	Field data will be added to the base map by County or consultant staff. High priority areas will be updated.	Sept 2021 to Apr 2022[2]
10. Submit completed map to DEQ	Results of phase 2 field investigation will be submitted with 2021[2] annual report.	Mar 2022[3]

[1] 7.a.& b. was not included in the original (2018) plan and schedule.

[2] 2018 plan and schedule targeted 2020 annual report for Phase 2 field investigation and data analysis.

[3] 2018 plan and schedule targeted 2020 annual report for Phase 2 map submission.

2019 Storm Sewer Inventory Activities

In 2019, the SWMP team performed the phase 1 field investigation and data analysis to identify and map storm sewer features associated with the County's MS4. The primary objectives of the investigation were to:

- Identify all known County MS4 outfalls;
- Identify all known surface waters flowing through the County's MS4 area;
- Identify all known surface waters that receive discharges from the County's MS4 outfalls;
- Identify all known storm sewer system components in the County's MS4 area;
- Identify all known post-construction storm water management facilities;
- Identify/designate high priority areas; and,
- Document all data in an organized GIS database.

Field activities occurred between June and August of 2019. During that time period, field personnel walked and drove approximately 120 miles within accessible public right-of-way (ROW) limits and spent approximately 270 hours in the field collecting data. In total, 2,265 provisional features were identified, mapped, and stored in an ArcGIS Online inventory database. Provisional storm water sewer inventory maps and additional details on the field investigation are documented in the *2019 Field Investigation Summary Report*.

2020 Storm Sewer Inventory Activities

In 2020, the SWMP team performed a thorough and collaborative analysis of all storm sewer inventory data collected in 2019. Activities included: the review, organization, and further definition of previously collected data; analysis of right of way, land ownership, and operations and maintenance agreements; analysis of data gaps; and a comparative analysis of parcel data. The SWMP team met several times to review and evaluate the data and mapping data depiction. Between May and September 2020, the team reviewed the complete GIS inventory dataset, evaluated data gaps and

limitations, assigned high priority areas and outfalls, assessed right-of-way/ownership, and reviewed post-construction storm water management facilities. These activities resulted in a net reduction of County MS4 storm sewer facilities (including outfalls) compared to the provisional data collected in 2019. The primary reason for this reduction is attributed to data being collected outside of the County right-of-way in 2019 (i.e., MDT, City of Billings, and private facilities). The inventory has been updated and is approximately 95% complete. Updated storm water sewer inventory maps and additional details on the storm sewer inventory activities are documented in the *Storm Sewer Inventory Field Investigation and Data Analysis Report* provided in Appendix D and a brief summary of the results is provided in Table 3-4.

Table 3-4. Storm Water Sewer Inventory Data Summary

Storm Sewer Features	Types of Facilities		Number of Features
Outfalls	▪ Culvert ▪ Storm Sewer	▪ Open Channel	26
Surface Waters	▪ Stream ▪ Lake ▪ Pond	▪ Reservoir ▪ Irrigation ▪ Drainage System	139
Open Conveyances	▪ Swale ▪ Ditch	▪ Valley Gutter ▪ French Drain	602
Closed Conveyances	▪ Culvert	▪ Storm Sewer	449
Inlets, Manholes, Drywells	▪ Inlet	▪ Manhole	201
Post-Construction Facilities	▪ Infiltration Basin ▪ Bioretention ▪ Permeable Pavement ▪ Dispersion ▪ Biofiltration Swale	▪ Extended Detention Basin ▪ Wet Detention Basin ▪ Proprietary Treatment Device ▪ Drywell ▪ Other	50
		Total Number of Features	1,467

2021 Storm Sewer Inventory Planned Activities

The SWMP team has identified 18 remaining data gaps that will require further field investigation and/or review of as-built drawings in 2021. Field personal will conduct site visits to collect data using GIS based survey equipment to resolve a portion of the remaining data gaps (Phase 2 field investigation). Additionally, SWMP team members will request and review as-built data of several facilities to resolve applicable data gaps. The data gathered during these investigations will be added to the existing inventory database and a quality review will be conduction prior to finalizing the inventory. Depending on the release timing of the 2020 census data any new MS4 boundary areas may also be collected in the future. The updated inventory maps (pdf and ArcGIS online database) will be finalized submitted with a future annual report and published to the County GIS site as appropriate.

High Priority Areas and Outfalls

The SWMP team has identified five high priority areas, which are areas that may be more prone to occurrences of illicit discharges and are in proximity to waterbodies (when compared to the remainder of the County's MS4 regulated area). The high-priority areas and the associated high priority outfalls are described in Table 3-5.

Table 3-5. High Priority Areas and High Priority Outfalls

High Priority Area Name	Outfall(s)[1]	Receiving Waterbody	Description/Location	Rationale
HPA-1	N/A	Yegan Drain (via surface runoff)	60-acre industrial area located west of I-90 and east of Sugar Ave, near the S 27th St interchange. Industrial services include truck and trailer repairs, welding, metal and steel supply, a traffic control storage yard, a brick manufacturer, and a bus garage.	The multiple industrial facilities with a high percentage of unvegetated surface and limited storm water management facilities could discharge pollutants to the Yegan Drain.
HPA-2	W-I90-OF-006 W-I90-OF-010 W-I90-OF-011	Yellowstone River	Metra Park Facility: Approximately 130 acres bordered by 1st Ave, US 87, Bench Blvd, Alkali Creek, and the Yellowstone River.	The facility contains a high percentage of impervious area, hosts frequent public events (including some with animals onsite), and is bordered by two waterbodies.
HPA-3	LKWD-OF-014	Coulson Ditch & Unnamed Stream	175-acre industrial area between Old Hardin Rd and the MRL Railroad tracks, west of Exxon Mobile Rd. The area includes a lumber supply yard, a steel and salvage yard, vehicle repair businesses, and a vehicle salvage yard.	The multiple industrial facilities (including a salvage yard) with a high percentage of unvegetated surface and limited storm water management controls could discharge pollutants to nearby surface waters.
HPA-4	N/A	Hogan's Slough (via surface runoff)	15-acre industrial area East of 32nd Ave and North of Gabel Rd. Hogan's Slough and Canyon Creek Canal both run through site. The area contains an autobody repair service, powder coating service, and an open-air storage yard.	Proximity to waterbodies and potential for automotive spills.
HPA-5	W-I90-OF-009	Yegan Drain	25-acre industrial area north of S 27th St and west of I-90. The primary business within the area is CARQUEST Auto parts	The area drains to the Yegan Drain via a storm sewer system. Potential concerns with the storm sewer system have been identified that the SWMP team is investigating.

[1] Outfalls that discharge water from the County's high-priority areas are considered high-priority

3.2.4 Illicit Discharge Prohibitions

In accordance with Part II.A.3.d, the County is required to prohibit non-storm water discharges (i.e., illicit discharges) into the regulated storm sewer system (to the extent allowable under state law). The County does not have full authority under state law to use a single ordinance or other regulatory mechanism to accomplish this requirement; therefore, the SWMP team is using and pursuing multiple avenues to make progress towards prohibiting illicit discharges to the MS4.

RiverStone Board of Health Rules

Rules and Regulations for Control of Nuisances Affecting Public Health – Rule #1

Section 1 of this rule reads as follows:

No person or persons shall allow filth or debris, either from humans or animals to accumulate on owned or rented premises, either outside or inside of a building that will directly or indirectly contribute to or cause a health hazard or nuisance. Filth and debris shall include, but not be limited to the following:

A) Putrescible Garbage
B) Solid or Liquid Septic Effluent
C) Dead Animals
D) Human or Animal Feces
E) Sewer Gases

While this rule does not directly address non-storm water discharges to the MS4, implementation and enforcement of the rule undoubtedly prevents rainwater and runoff from being contaminated with filth and debris prior to discharging to the MS4.

Rules and Regulations for Onsite Wastewater Treatment Systems – Rule #3

Rule #3 regulates all on-site wastewater treatment systems in the County, with the exception of public sewer systems. Section 9 of the rule prohibits the construction, operation, or use of an onsite wastewater treatment system that may pollute or contaminate state water in violation of Montana Code Annotated (MCA) 75-5-605.

Most on site wastewater treatment systems in the County consist of a septic tank and a drain field. This rule effectively prohibits discharge of wastewater from a faulty or poorly designed on-site wastewater treatment system from discharging to the MS4.

The SWMP team is considering pursuing a revision of Rule #3 to explicitly prohibit discharge of wastewater from private and public buildings on the ground or to storm drainage facilities.

Rules and Regulations for Onsite Collection and Storage of Solid Waste – Rule #4

Rule # 4 states that *No person shall allow garbage or refuse to accumulate around garbage storage areas* (Part D). While this rule does not explicitly prohibit illicit discharges, enforcement of the rule prevents runoff polluted with trash to discharge to the MS4 (especially in areas where garbage storage areas are located near MS4 facilities).

County Subdivision Regulations

Based upon the Montana Subdivision and Platting Act (MSPA) (MCA 76-3), the County is authorized to develop and enforce a set of regulations that govern the development of subdivisions within its jurisdictional area. More specifically, MCA 76-3-501 authorizes the County to address drainage within the subdivision regulations; however, the County Attorney's Office has noted that per MCA 76-3-511, subdivision regulations shall be no more stringent than state regulations or guidelines (with the exception that a legal process must be followed to bypass this requirement). Therefore, the County believes that subdivision regulations can be revised to more closely align with *Circular DEQ 8: Montana Standards for Subdivision Storm Water Drainage*. The SWMP team is in the process of coordinating with the City/County Planning Department to update the subdivision standards were applicable. This will only affect any new development and would not be retroactive to existing (recorded, constructed or not constructed) subdivisions.

Section 4.8 of the County Subdivision Regulations provides regulations for the design and implementation of sanitary sewer systems within new subdivisions. The SWMP team will be suggesting minor revisions to this section in 2021 to make it more clear that sanitary sewer systems are required for all new subdivisions. While the County is confident that all new subdivisions provide sanitary sewer systems, the proposed revision would clearly prohibit the connection of any wastewater facilities to the MS4 facilities.

Compliance Progress Discussion

The SWMP team recognizes that the rules and regulations discussed above do not prohibit all non-storm water discharges to the MS4. In accordance with suggestions from DEQ staff, the team investigated the potential to create and implement a water quality district and associated ordinance to prohibit non-storm water discharges to the MS4. The team determined that, with the exception of prohibiting discharge of automotive fluids to the MS4, current state laws (MCA 75-5-311) do not provide authority to regulate non-storm water discharges that could not be addressed simply through an amendment to RiverStone Board of Health Rule #3 (discussed above). Additional information regarding the investigation of authorities granted under a water quality district is provided in Appendix I. The team will discuss the potential to develop a water quality district with the Board of County Commissioners in 2021.

Per Part II.A.3.d of the General Permit, the County developed a formal enforcement response plan (ERP) for illicit discharges and connections in 2019. The ERP describes the limited response and enforcement procedures currently available for County personnel to use when addressing suspected illicit discharges and connections. Additional response and enforcement procedures will be incorporated as the County establishes additional legal authorities. The flow chart below depicts the process used to develop the ERP and a copy of the ERP is provided in Appendix H.

Figure 3-3. Summary of ERP Development Process

3.2.5 Outfall Inspections

Per Part II.A.3.e of the General Permit, the SWMP team is in the process of inspecting and screening all County MS4 outfalls during dry weather. The SWMP team conducted dry weather inspections in 2020 for a portion of the identified outfalls. The results of these inspections are summarized in Table 3-6. The completed inspection forms can be provided upon request.

Table 3-6. Dry-Weather Outfall Inspection Progress[2]

Category	2020	2021
Number of Outfalls Inspected	8	
Number of Illicit Discharges Identified	0	
Number of High Priority Outfalls Inspected	5	

[2] The SWMP team conducted dry weather screenings on 20 provisional outfalls in 2019; however, several of the outfalls screened were determined to be non-County facilities and have been removed from the County's storm sewer inventory (see Section 3.2.3). The SWMP team restarted the outfall dry weather screening program in 2020 and intends to screen all County outfalls within the years of 2020 and 2021.

Category	2020	2021
Percentage of Outfalls Inspected During Permit Term	30	

3.2.6 Illicit Discharge Investigations

Per Part II.A.3.f of the General Permit, the County developed an Illicit Discharge Investigation and Corrective Action Plan in 2019 and initiated work towards implementing the plan in 2020, which will continue in 2021. The plan describes the investigation procedures and corrective actions to be used by County personnel when tracking, investigating, and correcting illicit discharges. These procedures are based on the County's understood legal authority to implement IDDE General Permit requirements. Additional procedures and corrective actions will be incorporated as the County based on legally allowable procedures, rules, and corrective actions. A copy of the current plan is provided in Appendix D.

3.2.7 Coordination with Neighboring MS4s

The SWMP team is coordinating with the City of Billings and MDT to determine appropriate partnership methods for detecting and eliminating illicit discharges that may originate within respective MS4 boundaries. The team is also developing draft cooperative agreements to describe the partnership methods that are being considered. It is expected that agreements will be formally executed in 2021 with both parties.

3.3 MCM 4: Construction Site Storm Water Management

Construction sites are often considered a significant source of pollutants that have a high potential for discharging to local waterbodies. The primary pollutant of concern associated with active construction sites is sediment. Part II.A.4 of the General Permit requires the County to develop, implement, and enforce a program to reduce pollutants in storm water runoff that discharge to the MS4 from construction sites. The following sections describe the primary elements of the County's construction site storm water management program.

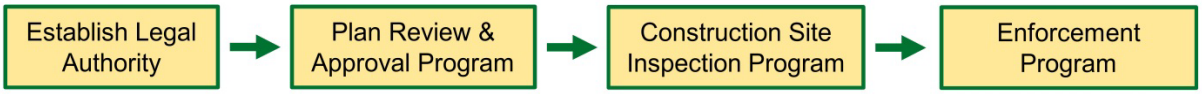
Elements of Construction Site Storm Water Management Program
☐ Ordinance or Regulatory Mechanism (in progress)
☐ Plan Review and Approval Process
☐ Construction Site Inspections
☐ Program Enforcement

Figure 3-4. Example of Proper Construction BMP
Source: HDR, Inc.

Figure 3-5. Example of Poor Construction BMP

3.3.1 Construction Program Overview

The County is working to develop and implement a construction site storm water management program. The program will consist of establishing legal authority, implementing a plan review and approval process, performing construction site inspections, and enforcing the primary requirements of the program. The flow chart shown below depicts the process to develop this program.



The following sections describe the County's plan to develop, implement, and maintain these elements of the construction site storm water management program.

3.3.2 Construction Site Storm Water Management Requirements

In accordance with Part II.A.4.a.i, the County is required to use a regulatory mechanism to require construction storm water management controls on public and private projects from construction activities that result in land disturbance of greater than or equal one acre and for activities disturbing less than one acre that are part of a larger common plan of development or sale (to the extent allowable under State law). The County does not have full authority under state law to use a single ordinance or other regulatory mechanism to accomplish this requirement; therefore, the SWMP team is pursuing multiple avenues to make progress towards addressing this requirement.

County Subdivision Regulations

The SWMP team has developed suggested revisions to the County Subdivision Regulations that would require construction storm water management controls during the development of subdivisions and would require submittal of a construction site storm water management plan as part of the subdivision application process. The SWMP team intends to present the suggested revisions to the Board of County Commissioners in March 2021 for consideration. A copy of the current applicable Yellowstone County Subdivisions Regulations is included in Appendix L.

Public Works Manual, Road Policies, or Storm Water Policies

The SWMP team is planning to develop a public works manual, amend the current road policies, or develop storm water policies to require construction storm water management controls on projects within the public right of way. Development and implementation will occur after the subdivision regulations revisions have been completed and implemented.

3.3.3 Plan Review and Approval

Per Part II.A.4.b of the General Permit, the County is required to develop and implement a plan review and approval process to verify that regulated construction projects are planning for and designing construction storm water BMPs. The County is currently working to develop the framework for this process by addressing the following components:

- Identify submittal requirements (i.e., constructions plans, project-specific storm water pollution prevention plan (SWPPP), applicable permit documentation, etc.)
- Identify personnel responsible for performing plan reviews and approvals
- Develop descriptions of responsibilities when performing a plan reviews and approvals
- Define timeframe for performing a plan reviews and approvals
- Finalize the construction site storm water management plan review checklist

The SWMP team is in the process of developing suggested revisions to the subdivision regulations to require construction site storm water management controls and submittals through subdivision review and approval process.

The team has also developed a program framework to define processes, roles, and responsibilities for implementation of the plan review and approval program. Components within the program framework include checklists, plan and report requirements, and subdivision regulation language. As the process continues to develop, applicable documentation will be added to this SWMP and submitted with each annual report. As noted previously, this will only affect new development and would not be retroactive to existing (recorded, constructed or not constructed) subdivisions.

3.3.4 Inspection Program

Elements of Inspection Program

- ☐ Standardized Inspection Form
- ☐ Project Inventory List
- ☐ Inspection Frequency Protocol
- ☐ Field Inspection Staff

The construction site inspection program has yet to be developed and implemented. Construction site inspections will be conducted by public works department staff after subdivision regulation revisions have been implemented (discussed above). The inspections will be conducted to verify that construction site storm water management controls are being installed and maintained in accordance subdivision regulation requirements. When fully developed and implemented, the County's inspection program will consist of the following elements in order to comply with Part II.A.4.c of the General Permit:

1. A standardized inspection form. A draft inspection form is provided in Appendix E.
1. An inventory of construction projects within the County that are covered under the Montana DEQ General Permit for Storm Water Discharges Associated with Construction Activity. The project inventory will document the following information:
    a. The project's associated authorization number.
    b. The geographic location, size, and topography of the project.
    c. The proximity to receiving waterbodies.
2. An inspection frequency protocol based upon the priority of the project. A draft inspection frequency determination worksheet is provided in Appendix E. At a minimum, the inspection frequency protocol will include the following requirements for high priority projects:
    a. One inspection at the beginning of construction.
    b. One inspection within 48-hours after each rain event of 0.25 inches or greater.
    c. One inspection within 48-hours after each occurrence of runoff from snowmelt due to thawing conditions that cause's visible surface erosion at the site.
    d. One inspection at the conclusion of the project prior to finalization.
3. County personnel that are trained and qualified to inspect construction storm water management controls.

This program is still in the development phase. The SWMP team will develop the framework for this program and solicit feedback from the County Commissioners and applicable departments. Specific regulatory authority as well as right-of-way accessibility are among the areas to be determined. As the program continues to develop, applicable documentation will be added to this SWMP and submitted with each annual report.

3.3.5 Enforcement

Per Part II.A.4.a of the General Permit, the County developed a formal ERP for construction site storm water management in 2019. Research and legal progress towards establishing allowable legal authority is included in Appendix I. The current ERP describes the response and enforcement procedures currently available for County personnel to use when addressing construction storm water concerns. An enforcement response flowchart is shown in Figure 3-6 and a copy of the current ERP is provided in Appendix H. The primary elements of this plan include identifying the violation, determining an appropriate level of response, implementing the appropriate level of response, following up with the violator, and closing the complaint.

The ERP will be updated to describe additional response and enforcement procedures as the County develops and implements the construction site storm water management control program (e.g., subdivision regulation revisions, public works manual/policies, etc.).

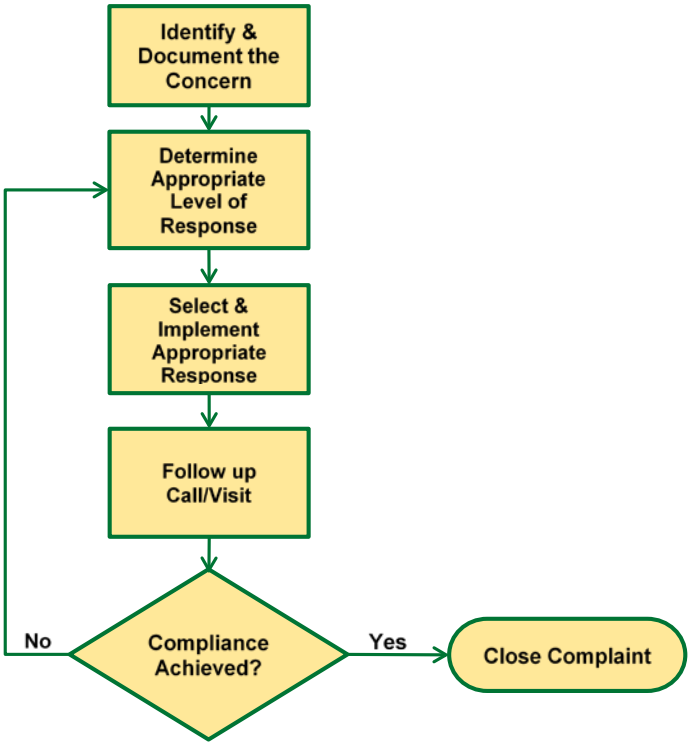


Figure 3-6. Enforcement Response Flowchart for Construction Site Storm Water

3.4 MCM 5: Post-Construction Site Storm Water Management in New and Redevelopment

Elements of Post-Construction Storm Water Management Program

- ☐ Ordinance or Regulatory Mechanism (in progress)
- ☐ Plan Review and Approval Process
- ☐ Post-Construction BMP Inspections
- ☐ Program Enforcement

Post-construction storm water management refers to implementing and maintaining long-term storm water management controls in order to prevent or minimize water quality impacts. Examples of post-construction storm water BMPs include extended detention basins, infiltration basins, biofiltration swales, and bioretention areas. Per Part II.A.5 of the General Permit, the County will develop, implement, and enforce a program that addresses storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre. This requirement also includes projects that are less than one acre but part of a larger common plan of development or sale. The following sections describe the primary elements of the County's post-construction storm water management program.

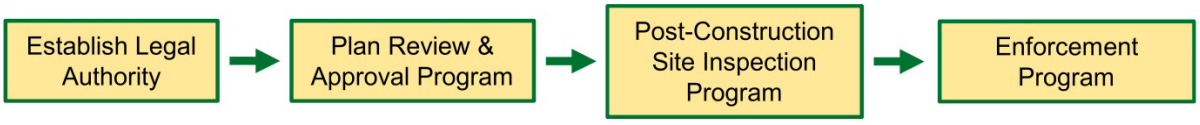
Figure 3-7. Example Infiltration Basin

Figure 3-8. Example Bioretention Area

Source: Montana Post-Construction Storm Water BMP Design Guidance Manual

3.4.1 Post-Construction Program Overview

The County is working to develop a post-construction storm water management program. The program will consist of requiring post-construction storm water management controls, implementing a plan review and approval process, performing post-construction site inspections, and enforcing the primary requirements of the program. The County recently completed a discussion with County stakeholders on low-impact development (LID) and the possibilities that the County may be able to take advantage of. The flow chart shown below depicts the process to develop this program.



The following sections describe the County's plan to develop, implement, and maintain these elements of the post-construction storm water management program.

3.4.2 Post-Construction Program Legal Authority

In accordance with Part II.A.5.a.i, the County is required to use a regulatory mechanism to require post-construction storm water management controls on public and private new and redevelopment projects that result in land disturbance of greater than or equal one acre and for projects disturbing less than one acre that are part of a larger common plan of development or sale (to the extent allowable under State law). The County does not have full authority under state law to use a single ordinance or other regulatory mechanism to accomplish this requirement; therefore, the SWMP team is pursuing multiple avenues to make progress towards addressing this requirement.

County Subdivision Regulations

The SWMP team has developed suggested revisions to the County Subdivision Regulations that would require post-construction storm water management controls for new subdivisions and would require submittal of a drainage plan as part of the subdivision application process. The SWMP team intends to present the suggested revisions to the Board of County Commissioners in March 2021 for consideration. As noted previously, this will only affect new development and would not be retroactive to existing (recorded, constructed or not constructed) subdivisions. A copy of the current applicable Yellowstone County Subdivisions Regulations is included in Appendix L.

Public Works Manual or Storm Water Policies

The SWMP team is planning to develop a public works manual, amend road policies, or develop storm water policies to require post-construction storm water management controls on projects within the public right of way. Development and implementation will occur after the subdivision regulations revisions have been completed and implemented.

County Zoning Regulations

The SWMP team conducted an investigation in 2020 to determine whether the County could use zoning regulations as a mechanism to require post-construction storm water management controls. The County's Legal Department has determined that zoning regulations are not an appropriate mechanism to require post-construction storm water management controls. The SWMP team is considering whether other revisions could be implemented to promote reduction in storm water runoff and positive water quality impacts associate with new and redevelopment projects. This initiative will be pursued after subdivision regulations and policy updates have been implemented.

3.4.3 Plan Review and Approval

Per Part II.A.5.b of the General Permit, the County is required to develop and implement a plan review and approval process to verify that adequately designed post-construction BMPs will be implemented on regulated new and redevelopment projects. Due to limitations in state laws, the County does not have one mechanism to require plan submittals for review and approval of drainage designs on new and redevelopment projects; but rather, the use of several mechanisms will be required to address this permit requirement. As discussed above, the SWMP team anticipates requiring drainage plan submittals associated with new subdivision applications, zoning compliance permits, and for projects being conducted within the County right-of-way. The first mechanism to be implemented will be requirements associated with subdivision regulations.

The SWMP team is currently working to develop the framework for this process by addressing the following components:

- Develop submittal requirements (e.g., drainage report, storm water calculations, construction plans, operation and maintenance plans, etc.)
- Identify personnel responsible for performing plan reviews and approvals
- Develop description of responsibilities when performing a plan review and approval
- Define timeframe for performing a plan review and approval

As the process continues to develop, applicable documentation will be added to this SWMP and submitted with each annual report.

3.4.4 Inspection Program

Elements of Inspection Program

- ☐ Standardized Inspection Forms
- ☐ BMP Inventory List
- ☐ Inspection Frequency Protocol
- ☐ Field Inspection Staff

The SWMP team identified numerous public and private post-construction storm water management controls while developing the County's storm water sewer inventory in 2019 and 2020. The SWMP team has plans to assign priority to post-construction storm water management controls and conduct inspections on high-priority post-construction storm water management controls in 2021. The County does not have authority to enter private property to conduct these inspections, so the SWMP team anticipates conducting inspections for public right-of-way where feasible.

When fully developed and implemented, the County's inspection program will consist of the following elements in order to comply with Part II.A.5.c of the General Permit:

1. A standardized inspection form will be used during site inspections for applicable post-construction BMPs. Inspection forms will be based upon the BMP inspection forms located in Appendix F of the *Montana Post-Construction Storm Water BMP Design Guidance Manual (September 2017).*
2. A complete inventory of new County-owned and private post-construction BMPs. (as determined to be legally accessible)
3. A complete inventory of existing County-owned and private post-construction BMPs in high priority areas.
4. An inspection frequency protocol based on the priority of the project. A draft inspection frequency determination worksheet is provided in Appendix F. At a minimum, the inspection frequency protocol will include the following requirements for high priority projects:
    a. Inspect County-owned post-construction BMPs annually.
    b. Inspect or have inspected privately-owned post-construction BMPs annually. (as determined to be legally accessible)
5. County personnel that are trained and qualified to inspect post-construction storm water management controls.

This program is still in the development phase. As the program continues to develop, applicable documentation will be added to this SWMP and submitted with each annual report.

3.4.5 Enforcement

Per Part II.A.5.a of the General Permit, the County developed a formal ERP for post-construction site storm water management in 2019. The primary elements of this plan include identifying the concern, determining an appropriate level of response, implementing the appropriate level of response, following up with the responsible party, and closing the complaint. The current ERP describes the response and enforcement procedures currently available for County personnel to use when addressing post-construction storm water concerns. Additional response and enforcement

procedures will be incorporated as the County further develops the post-construction storm water management program. An enforcement response flowchart is shown in Figure 3-9 and a copy of the current ERP is provided in Appendix H.

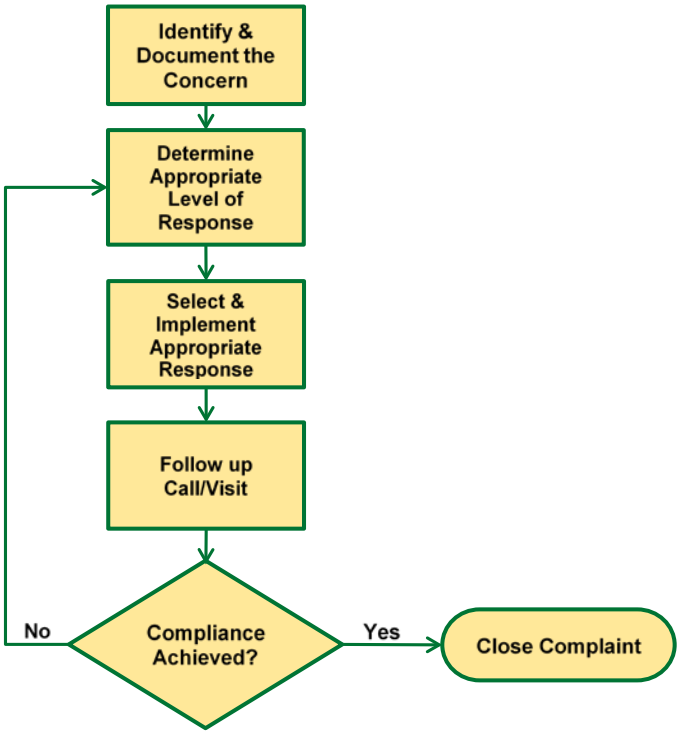


Figure 3-9. Enforcement Response Flowchart for Post-Construction Storm Water

3.5 MCM 6: Pollution Prevention/Good Housekeeping for Permittee Operations

Elements of Pollution Prevention and Good Housekeeping Operations
☑ Facility and Activity Inventory
☑ Facility and Activity SOPs (in progress)
☑ Internal Storm Water Pollution Prevention Training (in progress)

The County owns and operates various types of facilities within the MS4 boundary. Per Part II.A.6.a of the General Permit, the County is continuing to develop and implement an operation and maintenance program for County-owned and operated facilities. The program has three primary elements:

1. An inventory of County-owned and operated facilities and activities that have the potential to release pollutants.
2. Standard operating procedures (SOPs) for facilities and activities that identify storm water pollution prevention controls.
3. A program to conduct annual storm water pollution prevention training for all County staff directly involved with implementing the SOPs.

In 2019, the County developed the foundation for this program by creating an inventory of County-owned and operated facilities and the associated activities that have the potential to release pollutants. The County has developed nine SOPs to be implemented within this program. Details on the facility activity inventory and SOPs are described in the *Pollution Prevention/Good Housekeeping for Permittee Operations* document provided in Appendix G.

As part of this MCM the County Road and Bridge Department routinely has swept and cleaned a portion of their maintained infrastructure every year in an effort towards continued pollution prevention. In 2020 the county staff swept 58.7 miles of roads and cleaned 37 culverts in total.

4 Training

Part II.B of the General Permit requires the County to conduct training for SWMP team members and County staff who conduct activities associated with the SWMP. The following sections describe the County's MS4 training program and activities.

4.1 Storm Water Management Team Training

Matt Peterson presented a Microsoft PowerPoint presentation (training) that summarized the General Permit requirements and provided an overview of the 2019 SWMP update on April 10, 2019. The training attendees are listed in Table 4-1. Additionally, this training will be provided to all new SWMP team member hires within the first 90 days of hire date.

Table 4-1. SWMP Team Training Attendees

Name	Position/Responsibilities
Tim Miller	Public Works Director
Mike Black	Engineer/Primary SWMP Coordinator
Darin Swenson	Engineer/Assistant MS4 Coordinator
Matt Peterson (NewFields)	Engineer/SWMP Development & Project Management
Stephanie Griffin (HDR)	Environmental Specialist/SWMP Development
Melissa Widseth (HDR)	Coordinator/Public Education & Outreach
Spencer Savage (HDR - phone)	Engineer/SWMP Development

4.2 Storm Water Awareness Training for Field and Facilities Staff

Storm water awareness training is required during the first and fourth permit years for all appropriate County field staff and staff who work at County facilities. The trainings provide education regarding storm water impacts, the MS4 permit, the detection and elimination of illicit discharges and the implementation of the ERP, and specifically addresses BMPs necessary to minimize discharges of pollutants during permittee activities or the operation of permittee facilities.

4.2.1 First Year Training

First year training took place on March 21st, 2019 (during the third permit year). The staff members listed in Table 4-2 watched the video presentation developed by Excal Visual, Inc. titled *Municipal Storm Water Pollution Prevention: Storm Watch*. The video focused on BMPs such as good housekeeping, spill response, materials storage and handling, landscape maintenance, and street maintenance. This training did not cover the ERP for illicit discharges because the ERP has yet to be developed.

Table 4-2. Storm Water Awareness Training Attendees

Name	Position/Responsibilities
Tim Miller	Public Works Director
Mike Black	Engineer/Primary SWMP Coordinator
Clay Moore	Assistant Road & Bridge Director
Bob Hillard	Sign Technician
Darin Swenson	Engineer/Assistant MS4 Coordinator
Mike Schieno	Junk Vehicle & Code Enforcement Supervisor

4.2.2 Fourth Year Training

A second storm water awareness training was conducted December 16th, 2020 and January 13th, 2021.This training included training on the current ERP for illicit discharges, which was developed in 2019 and 2020. Since the County is working to establish legal authority and further develop the IDDE program, there is the potential for the current ERP to be updated to include additional enforcement procedures. If necessary, a follow-up training session will be scheduled to discuss revisions and updates.

Table 4-3. Storm Water Awareness Training Attendees

Name	Position/Responsibilities
Mike Black	Engineer/Primary SWMP Coordinator
Clay Moore	Assistant Road & Bridge Director
Bob Hillard	Sign Technician
Joe Lockwood	County Weed Coordinator
Jeff Seward	MetraPark Operations Director
Randy Pardis	MetraPark Operations Foreman
Greg Fisher	County Roads and Bridges Shop Foreman

4.2.3 New Hire Training

All applicable new hires will receive storm water awareness training, as described above, within the first 90 days of hire date.

4.3 Construction Site Storm Water Management Training

Construction site training is required during the first and fourth permit years for all inspectors and plan reviewers responsible for implementation of the Construction Storm Water Management in New Development and Redevelopment minimum measure. At a minimum, the training must include inspection protocol and implementation of the ERP.

4.3.1 First Year Training

The Primary SWMP Coordinator, Mike Black, attended a construction storm water management training coordinated by Montana DEQ and Altitude Training Associates on October 17-18, 2018.

4.3.2 Fourth Year Training

A second construction site storm water management training was conducted on December 16th, 2020 and January 13th, 2021 2020. This training included training on the current ERP for construction site storm water management, which was developed in 2019 and 2020. Since the County is working to establish legal authority and further develop the construction site storm water program, there is the potential for the current ERP to be updated to include additional enforcement procedures. If necessary, a follow-up training session will be scheduled to discuss revisions and updates.

Table 4-4. Construction Site Training Attendees

Name	Position/Responsibilities
Mike Black	Engineer/Primary SWMP Coordinator
Clay Moore	Assistant Road & Bridge Director
Bob Hillard	Sign Technician
Joe Lockwood	County Weed Coordinator
Jeff Seward	MetraPark Operations Director
Randy Pardis	MetraPark Operations Foreman
Greg Fisher	County Roads and Bridges Shop Foreman

4.3.3 New Hire Training

All applicable new hires will receive construction site storm water management training within the first 90 days of hire date.

4.4 Post-Construction Storm Water Management Training

Post-construction training is required during the first and fourth permit years for all inspectors and plan reviewers responsible for implementation of the Post-Construction Storm Water Management in New Development and Redevelopment minimum measure. At a minimum, the training must include inspection protocol and implementation of the ERP. This section describes the County's approach to post-construction storm water management training.

4.4.1 First Year Training

First year training was conducted on December 18th, 2018 (during the second permit year). The County's post-construction storm water plan review and inspection program was not yet developed; therefore, the training provided a broader understanding of the General Permit's post-construction program requirements, including:

- Summary of MCM 5 permit requirements
- Overview of the Montana Post-Construction Storm Water BMP Design Guidance Manual
- Development design example, including post-construction BMP selection and design
- Inspection guidance
- Mock inspection of a hydrodynamic separator and dry detention basin in a City of Billings subdivision

Training on the ERP was not included because the Post-Construction Storm Water ERP had not yet been developed. City of Billings staff also participated in the training. The County's attendees are listed in Table 4-3. The training materials are provided in Appendix J.

Table 4-5. Post-Construction Plan Reviewers and Inspectors MCM 5 Training Attendees

Department	Position/Responsibilities
Tim Miler	Public Works Director
Mike Black	Primary SWMP Coordinator
Darin Swenson	Assistant MS4 Coordinator

4.4.2 Fourth Year Training

A second training was conducted on December 16th, 2020 and January 13th, 2021 This training included training on the post-construction ERP, which was developed in 2019 and 2020. Since the County is working to establish legal authority and further develop the post-construction storm water program, there is the potential for the current ERP to be updated to include additional enforcement procedures. If necessary, a follow-up training session will be scheduled to discuss revisions and updates.

Table 4-6. Post-Construction Site Training Attendees

Name	Position/Responsibilities
Mike Black	Engineer/Primary SWMP Coordinator
Clay Moore	Assistant Road & Bridge Director
Bob Hillard	Sign Technician
Joe Lockwood	County Weed Coordinator
Jeff Seward	MetraPark Operations Director
Randy Pardis	MetraPark Operations Foreman
Greg Fisher	County Roads and Bridges Shop Foreman

4.4.3 New Hire Training

All applicable new hires will receive post-construction storm water management training within the first 90 days of hire date.

4.5 Pollution Prevention Standard Operating Procedure Training

Per Part II.A.6.a of the General Permit, the SWMP team conducted staff training on the SOPs discussed in Section 3.5. Applicable staff trained included storm water staff responsible for implementing the SOPs and staff that are involved with SOP-specific duties. Additionally, new storm water staff responsible for implementing SOPs will receive training within 90 days of hire. Training was conducted on December 16th, 2020 and January 13th, 2021 with staff in attendance identified below.

Table 4-7. 2020 SOP Training Attendees

Name	Position/Responsibilities
Mike Black	Engineer/Primary SWMP Coordinator (Shop, Roads & Bridges, Weed District, MetraPark)
Clay Moore	Assistant Road & Bridge Director (Shop, Roads & Bridges, Weed District)
Bob Hillard	Sign Technician (Shop, Roads & Bridges, Weed District)
Joe Lockwood	County Weed Coordinator (Shop, Roads & Bridges, Weed District)
Jeff Seward	MetraPark Operations Director (MetraPark)
Randy Pardis	MetraPark Operations Foreman (MetraPark)
Greg Fisher	County Roads and Bridges Shop Foreman (Shop, Roads & Bridges, Weed District)

5 Storm Water Management for Discharges to Impaired Waterbodies

Per Part III.A of the General Permit, the County is developing a strategy to manage storm water that discharges to impaired waterbodies. The County currently discharges to three waterbodies that are listed as impaired but do not have an approved total maximum daily load (TMDL). The following sections provide an inventory of impaired waterbodies, the pollutants of impairment, and the BMPs that will be used to target and reduce pollutants of impairment.

5.1 Impaired Waterbody Inventory

Table 5-1 provides a summary of these impaired waterbodies along with their pollutants of impairment. The waterbodies and the County's outfalls are shown on the storm sewer inventory maps documented in the updated *Storm Sewer Inventory Field Investigation and Data Analysis Report* provided in Appendix D. Note that the County does not have any outfalls that directly discharge to these impaired waterbodies; however, they are included within the SWMP because they are located within the County MS4 boundary and receive discharge from the MS4 either through non-point runoff or via drains/tributaries that the County MS4 discharges to.

Table 5-1. Yellowstone County MS4 Impaired Waterbodies

Waterbody	Location	Impaired	Approved TMDL	MS4 WLA	Impairment(s)	Sources
Yellowstone River	City of Laurel PWS to City of Billings PWS	Yes	No	No	▪ Chlorophyll-a ▪ Nitrate-Nitrite ▪ Oil and Grease ▪ Other anthropogenic substrate alterations ▪ Physical substrate habitat alterations	▪ Channelization ▪ Crop Production (Crop Land or Dry Land) ▪ Municipal Point Source Discharges ▪ Pipeline Breaks ▪ Streambank Modifications/ destabilization
Yellowstone River	City of Billings PWS to Huntley Diversion Dam	Yes	No	No	▪ Algae ▪ Arsenic ▪ Benthic Macroinvertebrates ▪ Dissolved Oxygen ▪ Eutrophication ▪ Oil and Grease ▪ Periphyton (Aufwuchs) Indicator Bioassessments ▪ Sediment	▪ Agriculture ▪ Municipal Point Source Discharges ▪ Natural Sources ▪ Pipeline Breaks
Canyon Creek	Highway 532 to mouth	Yes	No	No	▪ Flow Regime Modification	▪ Water Diversions

As discussed in Section 3.2.3, the County is in the process of reviewing and finalizing the storm water sewer inventory. In 2020, the SWMP team developed a revised list of outfalls as documented in the updated *Storm Sewer Inventory Field Investigation and Data Analysis Report*and shown on the storm sewer inventory maps provided in Appendix D.

5.2 Addressing Pollutants of Impairment

This section discusses BMPs that were implemented in 2020 and the BMPs planned for the coming year to target and reduce discharges of identified pollutants of impairment to the Yellowstone River. A summary of BMPs is provided in Table 5-3 and a detailed discussion for each pollutant of impairment is provided in the following sections.

Table 5-2. Pollutants of Impairment to be Targeted with BMPs

Impairment	Aligning Parameter from Table 1 in General Permit [1]	Impaired Waterbody	BMP(s)
Nitrate-Nitrite	Total Nitrogen	Yellowstone River, City of Laurel PWS to City of Billings PWS	See Section 5.2.1
Oil and Grease	Oil and Grease	Yellowstone River, City of Laurel PWS to City of Billings PWS Yellowstone River, City of Billings PWS to Huntley Diversion Dam	See Section 5.2.2
Dissolved Oxygen	Chemical Oxygen Demand	Yellowstone River, City of Billings PWS to Huntley Diversion Dam	See Section 5.2.3

Impairment	Aligning Parameter from Table 1 in General Permit [1]	Impaired Waterbody	BMP(s)
Sediment	Total Suspended Solids	Yellowstone River, City of Billings PWS to Huntley Diversion Dam	See Section 5.2.4

[1] Only the identified pollutants of impairment that align with Table 1 in Part IV of the General Permit are included

5.2.1 Total Nitrogen

The table below outlines the possible contributors, selected BMPs, and the rationale for BMP selection to target and reduce total nitrogen.

Table 5-3. Nitrogen Contributors and Planned Reduction Activities Possible Contributor	BMPs Implemented in 2019 & 2020	BMPs planned for 2021	Rationale
Landscaping Activities and Residential Yard Maintenance	▪ Implement public outreach plan ▪ Create and distribute education fliers ▪ Website update ▪ County fair storm water booth	▪ Distribute educational fliers ▪ Present storm water basic BMPs to local school classrooms ▪ Public interviews ▪ Pet waste stations ▪ County fair storm water booth	Distributed educational and awareness material to explain importance of storm water. Public outreach facilitates behavioral change.
Construction Activities	▪ Create and distribute educational fliers ▪ Website Update (SWMPP Trainings and construction permitting requirements) ▪ Attend local builders/contractor events ▪ MCM 4 Training ▪ MCM 5 Training	▪ Attend local builders/contractors events ▪ Plan reviews and approvals[1] ▪ Site inspections[1] ▪ Construction storm water ERP ▪ Public contact program ▪ Storm water website update (construction permitting information) ▪ Public interviews	Public messages, industry trainings, and plan reviews and approvals verify storm water BMPs are incorporated. Site inspections verify BMPs are installed, operated, and maintained. construction storm water ERP enforces SWPPP requirements.
Municipal Facilities and Activities	▪ Outfall Inspections ▪ SOP training ▪ Implementing SOPs (especially the Metra Park & landscaping SOPs)	▪ SOP training and implementation ▪ Outfall inspections	Internal training and implementing SOPs encourage behavioral change. Outfall inspections and the IDDE ERP verify and control illicit discharges within the MS4.

[1]BMP will be implemented after it is developed, likely in 2021

5.2.2 Oil and Grease

The table below outlines the possible contributors, selected BMPs, and the rationale for BMP selection to target and reduce oil and grease.

Table 5-4. Oil and Grease Contributors and Planned Reduction Activities

Possible Contributor	BMPs Implemented in 2019 & 2020	BMPs planned for 2021	Rationale
Construction Activities	▪ Educational fliers ▪ MCM 4 Training ▪ Public contact program	▪ Plan reviews and approvals[1] ▪ Site inspections[1] ▪ Construction storm water ERP ▪ Industry conferences and training seminars	Industry training, plan review, and approval verify storm water BMPs are incorporated. Site inspections verify BMPs are installed, operated, and maintained. construction storm water ERP enforces SWMP requirements.
Municipal Facilities and Activities	▪ Outfall inspections ▪ SOP training ▪ Implementing SOPs	▪ Coordination with City of Billings Environmental Department	Internal training and implementing SOPs encourage behavioral change. Outfall inspections verify and control illicit discharges within the MS4.
Automotive Maintenance	▪ Outfall inspections ▪ Educational fliers ▪ Storm water website ▪ County fair storm water booth	▪ IDDE ERP ▪ Outfall inspections ▪ Educational fliers ▪ County fair storm water booth ▪ Public interviews	Distributed storm water educational and awareness material encourages behavioral change. Outfall inspections and the IDDE ERP verify and control illicit discharges within the MS4.

[1]BMP will be implemented after it is developed, likely in 2021

5.2.3 Chemical Oxygen Demand

The water quality improvements and target BMPs addressed in Section 5.2.1 will result in improved chemical oxygen demand and dissolved oxygen concentrations. Therefore, the chemical oxygen demand and dissolved oxygen concentrations will improve by incorporating the BMPs for total nitrogen.

5.2.4 Total Suspended Solids

The table below outlines the possible contributors of total suspended solids selected BMPs, and the rationale for BMP selection to target and reduce total suspended solids.

Table 5-5. TSS Contributors and Planned Reduction Activities

Possible Contributor	BMPs Implemented in 2019 & 2020	BMPs planned for 2021	Rationale
Construction Activities	▪ Construction storm water ERP ▪ Outfall inspections ▪ Educational flier ▪ Storm water website ▪ Public contact program	▪ Subdivision regulation revisions[1] ▪ Plan reviews and approvals[1] ▪ Site inspections[1] ▪ Outfall inspections ▪ Educational flier ▪ Storm water website updates ▪ Coordination with City of Billings Environmental Department ▪ Construction storm water ERP	Industry training and plan review and approval verify that storm water BMPs are incorporated. Site inspections verify that BMPs are installed, operated, and maintained. The Construction storm water ERP will enforce storm water regulations to correct pollutant causing activities.
Municipal Facilities and activities	▪ Outfall inspections ▪ SOP training ▪ Storm water website	▪ IDDE ERP ▪ Storm water website update	Internal training and implementing SOPs encourage behavioral change. Outfall inspections and the IDDE ERP verify and control illicit discharges within the MS4.
Residential Neighborhoods	▪ Educational flier ▪ Storm water website ▪ County fair storm water booth	▪ Public Interviews ▪ Educational fliers ▪ Storm water website updates ▪ County fair storm water booth ▪ Public interviews	Distributed storm water educational and awareness material encourages behavioral change.

[1]BMP will be implemented after it is developed, likely in 2021

6 Self-Monitoring

The County is required to collect storm water samples on a semi-annual basis at four locations for the following parameters:

- Sediment (Total Suspended Solids, TSS)
- Nutrients (Total Nitrogen, TN) (Total Phosphorus, TP)
- Metals (Copper, Lead, Zinc)
- Oils and Grease
- pH
- Organics (Chemical Oxygen Demand, COD)
- Water Temperature

The County selected Monitoring Option 1 as outlined in the General Permit. Two sampling locations represent storm water runoff from predominantly residential areas and the other two locations represent storm water runoff from predominantly commercial/industrial areas. The monitoring locations are shown on the storm sewer inventory maps provided in Appendix D. The following table

describes the monitoring locations, land use correlations, and naming for each location. The County may re-evaluate these monitoring locations for the next permit cycle, if allowable.

Table 6-1. Self-Monitoring Location Summary

Monitoring Site ID	Residential/ Commercial	Lat/Long	Receiving Waterbody	Description
001A	Primarily Commercial	45.7945 -108.484	Yellowstone River	Grab sample from automated sampler equipment in manhole
001B	Primarily Commercial	45.813 -108.413	Yellowstone River	Sample direct from catch basin
002A	Primarily Residential	45.795 -108.445	Yellowstone River	Bucket sampler in channel
002B	Primarily Residential	45.798 -108.443	Yellowstone River	Samples are taken from edge of bank at Unnamed Creek.

The County collected storm water samples at monitoring site 002A, 001B, and 002B during first 2020 sampling period (June 17, 2020). Each sample was analyzed by an accredited laboratory and a summary of the monitoring results including the calculated long-term median is provided in Appendix K.

Analysis of the concentration over long term trends is statistically insignificant considering two or three samples are recorded for each site. Potential notable outliers in the recorded samples are discussed below. The full record of monitoring results is provided in Appendix K for reference.

The recorded TSS concentration at location 002B greatly exceeded the TSS concentration recorded at other sampling sites. Comparing median concentrations of TSS between the sites, sampling location 002B has been consistently 2 to 3 times higher than the other three sampling locations. The high concentration of TSS could be a result of winter street operations along HWY 87. The HWY 87 corridor permits higher speed thresholds than county roads, likely requiring more frequent sanding and salting in the winter months. The winter street operations techniques to increase efficacy of winter treatments with less sand and roadway salt could potentially reduce the concentration of TSS.

The COD for site 002B was observed to be higher than other sites during the 2020 sampling period and long-term median concentration. The sample location is adjacent to green spaces that appear to be mown regularly. If lawns in the surrounding region are mulched, grass clippings could be mobilized into low spots on the site. When clippings accumulate, they could be decomposing aerobically increasing the COD. The landscaping SOP includes strategies to limit mobilized plant detritus. Training and implementation of the landscaping SOP and behavioral change as a result of residential public outreach will limit impact of plant decomposition.

Public education and outreach will aid in reducing the higher concentrations found in the laboratory analysis for site 002B. The site receives drainage from the highway, a main east-west avenue for the southeast corner of the county. Additionally, the sample location likely receives drainage from many of the adjacent landscaped spaces in the adjacent residential properties. Training of County Staff on the SOPs developed for landscaping and winter street operations should help reduce mobilization of nutrients and TSS.

7 Reporting

Per Part IV.F of the General Permit, the County will submit a completed Annual Report form, an updated version of this SWMP, and other required documents to DEQ by March 1st of each year of the General Permit term.

8 SWMP Inspection Response Progress

As previously mentioned, the County has been working to address permit violations and all General Permit requirements. The County developed a regulatory compliance plan and schedule in September 2018 that outlined SWMP development tasks and the expected completion dates. Since then, the County has made progress on these tasks by completing the following:

- Comprehensive update to the County SWMP document
- Development of the Public Education and Outreach Program
- Researched and identified solutions to address ordinance and regulatory-related requirements
- Comprehensive update to the storm water sewer inventory
- Conducted storm water training activities for County personnel
- Development of the Pollution Prevention/Good Housekeeping Program

The County will continue to address permit violations and to further develop the SWMP throughout the remainder of the permit term. A progress update is provided in Table 8-1.

Table 8-1. Regulatory Compliance Schedule

Task	Permit Section	Scheduled Completion Date	Progress Update
Contract with HDR Engineering, Inc. to assist with initial audit response and develop compliance plan	N/A	N/A	Complete
Issue RFP to hire a consultant to develop and implement components of our SWMP for 2019-2021	N/A	October 1, 2018	Complete
Contract with consultant to develop and implement components of our SWMP for 2019-2021	N/A	October 31, 2018	Complete
Develop revised SWMP team org chart that identifies positions responsible for implementing each MCM	Part II.A - SWMP	December 31, 2018	Complete See Section 1.2.1
Establish SWMP team meeting schedule and SWMP file sharing system	Part II.A - SWMP	December 31, 2018	Complete See Section 1.2.2
Develop comprehensive General Permit and SWMP training for County SWMP team	Part II.B – Training	March 1, 2019	Complete See Section 4.1

Task	Permit Section	Scheduled Completion Date	Progress Update
Conduct new General Permit and SWMP training for County SWMP team	Part II.B – Training	March 29, 2019	Complete See Section 4.1
Purchase storm water awareness training DVD through Excal Visual, Inc. and develop training documentation materials	Part II.B – Training	November 31, 2018	Complete (Borrowed video from City of Billings)
Conduct storm water awareness training for County field staff & staff who work at permittee facilities	Part II.B – Training	December 31, 2018	Complete See Section 4.2
Conduct training for inspectors and plan reviewers responsible for MCM 5 implementation	Part II.B – Training	November 30, 2018	Complete See Section 4.4
Investigate opportunities and coordinate with other entities to develop plans for sharing responsibility to fulfill permit requirements. This will be conducted as the revised SWMP is being developed.	Part II.C - Sharing Responsibility	February 1, 2019	Complete See Section 1.3
Develop and provide documentation of formal agreements with other entities sharing responsibility to implement MCMs (if applicable).	Part II.C - Sharing Responsibility	March 1, 2019	N/A See Section 1.3
Develop outfall inventory table and add to SWMP[1]	Part III – Special Conditions	March 1, 2019 March 1, 2020 March 1, 2021	Complete See Table 3-3 and Appendix D
Develop a section in the SWMP that describes the County's plan to develop and implement BMPs to target and reduce discharges of identified pollutants of impairment listed in Table 5-3.	Part III – Special Conditions	March 1, 2019	Complete See Section 5.2
Include a list in the MS4 annual report that describes BMPs to be implemented in 2019 that will target and reduce discharges of the identified pollutants of impairment to impaired waterbodies	Part III – Special Conditions	March 1, 2019	Complete See Section 5.2

Task	Permit Section	Scheduled Completion Date	Progress Update
Conduct the Non-Storm Water Discharge Evaluation (Table A-2), to be submitted with each annual report	Part II.A.3 – Illicit Discharge Detection and Elimination Violations	March 1, 2019	Complete See Section 3.2.2
Conduct the Occasional Incidental Non-Storm Water Discharges (Table A-3), to be submitted with each annual report	Part II.A.3 – Illicit Discharge Detection and Elimination Violations	March 1, 2019	Complete See Section 3.2.2
Conduct storm water facility inventory analysis	Part II.A.3 – Illicit Discharge Detection and Elimination Violations	See Table 3-3	95% Complete See Table 3-3
Determine on the most appropriate way to prohibit illicit discharges in the County	Part II.A.3 – Illicit Discharge Detection and Elimination Violations	December 31, 2018	In progress See Section 3.2.4
Develop and adopt an ordinance, regulatory mechanism, or written policies and procedures to prohibit illicit discharges in the County	Part II.A.3 – Illicit Discharge Detection and Elimination Violations	December 31, 2019	In progress See Section 3.2.4
Develop IDDE ERP	Part II.A.3 – Illicit Discharge Detection and Elimination Violations	December 31, 2019	Partially complete See Section 3.2.4
Develop Illicit Discharge Investigation and Corrective Action Plan	Part II.A.3 – Illicit Discharge Detection and Elimination Violations	December 31, 2019	Partially complete See Section 3.2.6
Develop and submit updated comprehensive SWMP	Part II.A - SWMP	March 1, 2019	Complete

In addition to the tasks defined in 2018 the following items have been included or are scheduled to be part of the County's MS4 program implementation schedule in 2020 and 2021.

Table 8-2. Regulatory Compliance Schedule

Task	Permit Section	Scheduled Completion Date	Progress Update
Develop updated (2020) Public Education & Outreach Implementation Schedule and Plan	Multiple		Complete
Conduct storm water awareness training for County field staff & staff who work at permittee facilities	Part II.B – Training		Complete See Section 4.2

Coordinate with City of Billings and MDT other entities to develop cooperative agreements or MOUs. This will be conducted as the revised SWMP is being developed.	Part II.C - Sharing Responsibility		Initiated
Develop outfall inventory table and add to SWMP[1]	Part III – Special Conditions	March 1, 2019 March 1, 2020 March 1, 2021	In progress See Table 3-3
Include a list in the MS4 annual report that describes BMPs to be implemented in 2021 that will target and reduce discharges of the identified pollutants of impairment to impaired waterbodies	Part III – Special Conditions	March 1, 2021	Complete
Conduct the Non-Storm Water Discharge Evaluation (Table A-2), to be submitted with each annual report	Part II.A.3 – Illicit Discharge Detection and Elimination Violations	March 1, 2021	Complete
Conduct the Occasional Incidental Non-Storm Water Discharges (Table A-3), to be submitted with each annual report	Part II.A.3 – Illicit Discharge Detection and Elimination Violations	March 1, 2021	Complete
Update storm water facility inventory analysis and mapping	Part II.A.3 – Illicit Discharge Detection and Elimination Violations	March 1, 2021	Complete
Develop and submit updated comprehensive SWMP (2020)	Part II.A - SWMP	March 1, 2021	Complete

A summary of activities planned for the remainder of the permit term is provided in Table 8-2.

Table 8-3. Summary of SWMP Development Schedule

Permit Year	Anticipated Tasks
2021	▪ MCM 1 & 2 – Review and update program schedule and plan; Conduct outreach events and distribute material to key target audiences ▪ MCM 3 – Finalize storm water sewer system inventory – field data collection, mapping, GIS; Develop and finalize IDDE Cooperative agreements with City of Billings and MDT ▪ MCM 3 – Develop/implement IDDE regulatory-related requirements – as allowable by State & Local law ▪ MCM 4 – Develop elements of Construction Site Storm Water Management Program - as allowable by State & Local law; Finalize and implement County Subdivision Regulation revisions; ▪ MCM 5 – Develop elements of Post-Construction Storm Water Management Program - as allowable by State & Local law; Finalize and implement County Subdivision Regulation revisions ▪ MCM 6 – Continue to develop remaining SOPs and conduct training (new and previously developed SOPs) ▪ Part IV – Continue self-monitoring and reporting; ▪ Misc. – Develop SWMP Operations Analysis & Comparison and present options to BOCC

Appendix A. Supplemental Tables

Table A-1. Non-Storm Water Discharge Evaluation

Category[1]	Suspected Significant Contributor of Pollutants (yes/no)	Potential Associated Pollutants	Local Controls or Conditions
Water line flushing	No	Chlorine, sediment	None
Landscape irrigation	No	Chlorine, sediment, nutrients	None
Diverted stream flows	No	Sediment	None
Rising ground waters	Possibly	Sediment	To be investigated in 2021 and developed, if necessary
Uncontaminated ground water infiltration	No	None	None
Uncontaminated pumped ground water	No	Sediment	None
Discharges from potable water sources	No	Chlorine	None
Foundation drains	No	None	None
Air conditioning condensation	No	None	None
Irrigation water	Possibly	Nutrients, sediment, pesticides	To be investigated and developed, if necessary
Springs	No	None	None
Water from crawl space pumps	No	None	None
Footing drains	No	None	None
Lawn watering	No	Chlorine, nutrients	None
Individual residential car washing	Possibly	Sediment, organics, metals, oil and grease	To be investigated in 2021 and developed, if necessary
Flows from riparian habitats and wetlands	No	Sediment	None
Dechlorinated swimming pool discharges	Possibly	Chlorine	To be investigated in 2021 and developed, if necessary
Street wash water	Possibly	Organics, metals, floatables, sediment, nutrients	To be investigated in 2021 and developed, if necessary

[1] *Categories are in accordance with those listed in Part II.A.3.a of the General Permit*

Table A-2. Occasional Incidental Non-Storm Water Discharges not to be addressed as Illicit Discharges

Description of Occasional Incidental Non-Storm Water Discharge	Suspected Significant Contributor of Pollutants (yes/no)	Potential Associated Pollutants	Local Controls or Conditions
Charity Car Wash	No	Sediment, detergents, soaps, metals, oil and grease	Provide education through public education and outreach program
Residential Car Washes	No	Sediment, detergents, soaps, metals, oil and grease	Provide education through public education and outreach program
Emergency water main breaks	No	Chlorine, sediment	To be Determined
Fire Hydrant Flushing (Lockwood Water/Sewer)	Possibly	Chlorine	To be investigated in 2021 and developed, if necessary
Swimming Pools	Possibly	Chlorine	To be investigated in 2021 and developed, if necessary
Irrigation Return Water	Possibly	Sediment, nutrients	Expand public education and outreach program to promote awareness
Rising Groundwater	Possibly	Sediment	To be investigated in 2021 and developed, if necessary
Mobile Power Washers	Possibly	Sediment, organics, metals, oil and grease	To be investigated in 2021 and developed, if necessary
Water used for Dust Control	Possibly	Sediment, chlorine	To be investigated in 2021 and developed, if necessary.

Table A-3. Preliminary Summary of Waterbodies & Conveyance Systems in Yellowstone County MS4

Waterbodies	Total Outfalls	Waterbodies	Total Outfalls
Alkali Creek	5	Dry Creek	0
Arnold Drain	0	Five Mile Creek	3
BDPD	0	Grey Eagle Ditch	0
Big Ditch	0	High Ditch	0
Billings Bench Water Association (BBWA) Canals and laterals	0	Hogan's Slough	0
Birely Drain 50th Street	0	Holling Drain	0
Birely Drain 64th Street	0	Lake Josephine	
Birely Drain Rimrock	0	Lockwood Ditch	4
Bitter Creek		Mary Street Drain	0
Blue Creek	0	Shiloh Drain	0
Canyon Creek	0	Snow Ditch	1
Canyon Creek Ditch	0	Spring Creek	0
Coburn Lake	0	Suburban Ditch	0
Coulson Ditch	2	Yegan Drain	1
Cove Creek MT43F002_021	0	Yellowstone River MT43F001_010	1
Cove Creek Ditch	0	Yellowstone River MT43F001_11	0
Danford Drain	0	Unnamed Streams	9
TOTAL OUTFALLS = 26			

Appendix B. MS4 General Permit

GENERAL PERMIT
FOR
STORM WATER DISCHARGES ASSOCIATED WITH SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s)

PERMIT NUMBER MTR040000

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

AUTHORIZATION TO DISCHARGE UNDER THE MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES)

In compliance with Section 75-5-101 *et seq.,* Montana Code Annotated (MCA); Administrative Rules of Montana (ARM) 17.30.1101; 17.30.1301 *et seq.; and ARM* 17.30.601 *et seq.,* applicants with an authorization letter issued under this *General Permit for Storm Water Discharges Associated with Small Municipal Separate Storm Sewer Systems (Small MS4s)* are permitted to discharge storm water resulting only from Small MS4s in accordance with effluent limitations, monitoring requirements, and other conditions set forth herein.

This Permit shall become effective January 1, 2017.

This Permit and the authorization to discharge shall expire at midnight, December 31, 2021.

FOR THE MONTANA DEPARTMENT
OF ENVIRONMENTAL QUALITY

Jon Kenning, Chief
Water Protection Bureau

Issuance Date: November 30, 2016

Contents

Part I. Permit Coverage

Discharges Authorized
Montana Pollutant Discharge Elimination System (MPDES) General Permit MTR040000 is a fourth-generation General Permit for storm water discharges associated with Small Municipal Separate Storm Sewer Systems (MS4s). Pursuant to 75-5-402, MCA and requirements found in ARM, Title 17, Chapter 30, Subchapters 11, 12, and 13, the Department of Environmental Quality (the Department or DEQ) regulates storm water discharges from Small MS4s. To elaborate, ARM 17.30.1105(1)(d) requires MPDES permit coverage for Small MS4s that are identified in ARM 17.30.1102(23) or designated pursuant to ARM 17.30.1107. Regulated Small MS4s are required to apply for, and obtain, authorization for the discharge of storm water into state waters per requirements of this General Permit.

Ineligibility for Coverage
This 2017 General Permit does not authorize, or supersede permitting requirements for "storm water discharge associated with industrial activity" as defined in ARM 17.30.1102(29), "storm water discharge associated with construction activity" as defined in ARM 17.30.1102(28), or storm water discharges required or covered under another MPDES permit. The 2017 General Permit does not relieve the permittee from any other statute, regulation, permits, or other regulatory requirements for activities occurring within their area and not associated with permitted storm water discharges with Small Municipal Separate Storm Sewer Systems.

Applicants
The Department may determine that a small MS4 applying for coverage does not qualify for authorization under the renewed 2017 General Permit for Storm Water Discharges associated with Small MS4s, citing that the specific source applying for authorization appears unable to comply with the one or more of the following requirements:

- effluent standards, effluent limitations, standards of performance for new sources of pollutants, toxic effluent standards and prohibitions, and pretreatment standards;
- water quality standards established pursuant to 75-5-301, MCA;
- prohibition of discharge of any radiological, chemical, or biological warfare agent or high-level radioactive waste;
- prohibition of any discharges to which the regional administrator has objected in writing;
- prohibition of any discharge which is in conflict with a plan or amendment thereto approved pursuant to section 208(b) of the Act;
- any additional requirements that the Department determines are necessary to carry out the provisions of 75-5-101, et seq., MCA.
- The storm water discharge is different in degree or nature from discharges reasonably expected from sources or activities within the category described in this MPDES General Permit (including pollutants from process wastewater streams).
- The MPDES permit authorization for the same operation has previously been denied or revoked.
- The discharge sought to be authorized under the 2017 General Permit is also included within an application or is subject to review under the Major Facility Siting Act, 75-20-101, et seq., MCA.

- The point source is, or will be, located in an area of unique ecological or recreational significance. Such determination must be based upon considerations of Montana stream classifications adopted under 75-5-301, MCA, impacts on fishery resources, local conditions at proposed discharge sites, and designations of wilderness areas under 16 USC 1132 or of wild and scenic rivers under 16 USC 1274.

If the Department determines ineligibility for a Small MS4, the Department shall proceed, unless the application withdrawn, to process the application through the Individual MPDES Permit requirements. The Department will contact the applicant regarding ineligibility and request more information and fees, as needed, for Individual MPDES Permit requirements.

Permittees
Per ARM 17.30.1341(9), the Department may require any Small MS4 authorized by the 2017 General Permit to obtain an Individual Permit instead. The Department may require a Small MS4 to get an Individual Permit citing one or more of the following reasons:

- a water quality management plan has been approved that contains requirements applicable to categories or subcategories of discharges or facilities covered in a general permit;
- the Department has determined that the Small MS4 is a significant contributor to pollution;
- a change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the Small MS4;
- the discharger is not in compliance with the conditions of the 2017 General Permit;
- circumstances have changed since the time of the request to be covered by the 2015 General Permit so that the Small MS4 is no longer appropriately controlled under the 2017 General Permit;
- effluent limitations guidelines have been promulgated for facilities covered under the 2017 General Permit; or
- a change in any condition that requires either a temporary or permanent reduction or elimination of the discharge authorized under the 2017 General Permit has occurred.

Public Notice
Prior to issuing a General Permit, the Department shall provide a public notice in accordance with the requirements of ARM 17.30.1372 and shall adhere to the requirements of ARM 17.30.1373 through 17.30.1377 regarding public comments and public hearings.

Application for Coverage
Per ARM 17.30.1111, owners or operators of Small MS4s must obtain coverage under a MPDES General Permit by completing a General Permit application or a MPDES Individual Permit by submitting an application for an Individual Permit, and complying with the application requirements set forth in ARM 17.30.1111(2).

In accordance with ARM 17.30.1341(4), a discharger who fails to submit a written application in accordance with the terms of this General Permit shall not be authorized to discharge under the permit. A complete and timely application to be covered in accordance with this General Permit's requirements fulfills the requirements for permit application for purposes of ARM

17.30.1105, 17.30.1111, 17.30.1313, 17.30.1322, and 17.30.1341. The application form, as provided by the Department, shall be completed and submitted to:

Montana Department of Environmental Quality
Water Protection Bureau
P.O. Box 200901
Helena, Montana 59620-0901

Authorization options for coverage under the 2017 General Permit are provided below.

New Authorizations (Not currently authorized under the 2015 General Permit)
Applicants seeking authorization under the 2017 General Permit shall submit a complete application package at least 30 days before the anticipated date of required permit coverage. If an applicant owns and operates Small MS4 areas throughout the state, the applicant can submit:

- application packages for each Small MS4 area separately,
- application packages for each Small MS4 area separately as a co-permittee with the interconnected Small MS4,
- application packages for each Small MS4 area to reflect both permittee and co-permittee statuses, as requested, or
- a single comprehensive application package to cover all Small MS4 areas in the state.

An application package includes:

- an application form, as provided by the Department,
- a storm water management program, and
- fees (renewal permit fees) as required under ARM 17.30.201.

If there are deficiencies with the application package, the Department may deny authorization under the permit or contact the MS4 for additional information necessary to ensure the application package meets requirements. If the request is denied, the Department may process the request as an Individual Permit (with additional fees); the applicant may withdraw the request; or the applicant may modify the MS4's operations to meet the conditions of the 2017 General Permit and re-apply for coverage under the 2017 General Permit.

Once determined adequate, the Department will issue an authorization letter to these MS4s confirming coverage under the 2017 General Permit beginning January 1, 2017 [ARM 17.30.1341(4)].

Continuing Authorizations issued under the 2015 General Permit
Permitted MS4s renewing authorizations under the 2017 General Permit shall submit a complete renewal application package at least 30 days in advance of the existing 2015 General Permit expiration.

A renewal application package includes:

- a renewal application form, as provided by the Department,
- a storm water management program, and
- fees (renewal permit fees) as required under ARM 17.30.201.

If there are deficiencies with the renewal application package, the Department may deny authorization under the permit or contact the MS4 for additional information necessary to ensure the application package meets requirements. If the request is denied, the Department may process the request as an Individual Permit (with additional fees); the applicant may withdraw the request; or the applicant may modify the MS4's operations to meet the conditions of the 2017 General Permit and re-apply for coverage under the 2017 General Permit.

Once determined adequate, the Department will issue an authorization letter to these MS4s confirming coverage under the 2017 General Permit beginning January 1, 2017 [ARM 17.30.1341(4)].

Co-permittees Authorizations (New or Continuing Authorizations)
When multiple Small MS4s apply for coverage under a single permit authorization number, they shall be considered co-permittees and shall be jointly responsible for compliance under the 2017 General Permit as set forth at ARM 17.30.1111(3) and (7). Each co-permittee must submit a separate application package to obtain authorization. Co-permittee authorizations may occur under the 2017 General Permit as a renewal authorization with continuing coverage status from the 2015 General Permit or a new authorization. Co-permittees will be subject to the requirements above based on their status: new or continuing.

Other Permitting Requirements
Submittal of the application package and receipt of an authorization letter from the Department does not eliminate a permittee's obligation to obtain other necessary permits to include MS4-related activities that utilize the storm sewer systems as a conveyance for non-storm water discharges to a receiving waterbody.

Permit Area of Permitted MS4s Under the 2015-Issued General Permit
This permit covers areas pursuant to ARM 17.30.1102(23) that are served by, or contribute to, municipal separate storm sewers owned or operated by the permittee that discharges to State waters as follows:

- Cities: Billings, Bozeman, Butte, Great Falls, Helena, Kalispell, and Missoula.

  For cities required to maintain coverage under this renewed permit, the geographic area of permit coverage will include the U.S. Census designated urbanized areas in accordance with the 2010 census for cities listed in ARM 17.30.1102(23)(a) and the entirety of the municipal incorporated boundary for cities listed in ARM 17.30.1102(23)(b). For the purposes of the 2017 General Permit, these permittees are referred to as Traditional MS4s.

- Counties: Cascade, Missoula, and Yellowstone.

  For counties required to maintain coverage under this renewed permit, the geographic area of permit coverage will include the U.S. Census designated urbanized areas in accordance with the 2010 census for counties listed in ARM 17.30.1102(23)(a). For the purposes of the 2017 General Permit, these permittees are referred to as Traditional MS4s.

- Other: Malmstrom Air Force Base, Montana State University, and University of Montana (Missoula).

  For all other permitted MS4s as identified in accordance with ARM 17.30.1102(23)(d) and required to maintain coverage under this renewed permit, the geographic area of permit coverage is the portion of the permittee's jurisdiction that is within permitted Traditional MS4s. For the purposes of the 2017 General Permit, these permittees are referred to as Non-Traditional MS4s.

Effluent Limitations
Effective immediately upon issuance of an authorization under the 2017 General Permit and lasting through the expiration date, the following conditions apply to all Small MS4s covered under this General Permit. There must be no discharge of pollutants via storm water runoff to State Waters except as provided for below.

A. Implementation of Best Management Practices (BMPs) consistent with the provisions of the Storm Water Management Program (SWMP) and the requirements in this General Permit shall constitute compliance with the requirement of reducing pollutants to the maximum extent practicable (MEP). Discharges of storm water containing pollutants associated with Small MS4s covered under this General Permit will be controlled through the development, implementation, and enforcement of a SWMP designed to reduce the discharge of pollutants from the permitted Small MS4 to the MEP, to protect water quality, and to satisfy the appropriate water quality requirements of the Montana Water Quality Act (MWQA).

B. For regulated Small MS4s which have been designated through ARM 17.30.1102(23) and had initial authorization under the preceding January 1, 2005 to December 31, 2009 General Permit for Storm Water Discharge Associated with Small Municipal Separate Storm Sewer System, the permittee was required to develop, implement, and enforce a SWMP, as stated in Part II of the 2005 General Permit, no later than the December 31, 2009 expiration date. This requirement is still valid and binding under this reissued January 1, 2017 to December 31, 2021 General Permit for Storm Water Discharge Associated with Small Municipal Separate Storm Sewer System (MS4), although for the new inclusions or revisions to the SWMP as stated in the reissued 2017 General Permit, the permittee must develop, implement, and enforce those additional or revised components as per the implementation timeframe specified.

C. For any regulated Small MS4s which have been designated through ARM 17.30.1102(23) or 17.30.1107 or an unregulated MS4 seeking coverage that has not been previously authorized, the permittee must develop, implement, and enforce a SWMP in accordance with the 2017 General Permit, no later than five years from the initial date of permit authorization.

D. If an individual MPDES permit is issued to any regulated Small MS4, coverage under the 2017 General Permit is terminated on the effective date of the final individual MPDES permit.

No discharge of storm water containing pollutants from process wastewater streams may occur under this General Permit.

No discharge of storm water containing pollutants from Small MS4s covered under this General Permit may cause or contribute to a violation of water quality standards.

Part II. Storm Water Management Program

A. Requirements

The permittee must develop, document, and maintain a SWMP which includes management practices, control techniques, systems, designs, good standard engineering practices, and such other provisions necessary to reduce the discharge of pollutants from the permitted Small MS4 to the MEP. This section describes required BMPs and implementation schedules or deadlines for each BMP. DEQ requires BMPs that are ***selected, designed, installed, implemented, inspected, and maintained*** (or replaced based on inspections) in accordance with good engineering, hydrologic, and pollution control practices. DEQ provides the flexibility for permittees to choose appropriate BMPs based on their location-specific discretion to self-determine appropriate BMPs to control pollutant sources. If applicable, retain documentation, specifications, and/or standard operating procedures used for BMP selection.

Pursuant to ARM 17.30.1111(6), the permittee shall effectively manage a storm water program inclusive of the six minimum control measures: Public Education and Outreach; Public Involvement and Participation; Illicit Discharge Detection & Elimination; Construction Site Storm Water Management; Post-Construction Site Storm Water Management in New and Redevelopment; and Pollution Prevention/Good Housekeeping for Permittee Operations.

The permittee shall effectively implement a coordinated storm water program inclusive of the development of a storm water management team comprised of persons responsible for implementation of the SWMP and the establishment of formal mechanisms for communication and coordination between team members (e.g. meetings, email updates, etc.) to ensure cooperation necessary to facilitate permit compliance and timely reporting.

Within 60 Days of the permit effective date and then reviewed annually, all permittees must develop a storm water management team, including a primary SWMP coordinator, and organizational chart which identifies the position responsible for implementing each minimum measure. Any updates to this information shall be submitted with Annual Reports.

During the entire permit term, all permittees must establish, document, and execute formalized mechanisms for regular communication between storm water management team members to allow for exchange of information and submittal of information necessary for permit compliance tracking and reporting.

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
1. PUBLIC EDUCATION AND OUTREACH The permittee shall implement a storm water public education program to develop or adapt, distribute, and evaluate educational materials and outreach activities to key target audiences in the MS4 that raise awareness about the impacts of storm water discharges on waterbodies, educate audiences about the behaviors and activities that have the potential to pollute storm water discharges, and motivate action to change behaviors to reduce pollutants in storm water runoff.			
a. Determine key target audiences most appropriate for storm water outreach.	All	i. • Analyze which business types and/or residential behaviors are common sources of illicit discharges, spills, and dumping. • Develop a list, description, and rationale for selecting these key target audiences based on business and residential groups associated with illegal discharges and improper disposal of waste to the MS4. • List the pollutants associated with each key target audience. • Submit with 1st Annual Report.	End of 1st Permit Year
	All	ii. • Develop and advertise a storm water website for access by key target audiences, other interested stakeholders, and the general public. • At a minimum, the storm water website must include: o a copy of this General Permit; or o a link to the permittee's webpage containing ▪ the permit, ▪ access to outreach materials, ▪ outreach event information (most recent and current), ▪ storm water management program documents and updates, ▪ annual reports (or an equivalent summary or document providing an annual overview, and the availability	End of 1st Permit Year

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
		for the general public to request the annual report), and ▪ an effective mechanism for providing continued public input for the SWMP. • The website must also include: o information regarding how to identify sources of illicit discharges; o procedures on how to report an illicit discharge; o a summary of the permittee's requirements for covered construction activities; and o how to submit construction project complaints. • The website shall be available to the public on the internet.	
b. Develop and utilize the permittee's website for public outreach and involvement.	All	i. • Develop outreach messages which promote benefits of non-polluting behaviors to the key target audience as well as benefits to storm water discharges. • Submit with 2nd Annual Report.	End of 2nd Permit Year
c. Develop a tailored outreach strategy for each key target audience and specific storm water polluting behavior.	All	i. • Identify and, as needed, develop outreach formats and distribution channels for messages developed for each key target audience and associated storm water polluting behavior. • Formats and distribution channels should be tailored to key target audiences and can utilize other existing formats and distribution channels, such as existing community newsletters. • Submit a description of formats, distribution channels and schedule for each key target audience in 2nd Annual Report.	End of 2nd Permit Year

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
	All	ii. • Distribute outreach materials to target audiences • Describe distribution in Annual Reports.	During the 3rd, 4th, and 5th Permit Years

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
2. PUBLIC INVOLVEMENT AND PARTICIPATION The permittee shall develop a strategy to involve key target audiences in the development and implementation of the SWMP that complies with state and local public notice requirements.			
a. Identify approaches for involving key target audiences in SWMP development and implementation.	All	i. • Identify approaches for involving the key target audiences (identified under Part II.A.1.a.i.) in the development and implementation of the SWMP over the five year permit term. • For each key audience, describe: o the approach; o the target date(s) for implementation; and o purpose of the involvement approach (e.g. raise awareness, change behavior, and improve the SWMP). • Wherever possible, identify existing organizations with membership that represent some or all of the key target audiences and describe opportunities for partnering to involve membership in SWMP development and implementation. • Document collaboration with existing organizations if this is an approach for involving key target audiences. • Submit a description of public involvement approach, and schedule for each key audience in 1st Annual Report.	End of 1st Permit Year

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
	All	ii. • Implement identified involvement approaches for each key target audience. • Document participation and key target audience feedback on the approach in the SWMP and in each Annual Report.	During the 2nd, 3rd, 4th, and 5th Permit Years
b. Develop and utilize the permittee's website for public involvement.	All	i. • Develop and advertise a storm water website for soliciting input from key target audiences, other interested stakeholders, and the general public. At a minimum, the storm water website must include: o access to outreach materials; o most recent or current outreach event information; o SWMP planning documents; o annual reports (or an equivalent summary or document providing an annual overview, and the availability for the public to request the annual report); o a mechanism for collecting public input for the SWMP; and o illicit discharge and construction project complaints. • Website shall be available to the public on the internet.	End of 1st Permit Year

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
3. ILLICIT DISCHARGE DETECTION & ELIMINATION The permittee shall develop, implement and enforce a program to detect and eliminate illicit discharges (as defined in ARM 17.30.1102(7)) into the permitted Small MS4.			
a. Address the following more frequent categories of non-storm water discharges or flows (i.e., illicit discharges) if identified as significant contributors of pollutants to the Small MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined in ARM 17.30.1102(8)), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water (discharges or flows from firefighting activities are excluded from the effective prohibition against non-storm water and need only be addressed where they are identified as significant sources of pollutants to state waters). These more frequent non-storm water discharges must be reasonably expected (based on information available to the permittee) to not be significant sources of	All	i. • Evaluate and include, in each Annual Report: o a list of non-storm water discharges that the permittee has identified as significant contributors of pollutants; o the pollutants associated with each non-storm water significant contributor; and o document any local controls or conditions placed on these discharges.	Annually

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
pollutants to the Small MS4, because of either the nature of the discharges or conditions the permittee established for not allowing these discharges to the Small MS4.			
b. Develop a list of other similar occasional incidental non-storm water discharges (e.g. non-commercial or charity car washes, etc.) that will not be addressed as illicit discharges. These non-storm water discharges must not be reasonably expected (based on information available to the permittee) to be significant sources of pollutants to the Small MS4, because of either the nature of the discharges or conditions the permittee established for allowing these discharges to the Small MS4 (e.g., a charity car wash with appropriate controls on frequency, proximity to sensitive waterbodies, BMPs for the wash water, etc.).	All	i. • Evaluate and include, in each Annual Report: o a list of occasional incidental non-storm water discharges that the permittee has determined will not be addressed as illicit discharges; o the pollutants associated with each non-storm water occasional incidental; and o document any local controls or conditions placed on these discharges.	Annually
	All	ii. • Include a provision prohibiting any occasional incidental non-storm water discharge that is determined to be contributing significant amounts of pollutants to the Small MS4 in appropriate ordinances, regulatory mechanism or memoranda of agreements.	End of 2nd Permit Year
c. Inventory storm water sewer infrastructure to thoroughly track illicit discharges, contain spills, and determine high priority areas. When determining high priority areas, permittees must document and consider, at a minimum, the following: industrial areas, previous areas with illicit discharges, known illegal dumping areas, the oldest portions of	All	i. • Update existing map showing: o the location and number of all outfalls (as defined in ARM 17.30.1102(14) and Part VIII of this General Permit); and o the names and location of all surface waters that receive discharges from those outfalls. • Development of this map to accommodate the provisions of a comprehensive illicit discharge detection and elimination (IDDE) program and	End of 1st Permit Year

	Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
	MS4 storm sewer infrastructure, any areas with onsite sewage disposal systems, and areas that discharge to an impaired waterbody.		the SWMP would typically include mapping storm sewer system components including: o inlets; o open channels; o subsurface conduits/pipes; o dry wells (discharges to ground water directly); and o other similar discrete conveyances. • List, label, or highlight determined high priority areas. • Update the storm sewer map regularly and make available for review by the Department upon request.	
d.	To the extent allowable under State, or local law, effectively prohibit, through ordinance or other regulatory mechanism, non-storm water discharges (except those listed under Part II.A.3.a.) into the regulated storm sewer system and implement appropriate enforcement procedures and actions.	Traditional MS4s	i. • If not done previously, adopt an ordinance or other regulatory mechanism to prohibit illicit discharges • Submit with 2nd Annual Report.	End of 2nd Permit Year
		Non-Traditional MS4s	ii. • If not done previously, adopt an ordinance or other regulatory mechanisms to prohibit illicit discharges. • Permittees without legal authority to enact an ordinance or other regulatory mechanism shall ensure that written policies and procedures are in place to exert authority (to the extent allowable) over MS4 users such as: o employees, o the traveling public, o contractors, etc. • Submit a summary of legal authority, written policy, and written procedures with the 2nd Annual Report.	End of 2nd Permit Year

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
	All	iii. • Solicit assistance from neighboring MS4s as necessary to detect and eliminate illicit discharges that may originate within the neighboring MS4 and formalize in cooperative agreements, i.e. memoranda of understanding. • Agreements should specify investigation and enforcement responsibilities and these agreements should be described in each permittee's Enforcement Response Plan (ERP) (Part II.A.3.d.iv.) and Illicit Discharge Investigation and Corrective Action Plan (Part II.A.3.f.). • Formalize cooperative agreements, i.e. memoranda of understanding, with all neighboring MS4s as necessary to implement the IDDE program described in Part II.A.3. • Submit a summary of the cooperative agreements with the 2nd Annual Report.	End of 2nd Permit Year
	All	iv. • Develop a formal ERP for illicit discharges. The ERP must describe: o legal authority – through ordinance, formal policies or memoranda of understanding – to eliminate and abate illicit discharges; o identify staff with enforcement authority; o enforcement actions available; o enforcement escalation process; and o schedule to be utilized to quickly and consistently eliminate the source of the discharge, abate any damages and prevent recurrence. • The ERP must include informal, formal, and judicial responses. o Informal responses may include:	End of 2nd Permit Year

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
		▪ telephone notification; ▪ verbal notice; ▪ notice of violation; and ▪ meetings. o Formal responses may include: ▪ administrative order; ▪ compliance schedule; ▪ order to show cause; ▪ monetary penalty (administrative); and ▪ suspended service. o Judicial responses may include: ▪ injunctive relief; ▪ consent decree; ▪ civil penalties; and ▪ criminal penalties. • Submit the ERP with the 2nd Annual Report.	
	All	v. • Implement ERP.	End of 2nd Permit Year
e. Proactively inspect, during dry weather, all outfalls to detect illicit discharges and connections into the MS4 and identify high priority outfalls.	All	i. • Inspect and screen all of the permittee's outfalls during dry weather using the outfall field screening protocol developed by the *Center for Watershed Protection* or equivalent process. • This process shall be completed by the end of the permit cycle.	Completed by the end of the 5th year. Progress documented in the Annual Reports.
	All	ii. • Using inspection and screening results, storm sewer maps, and other appropriate data, determine high priority outfalls. • Priority is to be determined by the permittee and shall be based on potential water quality impact. When determining high priority outfalls, permittees must consider, at a minimum, outfalls:	End of 2nd Permit Year Reevaluate during 3rd, 4th, and 5th Permit Years

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
		○ which drain industrial areas (as identified by the Small MS4s zoning regulations or growth policy); ○ where illicit discharges have been detected during past permit terms; ○ which drain areas prone to incidents of illegal dumping; ○ which drain the oldest portions of the Small MS4s storm sewer infrastructure; ○ which serve areas primarily served by onsite sewage disposal systems; and/or ○ which discharge into an impaired water body. • Submit the list of high-priority outfalls with each 2nd – 5th Annual Reports. The 3rd-5th Year lists may reflect updated priority outfalls based on screening results.	
	All	iii. • Inspect and screen high priority outfalls during dry weather a minimum of once per year. • Submit a summary of screening results with each 3rd – 5th Annual Report.	During 3rd, 4th, and 5th Permit Years
f. Consistently and effectively investigate suspected illicit discharges and connections and track subsequent compliance actions.	All	i. • Develop an Illicit Discharge Investigation and Corrective Action Plan. This plan will describe the process that will be used to: ○ locate the source of an illicit discharge and ○ select the appropriate corrective action, i.e. enforcement action, abatement, etc. ○ At a minimum, this plan shall include processes to: ▪ investigate all illicit discharges within 7 calendar days. Document circumstances that prevented this timeframe;	End of 1st Permit Year

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
		▪ prioritize non-storm water discharges suspected of being sanitary sewage and/or significantly contaminated for investigation first; ▪ confirmed illicit connections must be eliminated within a goal timeframe of 6 months. Document circumstances that prevented this timeframe; ▪ notify Montana DEQ and appropriate agencies of dry weather flows believed to be an immediate threat to human health or the environment; ▪ document that a good faith effort was made to find the source of the dry weather discharge and document each phase of the investigation in a case file; and, ▪ resolve and document the conclusion of all investigations. ▪ The outfall where any illicit discharge is detected shall continue to be considered high priority and should be investigated as required in the permit. ▪ The plan should refer to the permittee's ERP for execution of appropriate enforcement actions. ▪ Submit the plan with the 1st Annual Report.	
	All	ii. • Implement an Illicit Discharge Investigation and Corrective Action Plan.	End of 2nd Permit Year
	Traditional MS4s	iii. ▪ Maintain documentation which describes the investigations conducted and corrective actions taken per the Illicit Discharge Investigation	During 2nd, 3rd, 4th, and 5th Permit Years

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
		and Corrective Action Plan during dry weather screening or through other detection methods, e.g. public complaints. ▪ Submit summary with each Annual Report.	
	Non-Traditional MS4s	iv. ▪ Maintain documentation which describes the investigations conducted and corrective actions taken per the Illicit Discharge Investigation and Corrective Action Plan by the permittee or a neighboring MS4 for all illicit discharges – detected on the permittee's property that originates outside of the permittee's property – during dry weather screening or through other detection methods, e.g. public complaints. ▪ Submit summary with each Annual Report.	During 2nd, 3rd, 4th, and 5th Permit Years

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
4. CONSTRUCTION SITE STORM WATER MANAGEMENT The permittee shall develop, implement, and enforce a program to reduce pollutants in storm water runoff to the permitted Small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of storm water discharges from construction activity disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. If the Department waives its permitting requirements for storm water discharges associated with construction activity that disturbs less than five acres of total land area in accordance with ARM 17.30.1105(5), the Small MS4 permittee is not required to develop, implement, and/or enforce a program to reduce pollutant discharges from such sites.			
a. To the extent allowable under State, or local law, effectively require, through ordinance, or other regulatory mechanism, erosion and sediment controls and controls of other construction-related pollutant sources	Traditional MS4s	i. • If not completed previously, adopt an ordinance or other mechanism to require construction storm water controls on private and permittee-owned regulated projects. • At a minimum the ordinance or other regulatory mechanism must:	End of 3rd Permit Year

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
on regulated construction projects (construction storm water controls) and implement appropriate enforcement procedures and actions.		○ require the construction storm water management minimum standards described as Non-Numeric Technology-Based Effluent Limits in the most current Montana DEQ General Permit for Storm Water Discharges Associated with Construction Activity to be implemented on all regulated construction projects, and ○ provide the permittee the authority to inspect privately-owned construction storm water management controls. • Submit with 3rd Annual Report.	
	Non-Traditional MS4s	ii. • If not completed previously, at a regulatory minimum, adopt formal policies or other mechanisms to the extent allowable, such as contractual requirements applicable to contractors performing construction work requiring construction storm water controls on permittee-owned/operated projects. The permittee must consider and document private development projects regardless of legal authority. • Submit authority summary, written policy, and written procedures with the 3rd Annual Report.	End of 3rd Permit Year
	All	iii. • Develop a formal ERP to ensure compliance with the construction storm water management regulatory mechanisms on regulated projects including private property. The sanctions and enforcement mechanisms to be used to ensure compliance will be included.	End of 3rd Permit Year

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
		• The ERP must describe how the permittee will: o eliminate and abate illegal construction discharges; o identify staff with enforcement authority; o enforcement actions available and enforcement escalation process and include a schedule to be utilized to quickly, and consistently eliminate the source of the discharge; and o abate any damages and prevent recurrence. • The ERP must include informal, formal, and judicial responses. o Informal responses may include telephone notification, verbal notice, notice of violation, and meetings. o Formal responses may include administrative order, compliance schedule, order to show cause, monetary penalty (administrative), and suspended service. o Judicial response may include injunctive relief, consent decree, civil penalties, and criminal penalties. • In addition, the ERP must also include non-monetary construction project-specific penalties such as stop work orders, bonding requirements, and/or permit denials for non-compliance. • Submit documentation of progress towards creation of ERP with the 1st Annual Report. • Submit adopted ERP with the 3rd Annual Report.	

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
	All	iv. • Implement ERP.	End of 4th Permit Year
b. Require that all regulated construction projects submit a construction storm water management plan prior to construction which is consistent with state and local requirements and which incorporates consideration of potential water quality impacts including storm water pollution prevention through appropriate erosion, sediment, and waste control BMPs. The storm water pollution prevention plan (SWPPP) developed pursuant to the MPDES General Permit for Storm Water Discharges Associated With Construction Activity (Permit Number MTR100000) may substitute for this site plan for projects where a SWPPP is developed.	Traditional MS4s	i. • Develop a construction storm water management plan review checklist that documents, at a minimum, that the requirements described in the Non-Numeric Technology-Based Effluent Limits of the most current Montana DEQ General Permit for Storm Water Discharges Associated with Construction Activity have been included on all regulated project construction storm water management plans. • The construction storm water management plan review checklist shall be used to ensure consistent review of submitted plans and to determine and document compliance with state and local requirements. • Submit with the 1st Annual Report.	End of 1st Permit Year
	Traditional MS4s	ii. • Implement construction storm water management plan review checklist.	End of 1st Permit Year
	Non-Traditional MS4s	iii. • Develop and implement a plan review checklist which documents, at a minimum, that the requirements described in the Non-Numeric Technology-Based Effluent Limits of the most current Montana DEQ General Permit for Storm Water Discharges Associated with Construction Activity have been included on all permittee-owned/operated project site plans. The permittee may modify the plan review checklist based on the maximum extent of contractual agreements with documentation. • The plan review checklist shall be used to ensure consistent review of submitted plans for permittee-owned/operated projects and	End of 1st Permit Year

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
		to determine and document compliance with state and local requirements. • Submit with the 1st Annual Report.	
c. Ensure that all construction storm water management controls are installed, operated and maintained in order to function as designed.	Traditional MS4s	i. • Develop an inspection form or checklist to ensure consistent and thorough regulated project inspections. • The checklist shall include, at a minimum, the requirements described in the Non-Numeric Technology-Based Effluent Limits of the most current Montana DEQ General Permit for Storm Water Discharges Associated with Construction Activity. • Submit with the 1st Annual Report.	End of 1st Permit Year
	Non-Traditional MS4s	ii. • Develop an inspection form or checklist to ensure consistent and thorough regulated project inspections. • The checklist shall include, at a minimum, the requirements described in the Non-Numeric Technology-Based Effluent Limits of the most current Montana DEQ General Permit for Storm Water Discharges Associated with Construction Activity. The permittee may modify the plan review checklist based on the maximum extent of contractual agreements with documentation. • Submit with the 1st Annual Report.	End of 1st Permit Year
	All	iii. • Conduct inspections using inspection form.	End of 1st Permit Year
	All	iv. • Develop and maintain/update a regulated project inventory to include, at a minimum, if the project is covered under the Montana DEQ General Permit for Storm Water Discharges Associated with Construction Activity and associated authorization number, the location, size, topography of site and proximity to	End of 1st Permit Year

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
		waterbodies for each project.	
	All	v. • Develop an inspection frequency determination protocol based upon the priority of the project. • Priority is to be determined using specific criteria to include – at a minimum: o project size; o proximity to a water body; o steepness of project site slopes; o discharge to waterbodies impaired for pollutants expected from active construction projects; and o past record of non-compliance by the operator of the construction site. • The protocol shall establish the following minimum inspection frequency for all high priority projects: o once at commencement of construction after BMPs have been implemented; o once within 48-hours after each rain event of 0.25 inches or greater; o once within 48-hours after each occurrence of runoff from snowmelt due to thawing conditions that causes visible surface erosion at the site; and o once at the conclusion of the project prior to finalization (i.e. release of bond, issuance of certificate of occupancy, etc.). • In addition, the inspection frequency shall include: o recidivism reduction measures such as incentives; o disincentives; or	End of 1st Permit Year

Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
		○ increased inspection frequency at non-compliant operator's sites.	

	Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
5.	POST-CONSTRUCTION SITE STORM WATER MANAGEMENT IN NEW AND REDEVELOPMENT The permittee shall develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the permitted Small MS4. This program must ensure that controls are in place that would prevent or minimize water quality impacts.			
a.	To the extent allowable under State, or local law, effectively require, through ordinance, or other regulatory mechanism, post-construction storm water management controls and on regulated projects and implement appropriate enforcement procedures and actions.	Traditional MS4s	i. • If not completed previously, adopt an ordinance or other mechanism to require post-construction storm water management controls on regulated projects that, at a minimum, include the performance standard described in Part II.A.5.b.iii. • Submit with 4th Annual Report	End of 4th Permit Year
		Non-Traditional MS4s	ii. • If not completed previously, at a regulatory minimum, adopt formal policies or other mechanisms to the extent allowable, such as contractual requirements applicable to contractors performing construction work requiring post-construction storm water controls on permittee-owned/operated projects. The permittee must consider and document private development projects regardless of legal authority. • Submit authority summary, written policy, and written procedures with the 4th Annual Report	End of 4th Permit Year
		All	iii. • Develop a formal ERP to ensure compliance with installation, operation and maintenance	End of 4th Permit Year

	Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
			requirements for post-construction storm water management controls on regulated projects including private property. • The ERP must include informal, formal, and judicial responses. o Informal responses may include: ▪ telephone notification; ▪ verbal notice; ▪ notice of violation; and ▪ meetings. o Formal responses may include: ▪ administrative order; ▪ compliance schedule; ▪ order to show cause; ▪ monetary penalty (administrative); and ▪ suspend service. o Judicial responses may include: ▪ injunctive relief; ▪ consent decree; ▪ civil penalties; and ▪ criminal penalties. • The ERP must describe: o legal authority to require inspection and maintenance of controls; o identify staff with enforcement authority; o the enforcements actions available; o enforcement escalation process; and o schedule to be utilized to quickly and consistently ensure compliance with post-construction requirements. • Submit the ERP with the 4th Annual Report.	
		All	iv. • Implement ERP.	End of 5th Permit Year

	Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
b.	Require that all regulated development projects submit a site plan which is consistent with state and local post-construction requirements which incorporates consideration of potential water quality impacts including appropriate post-construction storm water management controls.	Traditional MS4s	i. • Develop and implement a plan review checklist to ensure consistent review of submitted plans and to determine and document compliance with state and local post-construction requirements • Submit with the 1st Annual Report.	End of 1st Permit Year
		Non-Traditional MS4s	ii. • Develop and implement a plan review checklist to ensure consistent review of plans for permittee-owned/operated projects and to determine and document compliance with state and local post-construction requirements. The permittee may modify the plan review checklist based on the maximum extent of contractual agreements with documentation. • Submit the checklist with the 1st Annual Report	End of 1st Permit Year
		All	iii. • Require that all regulated projects implement post-construction storm water management controls that are designed to infiltrate, evapotranspire, and/or capture for reuse the post-construction runoff generated from the first 0.5 inches of rainfall from a 24-hour storm preceded by 48 hours of no measurable precipitation. For projects that cannot meet 100% of the runoff reduction requirement, the remainder of the runoff from the first 0.5 inches of rainfall must be either: a. Treated onsite using post-construction storm water management control(s) expected to remove 80 percent total suspended solids (TSS); b. Managed offsite within the same sub-watershed using post-construction storm	End of 1st Permit Year

	Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
			water management control(s) that are designed to infiltrate, evapotranspire, and/or capture for reuse; or c. Treated offsite within the same sub-watershed using post-construction storm water management control(s) expected to remove 80 percent TSS. • Permittees allowing offsite treatment shall do the following: a. Develop and apply criteria for determining the circumstances under which offsite treatment may be allowed. • The criteria must be based on multiple factors, including but not limited to: i. technical or logistic infeasibility (e.g. lack of available space; ii. high groundwater; iii. groundwater contamination; iv. poorly infiltrating soils; v. shallow bedrock; vi. prohibitive costs; and vii. a land use that is inconsistent with capture and reuse or infiltration of storm water). • Determinations may not be based solely on the difficulty and/or cost of implementation. • The permittee must develop a formal review and approval process for determining projects eligible for offsite treatment. • The offsite treatment option is to be used only after all onsite options have	

	Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
			been evaluated and documented through the permittee's developed formal review and approval process. b. Create and maintain an inventory of regulated projects which utilize offsite treatment of post-construction storm water runoff. The inventory must include the following information pertaining to each approved project: • Geographic location of the project; • Location of the offsite treatment facility which the project drains to; and • Documentation of the rationale for approval of offsite treatment. • Submit adopted performance standards with the 1st Annual Report.	
c.	Ensure that all post-construction storm water management controls are installed, operated and maintained in order to function as designed.	Traditional MS4s	i. • Develop and implement an inspection form or checklist to ensure consistent and thorough inspections of post-construction storm water management controls. • Submit with 2nd Annual Report.	End of 2nd Permit Year
		Non-Traditional MS4s	ii. • Develop and implement an inspection form or checklist to ensure consistent and thorough inspections of post-construction storm water management controls. • The permittee may modify the inspection form or checklist based on the maximum extent of contractual agreements with documentation. • Submit with 2nd Annual Report.	2nd Permit Year
		All	iii. • Develop and maintain/update an inventory (including at a minimum, a description and location) of all **new** permittee-owned and	End of 2nd Permit Year

	Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
			private post-construction storm water management controls installed since the effective date of the permit.	
		Traditional MS4s	iv. • Develop and maintain/update an inventory (including at a minimum, a description and location) of all **existing** permittee-owned and private high priority post-construction storm water management controls installed prior to the effective date of the permit. • Priority is to be determined by the permittee and should be based on potential water quality impact using specific criteria which may include: o operation and maintenance needs of the practices; o proximity to water body; o drainage area treated; o land use type; and o location within an impaired waterbody watershed.	End of 3rd Permit Year
		Non-Traditional MS4s	v. • Develop and maintain/update an inventory (including a description and location) of all existing permittee-owned post-construction BMPs.	End of 3rd Permit Year
		All	vi. • Develop an inspection frequency determination protocol based upon the priority of the post- construction storm water management control. • Priority is to be determined by the permittee and should be based on potential water quality impact using specific criteria which may include: o operation and maintenance needs	End of 2nd Permit Year

	Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
			of the practices; o proximity to water body; o drainage area treated; o land use type; and o location within an impaired waterbody watershed. • Submit protocol with 2nd Annual Report.	
		Traditional MS4s	vii. • Develop a program to either: o conduct inspections of high-priority post-construction storm water management controls at least annually, OR o to require self-inspection and reporting by owners at least annually. o Submit program description with 2nd Annual Report.	End of 2nd Permit Year
		All	viii. • Inspect permittee-owned high priority post-construction storm water management controls annually and document findings and resulting compliance actions.	During the 3rd, 4th, and 5th Permit Years
		Traditional MS4s	ix. • Inspect or have inspected all high priority privately-owned post-construction storm water management controls annually • Document findings and resulting compliance actions.	During the 3rd, 4th, and 5th Permit Years
d.	Incorporate recommendations and requirements into plans, policies and ordinances which allow and support the utilization of LID concepts on public and private property.	All	i. • Convene appropriate staff and conduct a discussion to evaluate existing barriers to implementing LID infrastructure in the permittee's codes, ordinances and policies. • The outcome of this discussion must identify opportunities for change and address the potential inconsistencies between policies. • Appropriate staff must include member(s) of various departments, some of which may	End of 4th Permit Year

	Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
			include: o Parks and Recreation; o Public Works; o Planning; o Environmental Protection; o Utilities; and o Transportation. • Submit a summary of the discussion outcomes with the 4th Annual Report.	

	Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
6.	POLLUTION PREVENTION /GOOD HOUSEKEEPING FOR PERMITTEE OPERATIONS The permittee shall develop and implement an operation and maintenance program which includes a training component, and has the ultimate goal of preventing or reducing pollutant runoff from permittee operations.			
a.	Identify the operation and maintenance program to prevent or reduce pollutant runoff from permittee-owned/operated facilities and field activities.	All	i • Create an inventory of permittee-owned/operated facilities and activities that have the potential to release contaminants to the MS4. The inventory should include, at a minimum, the following: 1. Facilities: • maintenance and storage yards; • waste handling and disposal areas; • vehicle fleet or maintenance shops with outdoor storage areas; • salt/sand storage locations; and • snow or dredge material disposal areas operated by the permittee. 2. Activities: • park and open space maintenance;	End of 1st Permit Year

	Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
			• parking lot maintenance; • building maintenance; • road maintenance/deicing; and • storm water system maintenance including catch basin cleaning. • List the possible contaminant(s) from each facility/activity and list the local department(s) and position(s) responsible for pollution prevention with each facility/activity. • Update the inventory annually.	
		All	ii. • Develop a map that identifies the locations of facilities and known locations of activities identified in 6.a.i. • Update the map annually.	During the 2nd, 3rd, 4th, and 5th Permit Years
		All	iii. • Organize similar facilities and activities identified in 6.a.i. into categories, label the categories, and develop standard operating procedures (SOPs) for all categories. • Development of the SOPs must include documented inspections and communication with relevant department personnel of 2 facilities/activities per category prior to SOP category completion. • The SOPs must identify storm water pollution controls (structural and non-structural controls, and operation improvements) to be installed, implemented, and/or maintained to minimize the discharge of contaminants. • The permittee must complete, at a minimum, the	During the 2nd, 3rd, 4th, and 5th Permit Years

	Minimum Measure	Permittee	Required BMP	Deadline/ Implementation Schedule
			required SOPs according to the following schedule: o one-fourth by the end of the 2nd permit year; o one-half by the end of the 3rd permit year; o three-fourths by the end of the 4th permit year; and o all by the end of the 5th permit year. • Submit the completed SOPs annually starting with the 2nd Annual Report.	
		All	iv. • Develop and internally document storm water pollution prevention training in conjunction with the development of the SOPs for each category.	During the 2nd, 3rd, 4th, and 5th Permit Years
		All	v. • Conduct annual storm water pollution prevention training for all permittee staff directly involved with implementing SOPs. • Trainings will be conducted during the next permit year after development of each SOP. ***Example: SOP and training developed in 2nd Permit Year. Training conducted in 3rd Permit Year.*** • Retain records of completed trainings and attendance.	During the 3rd, 4th, and 5th Permit Years

B. Training

The permittee is required to conduct and/or coordinate the following training and track/document of all municipal staff participation in each:

1. Conduct comprehensive training during the 1st year of the permit term for all members of the storm water management team to educate them about the new permit, the updated SWMP and implementation responsibilities for the upcoming permit term. New members of the storm water management team must receive the equivalent amount of training within 90 days of the hire date.
2. Conduct storm water awareness training, at a minimum, during 1st and 4th years of the permit term for all appropriate permittee field staff (and pretreatment inspection staff) and staff who work at permittee facilities. The training must provide education regarding storm water impacts, the MS4 permit, the detection and elimination of illicit discharges and the implementation of the ERP, and specifically address BMPs necessary to minimize discharges of pollutants during permittee activities or the operation of permittee facilities. Appropriate new field staff and staff who work at permittee facilities must receive the equivalent amount of training within 90 days of the hire date.
3. Conduct training, at a minimum, during the 1st and 4th years of the permit term for all inspectors and plan reviewers responsible for implementation of the Construction Site Storm Water Management Control Minimum Measure. Inspector training shall include inspection protocol and the implementation of the ERP upon development. New inspectors and plan reviewers must receive the equivalent amount of training within 90 days of the hire date.
4. Conduct training, at a minimum, during the 1st and 4th years of the permit term for all inspectors and plan reviewers responsible for implementation of the Post-Construction Storm Water Management in New Development and Redevelopment Minimum Measure. Inspector training shall include inspection protocol and the implementation of the ERP. New inspectors and plan reviewers must receive the equivalent amount of training within 90 days of the hire date.
5. Conduct training, at the schedule outlined within Part II.6.a.v, for storm water staff responsible for implementing Standard Operating Procedures (SOPs) developed as a requirement of the Pollution Prevention/Good Housekeeping Minimum Measure. Training must be oriented to staff involved with the SOP-specific duties. New storm water staff responsible for implementing SOPs must receive the equivalent amount of training within 90 days of the hire date.

C. Sharing Responsibility

In accordance with 17.30.1111(7), a small MS4 may share responsibility to implement the minimum control measures with another entity in order to satisfy their MPDES permit obligations to implement a minimum control measure. Shared responsibility is allowed only if the other entity implements the control measure, and the particular control measure, or component thereof, to a degree at least as stringent as the corresponding MPDES permit requirement. The other entity must agree to implement the control

measure on behalf of the owners and operators of the regulated small MS4. Written acceptance of this obligation is required. This obligation must be maintained as part of the description of the permittee's SWMP. In annual reports, the owners and operators must specify that they are relying on another entity to satisfy some of their permit obligations, unless the other entity is responsible to file the reports. The MS4 remains responsible for compliance with its permit obligations if the other entity fails to implement the control measure (or component thereof).

The MS4 should enter into a legally binding agreement with the other entity in order to minimize uncertainty about compliance with the MPDES permit.

D. Qualifying Local Program

If the application indicates a Qualifying Local Program requires a Small MS4 to implement one or more of the six minimum control measures as stated in ARM 17.30.1111 (9), and the permittee elects to do this in the application, then the permittee is directed to follow that qualifying program's requirements rather than the applicable storm water management program requirements stated in Part II.A.

E. Transfer of Ownership, Operational Authority, or Responsibility for SWMP Implementation

The permittee must implement the SWMP on all new areas added to the permittee's portion of the Small MS4 (or for which the permittee becomes responsible for implementation of storm water quality controls) as expeditiously as possible. Implementation may be accomplished as part of a phased plan to allow additional time for controls that cannot be implemented immediately.

Within 90 days of a transfer of ownership, operational authority, or responsibility for SWMP implementation, the permittee must have a plan for implementing the SWMP on all newly added areas. The plan may include schedules for implementation. Information on all new annexed areas and any resulting updates required to the SWMP must be included in the Annual Report.

F. Storm Water Management Program Updates Required by the Department

The Department may require changes to the SWMP as needed to:

1. Address impacts on receiving water quality caused, or contributed to, by discharges from the Small MS4;

2. Include more stringent requirements necessary to comply with new federal statutory or regulatory requirements; or

3. Include such other conditions deemed necessary by the Department to comply with the goals and requirements of the Montana Water Quality Act.

4. Update BMPs as necessary to improve program effectiveness per information and data submitted in permittees' Annual Reports.

5. Changes requested by the Department must be made in writing, set forth the time schedule for the permittee to develop the changes and update their program, and offer the permittee the opportunity propose alternatives to their program to meet the objective of the requested changes.

Part III. Special Conditions

A. Water Quality Controls for Storm Discharges to Impaired Waterbodies Pre-Total Maximum Daily Load (TMDL) Approval

The permittee's Storm Water Management Program (SWMP) must identify all outfalls that discharge to impaired waterbodies, the impaired waterbodies, and the associated pollutant(s) of impairment. Information on impaired waterbodies may be obtained from the Department or from the Montana DEQ Clean Water Act Information Center website: http://cwaic.mt.gov/. This information will be submitted with each Annual Report.

The permittee's SWMP must include a section that describes BMPs that target and reduce discharges of the identified pollutant(s) of impairment to impaired waterbodies without an approved TMDL. *The permittee should only identify pollutants of impairment from **Table 1** in Part IV.* The permittee's Annual Report must contain a summary of BMPs implemented over the reporting period and a schedule of BMPs planned for the following year.

B. Water Quality Controls for Storm Discharges to Impaired Waterbodies with Approved TMDL Wasteload Allocations (WLAs)

Addressing TMDLs in the SWMP

Appendix A of the permit contains a list of TMDLs with WLAs assigned to MS4s approved by the Department and EPA as of the effective date of this permit. The permittee's SWMP must identify all outfalls that discharge to impaired waterbodies with an approved MS4 WLA, the impaired waterbodies, and the associated pollutant(s) of impairment. This information will be submitted with each Annual Report.

The permittee must include in its SWMP a section identifying the measures and BMPs it plans to implement, describing the MS4's impairment priorities and long term strategy, and outlining interim milestones (i.e., a completion schedule for action items) for controlling the discharge of the pollutants of concern and making progress towards meeting the TMDL. **TMDL-Related Monitoring**, below, will be incorporated into this section.

The TMDL section of the SWMP must be submitted with the 4th year Annual Report for approval. The permittee will begin to implement the approved section no later than the start of the 5th permit year. The section must be annually evaluated based on monitoring results, revised as needed, and resubmitted with Annual Reports beginning with the 5th year Annual Report. Rationale must be provided for any revisions to this section. Revisions must be approved by the Department.

TMDL-Related Monitoring

The permittee must supplement the Self-Monitoring Requirements in Part IV with additional monitoring targeted at further evaluating MS4 loading to impaired waterbodies (Option 1) or at evaluating the effectiveness of BMPs selected for reducing MS4 loading to impaired waterbodies (Option 2). The same sample sites may be used for Self-Monitoring and TMDL Monitoring. Each permittee must inform the Department of its preferred Monitoring Option (1 or 2) with application for coverage under this renewed General Permit. Monitoring will begin no later than March 1 of the 2nd permit year.

Monitoring Option 1

1. At a minimum, the MS4 will select four sampling locations that discharge to impaired waterbodies. The location of these outfalls should consider the largest drainage areas, the surrounding land uses which could contribute to impairments, and high priority areas as identified by the IDDE minimum control measure. The permittee must submit a Sampling Plan to the Department for approval with the first Annual Report. The Sampling Plan should include strategy rationale, monitoring frequency, monitoring parameters, and monitoring locations. After the Sampling Plan is approved by the Department, the Permittee must provide a mechanism for public review of the plan.

2. Monitoring will be conducted semi-annually. Specific monitoring parameters will include pollutant(s) listed as a source of impairment specific to the receiving waterbody from the MS4. Monitoring data must be collected following procedures in 40 CFR Part 136, unless other test procedures have been specified in this General Permit.

Monitoring Option 2

1. As determined by the permittee and approved by the Department, Monitoring Option 2 provides the flexibility for a MS4-specific monitoring strategy that will provide the data required to track and evaluate effectiveness of BMPs. The permittee must submit a Sampling Plan to the Department for approval with the first Annual Report. The Sampling Plan should include strategy rationale, monitoring frequency, monitoring parameters, and monitoring locations. After the Sampling Plan is approved by the Department, the Permittee must provide a mechanism for public review.

Part IV. Monitoring, Recording and Reporting Requirements

A. Self-Monitoring Requirements

Storm water monitoring requirements must initiate: (1) on the effective date of authorization issued under this General Permit, (2) as outlined by Part IV.A.4., or (3) as otherwise directed by the Department. The Department reserves the right to require additional storm water sampling, testing, and reporting on a case-by-case basis.

1. Storm Water Discharge Monitoring

All permittees are required to perform sampling, testing, and reporting of storm water discharges for their Small MS4s under this General Permit, or as otherwise required by the Department.

2. Specific Monitoring Parameters

The required monitoring parameters are listed in Table 1.

Table 1. Small MS4 Monitoring Requirements

Parameter[1][2]	**Frequency**	**Type**[3]
Total Suspended Solids (TSS), mg/L	Semi-annual	Grab or Composite
Chemical Oxygen Demand (COD), mg/L	Semi-annual	Grab or Composite
Total Phosphorus, mg/L	Semi-annual	Grab or Composite
Total Nitrogen, mg/L	Semi-annual	Grab or Composite
pH, standard units	Semi-annual	Instantaneous
Copper, mg/L	Semi-annual	Grab or Composite
Lead, mg/L	Semi-annual	Grab or Composite
Zinc, mg/L	Semi-annual	Grab or Composite
Estimated Flow, gpm	Semi-annual	Instantaneous[4]
Oil and Grease[5], mg/L	Semi-annual	Grab

(1) Detection limits are pursuant to levels defined in Circular DEQ-7.
(2) Total recoverable methods to be used on all metals.
(3) See Definitions in Part VI. of this General Permit.
(4) Estimated flow rates are appropriate in cases where measurement gauges are not installed.
(5) Hexanes extraction (EPA Method 1664A).

3. Monitoring Locations

Permittees will choose from the two monitoring location options below and submit their selected option to the Department with their application for General Permit coverage:

a. Monitoring Option 1

For each semi-annual monitoring period, MS4 permittees must sample at the following locations within the permitted geographic area during a storm event with a measurable amount of discharge:

- 2 discharge points which represent storm water runoff drainage areas from a relatively commercial and/or industrial area; and,
- 2 discharge points which represent storm water runoff drainage areas from a relatively residential area.

Monitoring locations must be consistently identified as "001A" and "001B" for the industrial/commercial locations, and "002A" and "002B" for the residential locations. If a new monitoring location is added or used to replace an existing monitoring location, the new location will be identified according to the numeric alphabet scheme above.

b. Monitoring Option 2

For each semi-annual monitoring period, MS4 permittees must establish a network of at least four (4) monitoring locations and sample during a storm event with a measurable amount of discharge. At least one (1) monitoring location shall contain storm water runoff from a predominantly commercial and/or residential area and one (1) monitoring location shall contain storm water runoff from a predominantly residential area. At least one (1) monitoring location may be upstream, outside the MS4 boundary to evaluate water quality entering the MS4.

Monitoring locations must be consistently identified using a naming scheme of the permittee's choice, but the permittee can only use a chosen name once. If a new monitoring location is added or used to replace an existing monitoring location, a new name must be selected for the new location.

4. Storm Water Discharge Monitoring Schedule

Permittees authorized under the 2015 General Permit that were not required to monitor and obtain coverage under the 2017 General Permit are required to self-monitor starting January 1, 2018.

New authorizations under the 2017 General Permit (not authorized under the 2015 General Permit) are required to self-monitor starting three years from the date of authorization. These prescribed monitoring schedules provide flexibility for the permittee to establish a self-monitoring program.

5. Impaired Waterbodies Monitoring

Permittees with a storm water discharge to an impaired waterbody must conduct storm water discharge monitoring according to Part III. Special Conditions. Permittees must comply with all requirements associated with the TMDLs.

New authorizations under the 2017 General Permit (not authorized under the 2015 General Permit) will apply Part III.A requirements to both storm water discharges to impaired waterbodies with pre-total maximum daily load (TMDL) approval and approved TMDL wasteload allocations. Part III. B is not applicable during this permit cycle.

6. Monitoring Frequency

a. Sampling, testing, and reporting must be conducted at least semi-annually (two times per year) for each of the parameters listed in Table 1 above during a storm event with a measurable amount of discharge. One sample at each monitoring location must be taken between January 1st and June 30th of each permitted calendar year and the other sample between July 1st and December 31st.

b. If a permittee is not able to dependably obtain a sample at the identified required sampling outfall during a six-month monitoring period, rationale must be recorded in the corresponding annual report on why the collection of a sample was impracticable and the permittee must collect a substitute sample during the subsequent six-month monitoring period in addition to the required sample for that six-month monitoring period. The substitute sample and required six-month sample may be collected from back to back storm events with at least 48 hours of no measurable precipitation.

c. If a permittee fails to obtain the required sample for a six-month monitoring period, the permittee may request to replace the monitoring location outfall with appropriate rationale prior to the next calendar year. The Department must approve such requests prior to replacing a monitoring location. The new, approved outfall monitoring location will be identified with an unused outfall name/number. The permittee may not request to replace approved replacement monitoring locations again during the same permit cycle.

7. Monitoring Procedures

   Monitoring must be conducted according to test procedures approved under Part 136, Title 40 of the Code of Federal Regulations, unless other test procedures have been specified in this General Permit.

8. Penalties for Tampering

   The Montana Water Quality Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $25,000, or by imprisonment for not more than six months, or both.

B. Reporting and Evaluation of Monitoring Results

1. Monitoring results shall be submitted to the Department with each annual report.

2. Each annual report shall include a calculation of the long-term median concentration of each parameter in Table 1 of Part IV.A. The long-term median shall be calculated from all known monitoring results for each parameter at a monitoring location.

3. Monitoring results shall be used by permittees to self-evaluate measures taken to improve the quality of storm water discharges. Each annual report shall include an evaluation of the monitoring results relative to the long-term median. The evaluation must include (1) comparisons between monitoring locations, (2) discuss determinations for trends and outliers in monitoring results compared to the calculated long-term median, and results outside a pH range of 6.0 to 9.0 standard units, and (3) a schedule and rationale for BMPs planned to improve water quality of storm water discharges based on monitoring results.

C. Monitoring Records

The following information must be recorded and maintained at the office of the contact person/position for all storm water discharges which are sampled:

1. Date, exact place, and time of sampling;
2. Estimated duration (in hours) of the storm event(s) sampled;
3. Total rainfall measurements or estimates (in inches) of the storm event which generated the sampled runoff;
4. Name(s) of the individuals which performed the sampling or measurements; and
5. Analytical laboratory test result data and reports for storm water samples, and/or records, which minimally indicate:
   a. The date(s) analyses were performed;
   b. The time analyses were initiated;
   c. The initials or name(s) of individual(s) who performed the analyses;

d. References and written procedures, when available, for the analytical techniques or methods used; and
e. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc. used to determine these results.

D. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this General Permit, and records of all data used to complete the application for this General Permit, for a period of at least three years from the date of sample, measurement, report, or application.

E. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained an any compliance schedule of the permit must be submitted to DEQ in either electronic or paper format and be postmarked no later than 14 days following each schedule date unless otherwise specified in the permit.

F. Annual Report

1. The permittee (or co-permittee if co-permitted under one permit authorization number) shall prepare and submit an annual report to the Department for each calendar year within the General Permit term.
2. The permittee shall electronically submit the signed copy of the annual report form and required attachments to the Department by March 1st of each year for the preceding calendar year. Electronic submission is through NetDMR.
3. Each co-permittee shall submit an annual report form pertaining to their respective permitted Small MS4(s) unless formal written shared responsibilities allow another entity to complete the annual report form obligations.
4. The Department has provided an annual report form for use by all permittees or co-permittees.
5. If additional information is requested with the annual report form, then the permittee must submit this additional information at the same time as the form.
6. Monitoring results and evaluations, as required in Part IV.B of the General Permit, must be attached to the annual report form.
7. If the permittee or co-permittee has made any updates, changes, or improvements to their Storm Water Management Program during the prior calendar year, then an attachment to the annual report must provide a date and description of these updates, changes, or improvements.
8. Full-size, hard-copies of storm sewer system maps, including updates, must be submitted directly to the Department by March 1st of each year if the map(s) was developed or modified during the calendar year for which the annual report pertains.
9. The completion of this annual report must initiate for the calendar year in which authorization under the General Permit was issued.

10. The annual report must comply with the signatory and certification requirements as stated in Part VI.
11. Updates or revisions to submitted documents after the initial required submittal per development of the SWMP as outlined in Part II shall be retained onsite with the last revision date, and documents must be available upon request.

G. Changes in Storm Water Coordinator

The application identifies a formal Storm Water Coordinator for each permittee or co-permittee. Should the Storm Water Coordinator person/position, mailing address, email address, or telephone number identified on the Application Form change, the permittee or co-permittee must notify the Department in writing of this change within 15 calendar days of the change. This written notification must specifically reference that there is a "change of the Storm Water Coordinator", specifically identify the permit authorization number, and specifically identify the formal "Small MS4 Name" as identified on the application. The written notification letter for a change in the Storm Water Coordinator must be signed by a person meeting the signatory requirements of Part VI.

H. Records For Inspection

A copy of the General Permit, permit authorization letter, required SWMP documents, Annual Reports, Discharge Monitoring Reports (if required), and other pertinent records required by the General Permit shall be maintained by the Storm Water Coordinator for their respective Small MS4, and shall be made available to Department inspectors upon request for all permittees and co-permittees.

I. Inspection and Entry

The permittee shall allow the head of DEQ or the Regional Administrator, or an authorized representative upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment) practices, operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance, any substance or parameters at any location.

J. Twenty-four Hour Notice of Noncompliance Reporting

1. The permittee shall report any serious incident of noncompliance affecting the environment as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The report shall be made to the Water Protection Bureau at (406) 444-3080 or the Office of Disaster and

Emergency Services at (406) 324-4777. The following examples are considered serious incidents:

a. Any noncompliance which may seriously endanger health or the environment;
b. Any unanticipated bypass which exceeds any effluent limitation in the permit; or
c. Any upset which exceeds any effluent limitation in the permit.

2. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:
   a. A description of the noncompliance and its cause;
   b. The period of noncompliance, including exact dates and times;
   c. The estimated time noncompliance is expected to continue if it has not been corrected already; and
   d. DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Protection Bureau, by phone, (406) 444-3080.
   e. Reports shall be submitted to the following address:
   DEQ Water Protection Bureau, PO Box 200901, Helena, MT 59620.

K. Other Required Reporting

1. The permittee shall report any serious incident of illicit discharge within permitted MS4 boundaries that affects the environment as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The report shall be made to the Water Protection Bureau at (406) 444-3080.

2. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:
   a. A description of the illicit discharge and its cause/origin;
   b. The period of illicit discharging, including exact dates and times;
   c. The estimated time for correction of the illicit discharge if it has not been corrected already; and
   d. DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Protection Bureau, by phone, (406) 444-3080.
   e. Reports shall be submitted to the following address:
   DEQ Water Protection Bureau, PO Box 200901, Helena, MT 59620.

Part V. Compliance Responsibilities

A. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Montana Water Quality Act and is grounds for enforcement action; for termination under the General Permit; or for denial of coverage under this General Permit renewal. The permittee shall give the Department advance notice of any planned changes at the permitted facility or of an activity which may result in permit noncompliance.

B. Penalties for Violations of Permit Conditions

The Montana Water Quality Act provides that any person who violates a permit condition of the Act is subject to civil or criminal penalties not to exceed $25,000 per day or one year in prison, or both, for the first conviction, and $50,000 per day of violation or by imprisonment for not more than two years, or both, for subsequent convictions. MCA 75-5-611(a) also provides for administrative penalties not to exceed $10,000 for each day of violation and up to a maximum not to exceed $100,000 for any related series of violations. Except as provided in permit conditions "Bypass of Treatment Facilities" and "Upset Conditions", nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Removed Substances

Collected screenings, grit, solids, sludges, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard.

Part VI. General Requirements

A. Planned Changes

The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

1. The alteration or addition could significantly change the nature or increase the quantity of pollutant discharged. This notification applies to pollutants which are not subject to effluent limitations in the permit.

B. Anticipated Noncompliance

The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

C. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The reapplication must be submitted at least 90 days before the expiration date of this permit.

E. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

F. Other Information

When the permittee becomes aware that it failed to submit any relevant facts in an application, or submitted incorrect information in an application or any report to the Department, it shall promptly submit such facts or information with a narrative explanation of the circumstances of the omission or incorrect submittal and why they weren't supplied earlier.

G. Signatory Requirements

All applications, reports or information submitted to the Department or the EPA shall be signed and certified.

1. All permit notices of intent shall be signed by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Department shall be signed by a person described above or by a duly authorized representative of that person. A person is considered a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Department; and

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or an individual occupying a named position.

3. Changes to authorization. If an authorization described above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the above requirements must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Penalties for Falsification of Reports

The Montana Water Quality Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $25,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. As required by the Clean Water Act, applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act.

K. Property Rights

The issuance of this permit does not convey any property or water rights of any sort, or any exclusive privileges.

L. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers

This permit is not transferable to a new permittee. A new owner or operator of a facility must apply according to the standard application procedures 30 days prior to taking responsibility for the facility.

N. Fees

The permittee is required to submit payment of an annual fee as set forth in ARM 17.30.201. If the permittee fails to pay the annual fee within 90 days after the due date for the payment, the Department may:

1. Impose an additional assessment computed at the rate established under ARM 17.30.201: and,

2. Suspend the processing of the application for a permit or authorization or, if the nonpayment involves an annual permit fee, suspend the permit, certificate or authorization for which the fee is required. The Department may lift suspension at any time up to one year after the suspension occurs if the holder has paid all outstanding fees, including all penalties, assessments and interest imposed under this sub-section. Suspensions are limited to one year, after which the permit will be terminated.

O. Reopener Provisions

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations (and compliance schedule, if necessary), or other appropriate requirements if one or more of the following events occurs:

1. Water Quality Standards: The water quality standards of the receiving water(s) to which the permittee discharges are modified in such a manner as to require different permit conditions than contained in this permit.

2. Water Quality Standards are Exceeded: If it is found that water quality standards or trigger values in the receiving stream are exceeded either for parameters included in the permit or others, the Department may modify the permit conditions or water management plan.

3. TMDL or Wasteload Allocation: TMDL requirements or a wasteload allocation is developed and approved by the Department and/or EPA for incorporation in this permit.

4. Water Quality Management Plan: A revision to the current water quality management plan is approved and adopted which calls for different effluent limitations than contained in this permit.

P. Toxic Pollutants: A toxic standard or prohibition is established under Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit.

Part VII. Definitions

1. The "Act" means the Federal Clean Water Act.

2. "Best Management Practices" ("BMPs") means schedule of activities, prohibition of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of state waters. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

3. "Control measure" as used in this General Permit, means any Best Management Practice or other method used to prevent or reduce the discharge of pollutants to state waters.

4. The "Department" means the Montana Department of Environmental Quality.

5. "Flow-weighted composite sample" means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge.

6. "Grab Sample" for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.

7. "Green Infrastructure" means vegetation, soils, and natural processes used to manage water and create healthier urban environments. At the scale of a city or county, green infrastructure refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, green infrastructure refers to storm water management systems that mimic nature by soaking up and storing water.

8. "Hazardous substance" means any substance designated under 40 CFR Part 116 pursuant to section 311 of the federal Clean Water Act.

9. "Illicit Connection" means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.

10. "Illicit discharge" means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to an MPDES permit (other than the MPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from firefighting activities.

11. "MEP" is an acronym for "Maximum Extent Practicable", the technology-based discharge standard for Municipal Separate Storm Sewer Systems to reduce pollutants in storm water discharges that was established by the Clean Water Act, Section 402(p). A discussion of MEP as it applies to Small MS4s is found in ARM 17.30.1111(5). The MEP standard requires the development, implementation, and enforcement of measures including BMPs, control techniques, system design, engineering methods, and other

provisions that the Department determines to be appropriate for the control of such pollutants. MEP is an iterative, dynamic, flexible standard that the permittee shall evaluate and update continuously, as necessary, to better tailor or expand the program based on its effectiveness in reducing pollutant discharge load.

12. "MS4" means a municipal separate storm sewer system.

13. "Municipal separate storm sewer" means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that discharges to surface waters and is: (a) owned or operated by the state of Montana, a governmental subdivision of the state, a district, association, or other public body created by or pursuant to Montana law, including special districts such as sewer districts, flood control districts, drainage districts and similar entities, and designated and approved management agencies under section 208 of the federal Clean Water Act, which has jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, and is:
    a. designed or used for collecting or conveying storm water;
    b. not a combined sewer; and
    c. not part of a publicly owned treatment works (POTW) as defined in ARM Title 17, chapter 30, subchapter 13.

14. "Non-Traditional MS4" means MS4s which are designated as Small MS4s but are not cities or counties, such as drainage districts, transportation agencies, municipal utility districts, military bases, prisons and universities.

15. "Outfall" means the physical location where these conveyance structures discharge pollutants or storm water into surface water or where they leave the boundary of the designated MS4.The term does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances that connect segments of the same stream or other surface waters and that are used to convey surface waters.

16. "Owner or operator" means a person who owns, leases, operates, controls, or supervises a point source. "Point Source" means any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

17. "Process wastewater" means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

18. "Small municipal separate storm sewer system" means:
    a. small MS4s, and portions of them, that are located in the following urbanized areas in Montana as determined by the latest decennial census by the United States census bureau:
        i. the city of Billings and Yellowstone County;
        ii. the city of Missoula and Missoula County; and
        iii. the city of Great Falls and Cascade County;
    b. the following small MS4s serving a population of at least 10,000 as determined by the latest decennial census by the United States census bureau and that are located outside of an urbanized area:
        i. MS4s located in the city of Bozeman;
        ii. MS4s located in the city of Butte;
        iii. MS4s located in the city of Helena; and
        iv. MS4s located in the city of Kalispell;
    c. MS4s designated by the department pursuant to 17.30.1107; and
    d. systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large educational, hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

19. "Small MS4" means a small municipal separate storm sewer system.

20. "State waters" is defined at 75-5-103, MCA.

21. "Storm Water" means storm water runoff, snow melt runoff, and surface runoff and drainage.

22. "Storm Water Management Program" or "SWMP" means a comprehensive program to manage the quality of storm water discharged from the Small municipal separate storm sewer system.

23. "Surface waters" means any waters on the earth's surface including, but not limited to, streams, lakes, ponds, and reservoirs, and irrigation and drainage systems discharging directly into a stream, lake, pond, reservoir, or other surface water. Water bodies used solely for treating, transporting, or impounding pollutants shall not be considered surface water.

24. "Time-weighted composite sample" means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

25. "Total Maximum Daily Load" or "TMDL" is defined at 75-5-103, MCA.

26. “Traditional MS4” means all cities and counties covered by this General Permit.

27. "Waste Load Allocation" or "WLA" means the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources.

Appendix A: TMDLs with MS4 Approved WLAs

Basin: Upper Missouri

Affected MS4s: City of Helena
Pollutants of Concern: Total Phosphorus (TP), Total Nitrogen (TN), Total Suspended Solids (TSS)
MS4 WLA: None specified for Nutrients and Sediment in Prickly Pear Creek and Ten Mile Creek.
Assumptions and Actions Specified by the TMDL: The Department recognized that regulated storm water contributes only a small fraction of the total nutrient load and total sediment load. No additional requirements were imposed for permitted storm water facilities. However, to meet the intent of the TMDL goals and future recommendations, Helena MS4 must follow their permit requirements, evaluate potential impacts to impaired receiving waters, and utilize monitoring to implement an adaptive management approach to minimize pollutant loads.
Name and Date of TMDL: Framework Water Quality Restoration Plan and Total Maximum Daily Loads (TMDLs) for the Lake Helena Watershed Planning Area: Volume II – Final Report (August 2006)
Status of the TMDL: Final
Link to Main TMDL Document:
http://deq.mt.gov/Portals/112/Water/WQPB/CWAIC/TMDL/M09-TMDL-02a.pdf

Affected MS4s: City of Great Falls
Pollutants of Concern: Total Phosphorus (TP), Total Nitrogen (TN), and Sediment
MS4 WLA: None specified in the Lower Sun River.
Assumptions and Actions Specified by the TMDL:
In 2004, the MS4 was not considered a significant point source and no MS4 WLAs were developed. However, the Department recognized that urban areas have the potential to impact nutrient and sediment loading and future analysis is needed. To meet the intent of the TMDL goals and future recommendations, Great Falls MS4 must follow their permit requirements, evaluate potential impacts to impaired receiving waters, and utilize monitoring to implement an adaptive management approach to minimize pollutant loads.
Name and Date of TMDL: Water Quality Restoration Plan and Total Maximum Daily Loads for the Sun River Planning Area (December 2004)
Status of the TMDL: Final
Link to Main TMDL Document:
http://deq.mt.gov/Portals/112/Water/WQPB/CWAIC/TMDL/M13-TMDL-01a.pdf

Affected MS4s: City of Bozeman, Montana State University-Bozeman
Pollutants of Concern: Total Suspended Solids (TSS), Total Phosphorus (TP), Total Nitrogen (TN), E.coli
MS4 WLAs as follows: Note that WLAs apply to all MS4s that were co-permittees at the time of TMDL development; therefore, WLAs are aggregated and not individually assigned to each MS4.
TSS: The WLA is 137 tons of sediment per year for the Bozeman Creek watershed, which is a 37% reduction from the estimated existing load (218 tons/year). Because of the limited amount of data for Bear Creek, the Bear Creek WLA is also a 37% reduction (3.4 tons/year).
TSS Assumptions and Actions Specified by the TMDL: Percent reduction allocations were developed, but the WLAs are not intended to add load limits to the permit. WLAs are met by adhering to the permit requirements to minimize pollutant loads. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.
Nutrients: Since the storm water system should not be actively discharging during typical summer low flow conditions, both the existing load and WLA are defined as 0 (zero) for Bozeman Creek (Total Nitrogen), East Gallatin River (Total Nitrogen & Total Phosphorus); Bridger Creek (Nitrate), and Mandeville Creek (Total Nitrogen & Total Phosphorus).
Nutrient Assumptions and Actions Specified by the TMDL: When the storm water system is activated, the WLAs are met by adhering to the permit requirements and that monitoring can be used to implement an adaptive management approach to minimize pollutant loads. The MS4 is assigned a wasteload allocation of zero when the storm water system is not activated or functioning during storm events. As required by the permit, an illicit discharge detection and elimination program is necessary to achieve this WLA, which requires the permittees to regularly update the storm sewer system map, showing the location and number of outfalls.
Escherichia coli (E. coli): The MS4 will be assigned a wasteload allocation of 0 (zero) in Bozeman Creek when the storm water system is not activated.
E. coli Assumptions and Actions Specified by the TMDL: When the storm water system is activated, the WLAs are met by adhering to the permit requirements and that monitoring can be used to implement an adaptive management approach to minimize pollutant loads. The MS4 is assigned a wasteload allocation of zero when the storm water system is not activated or functioning during storm events. As required by the permit, an illicit discharge detection and elimination program is necessary to achieve this WLA, which requires the permittees to regularly update the storm sewer system map, showing the location and number of outfalls.
Name and Date of TMDL: Lower Gallatin Planning Area TMDLs & Framework Water Quality Improvement Plan (March 2013)
Status of the TMDL: Final
Link to Main TMDL Document:
http://deq.mt.gov/Portals/112/Water/WQPB/CWAIC/TMDL/M05-TMDL-02a.pdf

Basin: Columbia Basin

Affected MS4s: Butte-Silver Bow (BSB)
Pollutants of Concern: Total Phosphorus (TP), Total Nitrogen (TN), Total Suspended Solids (TSS), Metals (Arsenic, Cadmium, Copper, Lead, Mercury, and Zinc)
MS4 WLAs as follows:
TSS: The WLA is 179 tons of sediment per year from the BSB MS4 to Silver Bow Creek. (A 76% reduction from the current estimated load of 746 tons/yr.) The WLA comprises 8.5% of the Silver Bow Creek sediment TMDL.
TSS Assumptions and Actions Specified by the TMDL: Percent reduction allocations were developed, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.
Nutrients: The MS4 will be assigned a WLA of zero (0) lbs/day TN and TP in Silver Bow Creek when the storm water system is not activated.
Nutrient Assumptions and Actions Specified by the TMDL: When the storm water system is activated, the WLAs are met by adhering to the permit requirements and that monitoring can be used to implement an adaptive management approach to minimize pollutant loads. The MS4 is assigned a wasteload allocation of zero when the storm water system is not activated or functioning during storm events. As required by the permit, an illicit discharge detection and elimination program is necessary to achieve this WLA, which requires the permittees to regularly update the storm sewer system map, showing the location and number of outfalls.
Metals: The Butte-Silver Bow MS4 and the Butte Area Superfund Site are presently addressed in Silver Bow Creek via a composite wasteload allocation (WLA_{Butte}) because the sections of these areas overlap.
WLA_{Butte}
Arsenic: 2.38 lbs/day
Cadmium: 0.07 lbs/day
Copper: 2.85 lbs/day
Lead: 1.09 lbs/day
Mercury: 0.01 lbs/day
Zinc: 36.6 lbs/day
Metals Assumptions and Actions Specified by the TMDL: The WLAs are met by adhering to the permit requirements because the Superfund site has the goal of meeting water quality targets in Silver Bow Creek with direction from the CERCLA program.
Name and Date of TMDL: Upper Clark Fork Phase 2 Sediment and Nutrients TMDLs and Framework Water Quality Improvement Plan (April 2014)
Status of the TMDL: Final
Link to Main TMDL Document:
http://deq.mt.gov/Portals/112/Water/WQPB/CWAIC/TMDL/C01-TMDL-04a.pdf

Affected MS4s: City of Kalispell
Pollutants of Concern: Total Phosphorus (TP), Total Nitrogen (TN), Nitrate + Nitrite, Dissolved Oxygen (DO), Sediment, Temperature
MS4 WLAs as follows:
Nutrients: The TP WLAs are Middle Ashley Creek 15 lbs/growing season (44% reduction), Spring Creek 13 lbs/growing season (44% reduction), and Lower Ashley Creek 54 lbs/growing season (44% reduction). The TN WLAs are Middle Ashley Creek 292 lbs/growing season (30% reduction), Spring Creek 269 lbs/growing season (30% reduction), and Lower Ashley Creek 1030 lbs/growing season (30% reduction). The TN TMDL for Lower Ashley Creek provides a surrogate TMDL and allocations to address the Nitrate + Nitrite impairment. Water quality improvements that address excess TN loading will adherently result in decreased Nitrate + Nitrite loading and concentrations.
Nutrient Assumptions and Actions Specified by the TMDL: The Kalispell MS4 does not continuously discharge, and it only sporadically discharges during the dry summer growing season. Percent reduction allocations were developed, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.
Dissolved Oxygen: None specified for Ashley Creek and Spring Creek.
Dissolved Oxygen Assumptions and Actions Specified by the TMDL: Water quality improvements addressed in Nutrient TMDLs will result in improved DO concentrations. Therefore, the DO concentrations will increase by adhering to the permit requirements and discharge volumes. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.
Sediment: The Sediment WLAs are Middle Ashley Creek 15.4 tons/year (62% reduction), Lower Ashley Creek 46.5 tons/year (62% reduction), and Stillwater River 16.5 tons/year (62% reduction).
Sediment Assumptions and Actions Specified by the TMDL: Percent reduction allocations were developed, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.
Temperature: None specified for Ashley Creek and Whitefish River.
Temperature Assumptions and Actions Specified by the TMDL: The discharge temperatures will be consistent with naturally occurring conditions by the City of Kalispell MS4 adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.
Name and Date of TMDL: Flathead-Stillwater Planning Area Nutrient, Sediment, and Temperature TMDLs and Water Quality Improvement Plan (December 2014) which references Flathead Lake Nutrient TMDL Document (Phase 1, 2002)
Status of the TMDL: Final

Link to Main TMDL Document:
http://deq.mt.gov/Portals/112/Water/WQPB/TMDL/PDF/FlatheadStillwater/C11-TMDL-02a.pdf

Affected MS4s: City of Missoula
Pollutants of Concern: Total Nitrogen (TN), Sediment, Metals (Arsenic, Cadmium, Copper, Lead, Iron, and Zinc)
MS4 WLAs as follows:
Nutrients: The TN WLA for Grant Creek is 0.0 lbs/day.
Nutrient Assumptions and Actions Specified by the TMDL: Percent reduction allocations were developed, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements. The MS4 is assigned a wasteload allocation of zero when the storm water system is not activated or functioning during storm events. As required by the permit, an illicit discharge detection and elimination program is necessary to achieve this WLA, which requires the permittees to regularly update the storm sewer system map, showing the location and number of outfalls. When the storm water system is activated, the WLAs are met by adhering to the permit requirements and that monitoring can be used to implement an adaptive management approach to minimize pollutant loads.
Sediment: The Sediment WLA for Grant Creek 7.8 tons/year (53% reduction).
Sediment Assumptions and Actions Specified by the TMDL: Percent reduction allocations were developed, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.
Temperature: None specified for Grant Creek and Bitterroot River.
Temperature Assumptions and Actions Specified by the TMDL: No MS4 WLAs (except during periods of non-storm water runoff) were developed for Grant Creek or the Bitterroot River. To meet the intent of the TMDL goals and future recommendations, the MS4 must follow their permit requirements, evaluate potential impacts to impaired receiving waters, and implement Low Impact Development practices. The MS4 is assigned a wasteload allocation of zero when the storm water system is not activated or functioning during storm events. As required by the permit, an illicit discharge detection and elimination program is necessary to achieve this WLA. When the storm water system is activated, the WLAs are met by adhering to the permit requirements and that monitoring can be used to implement an adaptive management approach to minimize pollutant loads.
Metals: The Clark Fork River (MT76M001_030, Blackfoot River to Rattlesnake Creek) WLAs include a 55% reduction to metal loads, applicable to arsenic, cadmium, copper, iron, lead, and zinc. This reduction equates to 0.009 lbs/day of copper, 0.0045 lbs/day of lead, and 0.00004 lbs/day of zinc. No loads for arsenic, cadmium, or iron were calculated for this stream segment. The Clark Fork River (MT76M001_020, Rattlesnake Creek to Fish Creek) WLAs include a 40% reduction to metal loads, applicable to copper, iron, and lead. This reduction equates to 1.1 lbs/day of copper and 0.51 lbs/day of lead. No load for iron was calculated for this stream segment. The lead WLA for the Bitterroot River is 0.08 lbs/day (54% reduction).

Metals Assumptions and Actions Specified by the TMDL: Percent reductions and wasteload allocations were developed for the metals identified above in the Bitterroot River and Clark Fork River, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.
Name and Date of TMDL: Silver Bow Creek and Clark Fork River Metals TMDLs (May 2014); Bitterroot Watershed Total Maximum Daily Loads and Water Quality Improvement Plan (December 2014); Bitterroot Temperature and Tributary Sediment Total Maximum Daily Loads and Framework Water Quality Improvement Plan (August 2011); and Central Clark Fork Basin Tributaries TMDLs and Water Quality Improvement Plan (September 2014).
Status of the TMDL: All final.
Links to Main TMDL Document:
http://deq.mt.gov/Portals/112/Water/WQPB/CWAIC/TMDL/C01-TMDL-05a.pdf
http://deq.mt.gov/Portals/112/Water/WQPB/TMDL/PDF/Bitterroot/C05-TMDL-04a.pdf
http://deq.mt.gov/Portals/112/Water/WQPB/CWAIC/TMDL/C05-TMDL-03a.pdf
http://deq.mt.gov/Portals/112/Water/WQPB/CWAIC/TMDL/COL-TMDL-01a.pdf

Appendix C. MCM 1 & 2 – Public Education, Outreach, Participation & Involvement

Storm Water Pollution Prevention Information

Help protect our rivers, lakes, and streams by implementing the following guidelines

1. **Clean up** pet waste on your property and when out in public with your pets.
2. **Don't pour** household chemicals down the drain or into the storm drain system.
3. **Sweep** grass clippings and dispose of in trash cans.
4. **Direct downspouts** onto lawns away from paved surfaces.
5. **Wash vehicles** on the lawn or over a landscaped area.
6. **Clean up spills** when working on vehicles, landscaping equipment, or farming equipment.

Storm water pollution from residential areas can damage the water quality of Montana's streams, rivers, and lakes. Common pollutants include pet waste, household chemicals, vehicles fluids, and landscaping materials. Help prevent storm water pollution by maintaining your community, reporting illegal dumping into the storm drainage system, and encouraging your community members to help prevent storm water pollution.

Keep it Clean and Protect our Streams

What is Illegal Dumping?

Illegal dumping takes place when any waste material is accidentally or purposely dumped into a surface water gutter, or storm drain. Illegal dumping can affect water quality, make swimming unsafe, and damage fish habitat.

Examples of Illegal Dumping:

- Dumping household chemicals
- Dumping vehicle fluids
- Trash & debris
- Sanitary waste water (sewage)

To report illegal dumping of liquids or other materials into the storm drainage system in Yellowstone County or the City of Billings, please contact

- Yellowstone County Public Works: (406) 256-2735
- City of Billings Environmental Division: (406) 247-8517

Storm Water Pollution Prevention at Construction Sites

Storm water runoff from construction sites is a common source of pollution for Montana's waterbodies. Construction related activities such as earthwork, concrete pouring, paving, and equipment maintenance can generate pollutants such as sediment, concrete waste, hazardous materials, and trash. Implement storm water pollution prevention measures and follow local development requirements to help protect our rivers, lakes, and streams.

- Designate and utilize **concrete washout** stations.
- Design, install, and maintain **temporary construction storm water** BMPs.
- Ensure that post-construction storm water BMPs are **stabilized before use**.
- Practice **good house-keeping** techniques by cleaning up trash and debris.
- Designate an area for machine maintenance and keep a **spill kit** on site.
- **Educate** your team about the importance of storm water pollution prevention.

To request more information or report construction related pollution concerns in Yellowstone County or the City of Billings, please contact

- Yellowstone County Public Works: (406) 256-2735
- City of Billings Environmental Division: (406) 247-8517

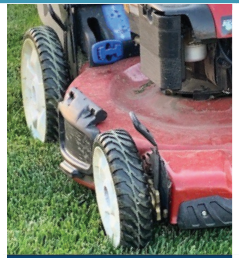
Construction Site Storm Water Management Resources:

- City of Billings Storm Water Management Website
- Yellowstone County Storm Water Management Website
- City of Billings Storm Water Management Manual
- Montana DEQ Storm Water Construction General Permit
- Montana DEQ Storm Water Management Construction Field Guide
- Montana Post-Construction Storm Water BMP Design Guidance Manual

Construction Best Management Practices (BMP) Considerations

Temporary BMP	Purpose, Benefits & Uses	Key Considerations
Silt Fence	• Reduce sediment runoff from site • Should be used as secondary BMP • Well suited for perimeter control • Can act as a sediment barrier	• Stake & secure fencing perpendicular to expected flow path • Embed bottom of fence into ground to prevent undercutting • Avoid areas with concentrated flows • Remove large sediment deposits when necessary
Straw Wattle	• Pond or pool runoff from site • Should be used with other BMPs • Suitable for areas with minor runoff • Simple installation	• Routine maintenance is required • Properly stake & secure wattles • Avoid areas with steep slopes & high velocities • Can create debris if wattle breaks
Erosion Control Blanket	• Temporarily stabilizes sloped surfaces • Protects and promotes vegetation growth • Reduces sheet flow on embankment slope	• Anchor entire blanket at top & bottom of slope • Avoid driving on blanket • Not Intended as a permanent slope stabilization measure
Vehicle Track Pad	• Commonly installed at site entrances & exits • Reduces sediment tracking onto roadways • Removes soil & mud from tires	• Can use rock pads, rumble strips, or cattle guards • Keep pads in place until end of construction • Maintain pad by removing soil/mud deposits

How Does Landscaping Impact Storm Water and the Yellowstone River?



Lawn Maintenance

Lawn clippings can clog the storm sewer system and degrade water quality.

Landscape Debris

Unmanaged leaf piles or yard debris can release harmful materials to local waterways.

Material Stockpiles

Storm water runoff from material stockpiles can contribute small sediments and other debris.

Fertilizers & Pesticides

Residual chemicals from fertilizers and pesticides can enter the storm sewer system and harm local waterways.

Equipment Maintenance

Fuel and oil spills can pollute storm water if not managed or cleaned up.

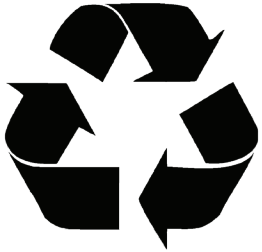
Creative Landscaping

Rain gardens and other creative landscaping techniques can promote infiltration and reduce storm water pollution.

Uncovered Loads

Trash and debris from uncovered loads can pollute storm water and clog the storm sewer system.

Tips to Prevent Storm Water Pollution:



1. **Sweep** and dispose of grass clippings in trash cans.
2. Create **waste piles** for landscaping debris that are located away from streets and storm sewer systems.
3. Locate and **maintain material stockpiles** to prevent the release of storm water pollutants.
4. Practice **good housekeeping** techniques by using and storing fertilizers and pesticides appropriately.
5. Designate and use **equipment maintenance areas** and have spill kits readily available.
6. **Avoid** application of fertilizers, pesticides and herbicides within 20 feet of storm drainage facilities and surface waters.
7. Ensure that all truck and trailer loads are **secured** with tarps or blankets.

To request more information or report landscaping related pollution concerns in Yellowstone County or the City of Billings, please contact

- Yellowstone County Public Works: (406) 256-2735
- City of Billings Environmental Division: (406) 247-8517

Can Automotive Maintenance Pollute Storm Water and the Yellowstone River?

Car Wash

Potential Storm Water Pollutants: Sediment, Toxic Chemicals, Detergents, Oil & Grease

Gas Station

Potential Storm Water Pollutants: Sediment, Fuel, Detergents, Oil & Grease, Trash & Debris

Parts Store

Potential Storm Water Pollutants: Sediment, Fuel, Oil & Grease, Toxic Chemicals, Trash & Debris

Repair Shop

Potential Storm Water Pollutants: Sediment, Toxic Chemicals, Oil & Grease, Trash & Debris

KEEP IT CLEAN

DRAINS TO YELLOWSTONE RIVER

Tips to Prevent Storm Water Pollution:

1. Clean up trash and debris.
2. Learn about storm water management at your facility and assist with operation and maintenance procedures.
3. Develop and implement a spill prevention and control plan and provide training for employees or co-workers.
4. Designate areas for machine maintenance and have spill kits readily available.
5. Use non-toxic cleaning products when possible.
6. Use and maintain chemical collection systems and don't pour chemicals down the drain or into the storm drain system.
7. Wash your vehicle(s) on the grass rather than on the street or driveway.

To request more information or report automotive related pollution concerns in Yellowstone County or the City of Billings, please contact

- Yellowstone County Public Works: (406) 256-2735
- City of Billings Environmental Division: (406) 247-8517

Storm Water Pollution Prevention Information

Help protect our rivers, lakes, and streams by implementing the following guidelines

1. **Clean up** pet waste on your property and when out in public with your pets.
2. **Don't pour** household chemicals down the drain or into the storm drain system.
3. **Sweep** grass clippings and dispose of in trash cans.
4. **Direct downspouts** onto lawns away from paved surfaces.
5. **Wash vehicles** on the lawn or over a landscaped area.
6. **Clean up spills** when working on vehicles, landscaping equipment, or farming equipment.

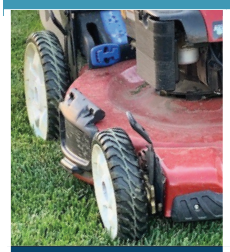
Construction Site Storm Water Management Resources:

- City of Billings Storm Water Management Website
- Yellowstone County Storm Water Management Website
- City of Billings Storm Water Management Manual
- Montana DEQ Storm Water Construction General Permit
- Montana DEQ Storm Water Management Construction Field Guide
- Montana Post-Construction Storm Water BMP Design Guidance Manual

Construction Best Management Practices (BMP) Considerations

Temporary BMP	Purpose, Benefits & Uses	Key Considerations
Silt Fence	• Reduce sediment runoff from site • Should be used as secondary BMP • Well suited for perimeter control • Can act as a sediment barrier	• Stake & secure fencing perpendicular to expected flow path • Embed bottom of fence into ground to prevent undercutting • Avoid areas with concentrated flows • Remove large sediment deposits when necessary
Straw Wattle	• Pond or pool runoff from site • Should be used with other BMPs • Suitable for areas with minor runoff • Simple installation	• Routine maintenance is required • Properly stake & secure wattles • Avoid areas with steep slopes & high velocities • Can create debris if wattle breaks
Erosion Control Blanket	• Temporarily stabilizes sloped surfaces • Protects and promotes vegetation growth • Reduces sheet flow on embankment slope	• Anchor entire blanket at top & bottom of slope • Avoid driving on blanket • Not Intended as a permanent slope stabilization measure
Vehicle Track Pad	• Commonly installed at site entrances & exits • Reduces sediment tracking onto roadways • Removes soil & mud from tires	• Can use rock pads, rumble strips, or cattle guards • Keep pads in place until end of construction • Maintain pad by removing soil/mud deposits

How Does Landscaping Impact Storm Water and the Yellowstone River?



Lawn Maintenance

Lawn clippings can clog the storm sewer system and degrade water quality.

Landscape Debris

Unmanaged leaf piles or yard debris can release harmful materials to local waterways.

Material Stockpiles

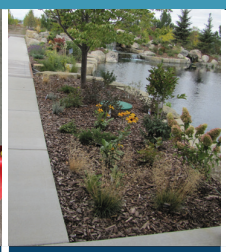
Storm water runoff from material stockpiles can contribute small sediments and other debris.

Fertilizers & Pesticides

Residual chemicals from fertilizers and pesticides can enter the storm sewer system and harm local waterways.

Equipment Maintenance

Fuel and oil spills can pollute storm water if not managed or cleaned up.



Creative Landscaping

Rain gardens and other creative landscaping techniques can promote infiltration and reduce storm water pollution.

Uncovered Loads

Trash and debris from uncovered loads can pollute storm water and clog the storm sewer system.

Storm water pollution from residential areas can damage the water quality of Montana's streams, rivers, and lakes. Common pollutants include pet waste, household chemicals, vehicles fluids, and landscaping materials. Help prevent storm water pollution by maintaining your community, reporting illegal dumping into the storm drainage system, and encouraging your community members to help prevent storm water pollution.

Keep it Clean and Protect our Streams

What is Illegal Dumping?

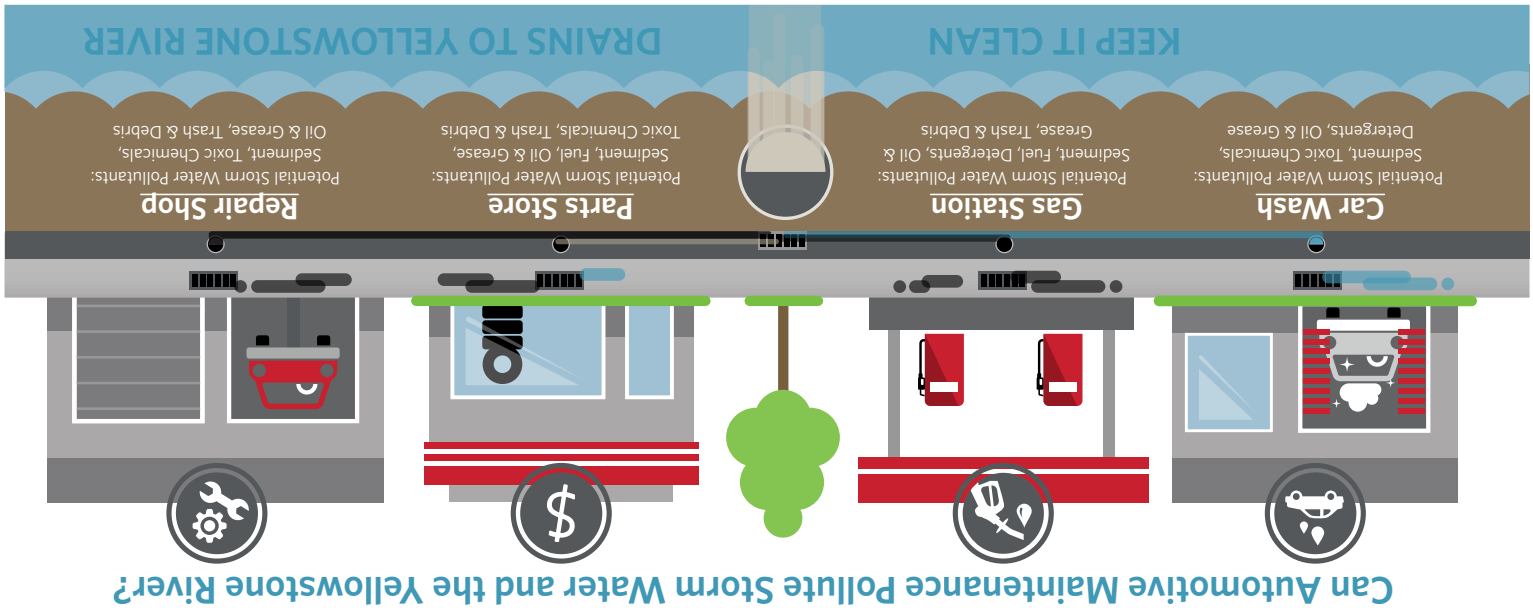
Illegal dumping takes place when any waste material is accidentally or purposely dumped into a surface water gutter, or storm drain. Illegal dumping can affect water quality, make swimming unsafe, and damage fish habitat.

Examples of Illegal Dumping:

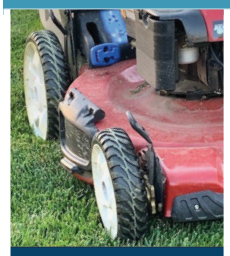
- Dumping household chemicals
- Dumping vehicle fluids
- Trash & debris
- Sanitary waste water (sewage)

To report illegal dumping of liquids or other materials into the storm drainage system in Yellowstone County or the City of Billings, please contact

- Yellowstone County Public Works: (406) 256-2735
- City of Billings Environmental Division: (406) 247-8517



How Does Landscaping Impact Storm Water and the Yellowstone River?



Lawn Maintenance

Lawn clippings can clog the storm sewer system and degrade water quality.

Landscape Debris

Unmanaged leaf piles or yard debris can release harmful materials to local waterways.

Material Stockpiles

Storm water runoff from material stockpiles can contribute small sediments and other debris.

Fertilizers & Pesticides

Residual chemicals from fertilizers and pesticides can enter the storm sewer system and harm local waterways.

Equipment Maintenance

Fuel and oil spills can pollute storm water if not managed or cleaned up.

Creative Landscaping

Rain gardens and other creative landscaping techniques can promote infiltration and reduce storm water pollution.

Uncovered Loads

Trash and debris from uncovered loads can pollute storm water and clog the storm sewer system.

Tips to Prevent Storm Water Pollution:

1. Clean up trash and debris.
2. Learn about storm water management at your facility and assist with operation and maintenance procedures.
3. Develop and implement a spill prevention and control plan and provide training for employees or co-workers.
4. Designate areas for machine maintenance and have spill kits readily available.
5. Use non-toxic cleaning products when possible.
6. Use and maintain chemical collection systems and don't pour chemicals down the drain or into the storm drain system.
7. Wash your vehicle(s) on the grass rather than on the street or driveway.

To request more information or report automotive related pollution concerns in Yellowstone County or the City of Billings, please contact

- Yellowstone County Public Works: (406) 256-2735
- City of Billings Environmental Division: (406) 247-8517

Can Automotive Maintenance Pollute Storm Water and the Yellowstone River?

Car Wash
Potential Storm Water Pollutants: Sediment, Toxic Chemicals, Detergents, Oil & Grease

Gas Station
Potential Storm Water Pollutants: Sediment, Fuel, Detergents, Oil & Grease, Trash & Debris

Parts Store
Potential Storm Water Pollutants: Sediment, Fuel, Oil & Grease, Toxic Chemicals, Trash & Debris

Repair Shop
Potential Storm Water Pollutants: Sediment, Toxic Chemicals, Oil & Grease, Trash & Debris

KEEP IT CLEAN

DRAINS TO YELLOWSTONE RIVER

Tips to Prevent Storm Water Pollution:

1. **Sweep** and dispose of grass clippings in trash cans.
2. Create **waste piles** for landscaping debris that are located away from streets and storm sewer systems.
3. Locate and **maintain material stockpiles** to prevent the release of storm water pollutants.
4. Practice **good housekeeping** techniques by using and storing fertilizers and pesticides appropriately.
5. Designate and use **equipment maintenance areas** and have spill kits readily available.
6. **Avoid** application of fertilizers, pesticides and herbicides within 20 feet of storm drainage facilities and surface waters.
7. Ensure that all truck and trailer loads are **secured** with tarps or blankets.

To request more information or report landscaping related pollution concerns in Yellowstone County or the City of Billings, please contact

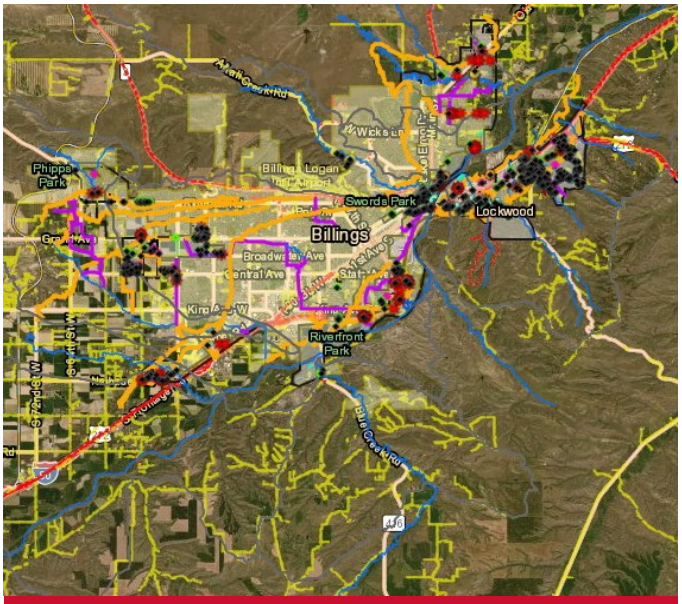
- Yellowstone County Public Works: (406) 256-2735
- City of Billings Environmental Division: (406) 247-8517

Storm Water Pollution Prevention Information

Help protect our rivers, lakes, and streams by implementing the following guidelines

1. **Clean up** pet waste on your property and when out in public with your pets.
2. **Don't pour** household chemicals down the drain or into the storm drain system.
3. **Sweep** grass clippings and dispose of in trash cans.
4. **Direct downspouts** onto lawns away from paved surfaces.
5. **Wash vehicles** on the lawn or over a landscaped area.
6. **Clean up spills** when working on vehicles, landscaping equipment, or farming equipment.

Appendix D. MCM 3 – Illicit Discharge Detection and Elimination



Yellowstone County MS4 Storm Water Sewer Inventory

Field Investigation and Data Analysis Report

Date Prepared: February 2021

Owner: Yellowstone County
3204 North 26th St.
Billings, MT 59101

Engineer: HDR
970 South 29th St. West
Billings, MT 59102

Executive Summary

HDR and NewFields staff members (hereafter referred to as the HDR Team)[1] conducted a storm sewer system field investigation and data analysis to identify and map storm sewer features associated with Yellowstone County's (County) Municipal Separate Storm Sewer System (MS4). The primary objectives of the investigation were to:

- Identify all known surface waters flowing through the County's MS4 area;
- Identify all known County MS4 Outfalls;
- Identify all known surface waters that receive discharges from the County's MS4 Outfalls;
- Identify all known County MS4 storm sewer system components;
- Identify all known County and private post-construction storm water management facilities;
- Identify/designate high priority areas; and,
- Document all data in an organized GIS database.

Preliminary mapping activities were performed in the spring of 2019 to prepare for the field investigation. These activities consisted of developing a storm sewer system inventory database (ArcGIS Desktop and Online) and performing a desktop analysis of the County's storm sewer system. Once these activities were completed, the results of the desktop analysis were used by field personnel to identify, verify, and map the location of storm sewer features. Field activities were conducted between June and August 2019. Following the field investigation, the HDR Team conducted a preliminary field data analysis and provided the County with a provisional storm sewer system inventory containing over 2,000 features (including surface waters and other non-County assets).

In 2020 the County Public Works Department conducted a comprehensive review of the provisional inventory data to evaluate for accuracy, identify high priority areas and outfalls, and address data gaps. Numerous features were removed from the inventory, most of which were drainage facilities owned by others (i.e., City of Billings, MDT, or private). A brief summary of the field investigation results is provided in Table 1.

As of the preparation of this report the County's storm sewer inventory is nearly complete. The HDR Team anticipates the inventory can be completed in 2021 through review of as-built documents and field investigations of specific areas identified and discussed during the 2020 comprehensive review process.

[1] NewFields Companies, LLC (NewFields) subcontracted with HDR in 2019, 2020, and 2021 to provide technical assistance with the storm water sewer inventory and other portions of the County's storm water management program.

Table 1. Storm Water Sewer Field Investigation Results Summary

Storm Sewer Feature	Types of Facilities		Number of Features Identified
Outfalls	▪ Culvert ▪ Storm Sewer	▪ Open Channel	26
Surface Waters	▪ Stream ▪ Lake ▪ Pond	▪ Reservoir ▪ Irrigation ▪ Drainage System	139
Open Conveyances	▪ Swale ▪ Ditch	▪ Valley Gutter ▪ French Drain	602
Closed Conveyances	▪ Culvert	▪ Storm Sewer	449
Inlets, Manholes, Drywells	▪ Inlet	▪ Manhole	201
Post-Construction Facilities	▪ Infiltration Basin ▪ Bioretention ▪ Permeable Pavement ▪ Dispersion ▪ Biofiltration Swale	▪ Extended Detention Basin ▪ Wet Detention Basin ▪ Proprietary Treatment Device ▪ Drywell ▪ Other	50
High Priority Areas	▪ N/A		5
		Total Number of Features Identified	*1,471*

Contents

Tables

Figures

Appendices

1 Introduction

1.1 Background Information and Permit Requirements

Yellowstone County's storm water sewer system is regulated by Montana's General Permit for Storm Water Discharges Associated with Small Municipal Separate Storm Sewer Systems (MS4), Permit Number MTR040000 (General Permit). The General Permit provides authorization to discharge storm water to waters of the state under the Montana Pollutant Discharge Elimination System (MPDES). The County is required to inventory storm sewer infrastructure within the MS4 boundary as one of the foundational components of the storm water management program (SWMP). A summary of the specific inventory requirements is provided in Table 1-1.

Table 1-1. Summary of General Permit Requirements for Storm Sewer Inventories

Minimum Measure (Part II.A.3.c)	Required BMP (Part II.A.3.c.i)
Inventory storm water sewer infrastructure to thoroughly track illicit discharges, contain spills, and determine high priority areas. When determining high priority areas, permittees must document and consider, at a minimum, the following: ▪ Industrial areas; ▪ Previous areas with illicit discharges; ▪ Known illegal dumping areas; ▪ The oldest portions of the MS4 storm sewer infrastructure; ▪ Any areas with onsite sewage disposal systems; and, ▪ Areas that discharge to an impaired waterbody.	▪ Update existing map showing: o the location and number of outfalls (as defined in ARM 17.30.1102(14) and Part VIII of the General Permit; and, o the names and locations of all surface waters that receive discharges from those outfalls. ▪ Development of this map to accommodate the provisions of a comprehensive illicit discharge detection and elimination (IDDE) program and the SWMP would typically include mapping storm sewer system components including: o inlets; o open channels; o subsurface conduits/pipes; o dry wells (discharges to ground water directly); and, o other similar discrete conveyances. ▪ List, label, or highlight determined high priority areas. ▪ Update the storm sewer map regularly and make available for review by the Department upon request.

The 2018 County SWMP inspection by Montana Department of Environmental Quality (DEQ) determined that the County storm sewer inventory was deficient and did not satisfy General Permit requirements. In September 2018, the County developed an inventory analysis plan and schedule to conduct a system-wide storm sewer inventory. The plan, schedule, and current status is provided in Attachment A.

This document describes the efforts undertaken by the County to develop the storm water sewer inventory, discusses the results of the field investigation and data analysis and provides suggested next steps to complete the inventory.

1.2 Purpose and Objectives

The purpose of the field investigation and data analysis was to identify all known County storm sewer system features within the MS4 boundary that were safely accessible from public right-of-way (ROW) limits. More specifically, the objectives were to:

- Identify all known surface waters flowing through the County's MS4 area;
- Identify all known County MS4 Outfalls;
- Identify all known surface waters that receive discharges from the County's MS4 Outfalls;

- Identify all known County MS4 storm sewer system components;
- Identify all known County and private post-construction storm water management facilities;
- Identify/designate high priority areas; and,
- Document all data in an organized GIS database.

1.3 Team Composition

The County Public Works Department is responsible for implementing and enforcing the General Permit requirements. The work discussed in this document represents a collaborative effort by the HDR Team staff and County Public Works staff. A summary of roles and responsibilities associated with the field investigation and analysis is provided in Table 1-2.

Table 1-2. Summary of Team Member Roles and Responsibilities

HDR Team	County Public Works Department
▪ Preliminary mapping efforts ▪ Desktop analysis ▪ Acquire and prepare data collection equipment ▪ Conduct field investigation (data collection) ▪ Data management and mapping ▪ Develop and maintain ArcGIS Online storm water sewer inventory ▪ Data analysis ▪ Coordinate and facilitate team meetings ▪ Analysis Report Preparation	▪ Comprehensive review of provisional storm water sewer inventory ▪ Determine high priority areas and outfalls ▪ Conduct field reviews at selected locations to address data gaps

2 Field Investigation Processes

A strategic process was implemented to prepare for the field investigation and to improve data management techniques. The primary phases of this process included preliminary mapping efforts, the field investigation, and the field data analysis. The following sections describe these phases and the supplemental activities performed during each phase.

2.1 Preliminary Mapping Efforts

Preliminary mapping activities were performed in the spring of 2019 to assess the County storm sewer system and to prepare for the field investigation. These activities consisted of creating the inventory database (ArcGIS Desktop & Online), preparing the field equipment, and performing a desktop analysis of the County storm sewer system.

2.1.1 Inventory Database

The inventory database was created using ArcGIS Desktop & Online applications and consists of seven primary components. These components are feature-class shapefiles with attribute tables organized such that various infrastructure characteristics could be documented (e.g., pipe diameter, type of surface water, conveyance feature, etc.). A summary of the database components is provided in Table 2-1.

Table 2-1. Summary of Inventory Database Components

Database Components (Feature Classification)	Feature Type to be Identified	
Outfalls	▪ Culvert ▪ Storm Sewer	▪ Open Channel
Surface Waters	▪ Stream ▪ Lake ▪ Pond	▪ Reservoir ▪ Irrigation ▪ Drainage System
Open Conveyances	▪ Swale ▪ Ditch	▪ Valley Gutter ▪ French Drain
Closed Conveyances	▪ Culvert	▪ Storm Sewer
Inlets, Manholes, Drywells	▪ Inlet	▪ Manhole
Post-Construction Facilities	▪ Infiltration Basin ▪ Bioretention ▪ Permeable Pavement ▪ Dispersion ▪ Biofiltration Swale	▪ Extended Detention Basin ▪ Wet Detention Basin ▪ Proprietary Treatment Device ▪ Drywell ▪ Other
High Priority Areas	▪ N/A	

2.1.2 Field Equipment

Field data was collected using an Apple iPad Mini, the ArcGIS Collector Application, and a GPS tracker. The aforementioned shapefiles were developed to be compatible with the ArcGIS Collector Application and the online database. Detailed procedures for creating the feature-class shapefiles and preparing the field equipment are described in the Data Management Plan located in Attachment C.

2.1.3 Desktop Analysis

A desktop analysis of the County storm sewer system was performed to establish a baseline for the field investigation. The analysis consisted of reviewing available hard-copy and digital data to identify potential storm water features and associated infrastructure. The following sources were reviewed during the analysis:

- Existing Yellowstone County MS4 Storm Sewer Map
- Clean Water Act Information Center
- National Hydrography Dataset
- City of Billings Integrated Storm Water Study

The data collected from these sources was incorporated into the respective shapefiles and supplemented with information obtained from ESRI aerial imagery and Google Street View photography.

2.1.4 Investigation Areas

Once the desktop analysis was completed, the results were reviewed and the entire County's MS4 area was divided into six data collection areas. These six areas were delineated to improve

efficiency during field activities and to help manage the anticipated volume of data to be collected. The data collection areas are summarized in Table 2-2 and shown on the overview map in Figure 1.

Table 2-2. Summary of Field Investigation Areas

Investigation Area	MS4 Area (acres)	Approximate Length of Roads (miles)	Approximate Length of Water (miles)
Northwest Area	2,079	15.0	7.2
Southwest Area	324	3.3	2.0
I-90 West Area	1,343	10.0	5.9
I-90 East Area	1,547	9.4	9.5
Northeast Area	1,162	18.2	5.0
Lockwood Area	3,665	64.8	18.2

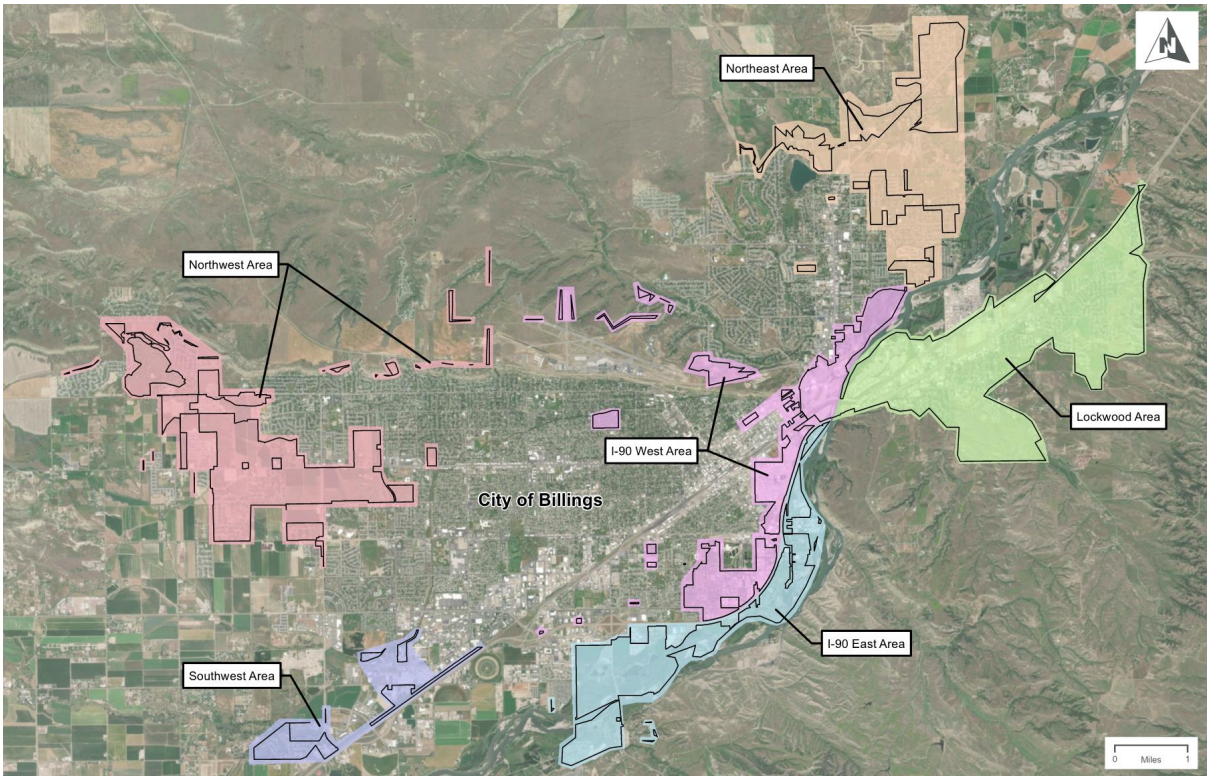


Figure 1. Field Investigation Area/MS4 Area Overview Map

2.2 Field Investigation

The field investigation occurred from June to August of 2019. During that time, field personnel walked and drove approximately 120 miles within accessible public ROW and spent approximately 270 hours in the field collecting data. The location of visible storm sewer features were mapped; when possible, photographs and storm sewer feature characteristics were documented including feature type, material, and size. In total, 2,265 surface water conveyance features were identified and mapped. Figure 2 through Figure 7 highlight some of the storm sewer features collected during the field investigation.

Figure 2. Roadside Ditch and Culvert Mapped in Residential Area

Figure 3. Grass Swale Mapped in Residential Area

Figure 4. Storm Water Pond Mapped in Residential Area

Figure 5. Storm Sewer Inlet Mapped on Shiloh Road

Figure 6. Potential Outfall Location Mapped in Industrial Area

Figure 7. Potential Outfall Location Mapped near Highway 312

3 Data Analysis Processes

3.1.1 Preliminary Data Analysis

The HDR Team analyzed the field data collected in 2019 to verify that applicable storm sewer features were mapped and to identify additional information to be collected by field personnel. A preliminary review was performed using the ArcGIS database and field personnel performed a follow-up investigation to collect additional information. A supplementary review was performed after the follow-up investigation to confirm the data and identify data gap locations (see Section 4.1). The results of the preliminary data analysis are summarized in Table 3-1.

Table 3-1. Preliminary Data Analysis Results

Storm Sewer Feature	Number of Features Identified
Outfalls	58
Surface Waters	139
Open Conveyances	698
Closed Conveyances	746
Inlets, Manholes, Drywells	521
Post-Construction Facilities	91
High Priority Areas	12
Total Features	2,265

3.1.2 Comprehensive Data Review

In 2020 the County Public Works Department conducted a comprehensive review of the provisional inventory to evaluate the data for accuracy, identify high priority areas and outfalls, and address data gaps identified by the HDR Team in 2019. The HDR Team helped facilitate the comprehensive review and also conducted a right-of-way (ROW) analysis to identify features located outside of the County's ROW, within the Montana Department of Transportation (MDT), City of Billings, or private right-of-way. The HDR Team updated the storm water sewer inventory following the comprehensive review and ROW analysis. The updated Storm Sewer System Inventory Maps are provided in Attachment B and selected shapefile attribute tables are provided in Attachment D. The entire provisional inventory is also available to be reviewed using ArcGIS Online or the ArcGIS Desktop Application.

Table 3-2. Comprehensive Data Review Results

Storm Sewer Feature	Number of Features Identified
Outfalls	25
Surface Waters	139
Open Conveyances	602
Closed Conveyances	449
Inlets, Manholes, Drywells	201
Post-Construction Facilities	50

Table 3-2. Comprehensive Data Review Results

Storm Sewer Feature	Number of Features Identified
High Priority Areas	5
Total Features	1,471

4 Data Gaps and Future Considerations

Additional information is needed to correctly identify storm sewer features in numerous areas and there are limitations with the current data which should be addressed prior to finalizing the inventory. The following sections summarize the data gaps, limitations associated with the current data, and future recommendations to finalize the inventory.

4.1 Data Gaps

A portion of the County storm sewer features and associated infrastructure are located below ground. Therefore, field personnel were not able to confirm the presence or characteristics of storm sewer features at certain locations. Several of these locations, classified as data gaps, were addressed during the comprehensive data review conducted in 2020; however, 17 data gaps are remaining. The number of remaining data gaps for each investigation area is provided in Table 4-1. A comprehensive table of the data gap locations with brief descriptions and planned next steps to address each location is provided in Attachment E along with a map that shows data gap locations.

Table 4-1. Summary of Data Gaps

Investigation Area	Naming Convention[1]	Number of Identified Data Gaps
Northwest Area	NW-DG-(#)	3
Southwest Area	SW-DG-(#)	1
I-90 West Area	I90W-DG-(#)	4
I-90 East Area	I90E-DG-(#)	1
Lockwood Area	LCKWD-DG-(#)	8

[1] To better manage data gap locations, a unique naming convention was developed based on respective investigation areas.

4.2 Data Limitations and Future Considerations

The information provided in the inventory database is preliminary because the data gaps identified in the previous section should be addressed. After the data gaps are addressed the inventory will be complete; however, the inventory will require annual updates, at a minimum, to address the following:

- Storm water sewer facilities should be added to the inventory following development and redevelopment activities occurring with the County MS4 area.
- As the Billings City limits expands, portions of the County MS4 will be transferred to the City of Billings. This will result in a reduction of County storm water sewer facilities.
- The County's MS4 boundary is will likely expand following each US census because the boundary is defined by the census designated urbanized area for the County. County storm

water facilities will need to be added to the inventory for the newly added MS4 areas following each census.

Additionally, the HDR Team populated attribute fields within the inventory database with readily available information; hover, not all attribute fields were populated. The County could consider populating additional attribute fields to better track and prioritize capital improvement projects.

5 Conclusion

The field investigation and data analysis resulted in significant progress towards developing an inventory of the County's storm sewer system. The following recommendations are offered to proceed with the storm sewer inventory process:

- Submit the current database and provisional maps as an interim or preliminary inventory with the 2019 Annual Report. Include an explanation of the work conducted in 2020 and the plans to finish the inventory.
- Conduct an additional storm sewer system inventory phase in 2021 to collect information to fill data gaps and finalize the inventory.
- Perform review of 2020 Census information, City of Billings annexations, and coordinate with the County Planning department on new development changes within the County's MS4 boundary.

6 References

1. City of Billings Integrated Storm Water Study, Sanderson Stewart, October 2013.
2. ESRI, ArcGIS Basemap Aerial Imagery, 2015.
3. Google, Inc., Google Maps: Street View, https://www.google.com/maps/, accessed March through September 2019.
4. Montana Department of Environmental Quality, Clean Water Act Information Center, http://deq.mt.gov/water/resources/CWAIC, accessed March 2019.
5. United States Geological Survey, National Hydrography Dataset, accessed March 2019.

Attachment A. Inventory Plan and Schedule

Storm Sewer Inventory Analysis Plan and Schedule

Task	Description	Dates
1. Confirm area to be mapped (County MS4 boundary)	Identify 2010 U.S. Census designated urbanized area and City of Billings MS4 boundaries	Sept 2018 (*completed*)
2. Identify items to be mapped	**Items to be mapped:** *MCM 3*: outfalls, surface waters that receive discharges from outfalls, inlets, open channels, subsurface conduits/pipes, dry wells, conveyances, high priority areas *MCM 5:* High priority existing post-construction storm water management controls, all new (post 2017) storm water management controls *MCM 6:* Location of permittee owned facilities and known activities that have the ability to release contaminants to the MS4	Sept 2018 (*completed*)
3. Desktop analysis and interviews	Review available hard-copy and digital data and interview field staff to create preliminary base map. Identify areas and data to be gathered during field investigation.	Nov 2018 to Apr 2019 (*completed*)
4. Submit preliminary map to DEQ	Results of desktop analysis with description of upcoming field investigation will be submitted with 2018 annual report	Mar 2019 (*completed*)
5. Field investigation (phase 1)	County and/or consultant staff will collect storm water inventory data using handheld GPS units. Use of intern(s) will be considered to maximize efficient use of funds. GPS data will be GIS compatible for integration with the County's GIS mapping platform.	May 2019 to Aug 2019 (*completed*)
6. Field data analysis (phase 1)	Field data will be added to the preliminary base map by County or consultant staff. Preliminary high priority areas will be identified. Additional field investigation needs will be identified, if necessary.	Sept 2019 to Apr 2020 (*completed*)
7. Submit updated map to DEQ	Results of phase 1 mapping analysis will be submitted with 2019 annual report. Description of upcoming field investigation will also be provided (if necessary).	Mar 2020 (*completed*)
7.a. Collaborative Field Data Analysis	Further organize & define dataset features, ownership, O&M responsibilities, and analyze County ROW extent.	Summer/Fall 2020[1]
7.b. Submit 2020 SWMP with updated Map	Verified data added to updated Phase 1 maps.	Mar 2020[1]
8. Field investigation (phase 2) (if necessary)	County and/or consultant staff will collect remaining items for storm water inventory data.	June 2021 to Aug 2021[2]
9. Field data analysis (phase 2) (if necessary)	Field data will be added to the base map by County or consultant staff. High priority areas will be updated.	Sept 2021 to Apr 2022[2]
10. Submit completed map to DEQ	Results of phase 2 inventory analyses will be submitted with 2020 annual report.	Mar 2022[3]

[1] 7.a.& b. was not included in the original (2018) plan and schedule.

[2] 2018 plan and schedule targeted 2020 annual report for Phase 2 field investigation and data analysis.

[3] 2018 plan and schedule targeted 2020 annual report for Phase 2 map submission.

Attachment B. Storm Sewer Inventory Maps

LEGEND

- STORMWATER MONITORING LOCATION
- RAILROAD
- ROAD
- HUC WATERSHED BOUNDARY
- YELLOWSTONE COUNTY MS4 BOUNDARY
- CITY OF BILLINGS BOUNDARY

SURFACE WATERS

- STREAM
- LAKE
- POND
- RESERVOIR
- REGIONAL DRAIN
- NATURAL MINOR DRAINAGE
- IRRIGATION MAIN OR LATERAL

2020 FIELD INVESTIGATION: STORM WATER FACILITIES

- OUTFALL
- INLET
- MANHOLE
- POST CONSTRUCTION STORM WATER BMP
- CULVERT
- SUBSURFACE STORM DRAIN
- OPEN CHANNEL
- SWALE
- VALLEY GUTTER

0 Feet 3,000

N

ALKALI CREEK RD

Alkali Creek

ALKALI CREEK

ZIMMERMAN TRL

RIMROCK RD

HOGANS SLOUGH

BIRELY DRAIN

COVE DITCH

HIGH DITCH

UNKNOWN

BIG DITCH

GRAND AVE

LATERAL OF SNOW DITCH

SNOW DITCH

CITY OF BILLINGS-YELLOWSTONE RIVER

BBWA CANAL

ARNOLD DRAIN

24TH ST W

Spring Creek

CENTRAL AVE

SHILOH DRAIN

BDPD

Hogans Slough

MONAD RD

LOWER CANYON CREEK

YELLOWSTONE COUNTY

PROVISIONAL STORM WATER SYSTEM INVENTORY DETAILED MAP

FIGURE DM-1

PATH: C:\USERS\SGRIFFIN\DESKTOP\10145212_DESKTOP_STORMWATER_INVENTORY_ANALYSIS\MAP_DOCS\WORKING\YELLOWSTONE_COUNTY_STORMWATER_SEWER_INVENTORY_DETAILED_MAPS.MXD - USER: SGRIFFIN - DATE: 2/19/2021

LEGEND

- STORMWATER MONITORING LOCATION
- RAILROAD
- ROAD
- HUC WATERSHED BOUNDARY
- YELLOWSTONE COUNTY MS4 BOUNDARY
- CITY OF BILLINGS BOUNDARY

SURFACE WATERS

- STREAM
- LAKE
- POND
- RESERVOIR
- REGIONAL DRAIN
- NATURAL MINOR DRAINAGE
- IRRIGATION MAIN OR LATERAL

2020 FIELD INVESTIGATION: STORM WATER FACILITIES

- OUTFALL
- INLET
- MANHOLE
- POST CONSTRUCTION STORM WATER BMP
- CULVERT
- SUBSURFACE STORM DRAIN
- OPEN CHANNEL
- SWALE
- VALLEY GUTTER

0 Feet 3,000

CENTRAL AVE
MONAD RD
KING AVE E
SNOW DITCH
SHILOH DRAIN
DANFORD DRAIN - CITY/COUNTY DRAIN
HOGANS SLOUGH
Hogans Slough
BBMACANAL
UNKNOWN
SUBURBAN DITCH
GREY EAGLE DITCH
LOWER CANYON CREEK
Canyon Creek
CANYON CREEK DITCH
LATERAL OF CANYON CREEK DITCH
ZOO DR
CITY OF BILLINGS-YELLOWSTONE RIVER
Yellowstone River
Blue Creek
BROCKWAY COULEE-YELLOWSTONE RIVER
Yellowstone River

YELLOWSTONE COUNTY
PROVISIONAL STORM WATER SYSTEM INVENTORY DETAILED MAP
FIGURE DM-1

PATH: C:\USERS\SGRIFFIN\DESKTOP\10145212_DESKTOP_STORMWATER_INVENTORY_ANALYSIS\MAP_DOCS\WORKING\YELLOWSTONE_COUNTY_STORMWATER_SEWER_INVENTORY_DETAILED_MAPS.MXD - USER: SGRIFFIN - DATE: 2/19/2021

LEGEND

- STORMWATER MONITORING LOCATION
- RAILROAD
- ROAD
- HUC WATERSHED BOUNDARY
- YELLOWSTONE COUNTY MS4 BOUNDARY
- CITY OF BILLINGS BOUNDARY

SURFACE WATERS

- STREAM
- LAKE
- POND
- RESERVOIR
- REGIONAL DRAIN
- NATURAL MINOR DRAINAGE
- IRRIGATION MAIN OR LATERAL

2020 FIELD INVESTIGATION: STORM WATER FACILITIES

- OUTFALL
- INLET
- MANHOLE
- POST CONSTRUCTION STORM WATER BMP
- CULVERT
- SUBSURFACE STORM DRAIN
- OPEN CHANNEL
- SWALE
- VALLEY GUTTER

0 Feet 3,000

FIVE MILE CREEK RD
ALKALI CREEK
Alkali Creek
Five Mile Creek
HIGHWAY 87 N
ROLLING DRAIN
MARY STREET DRAIN
FIVE MILE CREEK
LAKE ELMO DR
BBWA - BARRETT LATERAL?
UNKNOWN
BENCH BLVD
W WICKS LN
WICKS LN
UNKNOWN
UNKNOWN
UNKNOWN
HILLTOP RD
SEVENMILE CREEK-YELLOWSTONE RIVER
ARONSON AVE
E ALKALI CREEK RD
UNKNOWN
COULSON DITCH
Unnamed
OLD HARDIN RD
002B
002A
LOCKWOOD DITCH
UNKNOWN
UNKNOWN
LOCKWOOD DITCH
001A
6TH AVE N
BBWA CANAL
COVE DITCH
HIGH DITCH
RIMROCK RD
BIG DITCH
UNKNOWN
24TH ST W
CITY OF BILLINGS-YELLOWSTONE RIVER
UNKNOWN
YEGEN DRAIN
YEGEN DRAIN
Yellowstone River
UNKNOWN
ZIMMERMAN TRL
GRAND AVE
ARNOLD DRAIN
Spring Creek
ARNOLD DRAIN
ARNOLD DRAIN

YELLOWSTONE COUNTY
PROVISIONAL STORM WATER SYSTEM INVENTORY DETAILED MAP
FIGURE DM-1

PATH: C:\USERS\SGRIFFIN\DESKTOP\10145212_DESKTOP_STORMWATER_INVENTORY_ANALYSIS\MAP_DOCS\WORKING\YELLOWSTONE_COUNTY_STORMWATER_SEWER_INVENTORY_DETAILED_MAPS.MXD - USER: SGRIFFIN - DATE: 2/19/2021

LEGEND

- STORMWATER MONITORING LOCATION
- RAILROAD
- ROAD
- HUC WATERSHED BOUNDARY
- YELLOWSTONE COUNTY MS4 BOUNDARY
- CITY OF BILLINGS BOUNDARY

SURFACE WATERS

- STREAM
- LAKE
- POND
- RESERVOIR
- REGIONAL DRAIN
- NATURAL MINOR DRAINAGE
- IRRIGATION MAIN OR LATERAL

2020 FIELD INVESTIGATION: STORM WATER FACILITIES

- OUTFALL
- INLET
- MANHOLE
- POST CONSTRUCTION STORM WATER BMP
- CULVERT
- SUBSURFACE STORM DRAIN
- OPEN CHANNEL
- SWALE
- VALLEY GUTTER

0 Feet 3,000

FIVE MILE CREEK
Five Mile Creek
BBWA CANAL
UNKNOWN
MARY STREET DRAIN
HOLLING DR AIN
BBWA - BARRETT LATERAL?
LAKE ELMO DR
BENCH BLVD
WICKS LN
W WICKS LN
ALKALI CREEK
Alkali Creek
ALKALI CREEK RD
ARONSON AVE
HILLTOP RD
Yellowstone River
SEVENMILE CREEK-YELLOWSTONE RIVER
Unnamed
COULSON DITCH
LOCKWOOD DITCH
LOCKWOOD DR
NOBLEWOOD DR
001B
BECRAFT LN
Dry Creek

YELLOWSTONE COUNTY
PROVISIONAL STORM WATER SYSTEM INVENTORY DETAILED MAP
FIGURE DM-1

LEGEND

- STORMWATER MONITORING LOCATION
- RAILROAD
- ROAD
- HUC WATERSHED BOUNDARY
- YELLOWSTONE COUNTY MS4 BOUNDARY
- CITY OF BILLINGS BOUNDARY

SURFACE WATERS

- STREAM
- LAKE
- POND
- RESERVOIR
- REGIONAL DRAIN
- NATURAL MINOR DRAINAGE
- IRRIGATION MAIN OR LATERAL

2020 FIELD INVESTIGATION: STORM WATER FACILITIES

- OUTFALL
- INLET
- MANHOLE
- POST CONSTRUCTION STORM WATER BMP
- CULVERT
- SUBSURFACE STORM DRAIN
- OPEN CHANNEL
- SWALE
- VALLEY GUTTER

0 Feet 3,000

6TH AVE N
YEGEN DRAIN
Yellowstone River
Unnamed
Dry Creek
SEVENMILE CREEK-YELLOWSTONE RIVER
CITY OF BILLINGS-YELLOWSTONE RIVER
MONAD RD
KING AVE W
KING AVE E
DANFORD DRAIN CITY/COUNTY DRAIN
GREY EAGLE DITCH
UNKNOWN
HOGANS SLOUGH
Hogans Slough
SUBURBAN DITCH
Yellowstone River
Bitter Creek
Blue Creek
LOWER BLUE CREEK

YELLOWSTONE COUNTY
PROVISIONAL STORM WATER SYSTEM INVENTORY DETAILED MAP
FIGURE DM-1

LEGEND

- STORMWATER MONITORING LOCATION
- RAILROAD
- ROAD
- HUC WATERSHED BOUNDARY
- YELLOWSTONE COUNTY MS4 BOUNDARY
- CITY OF BILLINGS BOUNDARY

SURFACE WATERS

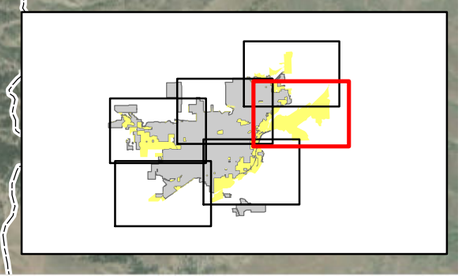
- STREAM
- LAKE
- POND
- RESERVOIR
- REGIONAL DRAIN
- NATURAL MINOR DRAINAGE
- IRRIGATION MAIN OR LATERAL

2020 FIELD INVESTIGATION: STORM WATER FACILITIES

- OUTFALL
- INLET
- MANHOLE
- POST CONSTRUCTION STORM WATER BMP
- CULVERT
- SUBSURFACE STORM DRAIN
- OPEN CHANNEL
- SWALE
- VALLEY GUTTER

0 Feet 3,000

Five Mile Creek
WA - BARRETT LATERAL?
UNKNOWN
Unnamed
OLD HARDIN RD
NOBLEWOOD DR
SEVENMILE CREEK-YELLOWSTONE RIVER
BECRAFT LN
001B
COULSON DITCH
LOCKWOOD DITCH
Yellowstone River
BBWA CANAL
HILLTOP RD
ALKALI CREEK RD
Alkali Creek
ARONSON AVE
ALKALI CREEK
E ALKALI CREEK RD
6TH AVE N
001A
002B
002A
YEGEN DRAIN
CITY OF BILLINGS-YELLOWSTONE RIVER
GREY EAGLE DITCH
Dry Creek



YELLOWSTONE COUNTY
PROVISIONAL STORM WATER SYSTEM INVENTORY DETAILED MAP
FIGURE DM-1

Attachment C. Data Management Plan

Storm Water Sewer Inventory: Preliminary Data Management Plan

Introduction

HDR is assisting Yellowstone County (County) with development of their Storm Water Management Program (SWMP). A critical component of the SWMP is the development and maintenance of a storm water sewer inventory that identifies the surface waters and storm sewer system features in the County's Municipal Separate Storm Sewer System (MS4) regulated areas. As part of this process, HDR performed a storm water sewer inventory field investigation during the summer of 2019 (2019 Field Investigation) to identify publicly accessible storm sewer infrastructure in the County's MS4 boundary. The purpose of this document is to describe the field inventory data acquisition procedures and recommendations for ongoing management and maintenance of data associated with the storm water sewer inventory.[1]

Data Acquisition Procedures

Collection Devices

The following devices were used to collect data during the 2019 Field Investigation:

1. Apple iPad Mini (hereafter referred to as iPad)
2. SX Blue 2 Bluetooth GPS Tracker

Device Setup

The iPad and GPS tracker were configured prior to the field investigation by downloading and installing mobile application software (Apps). The following Apps were downloaded to the iPad:

1. Collector for ArcGIS (Aurora)
2. Survey123 for ArcGIS
3. GNSS Status

The GPS tracker was synced to the GNSS Status App and the ArcGIS Apps were linked to HDR's ArcGIS Enterprise Online Account (this allowed the project team to access and review data through ArcGIS Online).

Data Configuration

Data collected during preliminary mapping activities and during the field investigation was configured as follows:

1. *ArcGIS Shapefiles* – Feature-class shapefiles with attribute fields for collection of storm sewer facility characteristics (e.g., pipe diameter, pipe material, etc.) were developed to be compatible with ArcGIS Online and the Collector for ArcGIS App. This allowed the data to be collected in the field using the Collector for ArcGIS App in offline mode and uploaded to the ArcGIS online inventory database at the end of each field day to add the newly collected data to the master inventory. The feature-class shapefiles were developed for the following items:
    a. Surface waters (polyline shapefile)
    b. Outfalls (point shapefile)
    c. Closed conveyance features (polyline shapefile)

[1] Refer to the *Yellowstone County Storm Water Sewer Inventory: 2019 Field Instigation Summary Report* for additional information about the storm water sewer inventory process and results.

   d. Open conveyance features (polyline shapefile)
   e. Inlets, catch basins, manholes and drywells (point shapefile)
   f. Post-construction management facilities (point shapefile)
2. *Survey123 Smart Forms* – An ArcGIS Survey123 smart form template was developed to consistently document outfall dry-weather screenings. The Survey123 App template was configured to export the results from each outfall dry-weather screening to a word document in a format similar to the outfall screening protocol developed by the Center for Watershed Protection (per the MS4 General Permit's requirements).

Data Acquisition and Management Procedures

The following procedures were used to manage and acquire data during the 2019 Field Investigation:

1. Pre-Field Investigation Activities
   a. An ArcGIS Online account was established to store, view, and manage field data.
   b. The feature-class shapefiles (described above) were published to the ArcGIS Online account and data collection maps were created.
   c. Map tiles were downloaded to the iPad for offline use within the Collector for ArcGIS App.
2. Field Investigation Activities
   a. Field personnel walked and drove through each investigation area and used the Collector for ArcGIS App (on the iPad) and the GPS tracker to document surface waters and storm water sewer features.
   b. Field personnel used the Survey123 App to conduct dry-weather outfall screenings on outfalls that were accessible from public right-of-way limits. When completing each survey, field personnel populated pre-defined fields in the Survey123 smart form template, collected photos, documented the date and time of each screening, and mapped the outfall location (i.e., latitude and longitude).
   c. At the end of each day, the data collected in the field (i.e., offline data) was synced to the ArcGIS Online account.
3. Post Field Investigation Activities
   a. Data from the field investigation was reviewed and revised (to correct errors) by project engineers using the ArcGIS Online account.
   b. The updated feature-class shapefile datasets were downloaded and stored in an ArcGIS file geodatabase.
   c. The results from the outfall dry-weather screenings collected using the Survey123 App were exported to individual Microsoft Word documents for review and completion.

Data Management and Maintenance Considerations

The data collected during the 2019 Field Investigation is currently stored in the following formats:

1. The feature-class shapefiles that define the County's storm water sewer inventory are stored in an ArcGIS file geodatabase. These files can be viewed using ArcGIS Desktop and can be configured for use in an online viewer application (such as ArcGIS Online).
2. The outfall dry-weather screening results are stored as Microsoft Word documents (.docx file format) and PDF files.

As discussed in the *Yellowstone County Storm Water Sewer Inventory: 2019 Field Instigation Summary Report*, the storm water sewer inventory is preliminary and should be updated and finalized in 2020. The 2019 Field Investigation data will be provided to the County in the formats described above, if requested.

It is recommended that the current feature-class shapefiles be used as the basis to update the finalize the Storm Water Sewer Inventory. Note that the data (both feature-class shapefiles and outfall dry-weather screenings) is configured so that the County could implement similar data collection procedures to those used in the 2019 Field Investigation to document any future changes or additions to the system.

Attachment D. Shapefile Attribute Tables

Yellowstone County MS4 – Outfall Attributes

Outfall ID	Conveyance Type	Owner	Diameter (in)	Receiving Waterbody Type	Receiving Waterbody Name	Drainage Basin	High Priority	Dry Screening Date	Condition	Condition Date
LKWD-OF-003	Open Channel		N/A	Stream	Unnamed	Sevenmile Creek Yellowstone River		11/18/2020 8:15	Good	11/18/2020 8:15
LKWD-OF-004	Open Channel		N/A	Stream	Unnamed	Sevenmile Creek Yellowstone River				
LKWD-OF-005	Open Channel		N/A	Irrigation	Lockwood Ditch	Sevenmile Creek Yellowstone River		11/18/2020 9:03	Good	11/18/2020 9:03
LKWD-OF-007	Open Channel		N/A	Irrigation	Lockwood Ditch	Sevenmile Creek Yellowstone River				
LKWD-OF-009	Open Channel		N/A	Stream	Unnamed	Sevenmile Creek Yellowstone River				
LKWD-OF-014	Open Channel		N/A	Irrigation	Coulson Ditch	Sevenmile Creek Yellowstone River		11/18/2020 10:52	Good	11/18/2020 10:52
LKWD-OF-015	Open Channel		N/A	Stream	Unnamed	Sevenmile Creek Yellowstone River				
LKWD-OF-016	Open Channel		N/A	Stream	Unnamed	Sevenmile Creek Yellowstone River				
LKWD-OF-017	Open Channel		N/A	Stream	Unnamed	Sevenmile Creek Yellowstone River				
LKWD-OF-018	Culvert			Irrigation	Lockwood Ditch	Sevenmile Creek Yellowstone River				
LKWD-OF-019	Open Channel		N/A	Stream	Unnamed	Sevenmile Creek Yellowstone River				
LKWD-OF-020	Open Channel		N/A	Stream	Unnamed	Sevenmile Creek Yellowstone River				
LKWD-OF-021	Open Channel		N/A	Stream	Unnamed	Sevenmile Creek Yellowstone River				
LKWD-OF-022	Open Channel		N/A	Irrigation	Lockwood Ditch	Sevenmile Creek Yellowstone River				
NE-OF-003	Culvert		12	Stream	Five Mile Creek	Five Mile Creek		6/26/2019 18:56	Poor	6/26/2019 18:56
NE-OF-007	Culvert		12	Stream	Five Mile Creek	Five Mile Creek				
NE-OF-008	Culvert		12	Stream	Five Mile Creek	Five Mile Creek				
NE-OF-009	Culvert		24	Stream	Alkali Creek	Alkali Creek				
NW-OF-001	Open Channel		N/A	Irrigation	Snow Ditch	City of Billings Yellowstone River		11/18/2020 9:23	Good	11/18/2020 9:23
W-I90-OF-006	Culvert		12	Stream	Alkali Creek	Alkali Creek		7/19/2019 21:47	Good	7/19/2019 21:47
W-I90-OF-007	Culvert			Stream	Yellowstone River	Sevenmile Creek Yellowstone River		11/18/2020 10:18	Good	11/18/2020 10:18
W-I90-OF-009	Culvert			City/Count Drain	Yegen Drain	Alkali Creek				
W-I90-OF-010	Culvert			Stream	Alkali Creek	Alkali Creek		11/18/2020 9:28	Good	11/18/2020 9:28
W-I90-OF-011	Culvert			Stream	Alkali Creek	Alkali Creek		11/18/2020 9:32	Good	11/18/2020 9:32
W-I90-OF-012	Culvert			Irrigation	Coulson Ditch	Sevenmile Creek Yellowstone River				
YC_OF_001	Culvert		48	Stream	Alkali Creek	Alkali Creek				

Yellowstone County MS4 – Surface Water Attributes

Unique ID	Name	Type	Receiving Waterbody	NHD Watershed	Owner	Impaired	TMDL
1	Cove Creek	Stream	No	Hogan's Slough		No	No
2	Cove Ditch	Irrigation	No	Hogan's Slough, COB-YR		No	No
3	Cove Creek Minor	Stream	No	Hogan's Slough		No	No
4	High Ditch	Irrigation	No	Hogan's Slough, COB-YR		No	No
5	Snow Ditch	Irrigation	Yes	City of Billings-Yellowstone River		No	No
6	Big Ditch	Irrigation	No	COB-YR	Big Ditch Company	No	No
7	Unknown	Drainage System	No	COB-YR		No	No
8	Canyon Creek	Stream	No	Lower Canyon Creek		Yes	No
9	Hogan's Slough	Stream	No	Hogan's Slough		No	No
10	Canyon Creek Ditch	Irrigation	No	Brockway Coulee, Lower Canyon Creek, Hogan's Slough, COB-YR	Canyon Creek Ditch Company	No	No
11	Shiloh Drain	Drainage System	No	City of Billings-Yellowstone River		No	No
12	Suburban Ditch	Irrigation	No	COB-YR		No	No
13	Arnold Drain	Drainage System	No	City of Billings-Yellowstone River		No	No
14	Danford Drain City/County Drain	Drainage System	No	COB-YR		No	No
15	Spring Creek	Stream	No	COB-YR		No	No
16	Grey Eagle Ditch	Irrigation	No	COB-YR	Grey Eagle Ditch Company	No	No
17	Yegen Drain	Drainage System	Yes	COB-YR		No	No
18	Dry Creek	Stream	No	Sevenmile Creek-YR		No	No
19	BBWA - Barrett Lateral?	Irrigation	No	Five Mile Creek	BBWA?	No	No
20	Five Mile Creek	Stream	Yes	Five Mile Creek		No	No
21	BBWA Canal	Irrigation	No	Sevenmile Creek-YR, Five Mile Creek, COB-YR	Billings Bench Water Association	No	No
22	Alkali Creek	Stream	Yes	Alkali Creek		No	No
23	Bitter Creek	Stream	No	Bitter Creek		No	No
24	Yellowstone River	Stream	Yes			Yes	No
25	Blue Creek	Stream	No	Lower Blue Creek		No	No
26	Lockwood Ditch	Irrigation	Yes	Sevenmile Creek-YR		No	No
27	Birely Drain	Drainage System	No	Hogan's Slough		No	No
28	Coulson Ditch	Irrigation	Yes	Sevenmile Creek-YR		No	No
29	BDPD	Irrigation	No	Hogan's Slough		No	No
30	Lockwood Ditch	Irrigation	Yes	Sevenmile Creek-YR		No	No
31	Unnamed	Stream	Yes	Sevenmile Creek-YR		No	No
32	Unnamed	Stream	Yes	Sevenmile Creek-Yellowstone River		No	No
33	Unnamed	Stream	Yes	Sevenmile Creek-YR		No	No
34	Unnamed	Stream	No	Sevenmile Creek-YR		No	No
35	Unnamed	Stream	No	Sevenmile Creek-YR		No	No
36	Unnamed	Stream	No	Five Mile Creek		No	No
37	Tired Man Road Pond	Pond	No			No	No
38	Peter Yegen Golf Course - Pond 2	Pond	No			No	No
39	Peter Yegen Golf Course - Pond 3	Pond	No			No	No
40	Peter Yegen Golf Course - Pond 1	Pond	No			No	No
41	Peter Yegen Golf Course - Pond 6	Pond	No			No	No

Yellowstone County MS4 – Surface Water Attributes

Unique ID	Name	Type	Receiving Waterbody	NHD Watershed	Owner	Impaired	TMDL
42	Peter Yegen Golf Course - Pond 5	Pond	No			No	No
43	Peter Yegen Golf Course - Pond 4	Pond	No			No	No
44	Unnamed	Pond	No			No	No
45	Unnamed	Natural Minor Drainage	No	Sevenmile Creek-Yellowstone River		No	No
48	Unnamed	Natural Minor Drainage	No	Five Mile Creek		No	No
49	Holling Drain	Drainage System	No	Five Mile Creek		No	No
50	Mary Street Drain	Drainage System	No	Five Mile Creek		No	No
53	Montana Audubon Center - Pond 1	Pond	No			No	No
54	Montana Audubon Center - Pond 2	Pond	No			No	No
61	Lake Josephine	Lake	No			No	No
62	Unnamed	Pond	No			No	No
66	Yegen Drain	Drainage System	No			No	No
68	Unnamed	Natural Minor Drainage	No			No	No
69	Unknown	Irrigation	No			No	No
71	Unknown	Irrigation	No			No	No
73	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
74	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
75	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
76	Unknown	Irrigation	No	City of Billings-Yellowstone River		No	No
77	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
78	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
79	Unnamed	Natural Minor Drainage	No			No	No
80	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
81	Unknown	Irrigation	No	Five Mile Creek	BBWA	No	No
82	Unknown	Irrigation	No	Five Mile Creek		No	No
83	Unknown	Irrigation	No	Five Mile Creek		No	No
84	Unknown	Irrigation	No	Five Mile Creek		No	No
85	Unknown	Irrigation	No	Five Mile Creek	BBWA	No	No
86	Unknown	Irrigation	No	Five Mile Creek		No	No
87	Unknown	Irrigation	No	Five Mile Creek	BBWA	No	No
88	Unknown	Irrigation	No	Five Mile Creek		No	No
89	Unknown	Irrigation	No	Five Mile Creek		No	No
90	Unknown	Irrigation	No	Five Mile Creek		No	No
92	Unknown	Pond	No	Sevenmile Creek-Yellowstone River		No	No
93	Unknown	Pond	No	Sevenmile Creek-Yellowstone River		No	No
94	Unknown	Pond	No	Sevenmile Creek-Yellowstone River		No	No
95	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
96	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
97	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
98	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
99	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No

Yellowstone County MS4 – Surface Water Attributes

Unique ID	Name	Type	Receiving Waterbody	NHD Watershed	Owner	Impaired	TMDL
100	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
101	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
102	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
103	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
104	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
105	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
108	Unknown	Natural Minor Drainage	No	Sevenmile Creek-Yellowstone River		No	No
109	Unknown	Drainage System	No	Hogan's Slough		No	No
110	Unknown	Irrigation	No	City of Billings-Yellowstone River		No	No
111	Unknown	Irrigation	No	City of Billings-Yellowstone River		No	No
112	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
113	Unknown	Irrigation	No	Sevenmile Creek-Yellowstone River		No	No
114	Unknown	Irrigation	Yes	Sevenmile Creek-Yellowstone River		No	No
115	Unknown	Irrigation	No	City of Billings-Yellowstone River		No	No
116	Unknown	Irrigation	No			No	No
117	Yellowstone Country Club - Pond 2	Pond	No			No	No
118	Unnamed	Pond	No			No	No
119	Unnamed	Pond	No			No	No
120	Unnamed	Pond	No			No	No
121	Unnamed	Pond	No			No	No
122	Unknown	Irrigation	No		BBWA	No	No
123	Unknown	Irrigation	No	Five Mile Creek		No	No
124	Unknown	Irrigation	No			No	No
125	Unknown	Irrigation	No			No	No
126	Unknown	Irrigation	No			No	No
127	Unknown	Irrigation	No			No	No
128	Unknown	Irrigation	No			No	No
129	Unknown	Irrigation	No			No	No
130	Unknown	Irrigation	No			No	No
131	Unknown	Irrigation	No			No	No
132	Unknown	Irrigation	No			No	No
133	Unknown	Irrigation	No			No	No
134	Unknown	Irrigation	No			No	No
135	Unknown	Irrigation	No			No	No
136	Lateral of Snow Ditch	Irrigation	No			No	No
137	Unknown	Irrigation	No			No	No
138	Unknown	Irrigation	No			No	No
139	Unknown	Irrigation	No			No	No
140	Unknown	Irrigation	No			No	No
141	Unknown	Irrigation	No			No	No
142	Lateral of Canyon Creek Ditch	Irrigation	No			No	No

Yellowstone County MS4 – Surface Water Attributes

Unique ID	Name	Type	Receiving Waterbody	NHD Watershed	Owner	Impaired	TMDL
143	Unknown	Irrigation	No			No	No
144	Unknown	Irrigation	No			No	No
145	Unknown	Irrigation	No			No	No
146	Unknown	Irrigation	No			No	No
147	Unknown	Irrigation	No			No	No
148	Unknown	Irrigation	No			No	No
149	Unknown	Irrigation	No			No	No
150	Unknown	Irrigation	No			No	No
151	Unknown	Irrigation	No			No	No
154	Unknown	Irrigation	No			No	No
155	Unknown	Irrigation	No			No	No
156	Unknown	Irrigation	No			No	No
157	Unknown	Irrigation	No			No	No
158	Unknown	Irrigation	No			No	No
159	Yellowstone Country Club - Pond 1	Pond	No			No	No
160	Coburn Lake	Lake	No			No	No

Yellowstone County MS4 – High Priority Area Attributes

Area ID	Outfalls	Receiving Water Body	General Description of Area	Rationale
HPA-1	N/A	Yegan Drain (via surface runoff)	60- acre industrial area located west of I-90 and east of Sugar Ave, near the S 27th St. interchange. Industrial services include truck and trailer repairs, welding, metal and steel supply, a traffic control storage yard, a brick manufacturer, and a bus garage.	The multiple industrial facilities with a high percentage of unvegetated surface and limited storm water management facilities could discharge pollutants to the Yegan Drain.
HPA-2	W-I90-OF-006 W-I90-OF-010 W-I-90-011	Yellowstone River	Metra Park Facility: Approximately 130 acres bordered by 1st Ave, US 87, Bench Blvd, Alkali Creek, and the Yellowstone River.	The facility contains a high percentage of impervious area, hosts frequent public events (including some with animals onsite), and is bordered by two waterbodies.
HPA-3	LKWD-OF-014	Coulson Ditch & Unnamed Stream	175-acre industrial area between Old Hardin Rd and the MRL Railroad tracks, west of Exxon Mobile Rd. The area includes a lumber supply yard, a steel and salvage yard, vehicle repair businesses, and a vehicle salvage yard.	The multiple industrial facilities (including a salvage yard) with a high percentage of unvegetated surface and limited storm water management controls could discharge pollutants to nearby surface waters.
HPA-4	N/A	Hogan's Slough (via surface runoff)	15-acre industrial area East of 32nd Ave and North of Gabel Rd. Hogans Slough and Canyon Creek Canal both run through the site. The area contains an autobody repair service, powder coating service, and an open air storage yard.	Proximity to waterbodies and potential for automotive spills.
HPA-5	W-I90-OF-009	Yegan Drain	25-acre industrial area north of S 27th St and west of I-90. The primary business within the area is CARQUEST Auto parts	The area Drains to the Yegan Drain via a storm sewer system. Potential concerns with the storm sewer system have been identified that the SWMP team is investigating.

Yellowstone County MS4 – Post-Construction Facility Attributes (Preliminary)

Unique ID	Type	Description	Flow Control	Water Quality	Year	Drainage Basin	Owner	Condition	Condition Date
1	Wet Detention Basin					Hogan's Slough			
2	Drywell		Yes			City of Billings-Yellowstone River			
3	Infiltration Basin		Yes			Hogan's Slough			
4	Infiltration Basin		Yes			City of Billings-Yellowstone River			
5	*(To be determined)*					City of Billings-Yellowstone River			
6	Drywell		Yes			City of Billings-Yellowstone River			
7	Infiltration Basin					Hogan's Slough			
8	Infiltration Basin					Hogan's Slough			
9	Infiltration Basin					Hogan's Slough			
10	Drywell					Hogan's Slough			
11	Infiltration Basin		Yes			City of Billings-Yellowstone River			
12	Bioretention					City of Billings-Yellowstone River			
13	Biofiltration Swale					City of Billings-Yellowstone River			
14	Drywell					City of Billings-Yellowstone River			
15	Drywell					City of Billings-Yellowstone River			
16	Drywell					City of Billings-Yellowstone River			
17	Drywell					City of Billings-Yellowstone River			
18	Biofiltration Swale					Sevenmile Creek-Yellowstone River			
19	Bioretention					Sevenmile Creek-Yellowstone River			
20	Infiltration Basin					Sevenmile Creek-Yellowstone River			
21	Wet Detention Basin					Alkali Creek			
22	Biofiltration Swale					Sevenmile Creek-Yellowstone River			
23	Biofiltration Swale					Sevenmile Creek-Yellowstone River			
24	Biofiltration Swale					Sevenmile Creek-Yellowstone River			
25	Biofiltration Swale					Sevenmile Creek-Yellowstone River			
26	Infiltration Basin					City of Billings-Yellowstone River			
27	Drywell					City of Billings-Yellowstone River			
28	Drywell					Hogan's Slough			
29	Infiltration Basin					Hogan's Slough			
30	Infiltration Basin					City of Billings-Yellowstone River			
31	Wet Detention Basin					City of Billings-Yellowstone River			
32	Biofiltration Swale					Alkali Creek			
33	Extended Detention Basin					Sevenmile Creek-Yellowstone River			
34	Biofiltration Swale					Sevenmile Creek-Yellowstone River			
35	Extended Detention Basin					Sevenmile Creek-Yellowstone River			
36	Bioretention					Sevenmile Creek-Yellowstone River			
37	Infiltration Basin					Sevenmile Creek-Yellowstone River			
38	*(To be determined)*					Sevenmile Creek-Yellowstone River			
39	Bioretention					Sevenmile Creek-Yellowstone River			
40	Bioretention					Sevenmile Creek-Yellowstone River			
41	Bioretention					Sevenmile Creek-Yellowstone River			

Yellowstone County MS4 – Post-Construction Facility Attributes (Preliminary)

Unique ID	Type	Description	Flow Control	Water Quality	Year	Drainage Basin	Owner	Condition	Condition Date
42	Drywell					Sevenmile Creek-Yellowstone River			
43	Bioretention					Sevenmile Creek-Yellowstone River			
44	Wet Detention Basin					Sevenmile Creek-Yellowstone River			
45	Biofiltration Swale					City of Billings-Yellowstone River			
46	Biofiltration Swale					*(To be determined)*			
47	Drywell					Sevenmile Creek-Yellowstone River			
48	Infiltration Basin					Sevenmile Creek-Yellowstone River			
49	Drywell					Sevenmile Creek-Yellowstone River			

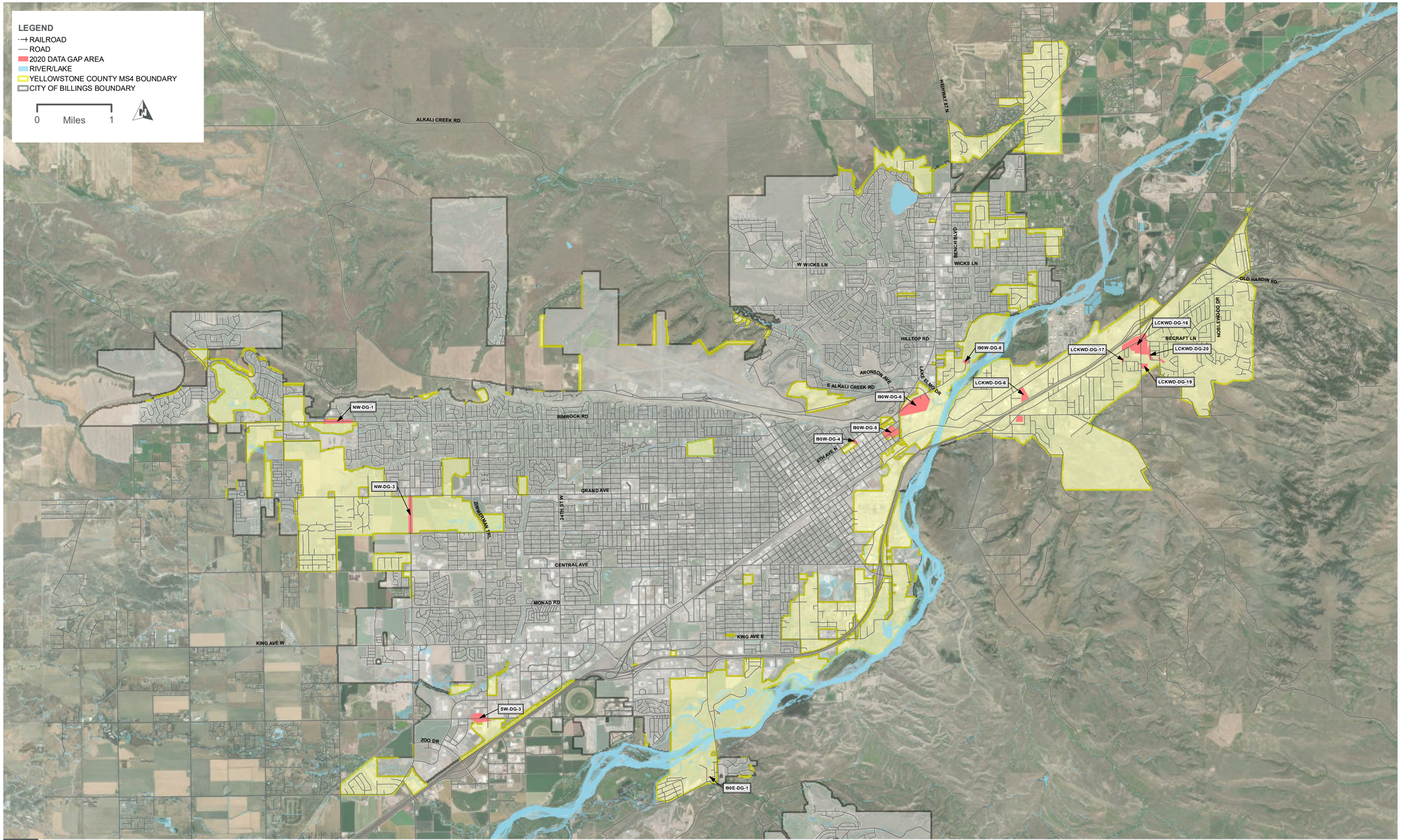
Attachment E. Data Gap Information & Location Map

Data Gap Location Summary Table

Data Gap ID	Location	Data Gap Description	Meeting Discussion/Decision	Task Assigned To
NW-DG-1	Rimrock Rd, between 50th ST W and 46th St W	Storm sewer infrastructure is unknown.	HDR/NewFields to request drawings from the City and complete this section under future task order.	HDR/NewFields
NW-DG-2	Northwest corner of Grand Ave and Zimmerman Trail	Storm Sewer infrastructure was established by desktop and field observations, may not be the correct infrastructure.	This is all in the City, delete all storm sewer infrastructure from County inventory.	HDR/NewFields
NW-DG-3	Shiloh Rd, between Grand Ave and Broadwater Ave.	Shiloh Rd. infrastructure must be verified.	HDR/NewFields to request drawings from the City and complete this section under future task order.	HDR/NewFields
SW-DG-3	Along Hesper Rd, east of Majestic Ln	Interaction of irrigation vs drainage facilities is unclear.	County to field verify whether infrastructure along Hesper Rd is irrigation or storm drainage.	County
I90W-DG-4	Intersection of 6th Ave N and N 15th St	Unable to verify where these inlets drain to.	HDR/NewFields to request storm drain records from the City of Billings (East Billings Urban Area) and complete this section under future task order	HDR/NewFields
I90W-DG-5	Near intersection of 3rd Ave N and N 9th St	Unable to verify where these inlets drain to.	HDR/NewFields to request storm drain records from the City of Billings (East Billings Urban Area) and complete this section under future task order	HDR/NewFields
I90W-DG-6	MetraPark	Where does all of the Metra Park storm sewer infrastructure outfall to?	County (Mike/Tim) need to walk this area to map it by hand. (Make sure to invite the Metra-Park operations personnel).	County
I90W-DG-8	Two Moon Park Rd	This seems like a major outfall. Unable to verify what drains to this point.	County will field review this item to clarify.	County
I90E-DG-1	Cul-de-sac on Sumac Dr.	Water flows into Sumac cul-de-sac and into inlet, then flows underground into residential private property. Possible outfall into Blue Creek, on private property, cannot confirm.	Easement from cul-de-sac to Blue Creek. County needs to conduct field investigation to determine.	County
LCKWD-DG-5	Southeast side of intersection at US-87 and Hardin Rd.	Does this pipe connect to a storm sewer system within property?	County to field verify. Infrastructure on Hwy 87 ROW is MDT.	County

Data Gap Location Summary Table

Data Gap ID	Location	Data Gap Description	Meeting Discussion/Decision	Task Assigned To
LCKWD-DG-6	Big Sky Steel Industrial Area (between Lockwood Rd and I-90 Frontage Rd)	Multiple pipes discharge into unnamed surface water near Lockwood Rd. bridge. Area needs additional information about where pipes are coming from and what is being discharged into the unnamed stream.	County to field verify.	County
LCKWD-DG-16	Area south of I-90 along Johnson Lane	Old Hardin Rd. and Johnson Ln. Intersection, significant amount of SW Infrastructure. Need additional information to verify piping networks and PCSMC (private and public).	Add closed conveyance and outfall on SE side of intersection of Old Hardin Rd and Johnson Ln. Add closed conveyance crossing Old Hardin Rd to the west of Johnson Ln, and open channel draining north to State ROW near the interchange.	HDR/NewFields
LCKWD-DG-17	Intersection of Rockwood St and Sherwood Ave	Where does this drain to?	County to field verify.	County
LCKWD-DG-19	Lockwood Fire Department	Verify SW infrastructure	Pipe crossing Johnson Ln from the fire department. County needs to field verify.	County
LCKWD-DG-20	Alaskan Ave	Confirm drainage patterns of unnamed creek	County needs to field verify this (area near the Mauser St & Alaska Ave intersection). Add outfalls?	County
LCKWD-DG-21	Mauser St	Are these dry wells?	County to field verify.	County
LCKWD-DG-22	Natural drainage crossing Enfield St	Verify SW infrastructure	County needs to field verify where these facilities flow to.	County



YELLOWSTONE COUNTY
DATA GAP AREAS

Appendix E. MCM 4 – Construction Site Storm Water Management

YELLOWSTONE COUNTY, MONTANA
CONSTRUCTION SITE VISIT INSPECTION FORM

General Information

Project Name:

Location:

Date of Inspection: | Start/End Time:

Inspector's Name(s):

Inspector's Title(s):

Inspector's Contact Information (phone):

Describe Present Phase of Construction:

Type of Inspection:

❑ Beginning of Construction ❑ Pre-storm event ❑ During rain event

❑ Post-rain event ❑ Conclusion of Project ❑ Response to violation or complaint

Weather Information

Has it rained since the last inspection? ❑Yes ❑No

If yes, provide:

Storm Start Date & Time: Storm Duration (hrs): Approximate Rainfall (in):

Weather at time of this inspection:

❑ Clear ❑ Cloudy ❑ Raining ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds

❑ Other: Temperature:

Do you suspect that discharges may have occurred since the last inspection?

❑Yes ❑No

Are there any stormwater discharges at the time of inspection? ❑Yes ❑No

If yes, provide location(s) and a description of stormwater discharged from the site (presence of suspended sediment, turbid water, discoloration, and/or oil sheen:

Prohibited Discharges

Are there any prohibited discharges at the time of inspection? ❑Yes ❑No

If yes, provide location(s) and a description:

	BMP/Activity	Implemented?	Maintained?	Corrective Action Needed & Notes
Erosion and Sediment Controls				
1	Are stormwater volume and velocity controls being used to minimize soil erosion within the site? (e.g. check dams, fiber rolls, etc.)	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
2	Are stormwater volume and velocity controls being used to minimize soil erosion at discharge locations? (e.g. stilling basins, fiber rolls, etc.)	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
3	Are efforts being made to minimize the amount of soil exposed throughout the site?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
4	Are efforts being made to minimize the disturbance of steep slopes?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
5	Are perimeter controls and sediment barriers (e.g. silt fence) adequately installed (keyed into substrate) and maintained?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
6	Are storm drain inlets properly protected?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
7	Are discharge points and receiving waters free of sediment deposits? If no, provide locations.	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
8	Is there evidence of sediment being tracked into the street?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
9	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected by natural buffers, barriers, or similar BMPs?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
10	Are efforts being made to minimize soil compaction and preserve topsoil?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	

	BMP/Activity	Implemented?	Maintained?	Corrective Action Needed & Notes
Soil Stabilization				
11	Are all slopes and disturbed areas not actively being worked properly stabilized?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
Dewatering				
12	Are discharges from dewatering activities being managed by appropriate controls?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
Pollution Prevention Measures				
13	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
14	Are materials that are potential stormwater contaminants stored inside or under cover?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
15	Is trash/litter from work areas collected and placed in covered dumpsters?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
16	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
17	Are vehicle and equipment fueling, cleaning, material storage, and maintenance areas free of spills, leaks, or other harmful materials?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
Surface Outlets and Miscellaneous				
18	When discharging from basins and impoundments, are outlet structures that withdraw water from the surface being used?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
19	Are there locations where additional BMPs appear to be necessary?	❑Yes ❑No ❑ N/A	❑Yes ❑No ❑ N/A	
Describe any incidents of non-compliance not described above:				

Inspector's Signature

Date

YELLOWSTONE COUNTY, MONTANA
PUBLIC WORKS DEPARTMENT
CONSTRUCTION SITE STORMWATER INSPECTION FREQUENCY DETERMINATION PROTOCOL

NAME OF PROJECT	PROJECT FILE NO.	ADDRESS
TOTAL PROJECT ACRES		TOTAL DISTURBED ACRES
OWNER	ADDRESS	PHONE NUMBER

Template Instructions: The following template contains example criteria which may be used to prioritize construction sites in order to determine inspection frequency. In accordance with the MS4 General Permit, high-priority sites are to be inspected a minimum of three times within the duration of a construction project. This template assumes that all other sites will be inspected at least once during a construction project's lifespan. Some of the criteria provided within the table below were taken directly from the General Permit. Criteria not required within the permit can be removed and/or additional criteria can be added, if desired. Rating values have not been provided because it is expected that each MS4 will utilized different rating values; therefore, rating values should be selected to meet the needs of your MS4 system.

YELLOWSTONE COUNTY PUBLIC WORKS

Instructions:

To determine the suggested inspection frequency of a given construction site, begin by filling out the Construction Site Rating Table below and add up all of the applied ratings. Then utilize the Inspection Frequency Determination Table to determine the priority and minimum inspection frequency for the site.

Construction Site Rating Table

Criteria	Rating System	Rating Value	Applied Rating for Each Criteria
Pre-determined priority of the control (if applicable)	Non High-Priority	0	
	High-Priority	X	
Project size	Less than 1 acre	*X*	
	1 to 5 acres	*X*	
	5+ acres	*X*	
Proximity to a surface water	1,000+ feet from site's outfall	*X*	
	200 to 1,000 feet from site's outfall	*X*	
	Direct discharge to surface water	*X*	
Steepness of project site slopes	Mostly Flat Ground	*X*	
	Slopes of 3:1	*X*	
	Slopes of 2:1 or steeper	*X*	
Discharge to a waterbody impaired for pollutants expected from active construction projects	No	*X*	
	Yes	*X*	
History of operator compliance	No history of non-compliant	*X*	
	Once non-compliant	*X*	
	2+ non-compliant	*X*	
Risk of Hazardous Material Spills/ Leaks	Low Risk: No hazardous materials stored on site	*X*	
	Medium Risk: Non-liquid hazardous materials stored on site	*X*	
	High Risk: Liquid hazardous materials stored on site	*X*	

Total = _____

The total of all the ratings will indicate the priority of the inspection for this construction site. The following is a suggested template which could be used to define inspection frequency based on site priority:

Inspection Frequency Determination Table

Total Rating Value	Priority	Inspection Frequency
0 to X	Low	1.
X to Y	Medium	1.
Y to Z	High	1. Once at commencement of construction after BMPs have been implemented
		2. Once within 48-hours after one rain event of 0.25 inches or greater
		3. Once at the conclusion of the project prior to finalization

Inspection Frequency for Construction Site

Site Priority: _____

Inspection Frequency:

DATE RECEIVED

YELLOWSTONE COUNTY, MONTANA
PUBLIC WORKS DEPARTMENT
CONSTRUCTION STORMWATER MANAGEMENT PLAN REVIEW CHECKLIST

NAME OF PROJECT	PROJECT FILE NO.	ADDRESS

TOTAL PROJECT ACRES	TOTAL DISTURBED ACRES

Latitude: Longitude:

GPS LOCATION OF CONSTRUCTION SITE

APPLICANT	ADDRESS	PHONE NUMBER

OWNER *(If different from Applicant)*	ADDRESS	PHONE NUMBER

Review History

First Review

Plan Received on: _____ **Approved/Denied:** _____

Review Completed on: _____ **Comments:** _____

Reviewed by: _____ _____

Second Review

Plan Received on: _____ **Approved/Denied:** _____

Review Completed on: _____ **Comments:** _____

Reviewed by: _____ _____

Third Review

Plan Received on: _____ **Approved/Denied:** _____

Review Completed on: _____ **Comments:** _____

Reviewed by: _____ _____

REPORT OF TECHNICAL REVIEW

____ The Construction Stormwater Management Plan for the above named project or activity **includes** the necessary components identified within the attached checklist.

____ The Construction Stormwater Management Plan for the above named project or activity **does not include** the necessary components identified within the attached checklist through failure to include the following:

_____

_____

_____

Review by: _____

Signature: _____ **Date:** _____

Project Name: _____ Applicant: _____

General Information	Complete	Incomplete	N/A
1. Describe the project location (address, parcel number, etc…)			
a. Description of project activity			
2. Areas (ac)			
a. Total disturbed area			
b. Existing impervious area			
3. Construction schedule/sequence			
4. Identify site features			
a. Limits of improvements relative to neighbors or a Vicinity Map			
b. Limits of clearing and grading			
c. Existing vegetation delineated			
d. Existing and proposed site topography			
e. Existing and proposed runoff direction			
f. Surface waters and storm conveyance systems within 200' of project			
g. Description of outfall and receiving surface waters			
h. Protection of waterways, receiving surface waters and natural resources			
i. Construction Stormwater Management Plan is phased with construction			
j. Stockpile locations, staging areas and access points defined			
k. Show all areas of construction, including but not limited to: structures, retaining walls, roads, drives, utilities, trenches, scaffolds, catch basins, etc.			
l. Description of site soil			
m. Description of watershed tributary to site			
5. Maintenance Plan for Control Facilities			
6. Copies of Design Waivers or Variances			
7. Copy of NOI and SWPPP as submitted to DEQ, if applicable			
Erosion and Sediment Controls			
1. Design considerations and erosion control BMPs are specified to:			
a. Control stormwater volume and velocity within the site to minimize soil erosion through use of controls such as check dams, fiber rolls, etc.			
b. Control stormwater discharges, including both peak flowrates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and streambank erosion through use of controls such as stilling basins, fiber rolls, etc.			
c. Minimize the amount of soil exposed during construction activity			
d. Minimize the disturbance of steep slopes			

Project Name: _____ Applicant: _____

Erosion and Sediment Controls (cont.)	Complete	Incomplete	N/A
e. Minimize sediment discharges from the site through use of perimeter controls such as silt fence, fiber rolls, diversion berms, etc.			
f. Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration, unless infeasible			
g. Minimize soil compaction and, unless infeasible, preserve topsoil			
Soil Stabilization			
1. The following soil stabilization requirements are clearly communicated:			
a. Stabilization of disturbed areas must be initiated immediately whenever any clearing, grading, excavating or other earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days			
b. If initiating vegetative stabilization measures immediately is infeasible, alternative stabilization measures must be specified			
Dewatering			
1. If applicable, discharges from dewatering activities are managed by appropriate controls such as sedimentation basins, sediment traps, etc. *Note: This does not preclude the contractor from the requirement to obtain a dewatering permit from MT DEQ.*			
Pollution Prevention Measures			
1. Pollution prevention measures are specified to:			
a. Specify treatment of wash waters in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge			
b. Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to storm water			
c. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures			
Prohibited Discharges			
1. Wastewater from washout of concrete is prohibited or managed by appropriate controls			
2. A statement (or statements) which prohibit discharges of the following:			
a. Wastewater from washout and cleanout of stucco, paint, from release oils, curing compounds and other construction materials			
b. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance			
c. Soaps or solvents used in vehicle and equipment washing			
Surface Outlets			
1. When discharging from basins and impoundments, outlet structures that withdraw water from the surface are used (unless infeasible)			

Appendix F. MCM 5 – Post-Construction Storm Water Management in New and Redevelopment Areas

YELLOWSTONE COUNTY, MONTANA
PUBLIC WORKS DEPARTMENT
POST-CONSTRUCTION STORMWATER MANAGEMENT CONTROL
INSPECTION FREQUENCY DETERMINATION PROTOCOL

NAME OF STORMWATER CONTROL **PROJECT FILE NO.** **ADDRESS**

Latitude: **Longitude:**

GPS LOCATION

RESPONSIBLE PARTY **PHONE NUMBER**

Template Instructions: The following template contains example criteria which may be used to prioritize post-construction stormwater management controls in order to determine inspection frequency. In accordance with the MS4 General Permit, high-priority sites are to be inspected annually, at a minimum. This template assumes that all other sites will be inspected at least once during the five year permit cycle. The criteria provided within the table below were taken directly from the General Permit and additional criteria can be added, if desired. Rating values have not been provided because it is expected that each MS4 will utilized different rating values; therefore, rating values should be selected to meet the needs of your MS4 system.

Instructions:

To determine the suggested inspection frequency of a given stormwater management control, begin by filling out the Post-Construction Stormwater Management Control Rating Table below and add up all of the applied ratings. Then utilize the Inspection Frequency Determination Table to determine the priority and minimum inspection frequency for the site.

Post-Construction Stormwater Management Control Rating Table

Criteria	Rating System	Rating Value	Applied Rating for Each Criteria
Pre-determined priority of the control (if applicable)	Non High-Priority	0	
	High-Priority	X	
Proximity to a surface water	1,000+ feet from site's outfall	*X*	
	200 to 1,000 feet from site's outfall	*X*	
	Direct discharge to surface water	*X*	
Drainage Area Treated	Less than X acre(s)	*X*	
	X to Y acres	*X*	
	Y+ acres	*X*	
Land Use Type	Residential	*X*	
	Commercial	*X*	
	Industrial	*X*	
	[other]	*X*	
Discharge to a waterbody impaired for pollutants expected from stormwater runoff	No	*X*	
	Yes	*X*	
[other]		*X*	
		X	
		X	

Total = _____

The total of all the ratings will indicate the priority of the inspection for this construction site. The following is a suggested template which could be used to define inspection frequency based on site priority:

Inspection Frequency Determination Table

Total Rating Value	Priority	Inspection Frequency[(1)]
0 to X	Low	1. Once every X year(s)
		2. [additional criteria if desired, e.g. after snowmelt, rain event, etc…]
		3.
X to Y	Medium	1. Once every X year(s)
		2. [additional criteria if desired, e.g. after snowmelt, rain event, etc…]
		3.
Y to Z	High	1. Once each year
		2. [additional criteria if desired, e.g. after snowmelt, rain event, etc…]
		3.

[(1)]Note: Consult the Operation and Maintenance (O&M) Plan/Manual for the given stormwater management control for additional inspection frequency requirements or recommendations. Compare O&M Manual/Plan to the results of the above table and select the inspection frequency which is more frequent for the given control.

Inspection Frequency for Post-Construction Stormwater Management Control

Site Priority: _____

Inspection Frequency:

DATE RECEIVED

YELLOWSTONE COUNTY, MONTANA
PUBLIC WORKS DEPARTMENT
POST-CONSTRUCTION STORMWATER MANAGEMENT
PLAN REVIEW CHECKLIST

NAME OF PROJECT	PROJECT FILE NO.	ADDRESS
TOTAL PROJECT ACRES		TOTAL DISTURBED ACRES
Latitude:	Longitude:	
GPS LOCATION OF CONSTRUCTION SITE		
APPLICANT	ADDRESS	PHONE NUMBER
OWNER *(If different from Applicant)*	ADDRESS	PHONE NUMBER

Review History

First Review

Plan Received on: _____ **Approved/Denied:** _____

Review Completed on: _____ **Comments:** _____

Reviewed by: _____ _____

Second Review

Plan Received on: _____ **Approved/Denied:** _____

Review Completed on: _____ **Comments:** _____

Reviewed by: _____ _____

Third Review

Plan Received on: _____ **Approved/Denied:** _____

Review Completed on: _____ **Comments:** _____

Reviewed by: _____ _____

REPORT OF TECHNICAL REVIEW

____ The Stormwater Management Plan for the above named project or activity **includes** the necessary post-construction controls in order to comply with the State and local post-construction stormwater requirements (as identified within the attached checklist).

____ The Stormwater Management Plan for the above named project or activity **does not include** the necessary post-construction controls in order to comply with the State and local post-construction stormwater requirements (as identified within the attached checklist) through failure to include the following:

_____

_____

_____

Review by: _____

Signature: _____ **Date:** _____

Project Name: _____ Applicant: _____

General Information	Complete	Incomplete	N/A
1. Location			
a. Address, subdivision name, legal description, etc…			
2. Type of development (residential, commercial, etc...)			
3. Areas (ac)			
a. Total disturbed area			
b. Existing impervious area			
c. Post-development impervious area			
4. Drainage basin maps are provided which clearly label the following:			
a. Existing basin boundaries			
b. Existing time of concentration flowpaths for each basin			
c. Post-development basin boundaries			
d. Post-development time of concentration flowpaths for each basin			
e. Discharge location(s)			
f. Receiving waters within 200 feet of project are identified			
5. Montana Licensed Engineer Stamp			
Drainage Plan Content			
1. Topographic map of existing and finished grade contours at 2-foot max intervals			
2. Location of each permanent stormwater control			
3. Plan and profile of each permanent stormwater control			
4. Invert elevations, slopes, and lengths of storm drain facilities			
5. Size, types, invert elevations and lengths of all culverts and pipe systems			
6. Discharge points clearly labeled			
7. Receiving surface waters identified			
8. Existing on-site natural resources identified and protected			
9. FEMA floodplains identified			
Calculations and Design Documentation			
1. Hydrology calculations			
a. State runoff method used (rational, SCS, etc…)			
b. State modeling constants and assumptions			
c. Description of design storms (frequency, depth, duration)			
d. Existing and post-development land uses			

Project Name: _____ Applicant: _____

Calculations and Design Documentation (Continued)	Complete	Incomplete	N/A
e. Existing and post-development peak runoff rate for each design storm			
f. Existing and post-development runoff volume for each design storm			
2. Post-construction BMP sizing calculations			
a. State design requirements (0.5-inch requirement, TSS removal, or other)			
b. Required permanent controls capacities, flow rates, and operating levels			
c. Sizing calculations with results			
d. A statement documenting compliance with design requirements			
e. If 0.5-inch or TSS removal requirements are not met, provide documentation showing the impracticability of infiltration, evapotranspiration, capture for reuse, and treatment.			
3. Culvert and pipe system capacities and outlet velocities			
4. Ditch capacities and velocities			
Additional Information			
1. Permits, easements, setbacks, and discharge agreements			
2. Floodplain maps			
3. Operations and Maintenance Manual for each permanent stormwater control			
a. Identify the owner			
b. Identify the party responsible for long-term O&M			
c. A schedule of inspection and maintenance for routine and non-routine maintenance tasks to be conducted			
d. System failure and replacement criteria to define the structure's performance requirements			
4. Geotechnical Report			

Appendix G. MCM 6 – Pollution Prevention/Good Housekeeping for Permittee Operations

Minimum Control Measure 6: Pollution Prevention/Good Housekeeping for Permittee Operations

The County owns and operates various types of facilities in the MS4 boundary. Per Part II.A.6.a of the General Permit, the County is developing and implementing an operation and maintenance program that has three primary components:

Elements of Pollution Prevention and Good Housekeeping Operations

- ☑ Facility and Activity Inventory
- ☑ Facility and Activity SOPs
- ☑ Internal Storm Water Pollution Prevention Training

1. An inventory of County-owned and operated facilities and activities that have the potential to release pollutants.
2. Standard operating procedures (SOPs) for facilities and activities that identify storm water pollution prevention controls.
3. A program to conduct annual storm water pollution prevention training for all County staff directly involved with implementing the SOPs.

The following sections provide an overview of the County-owned and operated facilities, the activities that take place at each facility, and the plan for developing standard operating procedures that address pollution prevention.

1.0 Inventory of Permittee Owned/Operated Facilities and Activities

The County currently owns and operates various types of facilities including parks, parking lots, buildings, and maintenance shops. In accordance with Part II.A.6.a.i of the MS4 General Permit, this section provides an inventory of the County's facilities and activities that have the potential to release contaminants to the MS4.

1.1 Facility Inventory

The County's facilities are separated into two categories, Tier 1 and Tier 2 facilities.

- Tier 1 facilities have an increased potential to release contaminants to the MS4 due to the type of pollutants generated or stored at these facilities (e.g., oils, hazardous materials, etc.). Examples of Tier 1 facilities include vehicle fleet maintenance areas, public event venues, high-traffic parks, and major parking lots. Tier 1 facilities are identified in Table 1. The County is developing facility-specific storm water pollution prevention SOPs for these facilities.
- Tier 2 facilities have less potential to release contaminants to the MS4 due to the decreased risk of exposure associated with activities taking place at these facilities. Examples of Tier 2 facilities include low-traffic parks and small parking lots. A summary of Tier 2 facilities is provided in Table 2 and a comprehensive list is provided in Table A-1 (Attachment A). The County is developing activity-based storm water pollution prevent SOPs for these facilities. The type of activities being conducted at each Tier 2 facility will govern which SOP(s) are to be implemented.

A map that shows locations of County facilities is provided in Attachment A.

Table 1: Tier 1 Facility Summary

Facility Information		Person Responsible for Pollution Prevention		Potential Contaminants								
Name	**Address**	**Name**	**Title**	Sediment	Nutrients[1]	Trash	Metals	Bacteria	Oil, Grease, Fuel	Organics	Pesticides/Herbicides	Hazardous Waste[2]
MetraPark – Arena	308 6th Ave N	Jeff Seward	Operations Director	X		X			X			X
MetraPark – Buildings/Parking Lots	308 6th Ave N	Jeff Seward	Operations Director	X	X	X		X	X	X	X	X
County Building/Offices	316 N. 26th St.	Greg Erpenbach	Facilities Superintendent	X		X			X			X
County Shops[3]	3321 King Ave. E.	Clay Moore	Assistant Road & Bridge Director	X	X	X			X	X	X	X
County Weed District[3]	3319 King Ave. E.	Joe Lockwood	Weed District Manager	X	X	X			X	X	X	X
County Courthouse	217 N. 27th St.	Greg Erpenbach	Facilities Superintendent	X		X			X			X
County Detention Facility	3165 King Ave. E	Greg Erpenbach	Facilities Superintendent	X		X			X		X	X
Two Moon Park	834 Two Moon Park Rd.	Cal Cumin	Parks Director	X	X	X			X	X	X	
Zimmerman Public Park	3314 MT-3	Cal Cumin	Parks Director	X	X	X			X	X	X	

[1] Nutrients in runoff are typically nitrogen and phosphorus pollutants from fertilizers, pet, and yard waste

[2] Hazardous waste is typically any biological, chemical, or physical material that is potentially harmful to human health or the environment. Examples include antifreeze, householder cleaners, and paints.

[3] County Shops and County Weed District are located on the same property.

Table 2. Tier 2 Facility Summary

Facility Information		Person Responsible for Pollution Prevention		Potential Contaminants								
Facility Type	**Department**	**Name**	**Title**	Sediment	Nutrients	Trash	Metals	Bacteria	Oil, Grease, Fuel	Organics	Pesticides/Herbicides	Hazardous Waste
Community Facilities	Facilities	Greg Erpenbach	Facilities Superintendent	X		X			X			
Parks	County Parks Department	Cal Cumin	Parks Director	X	X	X			X	X	X	
Parking Lots	Public Works	Clay Moore	Assistant Road & Bridge Director	X		X	X		X			
County Roads	Public Works	Clay Moore	Assistant Road & Bridge Director	X		X	X	X	X	X		
Stormwater BMPs[1]	Public Works	Mike Black	Senior Engineer	X	X	X			X		X	

[1] See MCM 5: Post-Construction Site Storm Water Management in New and Redevelopment for post-construction stormwater BMP operations and maintenance procedures. SOPs have not been developed for these facilities.

1.2 Activity Inventory

Table 3 identifies County activities that have the potential to release contaminants to the MS4. Similar activities have been grouped into eight categories. The County will develop one SOP for each category to describe procedures to be used to minimize the potential discharge of contaminants associated with these activities.

Table 3. County Activities that have the Potential to Release Contaminants to the MS4

SOP Category	Activity	Potential Pollutants								
		Sediment	Nutrients	Trash	Metals	Bacteria	Oil, Grease, Fuel	Organics	Pesticides/Herbicides	Hazardous Waste
Landscaping	Mowing						X	X		
	Tree Trimming						X	X		
	Fertilizer/pesticide/herbicide application		X						X	
	Planting	X								
	Equipment fueling						X			
Street Maintenance and Repairs	Street sweeping	X	X	X	X	X	X		X	
	Chip sealing	X					X			
	Asphalt and concrete cutting	X					X			
	Asphalt and concrete resurfacing	X					X			
	Curb and crosswalk painting						X			X
	Pothole repair						X			
Winter Street Operations	Street sanding	X					X			
	Snow removal and storage	X		X			X			
	Street deicing						X			X
Parking Lot Maintenance	Sweeping/cleaning	X	X	X	X	X	X		X	
	Parking lot striping						X			X
	Snow removal and storage	X		X			X			
Solid Waste Management	Dumpster and receptacle management		X	X	X	X	X	X		X
Building Maintenance	Sidewalk snow removal	X		X			X			
	Dumpster and receptacle management		X	X	X	X	X	X		X
Shop & Fleet Services	Vehicle fueling						X	X		
	Vehicle and equipment storage						X			X
	Vehicle washing	X					X			
	Materials storage						X			X
	Vehicle maintenance						X			X

SOP Category	Activity	Potential Pollutants								
		Sediment	Nutrients	Trash	Metals	Bacteria	Oil, Grease, Fuel	Organics	Pesticides/Herbicides	Hazardous Waste
Spills	Spill response and containment			X		X	X	X	X	X

Table 4 identifies applicable SOPs to be implemented for Tier 2 facilities. A comprehensive list of Tier 2 facilities is provided in Table A-1 (Attachment A).

Table 4. SOPs for Tier 2 Facilities

Facility Information		Applicable SOPs							
Tier 2 Facility Type	Department Responsible for Pollution Prevention	Landscaping	Street Maintenance and Repairs	Winter Street Operations	Parking Lot Maintenance	Solid Waste Management	Building Maintenance	Shop and Fleet Services	Spills
Community Facilities	Facilities	X			X	X	X		X
Parks	County Parks Board	X			X	X			
Parking Lots	Public Works				X				X
County Roads	Public Works		X	X					X
Stormwater BMPs[1]	Public Works								

[1] SOPs have not been developed for these facilities. See Note 1 in Table 2.

1.3 SOP Development

The County has two categories of storm water pollution prevention SOPs: facility-specific and activity-based. The list of SOPs being developed is provided in Table 5 and completed SOPs are provided in Attachment B.

Table 5. Storm Water Pollution Prevention SOPs

	SOP Name	SOP Development Schedule
Facility-Based SOPs (Tier 1 Facilities)	MetraPark[2]	2020
	County Building/Offices	2021
	County Shops[1]	2019
	County Weed District[1]	2019
	County Courthouse	2021
	County Detention Facility	2021
	Two Moon Park	2020 - 2021
	Zimmerman Public Park	2020 - 2021
Activity-Based SOPs (Tier 2 Facilities)	Landscaping	2019
	Street Maintenance and Repairs (including Winter Street Operations)	2020 - 2021
	Parking Lot Maintenance	2020 - 2021
	Solid Waste Management	2021
	Building Maintenance	2021
	Shop and Fleet Services	2019
	Spills	2021

[1] County Shops and County Weed District share the same property. A joint facility-based SOP has been developed for these facilities.
[2] MetraPark components – area, building, and parking lots – have been included in one combined SOP.

1.4 SOP Training

Persons responsible for pollution prevention at County facilities will conduct or oversee annual storm water pollution prevention training for all permittee staff directly involved with implementing SOPs. For newly created SOPs, trainings will be conducted during the next permit year after development of the SOP. The SOP training schedule for activity-based SOPs is provided in Table 6. Facility-based SOP trainings will be conducted annually with responsible parties. New staff hired within facilities with an SOP will undergo a training within 90 days of hire.

Table 6. Storm Water Pollution Prevention SOP Training Schedule

	SOP Name	SOP Training Schedule
Facility-Based SOPs (Tier 1 Facilities)	MetraPark	2021
	County Building/Offices	2022
	County Shops[1]	2020
	County Weed District[1]	2020
	County Courthouse	2022
	County Detention Facility	2022
	Two Moon Park	2021
	Zimmerman Public Park	2021
Activity-Based SOPs (Tier 2 Facilities)	Landscaping	2020
	Street Maintenance and Repairs; Winter Street Operations	2021
	Parking Lot Maintenance	2021
	Solid Waste Management	2022
	Building Maintenance	2022
	Shop and Fleet Services	2020
	Spills	2022

[1] County Shops and County Weed District share the same property. A joint facility-based SOP training session will occur for these facilities.

Appendix A. Tier 2 Facility List and Map

Table A-1. Tier 2 County Facilities

Department	General Information		Classifications		Applicable Activities								Notes
	Facility Name	Address	Within MS4 Boundary	Not Within MS4 Boundary	Landscaping	Street Maintenance & Repairs	Winter Street Operations	Parking Lot Maintenance	Solid Waste Management	Building Maintenance	Shop & Fleet Services	Spills	
Community Facilities	County Sherrif's Office #1	2323 2nd Ave N.		X	X			X	X	X			
	County Sherrif's Office #2	2550 3rd Ave N.		X	X			X	X	X			
	Youth Detention Center	410 S. 26th St.		X	X			X	X	X			Facilities located on same property
	Youth Services Center #1	407 S. 27th St.		X	X			X	X	X			
	Youth Services Center #2	413 S. 27th St.		X	X			X	X	X			
	Neptune Tumbleweed House	1019 Neptune Blvd.		X	X				X	X			
	Museum - Billings Logan Airport	1901 Terminal Circle		X	X			X	X	X			
	Western Heritage Center	2822 Montana Ave		X	X			X	X	X			
	County Storage Building #1	219 N. 26th St.		X	X			X	X	X			
	County Storage Building #2	3150 King Ave. E.	X		X			X	X	X			
	Riverside Cemetery	1316 Bitterroot Dr.	X		X			X	X				
County Parks Board	Bel Aire Park	628 Enfield St.	X		X			X	X				
	Brookdale Park	330 Woodland Rd.	X		X			X	X				
	Cloverleaf Meadows Park	859 46th St. W	X		X			X	X				
	Clydesdale Park	Wells Pl.	X		X			X	X				
	Eagle Cliff Meadows PVT Park	Eagle Cliff Meadows Road	X		X			X	X				
	Earl Guss Park	148 Bench Blvd.	X		X			X	X				
	Emerald Eagle Estates Sub Park	Noblewood Dr.	X		X			X	X				
	Farnum Park	Krumheuer Dr.	X		X			X	X				
	Harris Park	639 Tanglewood Dr.	X		X			X	X				
	Hillner Park	2464 Sunrise St.	X		X			X	X				
	Independence Park	3840 Roundup Rd.	X		X			X	X				
	Kiwanis Trail	831 Yellowstone River Rd.	X		X			X	X				
	Lockwood Park	2323 Old Hardin Rd.	X		X			X	X				
	Lockwood School Park Land	Stonehaven Trail	X		X			X	X				
	Madsen Park	1890 Prescott Dr.	X		X			X	X				
	McKenzie Park	Hunters Point	X		X			X	X				
	Oxbow Park	Broken Yoke Dr. & Clint Rd.	X		X			X	X				
	Quanta Park	Quanta Ln. & Willow Dr.	X		X			X	X				
	Quarter Horse Park	1800 Oklahoma Star Trail	X		X			X	X				
	Sannon Park	984 Noblewood Dr.	X		X			X	X				
	Shawnee Park	3400 Wasco Ave	X		X			X	X				
	Sierra Estates Sub 1st Park	Sierra Estates Subdivision	X		X			X	X				
	Sierra Estates Sub 2nd Park	Sierra Estates Subdivision	X		X			X	X				
	Sierra Estates Sub 3rd Park	Sierra Estates Subdivision	X		X			X	X				
	Sun Valley Sub 1st Park	Valley Heights Rd.	X		X			X	X				
	Twin Coulee Park	625 Lacey Rd.	X		X			X	X				
	Wells Garden Park	711 Lavender St.	X		X			X	X				
	Wilson Park	Riverside Rd.	X		X			X	X				
	Zimmerman Sub 4th Park	3314 MT-3	X		X			X	X				
	Lillis Park	*898 Parkview Dr.*											County property, City operated
	Burlington Park	*1123 21st St. W*											County property, City operated
	Rose Park	*1707 21st St. W*											County property, City operated
	Boulder Park	*2202 32nd St. W*											County property, City operated
	Castle Rock Park East	*380 Bohl Ave*											County property, City operated
	Walsh Park	*962 Ashley Ct. S*											County property, City operated
	Edgerton Park	*953 Dixon St.*											County property, City operated
	Riverfront Park	*7277-7337 State Highway 416*											In County MS4, City operated
	Coulson Park	*Charlene St.*											In County MS4, City operated
	Primrose Park	*1200 Reece Dr.*											County property, City operated

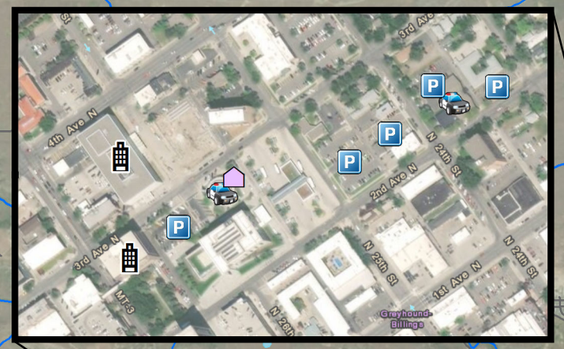
Department	General Information		Classifications		Applicable Activities								Notes
	Facility Name	Address	Within MS4 Boundary	Not Within MS4 Boundary	Landscaping	Street Maintenance & Repairs	Winter Street Operations	Parking Lot Maintenance	Solid Waste Management	Building Maintenance	Shop & Fleet Services	Spills	
Public Works	216 N 26th St Parking	216 N 26th St.	X		X			X	X			X	County property
	210 N 24th St Parking	210 N 24th St.	X		X			X	X			X	
	220 N 25th St Parking	220 N 25th	X		X			X	X			X	
	2311 2nd Ave N Parking	2311 2nd Ave N	X		X			X	X			X	
	217 N 24th St Parking	217 N 24th ST.	X		X			X	X			X	
	3150 King Ave E.	3150 King Ave E.	X		X			X	X			X	
	MetraPark Overflow 1			X	X			X	X			X	
	MetraPark Overflow 2			X	X			X	X			X	

LEGEND

- COMMUNITY FACILITY
- MAINTENANCE FACILITY
- SHERIFF'S FACILITY
- STORAGE BUILDING
- PARKING LOT
- PARK
- CEMETERY
- CREEK/STREAM
- RIVER/LAKE
- ROAD
- RAILROAD
- YELLOWSTONE COUNTY MS4 BOUNDARY

N

0 Miles 1



Sevenmile Creek
Five Mile Creek
Alkali Creek
Cove Creek
Dry Creek
Hogans Slough
Canyon Creek
Yellowstone River

YELLOWSTONE COUNTY
FACILITY INVENTORY MAP

Appendix B. Stormwater Pollution Prevention SOPs

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE CATEGORY: Landscaping	SOP NUMBER: 01 ISSUE DATE: 12/2019	

ACTIVITIES:	TARGET POLLUTANTS:
Mowing **Tree Trimming** **Fertilizer/Pesticide/Herbicide Application** **Planting** **Equipment Fueling**	Sediment Nutrients Oil & Grease Organics Pesticides/Herbicides

GENERAL

THIS SOP IS NOT EXPECTED TO COVER ALL NECESSARY PROCEDURE ACTIONS. OPERATORS ARE ALLOWED TO ADAPT SOPS TO UNIQUE SITE CONDITIONS IN GOOD JUDGMENT WHEN IT IS NECESSARY FOR SAFETY AND THE PROPER AND EFFECTIVE CONTAINMENT OF POLLUTANTS.

DESCRIPTION OF ACTIVITIES AND POLLUTANT SOURCE

Landscaping activities that have the potential to discharge pollutants to storm water runoff and surface waters include mowing, tree trimming, fertilizer/pesticide/herbicide application, planting, and equipment fueling. These activities occur at most County owned buildings and County parks.

APPLICABILITY

The procedures outlined in this SOP shall be implemented by all employees conducting landscaping activities at County owned facilities.

BEST MANAGEMENT PRACTICES (TO BE IMPLEMENTED FOR ALL LANDSCAPING ACTIVITIES)

- Locate all storm drain collection structures and inlets prior to starting work.
- Use temporary catch basin protection when necessary.
- Inspect equipment for gas, oil, and other fluid leaks prior to use.
- Promptly clean up spills in accordance with the spill response and containment SOP.
- Collect and dispose of all trash in the work area.
- Conduct all equipment cleaning and maintenance at the County Shops.

THE FOLLOWING ACTIVITY PROCEDURES SHOULD BE FOLLOWED FOR EACH LISTED ACTIVITY

MOWING

County staff are responsible for maintaining grassy areas at County owned buildings and County parks. Mowing includes the operation of mowers, trimmers, edgers, and blowers to maintain aesthetics of County managed grassy areas. A variety of pollutants can be introduced to the storm water system and nearby surface waters while mowing. Implement the following procedures to minimize the potential for storm water pollution during the mowing process:

- Adjust mower height to match the area's intended use and minimize clippings.
- Avoid excessive soil and vegetation damage by varying mowing patterns.
- When bagging clippings ensure appropriate collection, transportation, and disposal of all clippings.
- Sweep or blow clippings from sidewalks and streets to grass areas when work is complete.
- Dispose of clippings at the County Shop stockpiles or the Billings Landfill.

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE CATEGORY: Landscaping	SOP NUMBER: 01 ISSUE DATE: 12/2019	

TREE TRIMMING

County Staff perform routine care for trees and shrubs at County owned buildings and County parks. Tree trimming includes the operation of trimmers, chippers, and blowers to maintain aesthetics of County managed trees and shrubs. Oil, grease, fuel, and organics can be introduced to the storm water system and nearby surface waters while trimming. Implement the following procedures to minimize potential for pollution during the trimming process:

- Collect all trimmings and debris in the area when work is complete.
- Sweep or blow chips from pavement(s) into soil areas.
- Dispose of trimmings and debris at the County Shop stockpiles or the Billings Landfill.

FERTILIZER/PESTICIDE/HERBICIDE APPLICATION

Properly trained and certified persons perform routine care for grassy areas at County owned buildings and County parks. Fertilizer, pesticide, and herbicide application includes the operation of sprayers and spreaders to maintain health of County managed grassy and vegetated areas. A variety of nutrients and chemicals can be introduced to the storm water system and nearby surface waters during treatment. Implement the following procedures to minimize potential for pollution in the fertilizer/pesticide/herbicide application process:

- Read and review all product information prior to use. This information includes but is not limited to, safety data sheets, product instructions, and federal and state regulations governing use.
- Avoid application within a minimum of 20 feet of storm drainage facilities and surface waters and 100 feet of any well head.
- Calibrate application equipment to avoid excessive material application.
- Check the weather forecast. Wind and or rain conditions (current and future) may not be acceptable for application. Do not use pesticides if rain is expected within a 24-hour period and only apply when wind speeds are less than 5 mph.
- Mix and prepare all fertilizers, pesticides, and herbicides away from storm drains, waterbodies, and soils, preferably inside a protected area within a watertight secondary container.
- Employ appropriate techniques to minimize off-target application spray drift and over broadcasting are possible pollutants to the storm water system.
- Clean spills immediately and follow product specified procedures.
- Rinse application equipment away from water bodies and storm drains. Do not dispose of chemicals to storm drain, sewer, or ground surface.
- Dispose of excess material following manufacturer's instructions.

PLANTING

Planting includes digging, planting/seeding, and backfilling to maintain aesthetics of County managed land. Sediment and nutrients can be introduced to the storm water system and nearby surface waters during planting if proper procedures are not followed. Implement the following procedures to minimize potential for pollution when planting:

- Prior to digging call Montana 811 by dialing 811 or 800-424-5555 to locate underground facilities.
- While digging place spoils near the hole for ease of backfilling, avoid placing spoils in or near the gutter, a storm drain, or water body.
- Do not add excessive amounts of compost or fertilizer while backfilling.

- Apply seed and cover using pre-determined application method and rate, in accordance with manufacturer's instructions.
- Sweep dirt from surrounding pavement(s) into the planter area.
- Remove extra spoils from the site responsibly, use a tarp if necessary to contain spoils during transport.
- Transport spoils to the County Shops.
- Larger planting projects may require installation of temporary storm water BMPs such as silt fence and biorolls. Contact the County storm water coordinator to discuss pollution prevention for planting projects that are near water bodies and will take more than two days to complete.

EQUIPMENT FUELING

Equipment fueling applies to all gas, diesel, or kerosene vehicles and equipment required for maintenance of County facilities. Harmful chemicals can be introduced to the storm water system and nearby surface waters if spills occur while fueling equipment. Implement the following procedures to minimize pollution during fueling:

- Use the fuel automatic shut off (where applicable) to prevent overfilling, and do not 'top off' the tank.
- Mobile fueling should be minimized, whenever practical transport vehicles and equipment to designated fueling areas.
- When fueling small equipment from portable containers, fuel in an area a minimum of 50 feet away from storm drains and water bodies.
- If a large fuel spill occurs (greater than 1 gallon), contact the County storm water coordinator and your supervisor to determine if specialized sill response procedures are necessary.

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE CATEGORY: Shop and Fleet Services	SOP NUMBER: 02 ISSUE DATE: 12/2019	
ACTIVITIES: **Vehicle Fueling** **Vehicle and Equipment Storage** **Vehicle Washing** **Material Storage** **Vehicle Maintenance**	TARGET POLLUTANTS: Sediment Oil, Grease, Fuel Organics Hazardous Waste	

GENERAL

THIS SOP IS NOT EXPECTED TO COVER ALL NECESSARY PROCEDURE ACTIONS. OPERATORS ARE ALLOWED TO ADAPT SOPS TO UNIQUE SITE CONDITIONS IN GOOD JUDGMENT WHEN IT IS NECESSARY FOR SAFETY AND THE PROPER AND EFFECTIVE CONTAINMENT OF POLLUTANTS.

DESCRIPTION OF ACTIVITIES AND POLLUTANT SOURCE

The shop and fleet service activities that have the potential to discharge pollutants to storm water runoff and surface waters include vehicle fueling, vehicle and equipment storage, vehicle washing, material storage, and vehicle maintenance. Pollutants associated with these activities include sediment, oil, grease, fuel, organics, and hazardous waste.

APPLICABILITY

The procedures outlined in this SOP shall be implemented by all employees conducting shop and fleet services at County owned facilities.

BEST MANAGEMENT PRACTICES (TO BE IMPLEMENTED FOR ALL SHOP AND FLEET SERVICE ACTIVITIES)

- Inspect vehicles and equipment for gas, oil, and other fluid leaks prior to use.
- Promptly clean up spills in accordance with the spill response and containment SOP.
- Collect and dispose of all trash in the work area.
- Keep work and storage areas clean for easy detection of leaks and spills.
- Conduct equipment cleaning and maintenance at the County Shop and Weed District facility.

THE FOLLOWING ACTIVITY PROCEDURES SHOULD BE FOLLOWED FOR EACH LISTED ACTIVITY

VEHICLE FUELING

Vehicle fueling applies to all gas and diesel vehicles used by County facilities staff. Harmful chemicals can be introduced to the storm water system and nearby surface waters if spills occur while fueling. Implement the following procedures to minimize potential pollution during fueling:

- Shut off the vehicle prior to fueling.
- Fuel vehicles at approved locations.
- Inspect fueling location for corrosion, leaks, cracks, scratches, and other physical damage that may lead to spills.
- Follow all posted warnings.
- Use the fuel automatic shut off (where applicable) to prevent overfilling, and do not 'top off' the tank.
- Remain by the fill nozzle while fueling.

- Mobile fueling should be minimized, whenever practical transport vehicles to designated fueling areas.
- If a large fuel spill occurs (greater than 1 gallon), contact the County storm water coordinator and your supervisor to determine if specialized spill response procedures are necessary.

VEHICLE AND EQUIPMENT STORAGE

Vehicles and equipment stored for any period of time have the potential to leak, spill, or release chemicals or hazardous materials into the storm water system and nearby surface waters. Storage occurs at the County Shop and Weed District Facility. Implement the following procedures to minimize potential pollution during vehicle and equipment storage:

- Whenever possible, store vehicles and equipment inside where floor drains are connected to an oil-water separator.
- Vehicles and equipment stored outside shall be in approved locations.
- Monitor stored vehicles and equipment closely for leaks, use a drip pan as needed.
- Drain fluids from leaking or wrecked vehicles as soon as possible. Dispose of fluids properly, as directed by the facility's superintendent.

VEHICLE WASHING

Vehicle washing removes snow, ice, mud, and dirt from the surface of vehicles. Washing occurs at the County Shop and Weed District facility or other approved locations. Pollutants associated with vehicle washing include sediment, oil, grease, and fuel. Implement the following procedures to minimize potential pollution during vehicle washing:

- Wash vehicles in designated areas only, with drainage connecting to the sanitary sewer system or the County Shop and Weed District facilities on-site collection system.
- Avoid using excess water and soap when washing vehicles.
- Never wash vehicles over or near a storm drain that is not within the County Shop and Weed District facility.
- Use hoses with automatic shut off nozzles to minimize water usage.

MATERIAL STORAGE

Material storage applies to automotive products, fertilizers, pesticides, paints, chemicals, and other similar materials. Material storage includes proper handling through unloading, use, storage, and disposal. Indoor and outdoor storage occurs at the County Shop and Weed District facility. Implement the following procedures to minimize potential pollution during material storage:

- Store materials indoors or under cover whenever possible.
- Store materials on elevated surfaces, limiting contact with storm water run-off when possible.
- Provide an adequate storage container for all materials.
- Inspect storage areas and containers regularly for leaks, spills, and proper storage of all materials.
- Properly dispose of materials that are outdated or beyond use.
- Label and store all hazardous materials according to manufacturer instructions.
- Use secondary containment as needed to prevent contact with storm water in the event of a leak.

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE CATEGORY: Shop and Fleet Services	SOP NUMBER: 02 ISSUE DATE: 12/2019	

VEHICLE MAINTENANCE

Vehicle maintenance is routine for all County owned vehicles. Preventative maintenance will occur at the County Shops, while emergency repairs may require off-site work. Potential pollutants associated with vehicle maintenance include oil, antifreeze, brake fluid, solvents, batteries, fuels, and cleaners. Implement the following procedures to minimize potential pollution during vehicle maintenance:

- Perform maintenance activities in a designated maintenance bay at the County Shop and Weed District facility whenever possible.
- If outdoor work is required, prevent spilling through use of oil pans or similar devices.
- Use absorbent pads and drip pans when necessary.
- Keep equipment clean and do not allow excessive build-up of oil and grease.
- Perform regular preventative maintenance to minimize occurrence of leaks and major repairs.
- Dispose of used fluids, rags, and absorbent pads in respective disposal containers within the County Shops.
- Follow spill response procedures as outlined in the County Shop and Weed District Facility SOP.

Storm Water Pollution Prevention Standard Operating Procedures

for:

MetraPark

308 6th Avenue North
Billings, MT, 59101
(406) 256-2400

SOP Preparation Date: February 2021

Yellowstone County Public Works Department

Storm Water Management Program

SECTION 1.0 Facility Description and Contact Information

1.1 Facility Information

Facility Information

Name of Facility: MetraPark – Arena, Buildings, and Parking Lots

Street: 308 6th Avenue North

City: Billings State: MT ZIP Code: 59101

Discharge Information

Drainage Basin: City of Billings – Yellowstone River and Alkali Creek

Drainage Basin Receiving Waterbody: Alkali Creek and Yellowstone River

Does this facility discharge storm water *directly* into any segment of a receiving waterbody?[1]

☒Yes ☐No

Permit Information

Is this facility permitted by an MPDES Permit (in addition to MS4)? ☐Yes ☒No

If Yes, identify other discharge permits: _____

1.2 Contact Information/Responsible Parties

Metra Park Director of Operations:

Name: Jeff Seward

Telephone number: (406) 256-2407

Email address: jseward@metrapark.com

County Storm Water Management Program Coordinator:

Storm Water Management Contact Name (Primary): Mike Black

Telephone number: (406) 256-2735

Email address: mblack@co.yellowstone.mt.gov

1.3 Storm Water Pollution Prevention Team

The storm water pollution prevention team is responsible for implementing and maintaining storm water control measures, best management practices (BMPs), and taking corrective actions when required.

Name	Position/Title	Individual Responsibilities
Jeff Seward	Director of Operations	Site Storm Water Lead
Randy Pardis	Maintenance Superintendent	Site Storm Water Co-Lead
John Carney	Maintenance Foreman	Site Storm Water Co-Lead

[1] For purposes of this document, direct discharge refers to site runoff discharging directly into a stream or other receiving waterbody immediately upon leaving the bounds of the site or facility.

1.4 Site Description

The MetraPark complex is located at 308 6th Avenue North and consists of multiple facilities supporting events including concerts, rodeos, basketball games, hockey games, circus events, ice rink events, boxing events, wrestling tournaments, and indoor football games. The site has a total of eight parking facilities that function as administration parking lots, primary parking lots, overflow parking lots, recreational vehicle (RV) parking lots, and equipment loading bays. The Operations Division at MetraPark is responsible for operation and maintenance (O&M) of these event facilities. Operation activities at the MetraPark arena and facilities include event cleanup, sidewalk winter operations, animal waste removal, fertilizer/pesticide application, building maintenance, and facility landscaping. O&M services at the parking lot include sweeping, plowing, sanding, snow removal, pavement and curb markings, and asphalt/concrete maintenance and repair projects. A site plan is provided in Figure .

The site is scheduled to undergo a series of updates over the coming years. The conceptual master plan, developed by Charles D. Smith Architecture and Planning, is shown in the attachments. The planned updates include a hotel, restaurant, food truck court, RV park, carnival lot, First Interstate Arena, expo center, and livestock barns. During construction of the infrastructure outlined in the master plan, at least one storm water pollution prevention plan (SWPP) will be developed. The SWPP will identify best management practices during construction. Construction teams will implement these practices on site to prevent storm water pollution. With the upcoming master plan construction, it is anticipated that the site will undergo continual infrastructure changes to the storm water facilities in the coming years. These facilities will be captured in a SOP update once all infrastructure has been constructed. The Public Works Staff and MetraPark Operations Staff will annually discuss and update this document.

1.5 Purpose and Limitations

This standard operating procedure (SOP) document identifies potential storm water pollutants that could be discharged from the MetraPark, including the arena, buildings, and parking facilities, and storm water pollution best management practices (BMPs) to be installed, implemented, and maintained to minimize the discharge of pollutants in storm water runoff. This document will be updated to reflect any changes made to the MetraPark arena, buildings, and parking lots upon completion of the master plan.

This document is not expected to cover all necessary procedures to prevent storm water pollution. Operators are to adapt SOPs to unique site conditions and use good judgment to contain pollutants and protect water quality.

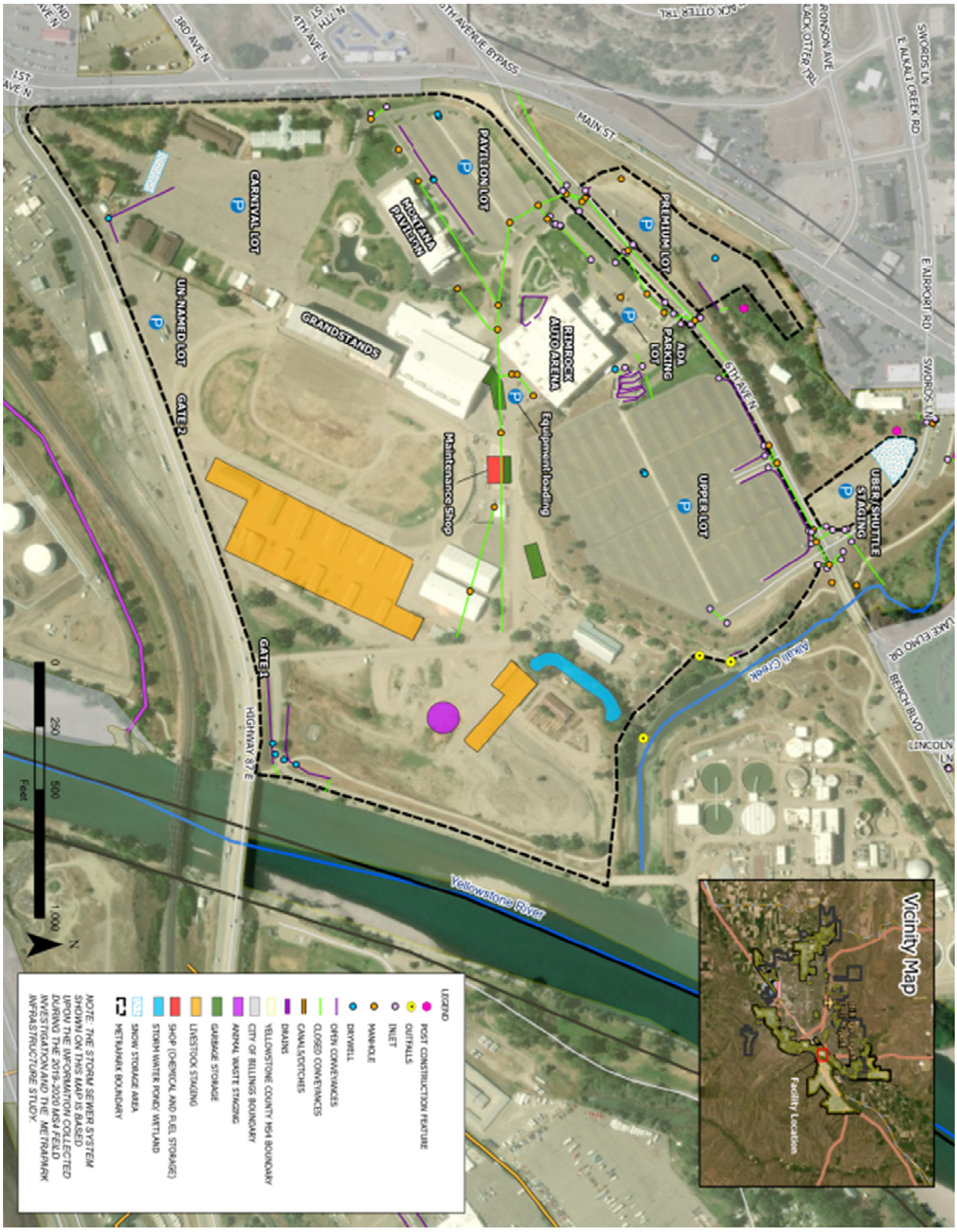


Figure 1. MetraPark Facility Site Plan

SECTION 2.0 Potential Storm Water Pollutant Sources

This section describes potential storm water pollutant sources associated with the facilities at MetraPark.

2.1 Potential Storm Water Pollutants Associated with Facility Activities

The MetraPark facilities serve various functions during events. General operational activities that occur within these facilities include: event cleanup, sidewalk winter operations, removal of animal waste, building maintenance, facility landscaping, street maintenance/repairs, winter street operations, parking lot maintenance, catch basin cleaning, and solid waste management. A list of potential pollutants associated with these activities is provided in Table 1. Measures to reduce the potential for discharge of pollutants to the storm sewer system are identified in Section 3.2.2.

Table 1. MetraPark Activities and Potential Storm Water Pollutants

Activity	Potential Pollutants									
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil, Grease, Fuel	Organics	Pesticides/Herbicides	Hazardous Waste[1]	Chlorides, Acetates
Event Cleanup			X						X	
Sidewalk Winter Operations	X		X	X						X
Animal Waste Removal		X			X		X			
Building Maintenance	X		X	X		X	X		X	
Facility Landscaping	X	X				X	X	X		
Street Maintenance/Repairs	X	X	X	X	X	X		X	X	
Winter Street Operations	X		X	X		X				X
Parking Lot Maintenance	X	X	X	X	X	X		X	X	
Catch Basin Cleaning	X	X	X	X	X	X	X	X		
Solid Waste Management		X	X	X	X	X	X		X	

[1] Hazardous waste is typically any material that is potentially harmful to human health or the environment. Examples include antifreeze, household cleaners, and paints.

2.2 Spills and Leaks

Inadvertent spills and leaks could occur in the arena and building facilities during various events such as rodeos, concerts, the Montana Fair, and trade shows.

Table 2 provides a list of locations where spills and leaks could occur and respective storm drain system discharge points outside the facilities. Spill response protocol is described in Section 3.2.4.

Table 2. Areas Where Potential Spills/Leaks Could Occur

Location	Discharge Point
Garbage Receptacles	Sheet flow to inlets, then to storm water inlet
Animal and Livestock Staging	Sheet flow to Yellowstone River
Maintenance Shop	Sheet flow to valley gutter, then to inlet
Equipment Loading Parking Facility	Sheet flow to inlets, then to storm water pond
Carnival Parking Facility	Sheet flow to valley gutter, then to drywell
RV Parking Facility	Sheet flow to valley gutter, then to inlet/drywell

SECTION 3.0 Storm Water Control Measures

This section describes the storm water BMPs to be installed, implemented, and maintained to minimize the discharge of pollutants from storm water runoff at the facility. The MetraPark complex is within the Yellowstone River watershed and the Alkali Creek watershed. The drainage system at the facility is composed of gutters, drywells, inlets, storm sewer pipe, trash receptacles, snow storage, chemical/bulk fuel storage, and a storm water pond.

3.1 Structural BMPs

3.1.1 Gutters

- Natural and man-made valley gutters convey runoff around facilities to drywells as seen in Figure 1.
- Responsible parties will inspect drywells after public events for sediment, trash, and structural damage.

3.1.2 Drywells

- Drywells receive storm water from conveyance infrastructure to improve water quality onsite. Drywell infrastructure is seen on Figure 1.
- Responsible parties will inspect drywells on an annual basis and after public events for sediment, trash, and structural damage. Remove sediment and trash from drywell grates to prevent clogging.

3.1.3 Inlets

- Inlets capture runoff from multiple facilities, which is conveyed through the storm sewer piping as seen in Figure 1.
- Responsible parties will inspect inlets on an annual basis and after public events for sediment, trash, and structural damage. Remove sediment and trash from the inlet grates to prevent clogging and contact the County Storm Water Management Program Coordinator to coordinate the removal of excessive sediment.

3.1.4 Storm Sewer Pipes

- Storm sewer pipes convey storm water from inlets to outfalls and storm water ponds. These pipes connect the system as seen in Figure 1.

- Responsible parties will inspect storm sewer piping on an annual basis for sediment and structural damage. A video inspection of the storm sewer piping may be necessary when drainage appears to be obstructed.

3.1.5 Trash Receptables

- The three locations shown on Figure 1 in green are consistently used by MetraPark to consolidate garbage following events.
- Trash receptacles of varying sizes and types are used at the facility dependent on the event taking place. Rolloffs and other specific event solid waste management containers are used as required.
- Empty and maintain all waste receptacles immediately following public events to prevent trash from entering the storm water drainage system.
- Follow procedures outlined in the Solid Waste Management SOP attached.

3.1.6 Snow Storage

- During the winter months, snow is stored in the designated areas shown in Figure 1 within the parking facilities.
- Inspect snow storage areas for trash and soil erosion. Remove obvious trash and obstructions that prevent adequate drainage. If necessary, rehabilitate and seed eroded areas and install temporary BMPs (i.e. straw waddles, silt fence, etc.) until vegetation is established.
- Inspect snow storage areas in the spring for excessive sediment accumulation. Remove and dispose of excessive sediment to prevent it from entering the storm water drainage system.
- Follow procedures outlined in the Parking Lot Maintenance SOP and the Winter Street Operations SOP.

3.1.7 Chemical and Bulk Fuel Storage

- The chemicals stored at the MetraPark Arena and facility include oil, antifreeze, road salts, diesel fuel, and window washer fluid. All chemicals are stored within the facility shop northeast of the Expo Center as shown in Figure 1.
- To prevent mobilization of pollutants, minor and major spill procedures are to be followed as listed below. Fueling and chemical storage tanks are double lined for containment. The manufacturer guidelines should be referenced for sizing and use of secondary containers.
- Petroleum waste products will be collected by the MetraPark maintenance staff and taken to the Yellowstone County Road & Bridge shop to be disposed of.

3.1.8 Storm Water Pond and Biohaven Island

- Storm water runoff quality and quantity mitigation from the arena and facilities is being provided by the storm water pond and drywells. The storm water pond is a BioHaven Floating Island which serves as a treatment wetland to help remove storm water pollutants and improve water quality.
- Inspect the pond and outlet structure on a semi-annual basis and following significant rain events. Document any structural damage to the pond outlet structure and notify the County Storm Water Management Program Coordinator to coordinate rehabilitation activities. Remove obvious trash and debris from the pond, storm sewer outlets, and the pond outlet structure and contact the County Storm Water Management Program Coordinator to coordinate the removal of excessive sediment and overgrown vegetation.

- Inspect the BioHaven Floating Island on an annual basis for vegetation growth and structural damage. Notify the County Storm Water Management Program Coordinator to coordinate the removal of dead vegetation, excessive vegetation, and to repair damaged anchor attachments. Dead plant material can anaerobically decompose into the pond and increase nutrient levels. Plant material should be replanted if it's found to be eaten by animals.

3.2 Non-Structural BMPs

3.2.1 Employee Training

Maintenance staff in the Operations Division shall receive annual training on updates to the MetraPark storm water SOPs. New hires are to be trained on the SOPs within 90 days of their hire date. Training should be conducted by the maintenance superintendent or foreman.

3.2.2 Good Housekeeping

Good housekeeping procedures to be implemented by maintenance staff are listed in Table 3.

Table 3. Facility Storm Water Management Good Housekeeping Procedures

Activity	Responsible Person/Position	BMP to Reduce Potential Pollution
Event Cleanup	Jeff Seward	Follow Solid Waste Management SOP
Sidewalk Winter Operations	Jeff Seward	Follow Winter Street Operations SOP
Animal Waste Removal	Jeff Seward	Regular Removal
Building Maintenance	Jeff Seward	Follow Building Maintenance SOP
Facility Landscaping	Tommy Harrell	Follow Landscaping SOP
Street Maintenance and Repairs	Jeff Seward	Follow Landscaping SOP
Winter Street Operations	Randy Pardis	Follow Winter Street Operations SOP
Parking Lot Maintenance	Randy Pardis	Follow Parking Lot Maintenance SOP
Catch Basin Cleaning	Randy Pardis	Follow Parking Lot Maintenance SOP
Solid Waste Management	Randy Pardis	Follow Solid Waste Management SOP

3.2.3 Disposal of Animal Waste

The MetraPark facility hosts many fair and livestock events. Animal staging areas are on the southeast end of the site, adjacent to the Yellowstone River. The animal waste is removed from the barns and compiled into one pile west of the Yellowstone River until it can be removed from the site to a local composting facility. The animal waste is consolidated directly following the conclusion of events.

When storm water transports animal waste off site, it mobilizes bacteria, nitrogen, and phosphorus into the watershed. With this site being in close proximity to the Yellowstone River, BMPs are being developed to prevent storm water pollution.

The storage and disposal of on site animal waste will be further addressed in future renditions of the MetraPark master plan. This will address the current removal and storage process, new removal and storage process, and BMPs to reduce potential pollutant discharge. Possible BMPs to be implemented in the

future may include silt fences, earthen berms, tarps, and a covered storage footprint. Until permanent BMPs can be developed, animal waste will be removed from the site quarterly.

3.2.4 Spill Response

Spill response and cleanup is addressed by employee and contractor training, as discussed in Section 3.2.1. MetraPark maintenance personnel are responsible for coordinating with contractors or vendors to verify that appropriate spill kits are kept on site during events or site maintenance. Spill response procedures are provided below.

Spill Kit

Site spill kits to be used by maintenance personnel are in the maintenance shop. Contractors and vendors are responsible for providing individual spill kits during events or site maintenance. The director of operations will provide Section 3.2.4 of the MetraPark SOP for vendor and contractor compliance. Vendors and contractors are to acknowledge receipt by signature. Extra spill kits will be available in the case that contractors and vendors fail to provide their own spill kits. At a minimum, spill kits should contain the following items:

- Absorbent Pads
- Bags of Floor Dry/Sand
- Booms
- Disposal Bags
- Safety Goggles
- Rubber Gloves

Minor Spill Response Procedure

A minor spill is defined as one that poses no significant threat to human health or the environment. These spills generally involve less than 5 gallons and can usually be cleaned up by maintenance personnel. Other characteristics of a minor spill include:

- The spilled material is easily stopped or controlled at the time of the spill.
- The spill is localized.
- The spilled material is not likely to reach surface water or groundwater.
- There is little danger to human health.
- There is little danger of explosion.

Use the following procedures in response to a minor spill:

1. Immediately notify the maintenance foreman and superintendent of the spill.
2. If necessary, physically contain the spill to prevent further migration from the facility.
    a. Stop or reduce continued release by ceasing activity.
    b. Block or slow the migration of spilled material.
    c. Close or plug leaks when possible.
2. Using proper personal protective equipment, obtain and use supplies from the spill kit for containment and absorption.
3. In consultation with the maintenance foreman and superintendent, clean up small spills that can be safely and effectively cleaned up by on-site personnel or hire a spill cleanup contractor.
4. Dispose of all contaminated products in accordance with applicable federal, state and local regulations.
5. Document the spill material, location, size, date, and time.

Major Spill Response Procedure

A major spill is defined as one involving a spill that cannot be safely and or adequately controlled or cleaned up by on-site personnel. Characteristics of a major spill include:

- The spill is large enough to spread beyond the immediate area.
- The spill material enters surface water or ground water (regardless of the size).
- The spill requires special training and equipment to cleanup.
- The spill is a threat to human health.
- There is a danger of fire or explosion.

Use the following procedures in response to a major spill:

1. All workers shall maintain a safe distance away from the spill.
2. Identify the contents of a major spill and potential pollutants.
3. Notify the maintenance foreman, maintenance superintendent, and the director of operations of the spill and details regarding the spill.
4. If there is not an immediate health or safety danger and if actions can be implemented safely, a trained employee shall conduct immediately implementable containment measures in the following sequence:
    a. Stop or reduce continued release by ceasing activity, closing valves or flipping switches.
    b. Block or slow the migration of spilled material.
    c. Divert flow of the material to drains or exterior facility points.
    d. Close or plug drains when possible.
5. The director of operations will contact the Fire Department to notify the Hazardous Response Team.
6. The director of operations will coordinate cleanup with the Hazardous Response Team.
7. The director of operations will notify the Storm Water Program Coordinator at Yellowstone County Public Works (406) 256-2735.
8. Document the spill material, location, size, date, and time using the Spill Report Form attached to this SOP.
9. The Storm Water Program Coordinator at Yellowstone County Public Works will report any spills that impact receiving waterbodies to the Montana DEQ Water Protection Bureau within 24-hours of the incident.
10. When oil and hazardous substances are spilled and reach a federally determined limit, the organization is to contact the National Response Center (800) 424-8802. Guidelines on Federally Determined Limits

Attachments: Activity SOPs

MetraPark Concept Master Plan
Spill Report Form
Landscaping SOP
Winter Street Operations SOP
Parking Lot Operations SOP
Solid Waste Management (To Be Developed)
Building Maintenance (To Be Developed)

Storm Water Pollution Prevention Standard Operating Procedures

for:

Two Moon Park

Billings, MT, 59105
(406)-248-1400

SOP Preparation Date: February 2021

Yellowstone County Public Works Department

Storm Water Management Program

SECTION 1.0 Facility Description and Contact Information

1.1 Facility Information

Facility Information

Name of Facility: Two Moon Park

Street: Two Moon Park Rd

City: Billings State: MT ZIP Code: 59105

Discharge Information

Drainage Basin: Yellowstone River

Drainage Basin Receiving Waterbody: Yellowstone River

Does this facility discharge storm water *directly* into any segment of a receiving waterbody?[1]

☒Yes ☐No

Permit Information

Is this facility permitted by an MPDES Permit (in addition to MS4)? ☐Yes ☒No

If Yes, identify other discharge permits:

1.2 Contact Information/Responsible Parties

Facility Superintendent:

Name: Cal Cumin

Telephone number: 406-256-2701

Email address: c-cumin@hotmail.com

County Storm Water Management Contact:

Storm Water Management Contact Name (Primary): Mike Black

Telephone number: 406-256-2735

Email address: mblack@co.yellowstone.mt.gov

1.3 Storm Water Pollution Prevention Team

The storm water pollution prevention team is responsible for implementing and maintaining storm water control measures/best management practices (BMPs), and taking corrective actions when required.

Table 1. Two Moon Park Storm Water Pollution Team

Name	Position/Title	Individual Responsibilities
Cal Cumin	Yellowstone County Parks Superintendent	Oversees management of parks

[1] For purposes of this document, direct discharge refers to site runoff discharging directly into a stream or other receiving waterbody immediately upon leaving the bounds of the site or facility.

1.4 Site Description

The Two Moons Park is a recreational park managed by Yellowstone County The park borders the Yellowstone River and is bordered by a steep forested bluff to the north of the park. Two small capacity parking loops are within the gravel entrance of the park as shown in Figure 1. Throughout the park, several trails intertwine the park to serve recreational purposes. The park is a riparian habitat to a variety of birds within the forested bluffs and cliffs. The park is the second most visited park within Yellowstone County. The park allows nonmechanized bikes, pedestrian, and pet owners to enjoy the trails. Motorized vehicles and fires are not permitted within the park.

1.5 Purpose and Limitations

This standard operating procedure (SOP) document identifies potential storm water pollutants that could be discharged from the site and storm water pollution best management practices (BMPs) to be installed, implemented, and maintained to minimize the discharge of pollutants from storm water runoff. The potential pollutants and BMPs identified in the document only address management of storm water associated with County management activities.

This document is not expected to cover all necessary procedures to prevent storm water pollution. Operators will adapt SOPs to unique site conditions and use good judgement to contain pollutants and protect water quality.

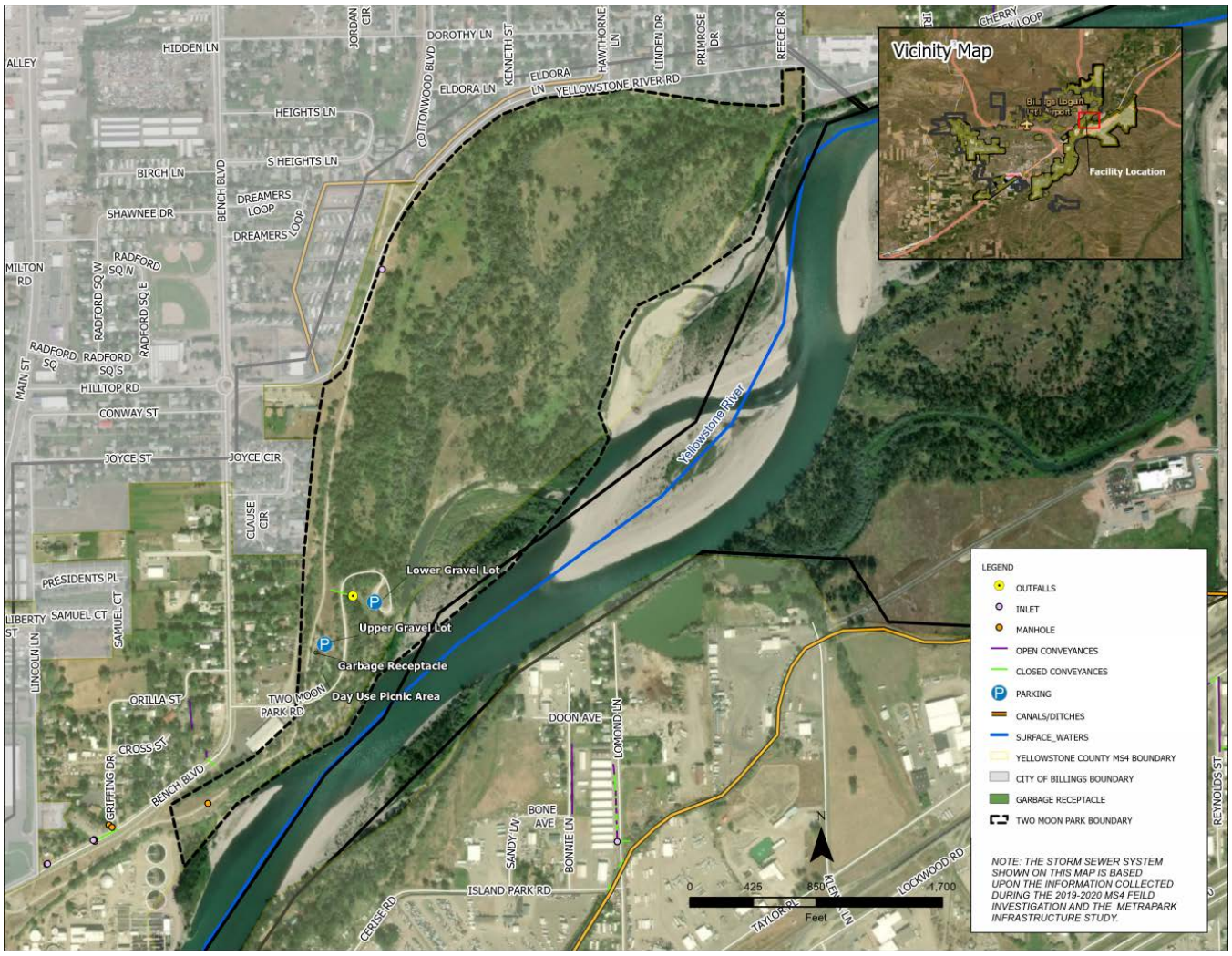


Figure 1. Two Moon Park Site Plan

SECTION 2.0 Potential Storm Water Pollutant Sources

This section describes potential storm water pollutant sources associated with the Two Moon Park.

2.1 Potential Storm Water Pollutants Associated with Facility Activities

Two Moon Park primary operations consist of landscaping, pet waste removal, parking lot maintenance, and solid waste removal. The majority of the operations are described in Landscaping SOPs and Solid Waste Management SOPs. A list of Two Moon Park related activities with the potential to discharge pollutants is provided in Table 2. Measures to be taken to reduce the potential for discharge of pollutants associated with these activities are identified in Section 3.2.2.

Table 2. Two Moon Park Activities and Potential Storm Water Pollutants

Activity	Potential Pollutants								
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil, Grease, Fuel	Organics	Pesticides/Herbicides	Hazardous Waste
Landscaping	x	x				x	x	x	
Pet waste removal		x			x		x		
Solid waste removal			x	x					

2.2 Spills and Leaks

Table 3 provides a list of locations where spills that would discharge contaminants to the storm drain system could occur. Spill response protocol is described in Section 3.2.3.

Table 3. Areas Where Potential Spills/Leaks Could Occur

Location	Discharge Point
Sevenmile Creek Outfall	Yellowstone River

SECTION 3.0 Storm Water Control Measures

This section describes the storm water BMPs to be installed, implemented, and maintained to minimize the discharge of pollutants from storm water runoff at the park. As shown in Figure 1, the park has one outfall that connects Sevenmile Creek to the Yellowstone River. The drainage system within the park is composed of natural ground infiltration and surface drainage. Two open channels also cross the park.

3.1 Structural BMPs

3.1.1 Storm Water Outlet Control

- The storm water outlet on Sevenmile creek has a large trash rack mounted on the downstream sloped end terminal section of the reinforced concrete box. Flow from the reinforced concrete box discharges into an earthen open channel that flows south of the lower gravel lot into the Yellowstone River as shown in Figure 1.
- The trash rack must be inspected monthly by Yellowstone County Parks management personnel to remove accumulated trash. Site personnel will walk the earthen ditch in April and March to inspect the channel for garbage and trash, to prevent transport at higher spring flows.

3.1.2 Trash Receptacles

- Several dumpsters are in the upper gravel parking lots, adjacent to the day use and picnic areas. These dumpsters are serviced by Republic Services.
- Smaller receptacles are found around the park. If trash cans do become overfilled, trash will be mobilized within the Yellowstone River Watershed creating the potential for pollution.

- The park must be visited at least biweekly by Republic Services to remove waste stored in dumpsters.
- Park staff must visit the park weekly to consolidate trash into the dumpsters. Park staff will make sure dumpster lids are closed to prevent transport of microtrash.
- When Two Moon is a venue for special events, park staff will visit the park the day following the event to consolidate trash into the dumpsters. If necessary, responsible parties will coordinate with Republic Services to remove dumpster trash directly following special events.
- Responsible event parties and park staff will follow the procedures outlined in the Solid Waste Management SOP attached.

3.1.3 Pet Waste Stations

- Two Moon Park is the second most used park within the county. With frequent use by recreationalists and pets, the park management staff must monitor pet waste receptacles within the park and continue encourage the public to pick up after their animals. Pet waste that remains for long periods can transfer nutrients and bacteria into the watershed and Yellowstone River. Signs placed near the pet waste bags stations educate the public on the bacteria and nutrient pollution caused by stagnant pet waste within the watershed.
- Pet waste stations will be visited biweekly (approximately) to replace rolls of dog waste bags and move pet waste into the dumpsters at the entrance of the park

3.1.4 Storm Water Drainage System

The Two Moon Park is within the Yellowstone River Watershed and discharges directly into the river system. These open channels include two earthen ditches that discharges Seven Mile Creek into the Yellowstone River. The storm water drainage system features associated with the facilities are shown in the site plan in Figure 1.

3.1.5 Permanent Storm Water Management BMPs

BMP Locations
Storm water runoff quality is controlled by a large trash rack on one of the earthen open channels discharging into the Yellowstone River. The trash rack is mounted on the downstream flared end terminal section treatment of the reinforced concrete pipe that discharges stormwater into the earthen channel.

3.1.6 Chemical and Bulk Fuel Storage

No known chemicals or bulk fuel storage is apparent at Two Moon Park.

3.2 Non-Structural BMPs

3.2.1 Employee Training

Park staff will receive annual training on updates to the Two Moon Park SOPs. New hires will be trained on the SOPs within 90 days of their hire date. Trainings will be conducted by the Yellowstone County Parks Management Staff.

3.2.2 Good Housekeeping

Good housekeeping procedures to be implemented by facility staff are listed in Table 4.

Table 4. Two Moon Park Storm Water Management Good Housekeeping Procedures

Activity	Responsible Person/Position	BMP to Reduce Potential for Pollution
Landscaping	Cal Cumin	Follow the Lanscaping SOP.
Pet waste removal	Cal Cumin	Maintain pet waste bags at pet waste stations. Remove pet waste from recepticals weekly and follow the Solid Waste Management SOP.
Solid waste removal	Cal Cumin	Remove trash from recepticals weekly and follow the Solid Waste Management SOP.
Parking Lot Maintenance	Cal Cumin / Clay Moore	Follow Parking Lot Maintenance SOP

3.2.3 Spill Response

Spill response and cleanup is addressed by employee and contractor training, as discussed in Section 3.2.1. Yellowstone County Parks personnel are responsible for coordinating with private landscaping crews and venue users to verify that appropriate spill kits are kept on site during events or landscaping activities. Spill response procedures are provided below.

Spill Kit

Site spill kits to be used by maintenance personnel are in the maintenance shop. Landscaping crews and venue users are responsible for providing individual spill kits during events or site maintenance. The director of parks will provide Section 3.2.4 of the Two Moon Park SOP for vendor and contractor compliance. Vendors and contractors are to acknowledge receipt by signature. Extra spill kits will be available in the case landscaping crews and venue users fail to provide their own spill kits. At a minimum, spill kits should contain the following items:

- Absorbent Pads
- Bags of Floor Dry/Sand
- Booms
- Disposal Bags
- Safety Goggles
- Rubber Gloves

Minor Spill Response Procedure

A minor spill is defined as one that poses no significant threat to human health or the environment. These spills generally involve less than 5 gallons and can usually be cleaned up by maintenance personnel. Other characteristics of a minor spill include:

- The spilled material is easily stopped or controlled at the time of the spill.
- The spill is localized.
- The spilled material is not likely to reach surface water or groundwater.
- There is little danger to human health.
- There is little danger of explosion.

Use the following procedures in response to a minor spill:

1. Immediately notify the maintenance foreman and superintendent of the spill.
2. If necessary, physically contain the spill to prevent further migration from the facility.
    a. Stop or reduce continued release by ceasing activity.

   b. Block or slow the migration of spilled material.
   c. Close or plug leaks when possible.
2. Using proper personal protective equipment, obtain and use supplies from the spill kit for containment and absorption.
3. In consultation with the maintenance foreman and superintendent, clean up small spills that can be safely and effectively cleaned up by on-site personnel or hire a spill cleanup contractor.
4. Dispose of all contaminated products in accordance with applicable federal, state and local regulations.
5. Document the spill material, location, size, date, and time using the attached spill report form.

Major Spill Response Procedure

A major spill is defined as one involving a spill that cannot be safely and or adequately controlled or cleaned up by on-site personnel. Characteristics of a major spill include:

- The spill is large enough to spread beyond the immediate area.
- The spill material enters surface water or ground water (regardless of the size).
- The spill requires special training and equipment to cleanup.
- The spill is a threat to human health.
- There is a danger of fire or explosion.

Use the following procedures in response to a major spill:

1. All workers shall maintain a safe distance away from the spill.
2. Identify the contents of a major spill and potential pollutants.
3. Notify the director of parks of the spill and details regarding the spill.
4. If there is not an immediate health or safety danger and if actions can be implemented safely, a trained employee shall conduct immediately implementable containment measures in the following sequence:
   a. Stop or reduce continued release by ceasing activity, closing valves or flipping switches.
   b. Block or slow the migration of spilled material.
   c. Divert flow of the material to exterior facility points.
5. The director of operations will contact the Fire Department to notify the Hazardous Response Team.
6. The director of operations will coordinate cleanup with the Hazardous Response Team.
7. The director of operations will notify the Storm Water Program Coordinator at Yellowstone County Public Works (406) 256-2735.
8. Document the spill material, location, size, date, and time using the Spill Report Form attached to this SOP.
9. The Storm Water Program Coordinator at Yellowstone County Public Works will report any spills that impact receiving waterbodies to the Montana DEQ Water Protection Bureau within 24-hours of the incident.
10. When oil and hazardous substances are spilled and reach a federally determined limit, the organization is to contact the National Response Center (800) 424-8802. Guidelines on Federally Determined Limits

Attachments: Activity SOPs

Spill Report Form

Landscaping SOP

Parking Lot Maintenance SOP (To Be Developed)

Solid Waste Management SOPs (To Be Developed)

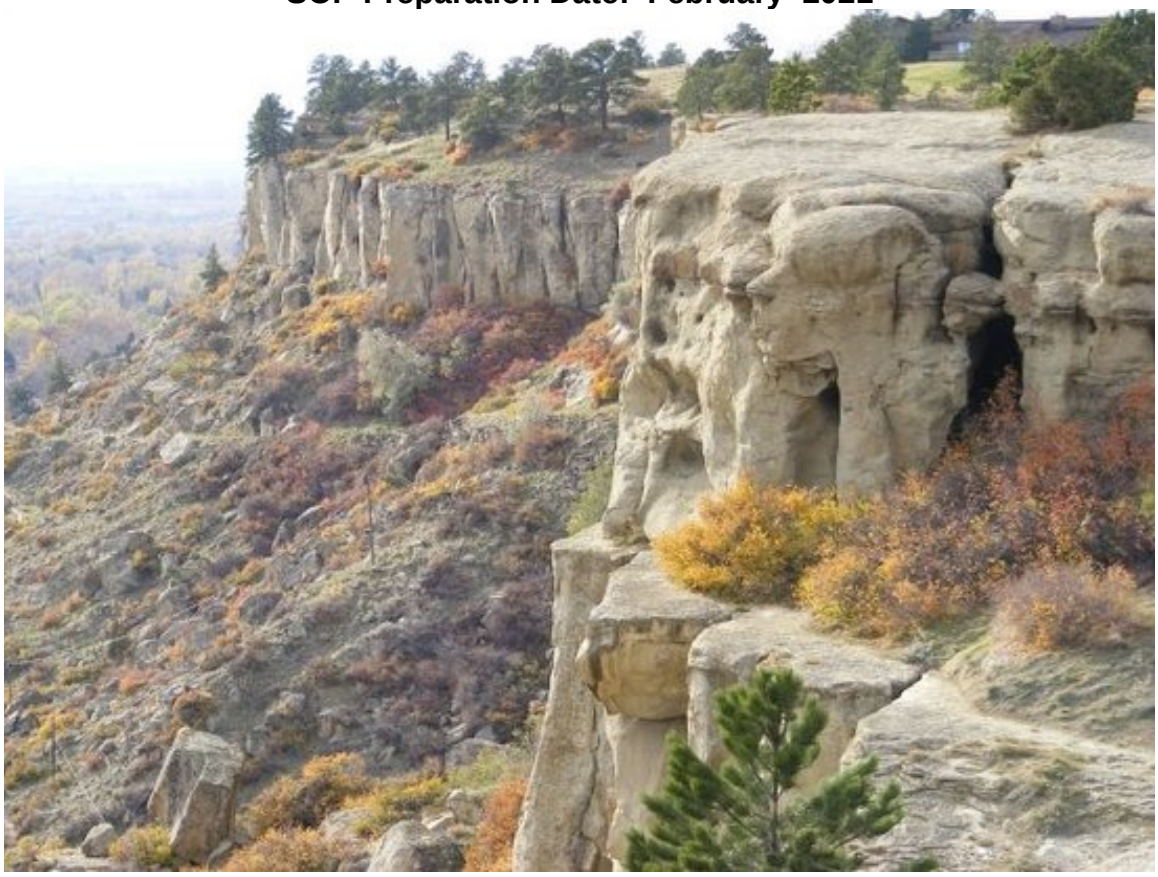
Storm Water Pollution Prevention Standard Operating Procedures

for:

Zimmerman Park

3314 MT-3
Billings, MT, 59106
(406)-657-8371

SOP Preparation Date: February 2021



Yellowstone County Public Works Department

Storm Water Management Program

SECTION 1.0 Facility Description and Contact Information

1.1 Facility Information

Facility Information

Name of Facility: Zimmerman Park

Street: 3314 MT-3

City: Billings State: MT ZIP Code: 59106

Discharge Information

Drainage Basin: Cove Ditch

Drainage Basin Receiving Waterbody: Yellowstone River

Does this facility discharge storm water *directly* into any segment of a receiving waterbody?[1]
☐Yes ☒No

Permit Information

Is this facility permitted by an MPDES Permit (in addition to MS4)? ☐Yes ☒No

If Yes, identify other discharge permits:

1.2 Contact Information/Responsible Parties

Facility Superintendent:

Name: Cal Cumin
Telephone number: 406-256-2701
Email address: c-cumin@hotmail.com

County Storm Water Management Contact:

Storm Water Management Contact Name (Primary): Mike Black
Telephone number: 406-256-2735
Email address: mblack@co.yellowstone.mt.gov

1.3 Storm Water Pollution Prevention Team

The storm water pollution prevention team is responsible for implementing and maintaining storm water control measures/best management practices (BMPs), and taking corrective actions when required.

Table 1. Zimmerman Park Storm Water Pollution Team

Name	Position/Title	Individual Responsibilities
Cal Cumin	Yellowstone County Parks Superintendent	Oversees management of parks

[1] For purposes of this document, direct discharge refers to site runoff discharging directly into a stream or other receiving waterbody immediately upon leaving the bounds of the site or facility.

1.4 Site Description

The Zimmerman Park is a recreational park managed by the Yellowstone County Parks. The park borders MT-3 highway to the north and is bordered by a steep forested bluff to the south of the park. A small parking lot is located at the north end of the park as shown in Figure 1.Throughout the park several trails intertwine the park to serve walking, mountain biking, and climbing recreationalists. The park allows nonmechanized bikes, pedestrian, and pet owner owners to enjoy the trails. Motorized vehicles and fires are not permitted within the park.

1.5 Purpose and Limitations

This standard operating procedure (SOP) document identifies potential storm water pollutants that could be discharged from the site and identifies storm water pollution best management practices (BMPs) to be installed, implemented, and maintained to minimize the discharge of pollutants from storm water runoff. The potential pollutants and BMPs identified in the document only address management of storm water associated with County management and operational activities.

This document is not expected to cover all necessary procedures to prevent storm water pollution. Operators will adapt SOPs to unique site conditions and use good judgement to contain pollutants and protect water quality. This document is not expected to cover all necessary procedure actions. Operators are to adapt SOPs to unique site conditions in good judgment when it is necessary for safety and the effective containment of pollutants.

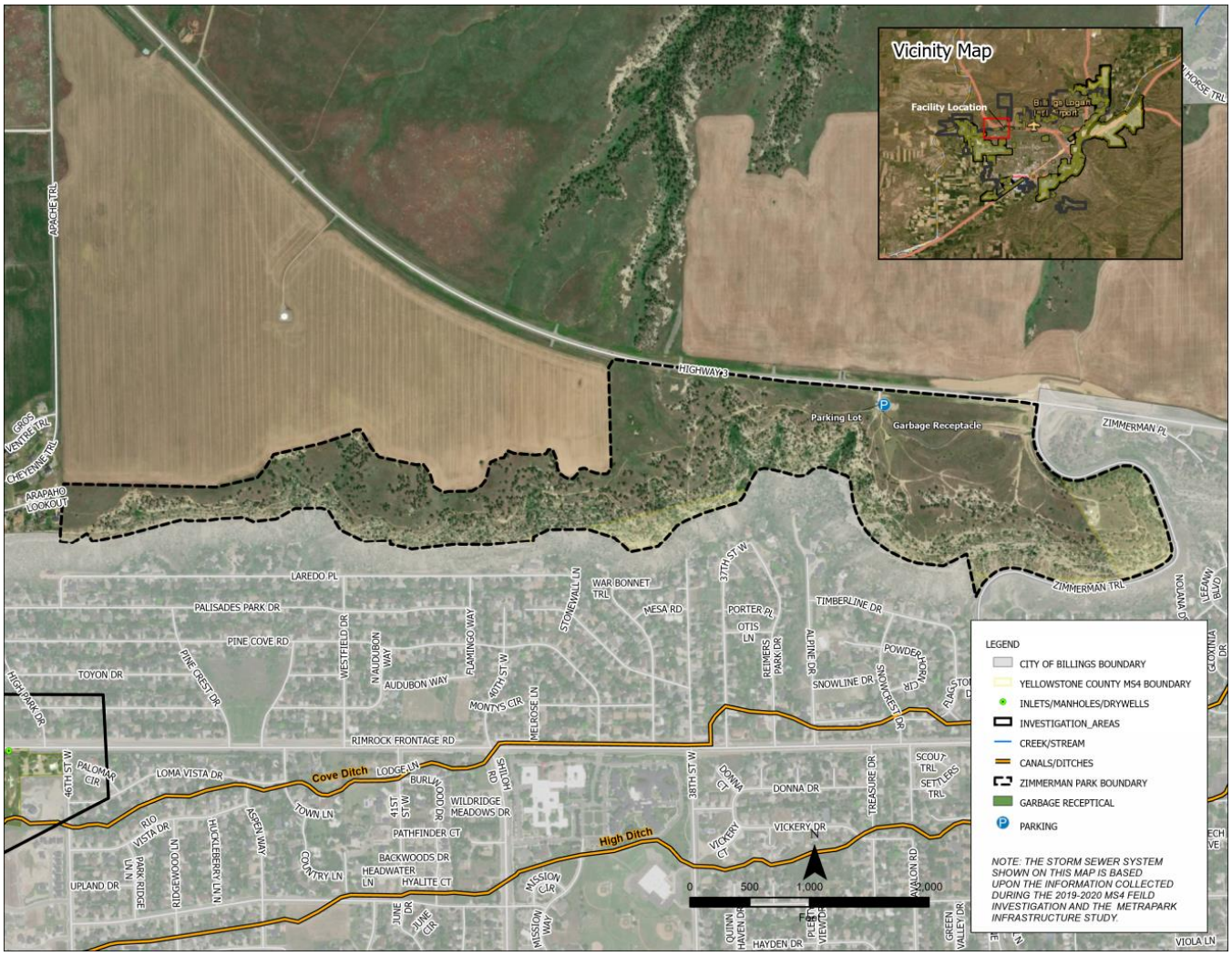


Figure 1. Zimmerman Park Site Plan

SECTION 2.0 Potential Storm Water Pollutant Sources

This section describes potential storm water pollutant sources associated with the Zimmerman Park.

2.1 Potential Storm Water Pollutants Associated with Facility Activities

Zimmerman Park primary operations consist of lanscaping, pet waste removal, parking lot maintenance, and solid waste removal. The majority of the facility operations, along with standard operating procedures to prevent pollution, are described in the Landscaping SOPs and Solid Waste Management SOPs. A list of Zimmerman Park related activities with the potential to discharge pollutants during a storm water event is provided in Table 2. Measures to be taken to reduce the potential for discharge of pollutants associated with these activities are identified in Section 3.2.2.

Table 2. Zimmerman Park Activities and Potential Storm Water Pollutants

Activity	Potential Pollutants								
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil, Grease, Fuel	Organics	Pesticides/Herbicides	Hazardous Waste
Landscaping	x	x				x	x	x	
Pet waste removal		x			x				
Solid waste removal			x	x					

2.2 Spills and Leaks

Based on the assessment of the site, there are limited opportunities for point source discharge into surrounding waterbodies from the park. Non-point source pollutants may be mobilized on impervious surfaces near the park. In general, BMPs and spill procedures must be followed to limit mobilization of stormwater pollutants.

SECTION 3.0 Storm Water Control Measures

This section describes the storm water BMPs to be installed, implemented, and maintained to minimize the discharge of pollutants from storm water runoff at the park. The drainage system within the park is composed of natural overland ground flow.

3.1 Structural BMPs

3.1.1 Trash Receptacles

- Smaller receptacles are found around the park. If trash cans overflow, trash will be mobilized.
- Park staff must visit the park weekly to remove trash. Park staff will make sure trash lids are closed to prevent transport of microtrash.
- Responsible parties and park staff will follow the procedures outlined in the Solid Waste Management SOP attached.

3.1.2 Pet Waste Stations

- With frequent use by recreationalists and pets, the park must monitor pet waste receptacles within the park and encourage the public to pick up after their animals. Pet waste that remains for long periods can transfer bacteria and nutrients into the watershed.
- . Signs placed near the pet waste bags stations educate the public on the bacteria and nutrient pollution caused by stagnant pet waste within the watershed.
- Pet waste stations will be visited biweekly (approximately) to replace rolls of dog waste bags and move pet waste into the dumpsters at the entrance of the park

3.2 Non-Structural BMPs

3.2.1 Employee Training

Park staff shall receive annual training on updates to the Zimmerman Park SOPs. New hires are to be trained on the SOPs within 90 days of hire. Training should be conducted by the Yellowstone County Parks Management staff..

3.2.2 Good Housekeeping

Good housekeeping procedures to be implemented by facility staff are listed in Table 4.

Table 3. Zimmerman Park Storm Water Management Good Housekeeping Procedures

Activity	Responsible Person/Position	BMP to Reduce Potential for Pollution
Landscaping	Cal Cumin	Follow the Landscaping SOP.
Pet waste removal	Cal Cumin	Maintain pet waste bags at pet waste stations. Remove pet waste from recepticals weekly and follow the Solid Waste Management SOP.
Solid waste removal	Cal Cumin	Remove trash from recepticals weekly and follow the Solid Waste Management SOP.
Parking Lot Maintenance	Cal Cumin / Clay Moore	Follow Parking Lot Maintenance SOP

3.2.3 Spill Response

Spill response and cleanup is addressed by employee and contractor training, as discussed in Section 3.2.1. Yellowstone County Parks personnel are responsible for coordinating with private landscaping crews and venue users to verify that appropriate spill kits are kept on site during events or landscaping activities. Spill response procedures are provided below.

Spill Kit

Site spill kits to be used by maintenance personnel are in the maintenance shop. Landscaping crews and venue users are responsible for providing individual spill kits during events or site maintenance. The director of parks will provide Section 3.2.4 of the Zimmerman Park SOP for vendor and contractor compliance. Vendors and contractors are to acknowledge receipt by signature. Extra spill kits will be available in the case landscaping crews and venue users fail to provide their own spill kits. At a minimum, spill kits should contain the following items:

- Absorbent Pads
- Bags of Floor Dry/Sand
- Booms
- Disposal Bags
- Safety Goggles
- Rubber Gloves

Minor Spill Response Procedure

A minor spill is defined as one that poses no significant threat to human health or the environment. These spills generally involve less than 5 gallons and can usually be cleaned up by maintenance personnel. Other characteristics of a minor spill include:

- The spilled material is easily stopped or controlled at the time of the spill.
- The spill is localized.
- The spilled material is not likely to reach surface water or groundwater.
- There is little danger to human health.
- There is little danger of explosion.

Use the following procedures in response to a minor spill:

1. Immediately notify the maintenance foreman and superintendent of the spill.
2. If necessary, physically contain the spill to prevent further migration from the facility.
    a. Stop or reduce continued release by ceasing activity.
    b. Block or slow the migration of spilled material.
    c. Close or plug leaks when possible.
2. Using proper personal protective equipment, obtain and use supplies from the spill kit for containment and absorption.
3. In consultation with the maintenance foreman and superintendent, clean up small spills that can be safely and effectively cleaned up by on-site personnel or hire a spill cleanup contractor.
4. Dispose of all contaminated products in accordance with applicable federal, state and local regulations.
5. Document the spill material, location, size, date, and time using the attached spill report form.

Major Spill Response Procedure

A major spill is defined as one involving a spill that cannot be safely and or adequately controlled or cleaned up by on-site personnel. Characteristics of a major spill include:

- The spill is large enough to spread beyond the immediate area.
- The spill material enters surface water or ground water (regardless of the size).
- The spill requires special training and equipment to cleanup.
- The spill is a threat to human health.
- There is a danger of fire or explosion.

Use the following procedures in response to a major spill:

1. All workers shall maintain a safe distance away from the spill.
2. Identify the contents of a major spill and potential pollutants.
3. Notify the director of parks of the spill and details regarding the spill.
4. If there is not an immediate health or safety danger and if actions can be implemented safely, a trained employee shall conduct immediately implementable containment measures in the following sequence:
    a. Stop or reduce continued release by ceasing activity, closing valves or flipping switches.
    b. Block or slow the migration of spilled material.
    c. Divert flow of the material to exterior facility points.
5. The director of operations will contact the Fire Department to notify the Hazardous Response Team.
6. The director of operations will coordinate cleanup with the Hazardous Response Team.
7. The director of operations will notify the Storm Water Program Coordinator at Yellowstone County Public Works (406) 256-2735.

8. Document the spill material, location, size, date, and time using the Spill Report Form attached to this SOP.
9. The Storm Water Program Coordinator at Yellowstone County Public Works will report any spills that impact receiving waterbodies to the Montana DEQ Water Protection Bureau within 24-hours of the incident.
10. When oil and hazardous substances are spilled and reach a federally determined limit, the organization is to contact the National Response Center (800) 424-8802. Guidelines on Federally Determined Limits

Attachments: Activity SOPs

Spill Report Form

Landscaping SOP

Parking Lot Maintenance SOP (To Be Developed)

Solid Waste Management SOPs (To Be Developed)

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE **CATEGORY:** Street Maintenance and Repairs	**SOP NUMBER:** 3 Issue Date: 2/21	
ACTIVITIES: **Surface Repairs, Street Sweeping, Sidewalk Repairs, and Catch Basin Cleaning**	**TARGET POLLUTANTS:** Sediment, Trash, Metals, Oil, Grease, Fuel	

GENERAL

THIS SOP IS NOT EXPECTED TO COVER ALL NECESSARY PROCEDURE ACTIONS. OPERATORS ARE ALLOWED TO ADAPT SOPS TO UNIQUE SITE CONDITIONS IN GOOD JUDGMENT WHEN IT IS NECESSARY FOR SAFETY AND THE PROPER AND EFFECTIVE CONTAINMENT OF POLLUTANTS.

DESCRIPTION OF ACTIVITIES AND POLLUTANT SOURCE

Street Maintenance and Repair, including winter street operations, activities that have the potential to discharge pollutants to storm water runoff include surface repairs, street sweeping, sidewalk repairs, catch basin cleaning, pipe cleaning, and brush cutting. These activities occur within Yellowstone County.

APPLICABILITY

The procedures outlined in this SOP shall be implemented by all employees conducting Street Maintenance and Repair activities within Yellowstone County.

BEST MANAGEMENT PRACTICES (TO BE IMPLEMENTED FOR ALL STREET MAINTENANCE AND REPAIR ACTIVITIES)

- Locate all storm drain system infrastructure, including storm water inlets structures (catch basins), prior to starting work.
- Protect all storm drain infrastructure, including catch basins, during demolition and construction activities.
- Inspect equipment for gas, oil, and fluid leaks prior to use.
- Promptly clean up spills following the spill response and containment SOP.
- Collect and dispose of all trash in the work area.
- Install construction storm water BMPs when performing street maintenance and repairs to protect storm drain catch basins and limit site runoff. If a Storm Water Prevention Plan (SWPP) is prepared, the SWPP should be followed during all construction activity.
- If construction activities require brush or vegetation to be cleared, brush and vegetation will be collected and removed from the site. Vegetation will be cleared from any gutters, curbs, and storm water inlets to prevent further mobilization in the watershed.
- Responsible parties will sweep streets following spring runoff and in the fall before onset of cold weather.
- Responsible parties will remove snow regularly from roads, highways, and streets. Minimal road salts and sands will be applied to maintain safe vehicle travel.

THE FOLLOWING ACTIVITY PROCEDURES SHOULD BE FOLLOWED FOR EACH LISTED ACTIVITY

SURFACE REPAIRS

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE CATEGORY: Street Maintenance and Repairs	SOP NUMBER: 3 Issue Date: 2/21	

Damage to the roadway surface is often negatively influenced by freezing and thawing of water in cracks in the asphalt and roadway surface. To prevent further damage to the surface course, base course, and subbase course layers, surface repairs are to be completed within the County to maintain the infrastructure and prevent further damage. Implement the following procedures to minimize potential for storm water pollution during the surface repair process:

- If the road requires that the surface be milled before filling in cracks and other structural defects, water will be sprayed prior to grinding or sawing asphalt or concrete. Wet-cutting ports or portable water tanks will be supplied to construction crews by the contractor performing the work. Water from saw cutting procedures will be collected and disposed of off-site.
- When performing milling, patching, and resurfacing work, construction storm water BMPs will be used to protect storm water inlets and prevent water from leaving the site. If concrete patching is needed, the contractor will utilize a concrete washout pit.
- A site specific SWPPP will be followed for surface repair.

STREET SWEEPING

Street sweeping removes dirt and debris from county streets to help prevent clogging of storm water inlets. Implement the following procedures to minimize potential for storm water pollution during the street sweeping process:

- Vacuum street sweepers will be utilized to contain particles that would otherwise be mobilized into the watershed.
- The county will utilize street sweepers that are PM-10 certified to meet minimum material removal standards of the EPA.
- Wet street sweeping systems will be utilized to contain and remove dust, and prevent mobilization.

SIDEWALK REPAIRS

Implement the following procedures to minimize potential for storm water pollution during the sidewalk repairs:

- If the sidewalk requires that the surface be milled before filling in cracks and other structural defects, water will be sprayed prior to grinding the concrete. Wet-cutting ports or portable water tanks will be supplied before performing the work. Water from grinding of concrete will be collected and disposed off-site
- If sidewalk sections will be replaced with new sections, the contractor will use concrete washout pits during the pour.

CATCH BASIN CLEANING

Catch basins will be cleaned to prevent further transport of trash within storm drain pipes and open channels. Implement the following procedures to minimize potential for storm water pollution during the catch basin cleaning process:

- Responsible parties should remove any trash or sediment that has accumulated within catch basins every fall prior to onset of cold weather in early fall.Streets will be swept every spring to help keep catch basins clean and functional.

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE CATEGORY: Street Maintenance and Repairs	SOP NUMBER: 3 Issue Date: 2/21	

STREET SANDING

Streets are sanded within the County to provide additional traction during winter months. Spring runoff can mobilize sediments into storm water inlets and local waterways. Implement the following procedures to minimize potential for storm water pollution during the street sanding process:

- Responsible parties will apply salts or sand independently. Sands will be applied in areas to help provide traction like at stop lights, stop signs, and intersections.
- Annually inspect equipment to ensure sand is applied in the expected and calibrated amount.
- Sweep up sand in early spring when the street snow is melted.

STREET DEICING

Street deicing can reduce collisions. However roadway deicing can negatively impact the watersheds when salts dissolve in the spring and be difficult to control. Implement the following procedures to minimize potential for storm water pollution during the street deicing process:

- Responsible parties will apply sand and salt independently. Salts will only be applied in areas to melt ice like areas that require high speed traffic avenues.
- The amount of road salt required to deice the roadway will be reduced by prewetting the salt or applying a salt brine to the pavement. This salt brine helps salt better adhere to the road surface and reduce the amount of material if little deicing is required.
- Low chloride salts, acetates or organic products made from sugar beets and other plant materials can be applied to parking lots as an alternative to high chloride salts.
- Annually inspect equipment to ensure salts or sands are applied in the expected and calibrated amounts.
- Roadway salts will be applied following snow removal.
-

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE **CATEGORY:** Parking Lot Maintenance	**SOP NUMBER:** 4 **ISSUE DATE:** 2/21	
ACTIVITIES: **Sweeping, parking lot striping and patching, snow removal and snow storage**	**TARGET POLLUTANTS:** Sediment, Trash, Oil, Grease, Fuel	

GENERAL

THIS SOP IS NOT EXPECTED TO COVER ALL NECESSARY PROCEDURE ACTIONS. OPERATORS ARE ALLOWED TO ADAPT SOPS TO UNIQUE SITE CONDITIONS IN GOOD JUDGMENT WHEN IT IS NECESSARY FOR SAFETY AND THE EFFECTIVE CONTAINMENT OF POLLUTANTS.

DESCRIPTION OF ACTIVITIES AND POLLUTANT SOURCE

Parking lot maintenance activities that have the potential to discharge pollutants to storm water runoff include sweeping, parking lot striping and patching, snow removal, and snow storage. These activities occur within Yellowstone County.

APPLICABILITY

The procedures outlined in this SOP shall be implemented by all employees conducting Parking Lot Maintenance activities within Yellowstone County.

BEST MANAGEMENT PRACTICES (TO BE IMPLEMENTED FOR ALL PARKING LOT MAINTENANCE ACTIVITIES)

- Responsible parties will clean parking lots following large events, following spring runoff, and in the fall before the onset of cold weather. This will reduce transport of trash, debris, sediment, oils, and other pollutants into the storm water system.
- Responsible parties will remove snow regularly from the parking lots. Responsible parties will apply minimum amounts of sand and salt to ensure the safety of pedestrians and vehicular travel.

THE FOLLOWING ACTIVITY PROCEDURES SHOULD BE FOLLOWED FOR EACH LISTED ACTIVITY

SWEEPING

Sweeping parking lots is an important activity to remove dirt and debris that can cause damage and clog storm water inlets. Implement the following procedures to minimize potential for storm water pollution during the parking lot sweeping:

- Every fall parking lots will be swept. Dirt and debris will be disposed of off-site.
- Responsible personnel will remove loose garbage and garbage receptacles from the parking lot regularly.
- Semiannually parking lots will be inspected for oil stains. Oil stains will be treated with an oil stain remover to treat and remove the spill if possible.

PARKING LOT STRIPING AND PATCHING

Implement the following procedures to minimize potential for storm water pollution during the parking lot striping and patching:

- Sweep the parking before striping to remove any paint flakes or pieces of pavement.
- Dispose of paint flakes off-site.
- If spills occur while painting the parking lot, spills will be contained. Please reference the spills and containment SOP for proper procedures.

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE **CATEGORY:** Parking Lot Maintenance	**SOP NUMBER:** 4 **ISSUE DATE:** 2/21	

SNOW REMOVAL AND MAINTENANCE

Snow removal and snow storage impacts the quality of drainage in the spring and could transport salts and sediment applied throughout the winter into the storm drain system. Applying too much salt onto a parking lot can shorten the life of pavement and be transported into streams and rivers, harming aquatic life. Salts are difficult to control from a storm water perspective, as the chloride dissolves into water. Implement the following procedures to minimize potential for storm water pollution during snow storage and removal:

- Snow will be plowed away from inlets to allow for adequate drainage when temperatures warm.
- The amount of road salt required to deice the parking lot will be reduced by prewetting the salt or applying a salt brine to the pavement. This salt brine helps salt better adhere to the road surface and reduces the amount of material if little deicing is required.
- Low chloride salts, acetates, or organic products made from sugar beets and other plant materials will be applied to parking lots as an alternative to high chloride salts.
- Plow or shovel parking lots prior to application of salts.
- Use salts or sands independently. Salts are to be applied as a melting agent and sands are to be applied to help provide traction. Be aware of areas where salts are used and potential drainage to outfalls.
- Annually inspect trucks and equipment to ensure salts or sands are applied in the expected and calibrated amounts.
- Sweep up sand in early spring when the parking lot snow is melted.

Appendix H. Enforcement Response Plan (ERP)

ENFORCEMENT RESPONSE PLAN FOR STORM WATER MANAGEMENT WITHIN YELLOWSTONE COUNTY, MONTANA

Introduction

In accordance with the General Permit for Storm Water Discharge Associated with Small Municipal Separate Storm Sewer System (MS4) (General Permit), issued by the Montana Department of Environmental Quality (DEQ), Yellowstone County (County) is required to develop and implement an Enforcement Response Plan (ERP) to promote compliance with local storm water regulations and General Permit requirements. Since the County is working to establish regulatory authority and local storm water regulations, the purpose of this ERP is to specify the response and enforcement procedures that are currently available for County personnel to use when addressing storm water related concerns or suspected violations of County storm water requirements. This document addresses the General Permit's ERP requirements for the following Minimum Control Measures (MCM's):

- MCM 3: Illicit Discharge Detection and Elimination (IDDE) (Part II.A.3.d.iv.)
- MCM 4: Construction Site Storm Water Management (Part II.A.4.a.iii.)
- MCM 5: Post-Construction Site Storm Water Management in New and Redevelopment (Part II.A.5.a.iii.)

The enforcement actions and procedures within this plan are generally applicable to each of the three MCMs listed above; however, enforcement actions and procedures which are specific to an individual MCM are addressed within the attachments, listed as follows:

- Attachment A: Illicit Discharge Detection and Elimination
- Attachment B: Construction Site Storm Water Management
- Attachment C: Post-Construction Site Storm Water Management in New and Redevelopment

The procedures within this ERP have been developed with the following objectives in mind:

- Prevent pollutants from entering the County MS4 and causing environmental harm.
- Establish appropriate response and enforcement actions based on the nature and severity of storm water-related concerns.
- Promote consistent and timely use of response and of limited enforcement tools.
- Encourage correction of storm water related concerns in a timely manner.
- Promote compliance with County and storm water requirements through education and compliance assistance first and, if necessary, referral to other regulatory agencies.

Yellowstone County has limited authority to enforce storm water regulations. The current County regulations that address storm water (per the General Permit's requirements) are as follows:

Illicit Discharge Detection and Elimination:	(Under Development)
Construction Site Storm Water management:	Subdivision Regulations, Section 4.7
Post-Construction Site Storm Water Management:	Subdivision Regulations, Section 4.7

Acronyms

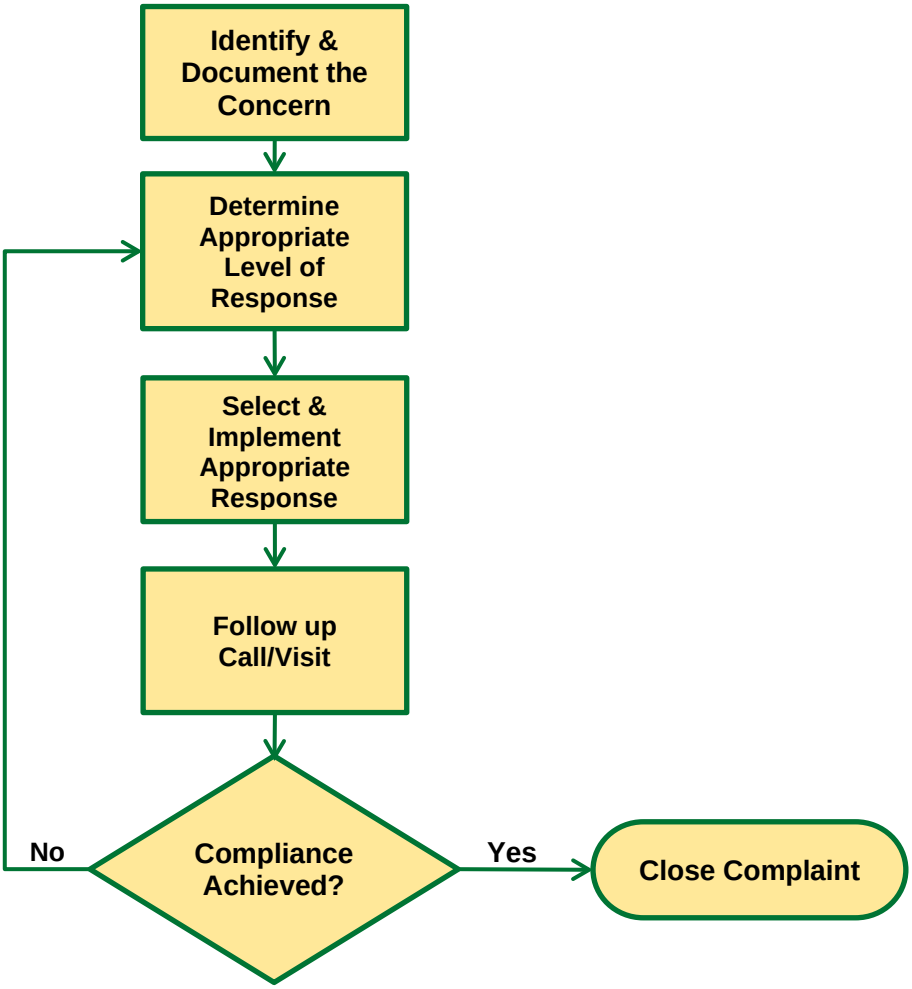
The following acronyms have the following meaning:

DEQ Department of Environmental Quality
ERP Enforcement Response Plan
IDDE Illicit Discharge Detection and Elimination
MCM Minimum Control Measure
MS4 Municipal Separate Storm Sewer System
SWMP Storm Water Management Program

1 Enforcement Response Plan Overview

The enforcement process consists of six basic steps beginning with identification of a storm water-related concern concluding with closing the complaint. The overall process is shown in the flowchart below and is further explained within the following sections.

Enforcement Response Flowchart for the Yellowstone County Storm Water Management Program



2 Identifying and Investigating Storm Water-Related Concerns

The County may become aware of storm water-related concerns or potential violations of County storm water requirements in the following ways:

- County Public Works personnel may identify storm water-related concerns conducting outfall dry-weather screenings or collecting storm water samples.
- The public may file a storm water-related complaint through the County's Public Contact Program.
- Personnel from other County departments may identify and communicate storm water-related concerns while performing their regular job functions.
- Personnel from other regulatory agencies may identify and communicate storm water-related concerns while performing their regular job functions.

This section discusses the County's plan to identify and investigate storm water-related concerns in each of the three regulatory programs required by the General Permit.

2.1 Illicit Discharge Detection and Elimination

Part II.A.3 of the General Permit requires the County to detect and eliminate illicit connections and discharges within the MS4 boundary. The County may observe a suspected illicit connection or discharge during the course of County operations or they may receive a complaint. When an illicit discharge is suspected, the SWMP Team will conduct an investigation in accordance with the County Illicit Discharge Investigation and Corrective Action Plan to identify the source of the suspected illicit connection or discharge. When an illicit discharge is confirmed, the SWMP Team will document the results of the investigation and initiate enforcement action(s) as described in this document and allowed by applicable laws to abate the illicit connection or discharge. This process is summarized in the Figure 1.

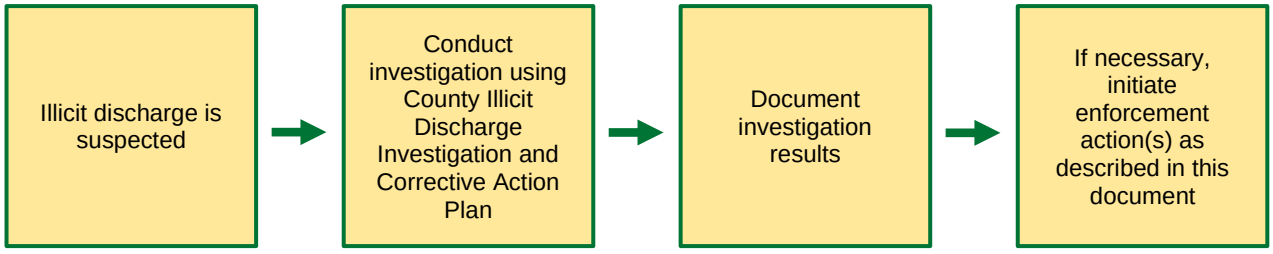


Figure 1. Summary of IDDE Investigation and Confirmation Process

2.2 Construction Site Storm Water

Part II.A.4 of the General Permit requires the County to regulate storm water runoff from construction activities that result in a land disturbance of greater than or equal to one acre and from construction activities disturbing less than one acre if the activities are part of a larger common plan of development or sale that would disturb one acre or more. The County subdivision regulations currently require regulated projects to abide by the Montana DEQ requirements (i.e., Montana DEQ Construction General Permit requirements).

The County may observe a suspected Construction General Permit violation during the course of County operations or they may receive a complaint. When the SWMP team believes an observation

or complaint requires investigation, a site visit and inspection (from public ROW) will be conducted. If necessary, the SWMP Coordinator may contact the property owner to request access to the property to further evaluate the situation. When a violation is confirmed, the SWMP Team will document the results of the investigation and initiate enforcement action(s) as described in this document and allowed by applicable laws to correct the issue. This process is summarized in Figure 2.

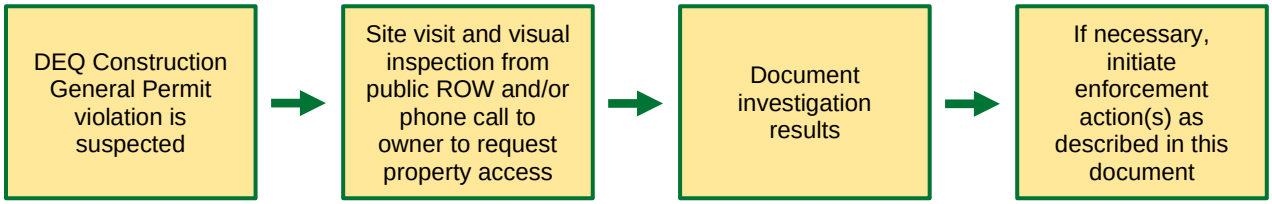


Figure 2. Summary of Construction Site Investigation and Violation Confirmation Process

2.3 Post-Construction Site Storm Water

Part II.A.5 of the General Permit requires the County to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. The County subdivision regulations currently require regulated projects to abide by the Montana DEQ requirements (i.e., Montana Circular DEQ 8 requirements).

The County may observe a suspected Circular DEQ 8 violation during the course of County operations or they may receive a complaint. When the SWMP team believes an observation or complaint requires investigation, a site visit and inspection (from public ROW) will be conducted. If necessary, the SWMP Coordinator may contact the property owner to request access to the property to further evaluate the situation. When a violation is confirmed, the SWMP Team will document the results of the investigation and initiate enforcement action(s) as described in this document and allowed by applicable laws to correct the issue. This process is summarized in Figure 3.

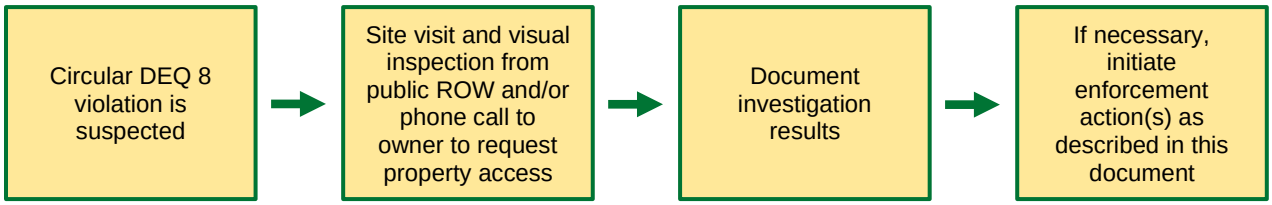


Figure 3. Summary of Post-Construction Site Investigation and Violation Confirmation Process

3 Determining the Appropriate Level of Response

Once a storm water-related concern is identified, the appropriate level of response will be determined and an appropriate response remedy will be selected. The County currently has three levels of responses available, each of which is briefly described below.

3.1 Level 1: No Enforcement Action

There may be situations where County personnel are made aware of storm water-related concerns; however, sufficient evidence does not exist to prove a violation is taking place. An example of such situation may be if a complaint is received stating that a storm water control has not been properly maintained; however, after a brief site inspection and/or verbal discussion, the County staff determines the storm water control is within compliance and no enforcement action is required. In

such situations, the storm water-related concern and response should be documented using the Enforcement Response Documentation Form (Attachment D) so that it can be referenced in the future, if necessary.

3.2 Level 2: Informal Response

The County will pursue compliance to storm water-related concerns through informal methods whenever reasonable. Informal responses include telephone conversations, verbal notices, and meetings, each of which is described in Section 4.1. These methods should be used as the first response option whenever a response is required (except for situations that pose an immediate or significant threat to human health or the environment, in which case a Level 3 response should be initiated). Implementation of informal measures often establishes the documentation necessary to implement formal enforcement actions through other regulatory agencies if informal measures do not result in correction.

3.3 Level 3: Referral to Other Agencies

The County is currently working to establish regulatory authority to enforce local storm water regulations. If an informal response proves insufficient to resolve the situation or the situation poses an immediate or significant threat to human health or the environment, the County will enlist the help of DEQ, emergency personnel, or other regulatory agencies, as described in Section 4.2. Immediate help from DEQ or emergency personnel will be solicited if it suspected that the situation poses a significant threat to human health or the environment.

4 Selecting an Appropriate Response Remedy

Once the severity of the storm water-related concern is determined, County staff will identify and initiate the proper response. The County's selected response remedies are described below. Note that each issue must be documented even if the decision is to take no action. Documentation must explain why such action was/was not taken.

4.1 Informal Responses

4.1.1 Telephone Conversation/Verbal Notice

A telephone conversation or verbal notice will be used to obtain additional information pertaining to a storm water-related concern or to resolve an infrequent issue. The initial contact will take place within 72 hours of receiving a complaint or observing a storm water-related concern. At a minimum, the conversation shall be documented on an Enforcement Response Documentation Form with the following information: date/time call placed, the County staff member who initiated contact, the person contacted (responsible party), and the content of the conversation.

4.1.2 Meetings

A meeting may also be used to obtain additional information pertaining to a storm water-related concern or to resolve an issue that does not pose immediate threat to human health or the environment. The meeting will serve to educate the responsible party regarding the storm water-related concern and to discuss measures that can be taken to correct the issue. The meeting will be conducted by the Storm Water Management Program (SWMP) Coordinator or a delegated member of the SWMP team. At a minimum, the meeting shall be documented on an Enforcement Response

Documentation Form with the following information: meeting location, date/time of meeting, meeting attendees, content of the conversation, and agreements made at the meeting.

4.2 Referral to Other Agencies

4.2.1 Montana DEQ Enforcement Division

Discharges and/or activities which are believed to be an immediate threat to human health or the environment will be reported Montana DEQ. DEQ's Enforcement Division may assist in the response and enforcement process. Contact information for DEQ is as follows:

Montana DEQ Enforcement Division
Phone: (406) 444-0379
Website: https://deq.mt.gov/DEQAdmin/ENF

4.2.2 Local Fire Department

The City of Billings Fire Department or the Lockwood Fire Department will be contacted for situations requiring hazardous materials response. The phone number for the City of Billings Fire Department and the Lockwood Fire Department are as follows:

City of Billings Fire Department
Phone: (406) 657-8423

Lockwood Fire Department
Phone: (406) 252-1460

4.2.3 RiverStone Health

RiverStone Health is the local health department that helps protect people from health threats such as food-borne illnesses, natural and man-made disasters, toxic exposures, and preventable illness and injury. This includes hazardous spills near drinking water sources, parks with dogs and children, and potential to contaminant soils and groundwater. RiverStone health may be able to assist with response and enforcement procedures for illicit-discharge related violations. The phone number and website to access RiverStone Environmental Health Services are as follows:

Phone: (406) 256-2770
Website: https://riverstonehealth.org/our-organization/contact-us/

4.2.4 Local Emergency Personnel

Discharges and/or activities which are believed to be an immediate threat to human health or the environment may be reported to local emergency personnel.

Local Emergency Personnel
Phone: 911

4.2.5 City of Billings Environmental Division

The City of Billings may be able to assist with response and enforcement procedures for situations which could impact the City's MS4. City of Billings Environmental Division's contact information is provided below:

City of Billings Environmental Division
Phone: (406) 247-8517

4.2.6 Montana Department of Transportation Environmental Services

The Montana Department of Transportation may be able to assist with response and enforcement procedures for situations which are impacting MDT's facilities. MDT's Environmental Services Division contact information is provided below:

MDT Environmental Services
Phone: (406) 252-4138

4.3 Additional Considerations

The following criteria will be considered to aid in determining the correct level of response.

4.3.1 Magnitude

A minor isolated instance requiring correction will typically be considered non-significant and addressed with informal responses; however, isolated incidents which may cause immediate or significant damage to the MS4 or pose a threat to human health and/or the environment will be considered significant and the County will solicit help from DEQ or other appropriate agencies (see Section 4.2).

4.3.2 Duration

Regardless of magnitude, storm water-related concerns that continue over prolonged periods of time will result in escalated enforcement actions.

4.3.3 Compliance History

The responsible party's compliance history will be an important factor in determining the appropriate remedy to apply. The County will likely rely on informal responses for the less severe storm water-related concerns if the responsible party has a good compliance history; however, recurring issues may lead the County to escalate the level of response in a shorter time-frame than usual.

4.3.4 Good Faith of the Operator

Good Faith is a characteristic of actions which show that the responsible party is intending to correct the issue(s) in a timely manner. If the responsible party is attempting in good faith to correct the storm water-related concern, the County's enforcement responses may be less severe; however, potential threats to human health and the environment will always take precedence when considering whether or not to base the County's level of response on the good faith of the responsible party.
In addition, while the responsible party's good faith in correcting its noncompliance may be a factor in determining which enforcement response is suitable, good faith does not preclude the responsible party from enforcement action.

5 Enforcement Roles and Responsibilities

The following table outlines the typical enforcement roles of County personnel. Primary indicates primary responsibility, Secondary indicates secondary responsibility, and N/A indicates that County personnel do not have the authority to make the decision.

Table 5-1. County Staff Enforcement Roles

Enforcement Action	Delegated SWMP Team Member	SWMP Coordinator	Public Works Director
Telephone Conversation and/or Verbal Notice	Primary	Primary	Secondary
Meetings	Primary	Primary	Secondary
Referral to Other Agencies	N/A	Primary	Primary

All storm water-related concerns and the responses shall be reported to the SWMP Coordinator. The SWMP Coordinator or delegated SWMP team member will be responsible for initiating and documenting informal responses. If the storm water-related concern is not resolved or the situation poses a significant threat to human health or the environment, the SWMP Coordinator or the Public Works Director will coordinate with other regulatory agencies. The SWMP Coordinator and the County Attorney will be copied on all enforcement responses.

6 Escalation Process and Schedule for Storm Water-Related Concerns

The type of storm water-related concern and enforcement response schedule differs for each MCM; therefore, refer to the following attachments for this information:

- Attachment A: Illicit Discharge Detection and Elimination
- Attachment B: Construction Site Storm Water Management
- Attachment C: Post-Construction Site Storm Water Management in New and Redevelopment Areas

Attachment A. Illicit Discharge Detection and Elimination

Escalation Process and Schedule for Illicit Discharge Violations

Tables A-1 and A-2 (below) provide typical responses to common illicit discharge violations and a typical schedule for escalation of enforcement actions. Each situation has unique circumstances and concerns. Therefore, the tables below serve as guidance only. Violations that pose a significant threat to human health and/or the environment will utilize more severe enforcement actions on a compressed timeframe in order to quickly eliminate the illicit discharge, abate any damages, and prevent recurrence.

Table A-1. Example Responses to Common Illicit Discharge Violations

Violation	Circumstances of Violation	Initial Level of Response	Initial Response Remedy
Dumping household chemicals into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Contractor discharging paint, concrete wash water, or other deleterious substance into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Restaurant or business discharging fat, oil, grease, or mop wash water into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Direct connection of anything other than storm water or clean groundwater into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Discharging wastewater from a RV, camper, or other source into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies

Table A-2. Escalation Process, Response Schedule, and Responsibilities for Illicit Discharge Violations

Response	Response Schedule	Responsibility
Telephone Conversation, Verbal Notice, and/or Meeting	Within 48 hours of Violation	SWMP Coordinator
Referral to Other Agencies	As deemed appropriate by the SWMP Coordinator and Public Works Director	SWMP Coordinator Public Works Director

Attachment B. Construction Site Storm Water Management

Escalation Process and Schedule for Construction Site Storm Water Violations

Tables B-1 and B-2 (below) provide typical responses to common construction site storm water violations and a typical schedule for escalation of enforcement actions. Each situation has unique circumstances and concerns. Therefore, the tables below serve as guidance only. Violations that pose a significant threat to human health and/or the environment will utilize more severe enforcement actions on a compressed timeframe in order to quickly eliminate the illicit discharge, abate any damages, and prevent recurrence.

Table B-1. Example Responses to Common Construction Site Storm Water Violations

Violation	Circumstances of Violation	Initial Level of Response	Initial Response Remedy
Conducting earth disturbing activities without preparing a SWPPP and obtaining coverage under DEQ's Construction General Permit	Operator is unware of requirements	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Operator is aware of requirements but has not obtain coverage	Level 3	Referral to Other Agencies
Best management practices (BMPs) as listed on the SWPPP are: ▪ Not installed ▪ Not installed correctly ▪ Not regularly inspected ▪ Not maintained	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Poorly maintained construction site (i.e. lack of good housekeeping techniques, tracking soil offsite, excessive trash and debris, etc.)	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
SWPPP is not up-to-date	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
SWPPP is not located on site	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies

Table B-2. Escalation Process, Response Schedule, and Responsibilities for Construction Site Storm Water Violations

Response	Response Schedule	Responsibility
Telephone Conversation, Verbal Notice, and/or Meeting	Within 48 hours of Violation	SWMP Coordinator
Referral to Other Agencies	As deemed appropriate by the SWMP Coordinator and Public Works Director	SWMP Coordinator Public Works Director

Attachment C. Post-Construction Site Storm Water Management in New and Redevelopment

Escalation Process and Schedule for Post-Construction Site Storm Water Violations

Tables C-1 and C-2 (below) provide typical responses to common post-construction storm water violations and a typical schedule for escalation of enforcement actions. Each situation has unique circumstances and concerns. Therefore, the tables below serve as guidance only. Violations that pose a significant threat to human health and/or the environment will utilize more severe enforcement actions on a compressed timeframe in order to quickly eliminate the illicit discharge, abate any damages, and prevent recurrence.

Table C-1. Example Responses to Common Post-Construction Site Storm Water Violations

Violation	Circumstances of Violation	Initial Level of Response	Initial Response Remedy
Failure to obtain approval of subdivision plans from DEQ and the County Planning Department	Operator initiated construction prior to receiving approval	Level 3	Referral to Other Agencies
Failure to construct post-construction storm water management facilities as shown on the plans and as required by DEQ Circular 8	Initial Incident	Level 3	Referral to Other Agencies
Failure to abide by the operation and maintenance plan submitted to DEQ for post-construction storm water management facilities	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Failure to notify the Public Works Department about modifying post-construction storm water management facilities	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Failure to notify the Public Works Department of a change of ownership	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies

Table C-2. Escalation Process, Response Schedule, and Responsibilities for Construction Site Storm Water Violations

Response	Response Schedule	Responsibility
Telephone Conversation, Verbal Notice, and/or Meeting	Within 48 hours of Violation	SWMP Coordinator
Referral to Other Agencies	As deemed appropriate by the SWMP Coordinator and Public Works Director	SWMP Coordinator Public Works Director

Attachment D. Enforcement Response Documentation Form

ENFORCEMENT RESPONSE DOCUMENTATION FORM

County Personnel Involved Date

Description of Storm Water Concern

Location of Storm Water Concern

Responsible Party Telephone

Street City Zip

Description of Storm Water Concern:

Level of Response Selected Remedy Follow-Up Date

Additional Notes:

Appendix I. Storm Water Ordinance/Regulatory Mechanism

Yellowstone County

PUBLIC WORKS DEPARTMENT
P.O. Box 35024
Billings, MT 59107-5024

Phone (406) 256-2735
Fax (406) 254-7946

Attn: Ms. Rainie DeVaney
Department of Environmental Quality
Surface Water Discharge Permitting Section
Water Protection Bureau
PO Box 200901
Helena, MT 59620-0901

RE: Yellowstone County MS4 Compliance Issues – Status After Initial County Legal Input

Dear Ms. DeVaney,

Background

On November 6, 2019, Yellowstone County and the Montana Department of Environmental Quality (DEQ) met and discussed how the County could come into compliance with the MS4 General Permit requirements. The County had a concern that it lacked the authority to implement many of the requirements. The County and DEQ decided that the County would further investigate its authority to implement the requirements. In particular, the County would investigate whether it could create a water quality district, modify its health regulations, modify its subdivision regulation and or modify its zoning regulations to implement the requirements. The County has investigated the various options to implement the requirements. The County has determined that none of the options would individually allow the County to fully comply with the requirements. The County could comply with the requirements of MCM 1,2 and 6. The County could not fully comply with the requirements of MCM 3,4 and 5. The County could potentially partially comply with these requirements with a modification of its subdivision regulations.

We have engaged our Legal department for their input. Based on their review of the MS4 General Permit requirements and County's legal authority to implement the compliance options, they made the following suggestion.

Yellowstone County **is** in compliance because the "***extent allowable under State and Local Law***" does not allow for the creation of regulations or ordinances for counties without self-governing legal authority.

Introduction

This letter provides an update on Yellowstone County's progress towards addressing the MS4 General Permit's regulatory-related requirements. Over the past five months our SWMP team has explored the potential compliance solutions suggested by DEQ's team members during the November 6, 2019 meeting (described below). Our efforts have included research of the applicability of each suggested solution, development of draft compliance plans, SWMP team coordination with the Yellowstone County Attorney's Office, and a discussion with the Board of County Commissioners (BOCC). While we have made significant progress towards understanding the potential applicability of each suggested solution, the County Attorney's Office is not confident that the solutions could be legally implemented to address the MS4 General Permit requirements (based on limitations within the Administrative Rules of Montana (ARM) and Montana Code Annotated (MCA)).

Based on directives from the BOCC during the August 27, 2020 discussion session, I (on behalf of Yellowstone County) am requesting DEQ to provide a formal legal assessment that confirms the County's ability to implement each of the suggested solutions to directly address the MS4 General Permit's regulatory-related requirements.

Discussion of Potential Solutions

During the November 6, 2019 meeting with DEQ, the County agreed to pursue four potential solutions that could be employed to comply with the MS4 General Permit's regulatory-related requirements. The County's findings and concerns with each of these suggested solutions is briefly discussed within the following sections.

Development of a Water Quality District

A Water Quality District (WQD) is an area established by a county (or city-county) with definite boundaries for the purpose of protecting, preserving, and improving the quality of surface water and ground water in the district (as authorized by MCA 7-13-45). Per MCA 75-5-311 subsection (4), if the County were to develop a WQD, they could adopt an ordinance (or ordinances) to regulate the following specific facilities and sources of pollution:

- Onsite wastewater disposal facilities;
- Storm water runoff from paved surfaces; *(emphasis added)*
- Service connections between buildings and publicly owned sewer mains;
- Facilities that use or store halogenated and nonhalogenated solvents, including hazardous substances that are referenced in 40 CFR 261.31, United States environmental protection agency hazardous waste numbers F001 through F005, as amended; and
- Internal combustion engine lubricants.

The County is concerned that authority to regulate the facilities listed above would not be broad enough to encompass the full suite illicit discharges (i.e., *non-storm water* discharges). Additionally, a WQD would not grant the County authority to regulate storm water runoff from *unpaved* surfaces, which would be required to implement construction and post-construction requirements. The BOCC are concerned that the current (limited) authorities granted to a WQD do not justify the effort and expense needed to create and implement a WQD for the sole purpose of addressing MS4 General Permit requirements. Therefore, the County is requesting clarification on the legal ability for a WQD to address the MS4 General Permit's illicit discharge detection and elimination (IDDE), construction, and/or post-construction regulatory-related requirements.

Per Yellowstone County Legal review: The general mission of a water quality district would allow for regulations to comply with the requirements, but the plan a district can implement would not allow for regulations to comply with the requirements.

Revisions to RiverStone Board of Health Rules and Regulations

RiverStone Health serves in a role as the Yellowstone County-City Health Department with a mission to improve life, health, and safety. The RiverStone Board of Health is the governing body of RiverStone Health and is responsible for fulfilling the obligations and activities of the "local Board of Health" for Yellowstone County, as that term and those duties are defined in applicable Montana statutes. The County Attorney's Office is concerned that regulation of discharges to the County's MS4 may be outside of the realm of septic and onsite wastewater system review activities that RiverStone Board of Health has the authority to address. The County is therefore requesting that DEQ provide guidance to describe how a local Board of Health's powers and duties, as defined in MCA, relate to implementation of MS4 General Permit requirements.

Per Yellowstone County Legal Review: The regulations to comply with the requirements are not health regulations.

Revise County Subdivision Regulations

Based upon the Montana Subdivision and Platting Act (MSPA) (MCA 76-3), the County is authorized to develop and enforce a set of regulations that govern the development of subdivisions within its jurisdictional area. More specifically, MCA 76-3-501 authorizes the County to address drainage within the subdivision regulations; however,

the County Attorney's Office has noted that per MCA 76-3-511, subdivision regulations shall be no more stringent than state regulations or guidelines (with the exception that a legal process must be followed to bypass this requirement). Therefore, the County believes that subdivision regulations could be revised to more closely align with *Circular DEQ 8: Montana Standards for Subdivision Storm Water Drainage*. The SWMP team is in the process of coordinating with the City/County Planning Department to develop a plan review and approval process that could be implemented if subdivision standards were updated; however, the County is requesting that DEQ provide guidance on which portions of the construction and post-construction requirements could be addressed within the subdivision requirements while still complying with MCA 76-3-511.

Please note that this will only affect any new development and would not be retroactive to existing (recorded, constructed or not constructed) subdivisions. Preliminary discussions with City / County Planning seem to indicate that they could require specific MS4 information during the Subdivision application process but lack the ability to review and field monitor said submittal information.

Per Yellowstone County Legal Review: The subdivision regulations could be used to implement regulations to comply with some of the requirements, particularly construction site stormwater management.

Incorporate Storm Water Criteria within the County's Zoning Regulations

Based upon MCA 76-2-202, county zoning requirements may regulate the erection, construction, reconstruction, alteration, repair, location, or use of buildings or structures or the use of land. The County Attorney's Office has advised that they believe incorporation of storm water criteria would be outside of the scope of zoning regulations. The County requests that DEQ clarify whether MCA allows for regulation storm water facilities (both construction and post-construction) within zoning regulations.

Per Yellowstone County Legal Review: The regulations to comply with the MS4 General Permit requirements are not zoning regulations.

Develop a County Public Works Manual

Per MCA 7-14-2101 and MCA 7-14-2103, the County is authorized to regulate the planning, design, construction, and maintenance of roadways, bridges, and associated infrastructure within the County right-of-way. The County recognizes that a public works manual could be created; however, currently believes that the effort associated with development of such a manual (and program to implement the manual) for the sole purpose of regulating an unfunded drainage mandate is inconsistent with current County staffing resources. More importantly, it appears that a very small portion of activities occurring within the County would be captured under a public works manual (i.e., projects within the public right-of-way).

The development of a Public Works Manual would be a "soft" approach to compliance. I see this as having department policy statements versus have ordinances that are regulations with "teeth". A policy would be request (soft) attempts to comply versus require (must, or shall – due to such and such code / regulation), which would have consequences.

RSID (Rural Special Improvement District)

Within MCA, Counties have the ability to create RSID's for public infrastructure built in the public easements or public dedicated rights – of – way. This strategy would appear, on the surface, to have some potential to Permit compliance, but upon further consideration, it would actually be extremely difficult to manage.

One difficultly would be determining the boundary extents. Would the boundary be County wide? That does not seem efficient or reasonable. The County MS4 boundary is relatively close to the existing City of Billings city limits. Property owners in remote areas within County limits may never be part of any MS4 boundary. They would be paying for something that RSID Bond Counsel would deem not a direct benefit to said parcel assessments.

Another difficulty is related to the ever changing MS4 boundary. As county parcels are annexed into the City of Billings, the RSID boundary (and assessed parcels) would be made smaller. As census tract data relating to density, triggers inclusion – the RSID boundary would need to expand. Therefore, the MS4 boundary would be ever changing.

Our County allows advisory committees to help determine RSID maintenance costs and therefore the associated assessment levels. This too, would be a complicated and ever-changing process.

Conclusion

DEQ asked that Yellowstone County engage our Legal Department and then make a presentation to our County Commissioners. We have now completed that. On August 27th at the Commissioners Discussion meeting we presented a "status report" of what Public Works (along with our consultant HDR) and Yellowstone County Legal Department had determined.

The BOCC (commissioners) agreed with County Legal's suggestion to submit a letter to DEQ requesting the sections of either MCA or ARM that show legal authority for the County to create enforceable regulations or ordinances (as presented in the above sub-sections). Currently, County Legal review indicates that no authority exists (referring to MCM 3, 4, and 5). Upon DEQ responding to this request, in writing, we will engage County Legal in a review of any information DEQ provides. If County Legal has further concerns or questions, we anticipate further dialogue with DEQ.

The County SWMP team recognizes the importance of complying with the MS4 General Permit's requirements. The BOCC would like certainty that our efforts to comply with the regulatory-related requirements are consistent with current state codes and rules and would also like to better understand how much (or little) of the requirements can legally be addressed through implementing the suggested solutions. We will continue to proceed with developing and implementing the portions of the SWMP that do not require regulatory authority determination while we await a response to this letter.

Additionally, we will revisit our draft ERP's and update them, if applicable, prior to submittal of the 2020 MS4 Annual Report. We are also in the process of developing a document that suggests framework to facilitate plan reviews, approvals, inspections, and enforcement for construction and post-construction storm water facilities under the assumption that these activities would be conducted within the County Public Works Department. While this program could not yet be implemented, we believe that having a plan in place will be valuable to help us move forward quickly after our concerns with the potential solutions discussed within this letter have been addressed. We appreciate DEQ's willingness to coordinate with the County as we develop our SWMP.

Sincerely,

Mike Black, PE
Senior Yellowstone County Civil Engineer

cc: via email Jarrett Hillius, PE – HDR
Matt Peterson, PE – NewFields

From:	Mike Black
To:	JKenning@mt.gov; Davis, Tim; Moser, Kurt; Rainie DeVaney ; gov> (Haley.Sir@mt.gov); Makus, Erik; Clark, Amy
Cc:	Hillius, Jarrett; Matthew Peterson; Mark English
Subject:	MS4 Permit Compliance (meeting notes of tel-con of 1-20-2021)
Date:	Tuesday, January 26, 2021 4:52:30 PM
Attachments:	YC MS4_SWMP Update_2021-01-20.pdf

DEQ and EPA Representatives,

Thank you for your participation in the Microsoft Team's meeting to discuss the status of Yellowstone County's storm water management program (SWMP) on January 20, 2020. The presentation that Mike Black and Matt Peterson used to guide and facilitate the conversation is attached for your reference. As discussed, Yellowstone County is currently working towards developing revisions to the County Subdivision Regulations along with a program to conduct plan reviews, approvals, inspections, and enforcement for both construction and post-construction storm water management controls. Additionally, the County plans to consider developing a public works manual or storm water policies following completion of the revisions to the subdivision regulations.

Our SWMP team will take DEQ's other comments and suggestions during the meeting into consideration over the coming weeks and months, the most prominent which are summarized as follows:

- Reconsider the assessment of opportunities to revise the County Zoning Regulations (based on Jon's comment that the County could use zoning regulations to limit impervious areas, require green space, or take other similar approaches to address MCM 5 permit requirements)
- Include applicable Board of County Commissioners (BOCC) meeting documentation in the SWMP (regarding discussion of potential regulatory-related compliance solutions with the BOCC)
- Pursue compliance with the MS4 regulatory-related requirements through all available avenues, with the understanding that no single avenue/potential solution will provide full compliance with MS4 permit requirements

Finally, Yellowstone County has requested that DEQ review our legal assessment of the potential solutions noted in the attached presentation, and provide feedback regarding our conclusions. In recognizing DEQ's position that it is the County's responsibility to determine what is allowable under state law, the County may consider filing for a declaratory judgement to more clearly understand the applicability of the potential solutions discussed during our meeting. The purpose of such an action would be to help both Yellowstone County and Montana's other MS4 counties to more clearly understand options and limitations for compliance with the MS4 general permit. Yellowstone County is committed to compliance and we want to make sure that our compliance efforts are in accordance with state laws and regulations governing Montana's counties.

Sincerely,

Mike Black, P.E. - *Senior Yellowstone County Civil Engineer* -
mblack@co.yellowstone.mt.gov

YELLOWSTONE COUNTY STORM WATER MANAGEMENT PROGRAM

REGULATORY UPDATE

JANUARY 20, 2021

YELLOWSTONE COUNTY SWMP – REGULATORY UPDATE

Introductions

Summarize 2020 County Activities

Summarize Findings

Discussion

INTRODUCTIONS & REVIEW MEETING PURPOSE AND OBJECTIVES

- Brief introductions
  - Yellowstone County
  - Montana DEQ
  - US EPA
  - HDR/NewFields

- Purpose & Objectives
  - Present findings from legal investigation of potential solutions
  - Present the County's planned approach towards compliance
  - Provide opportunity for feedback

YELLOWSTONE COUNTY SWMP – REGULATORY UPDATE

- Introductions
- **Summarize 2020 County Activities**
- Summarize Findings
- Discussion

SUMMARIZE 2020 COUNTY ACTIVITIES

MCM 3 - Illicit Discharge Detection & Elimination (IDDE)

- *Draft* Illicit Discharge Prohibition Plan
  - Investigate feasibility of potential solutions
    - Water Quality District (WQD)
    - RiverStone Board of Health Rules
    - Sanitation and Subdivision Regulations
  - Extensive coordination with County Legal Department
  - Present findings to Commissioners
- IDDE Partnership Plan
  - Evaluate partnership/MOUs with City of Billings and MDT
  - Initiated coordination of agreements
- *Draft* IDDE ERP and Investigation and Corrective Action Plan
  - Submitted with 2019 Annual Report
  - Staff training on ERP and Investigation in 2020

SUMMARIZE 2020 COUNTY ACTIVITIES

MCM 4 & 5 - Construction & Post Construction Storm Water Management

- *Draft* Construction and Post-Construction Storm Water Control Requirement Plan
  - Investigate feasibility of potential solutions
    - Revise County Subdivision Regulations
    - Revise County Zoning Regulations
    - Develop County public works manual relating to storm water
  - Extensive coordination with County Legal Department
  - Present findings to Commissioners
- *Draft* ERP
  - Submitted with 2019 Annual Report
  - Staff training on ERP 2020
- Developing suggested revisions to subdivision regulations through
  - Coordination with County Planning Department
- Developing construction & post-construction program *framework*

YELLOWSTONE COUNTY SWMP – REGULATORY UPDATE

- Introductions
- Summarize 2020 County Activities
- **Summarize Findings**
- Discussion

ILLICIT DISCHARGE DETECTION & ELIMINATION

Water Quality District & Ordinance

- Purpose: protect, preserve, and improve the quality of surface water and ground water in the district (MCA 7-13-45)
- Local water quality program that requires administrative organization (including a board of directors), staff, and financial resources

- Allows ordinance to regulate:
  - Onsite wastewater disposal facilities;
  - Storm water runoff from paved surfaces;
  - Service connections between buildings and publicly owned sewer mains;
  - Facilities that use or store halogenated and nonhalogenated solvents; and
  - Internal combustion engine lubricants
- Does not allow regulation of a full suite of illicit discharges (i.e., non-storm water discharges)

ILLICIT DISCHARGE DETECTION & ELIMINATION

Water Quality District & Ordinance

- Conclusion
  - Concern that using a WQD (and ordinance) to regulate illicit discharges would over-step authorities granted in MCA
  - The limited authorities granted to a WQD do not justify the effort and expense needed to create and implement a WQD for the sole purpose of minimally addressing MS4 General Permit requirements
  - BOCC is likely to oppose

ILLICIT DISCHARGE DETECTION & ELIMINATION

Amend RiverStone Board of Health Rules

- RiverStone Board of Health
  - Governing body of RiverStone Health; acts as the Yellowstone City-County Health Department
  - Responsible for fulfilling the obligations and activities of the "local Board of Health"

- Opportunities to prohibit illicit discharges
  - Regulate the control & disposal of sewage (MCA 50-2-116 (1)(k))
    - Could potentially use to prohibit discharge of sewage to MS4 facilities
  - Require removal of filth that might cause disease or adversely affect public health (MCA 50-2-116 (2)(ii))
    - Could potentially classify some illicit discharges as "filth or other contaminants that might cause disease or adversely affect public health".
    - Could potentially use to prohibit discharge of these contaminants to MS4 facilities.

ILLICIT DISCHARGE DETECTION & ELIMINATION

Amend RiverStone Board of Health Rules

- Current Applicable Regulations:
  - Rule #1 – Control of Nuisances Affecting Public Health: *No person or persons shall allow filth or debris, either from humans or animals to accumulate on owned or rented premises… that will directly or indirectly contribute to or cause a health hazard or nuisance.*
  - Rule #3 –Onsite Wastewater Treatment Systems: Section 9.1…*no person may construct, alter, extend, operate, or use an onsite wastewater treatment or disposal system that may…*
    - *Pollute or contaminate state water in violation of 75-5-605, MCA*
    - *Degrade state water unless authorized in violation of 75-5-303, MCA*
  - Rule #4 –Onsite Collection and Storage of Solid Waste: *No person shall allow garbage or refuse to accumulate around garbage storage areas… pick up any spilled garbage or refuse*

ILLICIT DISCHARGE DETECTION & ELIMINATION

Amend RiverStone Board of Health Rules

- Potential Opportunity for Rule Revision
  - Revise Rule #3 to prohibit discharge of wastewater from private and public buildings on the ground or to storm drainage facilities
    - Recognize that the term "wastewater" has limitations and is not inclusive of most non-storm water discharges

- Conclusion
  - The current rules provide some progress towards compliance with IDDE requirements
  - County Attorney's Office is concerned that specific/further regulation of discharges to the County's MS4 may be outside of the realm of septic and onsite wastewater system review activities that RiverStone Board of Health has the authority to address

ILLICIT DISCHARGE DETECTION & ELIMINATION

Amend Sanitation & Subdivision Regulations

- Not reviewed – Direct applicability to RiverStone Health section above

CONSTRUCTION & POST-CONSTRUCTION STORM WATER MANAGEMENT

Revise County Subdivision Regulations

- County authorized to develop and enforce regulations that govern the development of subdivisions (MCA 76-3)
- Can address drainage within subdivision regulations (MCA 76-3-501)
  - Per MCA 76-3-511, subdivision regulations shall be no more stringent than state regulations or guidelines (with the exception that a legal process must be followed to bypass this requirement)
    - Circular DEQ 8
    - Construction General Permit
- Limitations
  - Applicable only to development of subdivisions during the platting process
  - Regulating and inspecting individual lots could be problematic. Could potentially be addressed through a Subdivision Improvement Agreement and storm water facility easements.

CONSTRUCTION & POST-CONSTRUCTION STORM WATER MANAGEMENT

Revise County Subdivision Regulations

- Conclusion
  - SWMP team and City/County Planning are developing suggested language to require construction and post-construction storm water management controls
  - SWMP team and City/County Planning are developing a program framework to facilitate plan reviews, approvals, and inspections (additional staff is needed)
  - To be presented to the Commissioners in 2021

CONSTRUCTION & POST-CONSTRUCTION STORM WATER MANAGEMENT

Revise County Zoning Regulations

- Zoning requirements may regulate the erection, construction, reconstruction, alteration, repair, location, or use of buildings or structures or the use of land (MCA 76-2-202)
- County Attorney's Office and Planning Department has advised that they believe incorporation of storm water criteria would be outside the scope of zoning regulations
- Conclusion
  - County does not intend to pursue revisions to the zoning regulations

CONSTRUCTION & POST-CONSTRUCTION STORM WATER MANAGEMENT

Develop a County Public Works Manual

- The County is authorized to regulate the planning, design, construction, and maintenance of roadways, bridges, and associated infrastructure within the County right-of-way (MCA 7-14-2101 and 7-14-2103)

- Conclusion
  - Only activities occurring within the County right-of-way would be captured under a public works manual or County Storm Water Policies
  - SWMP team currently focusing efforts on development of revised subdivision regulations and program to implement the regulations. Public works manual will be considered after the subdivision regulation revisions are implemented.

YELLOWSTONE COUNTY SWMP – REGULATORY UPDATE

- Introductions
- Summarize 2020 County Activities
- Summarize Findings
- Discussion

DISCUSSION

Appendix J. Training Documentation

Yellowstone County MS4 Training

Subject: SWMP Team Training

Date: Wednesday, January 13, 2021

Location: MetraPark Conference Room, 308 6th Ave N., Billings

Attendee Name	Position/Responsibility	Signature
Jess Seguard	Operations Dir.	
Randy Pardis	Labor Foreman	Randy Pardis
Mike Black	County Engineer	
Jarrett Hillius	HDR	

Yellowstone County MS4 Training Agenda

Training Name:	SWMP Team Training
Date:	Wednesday, January 13, 2021
Location:	MetraPark Conference Room, 308 6th Ave N., Billings
Attendees:	See attendance record form — Attendees Column 2 (Tab to add more rows)

Training Agenda

Time	Topic	Training Lead
8:30	Training Overview and Roll Call	Mike Black, Jarrett Hillius
8:35	Storm Water Awareness Illicit Discharge– A Grate Concern by Excal Visual	Mike Black
9:00	Storm Water Awareness Illicit Discharge- Enforcement Response Plan ▪ Overview of ERP to include o Summarize General Permit IDDE Requirements o County IDDE Program Overview, Policies, and Procedures o Enforcement Response Steps o Response Remedies o Enforcement Roles & Responsibilities o Escalation Process	Jarrett Hillius
9:15	Construction Site Storm Water Stormwater “Ground Control” by Excal Visual	Mike Black
9:45	Construction Site Storm Water Construction Site Storm Water ERP ▪ Overview of ERP to include o Summarize General Permit Construction Site Storm Water Management Requirements o County Construction Site Storm Water Management Program Overview, Policies, and Procedures o Enforcement Response Steps o Identifying and Investigating Construction Site Storm Water Concerns • Construction Activities and Locations • Receipt of Compliant or suspected violation • Inspection / Site Visit / Property Owner Contact	Jarrett Hillius

	• Documentation of Findings o Response Remedies o Enforcement Roles & Responsibilities o Escalation Process	
10:00	Post-Construction Site Storm Water Reduce Runoff: Slow it Down, Spread it Out, Soak it In by EPA	Mike Black
10:30	Post -Construction Site Storm Water Post - Construction Site Storm Water ERP ▪ Overview of ERP to include o Summarize General Permit Post-Construction Storm Water Management Requirements o County Post-Construction Storm Water Management Program Overview, Policies, and Procedures o Enforcement Response Steps o Identifying and Investigating Post-Construction Site Storm Water Concerns • Receipt of Compliant or suspected violation • Inspection / Site Visit / Property Owner Contact • Documentation of Findings o Response Remedies o Enforcement Roles & Responsibilities o Escalation Process	Jarrett Hillius
10:45	MetraPark Standard Operating Procedure Review ▪ Training to cover SOP topics: o Site Review including Facilities o SOP Overview o Potential SW Sources; activities, spills, leaks o Stormwater Controls; Drainage systems, BMPs, Chemical/Fuel Storage, Spill Response	Mike Black & Jarrett Hillius
11:00	Landscaping Standard Operating Procedure Review ▪ Training to cover BMPs for Landscaping Activities: o Mowing, Tree Trimming, Fertilizer/Pesticide/Herbicide Application o Planting, Backfilling, Digging o Equipment Fueling and Maintenance	Mike Black & Jarrett Hillius
11:15	Shop and Fleet Services Standard Operating Procedure Review ▪ Training to cover BMPs for Shop/Fleet Activities o Vehicles Fueling o Vehicles Storage and Washing o Vehicle Maintenance o Material Storage	Mike Black & Jarrett Hillius

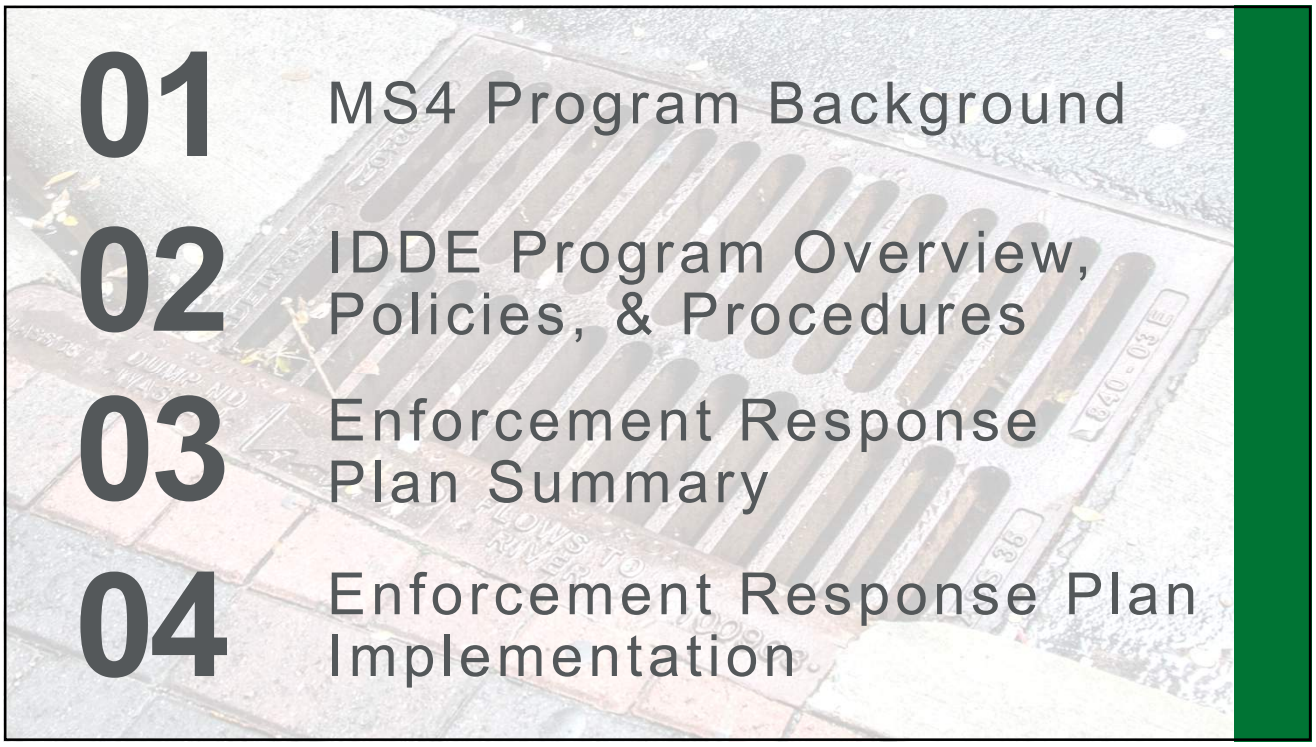
1

Yellowstone County, MT MS4 Illicit Discharge Enforcement Response Plan Training

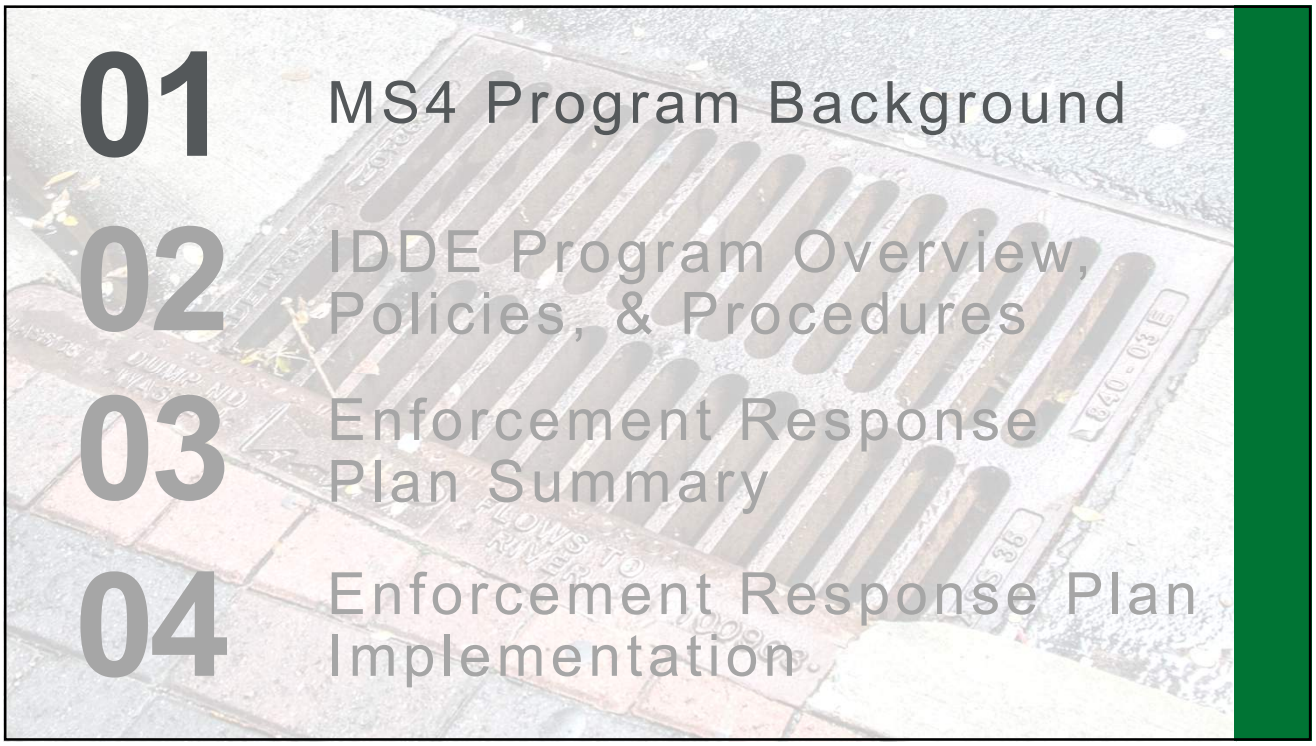
January 13, 2020

Photo by James Lewis on Unsplash

2


01
MS4 Program Background
02
IDDE Program Overview, Policies, & Procedures
03
Enforcement Response Plan Summary
04
Enforcement Response Plan Implementation

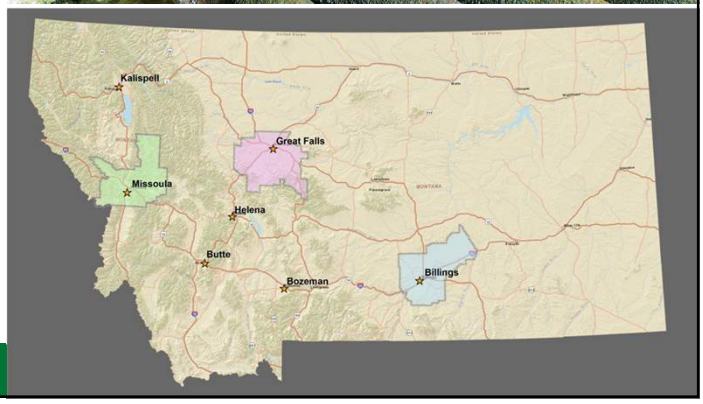
3


01
MS4 Program Background
02
IDDE Program Overview, Policies, & Procedures
03
Enforcement Response Plan Summary
04
Enforcement Response Plan Implementation

4

MS4 Program Background

- EPA MS4 (Municipal Separate Storm Sewer System) Permit Program
- Cities/Counties Regulated by Size
- Goal: Limit Pollutants through the implementation of BMPs consistant with the Storm Water Management Program (SWMP)



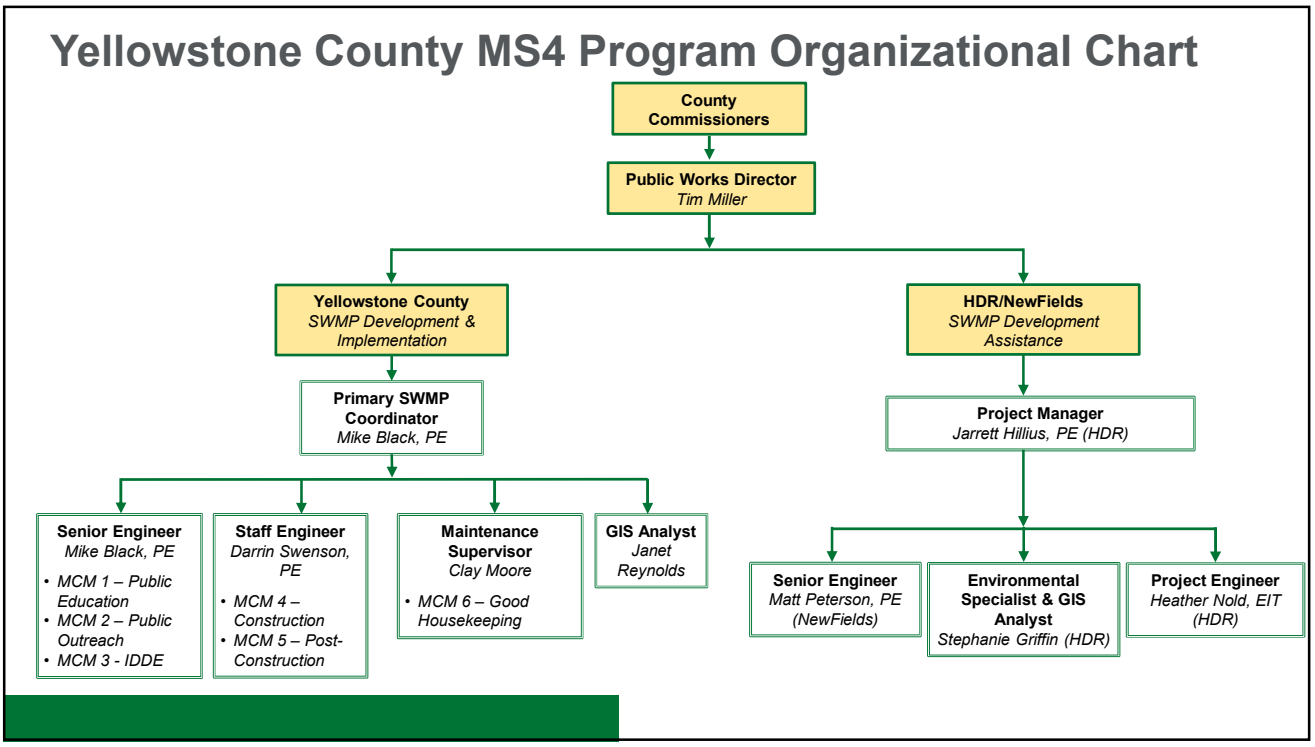
5

MS4 General Permit

- Storm Water Management Program
- Minimum Control Measures (MCM)
  - MCM 1: Public Education & Outreach
  - MCM 2: Public Involvement & Participation
  - MCM 3: Illicit Discharge Detection & Elimination
  - MCM 4: Construction Site Storm Water Management
  - MCM 5: Post-Construction Site Storm Water Management in New & Redevelopment
  - MCM 6: Pollution Prevention/Good Housekeeping

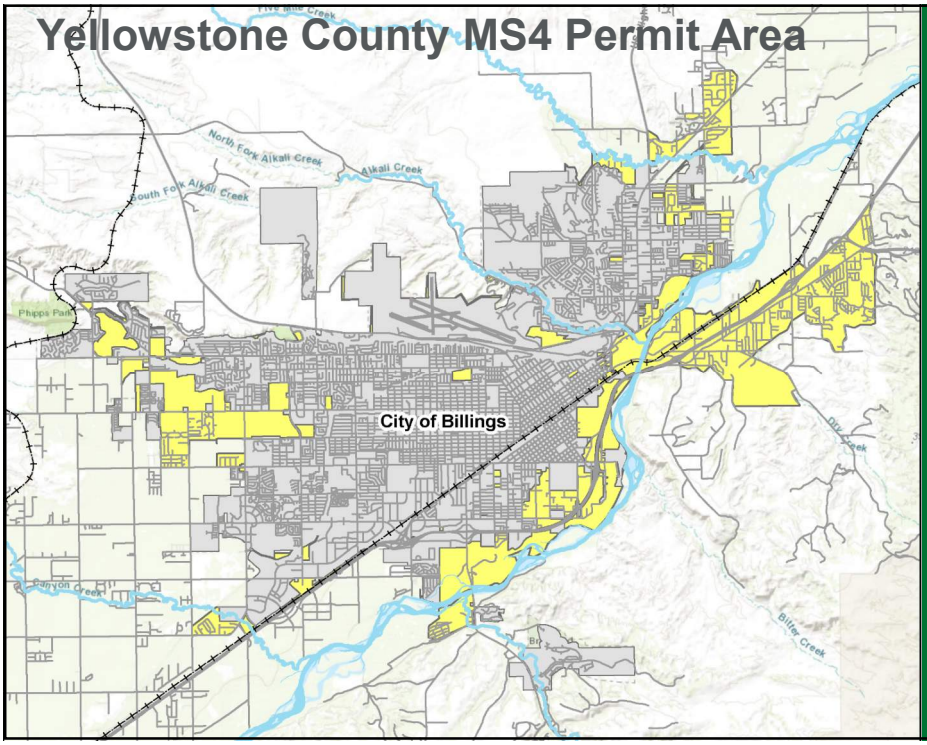
6

Yellowstone County MS4 Program Organizational Chart



7

Yellowstone County MS4 Permit Area



Eight Watersheds

- Alkali Creek
- Brockway Coulee - Yellowstone River
- City of Billings - Yellowstone River
- Five Mile Creek
- Hogans Slough
- Lower Blue Creek
- Lower Canyon Creek
- Sevenmile Creek - Yellowstone River

8

01 MS4 Program Background

02 IDDE Program Overview, Policies, & Procedures

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

9

MCM 3: Illicit Discharge Detection & Elimination

- Illicit Discharge: Any non-storm water discharge to a MS4 (with some exceptions, such as firefighting activities)
- Examples
  - Septic tank seepage
  - Laundry wastewater
  - Pesticides and fertilizers
  - Improper waste oil disposal

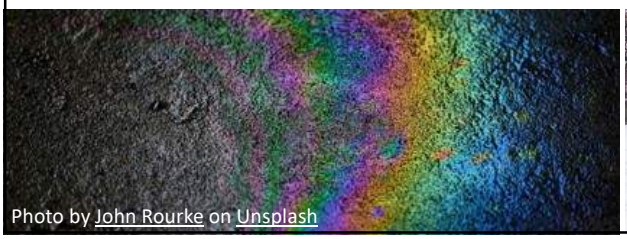


Photo by John Rourke on Unsplash

Photo by James Lewis on Unsplash

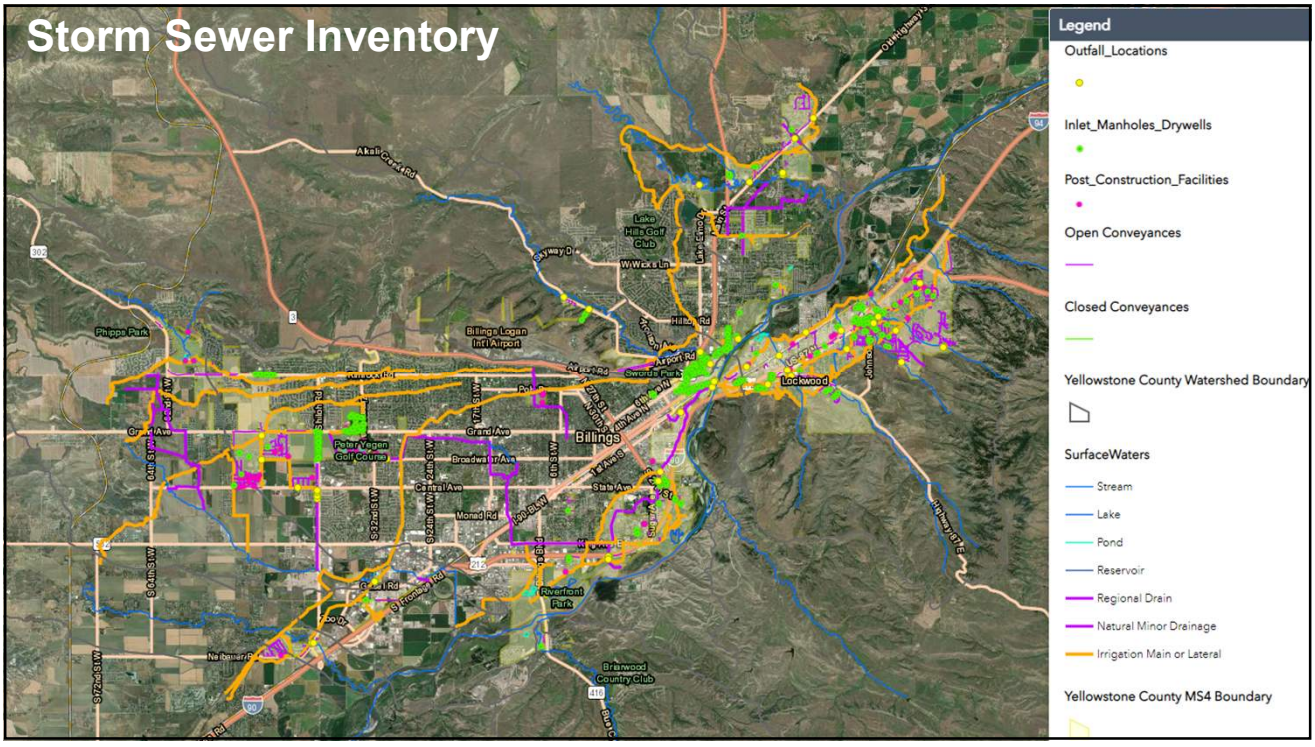
10

IDDE Program Elements

- Storm Water Sewer Inventory
- Allowable Non-Storm Water Discharge Evaluations
- Prohibit Illicit Discharges
- Outfall Inspections
- Illicit Discharge Investigations & Corrections
- Illicit Discharge Enforcement
- Investigation and Enforcement Documentation

11

Storm Sewer Inventory



12

Illicit Discharge Prohibitions

- Work in progress
- Currently operating under limited authority to prohibit discharges
- Coordinate with RiverStone Health, DEQ, and others as applicable

13

Outfall Inspections

- 20 Outfalls
- 12 High-Priority Outfalls
- Annual Dry Weather Screenings
  - Outfall description
  - Outfall condition
  - Flow characterization (for flowing outfalls)
  - Data collection

YELLOWSTONE COUNTY, MONTANA
OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Outfall ID: E-B0-OF-002	Today's date & time (auto-populated): 07/15/2019 3:45 PM
Subwatershed: City of Billings Yellowstone River	
Inspected by: KGOODAN	Air Temperature (°F): 87
Geographic Point: 	Camera: 
Latitude: 45.74199 / Longitude: -108.5332	Rainfall Last 24 hours: Yes (in.): 0.56 Rainfall Last 48 hours: Yes (in.): 0.71
Land Use in Drainage Area (Check all that apply): Open Space	Other: Riverfront Park - Lake Josephine Known Industries: None
Notes (e.g., origin of outfall, if known):	
Comments: Grey Eagle Ditch supplies water to two different conveyances which join into this open conveyance outfall into Lake Josephine	

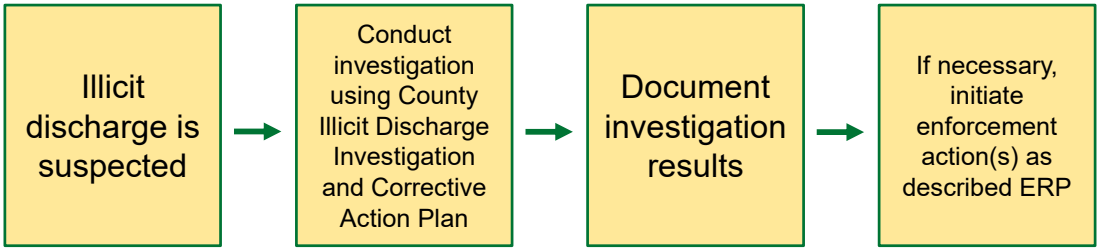
Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
Pipe	HDPE	Circular	Single	Diameter/Dimensions: 36"	In Water: Partially With Sediment: No
Flow Present? *If No, Skip to Section 4*	Yes				
Flow Description (If present)	Moderate				
Comments: Water flow from Grey Eagle Ditch into the lake flowing to the East.					

14

Investigation and Response

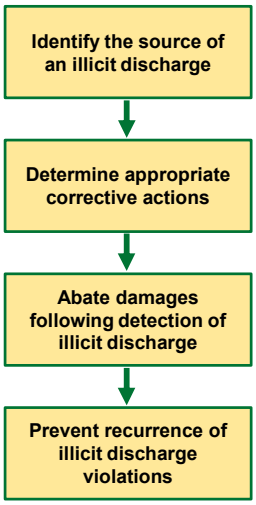
- When an illicit discharge is suspected, the SWMP Team will conduct an investigation in accordance with the Illicit Discharge Investigation and Corrective Action Plan to identify the source.
- When an illicit discharge is confirmed, the SWMP Team will document the results of the investigation and initiate enforcement action as allowed by applicable laws to abate the illicit connection or discharge.



15

Illicit Discharge Investigations

- Investigation & Corrective Action Plan



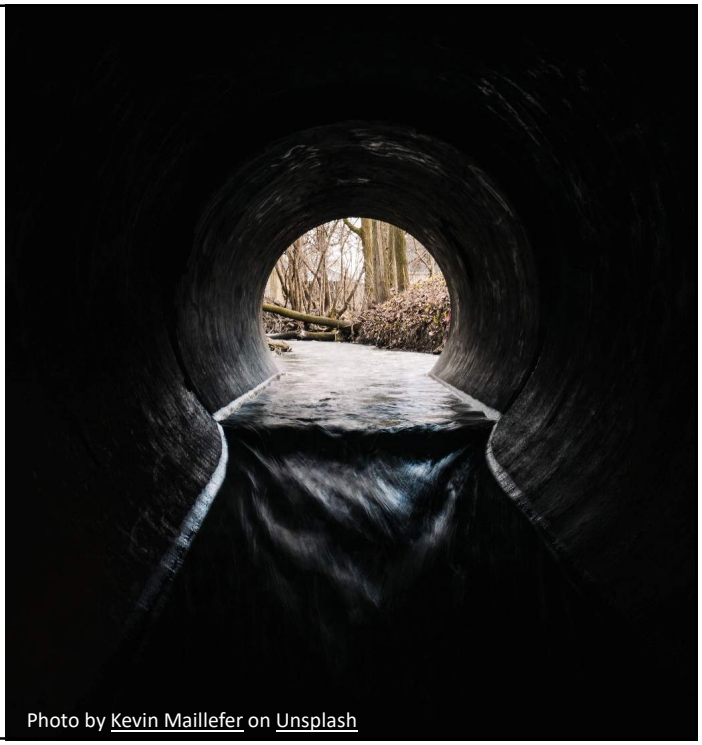


Photo by Kevin Maillefer on Unsplash

16

01 MS4 Program Background

02 IDDE Program Overview, Policies, & Procedures

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

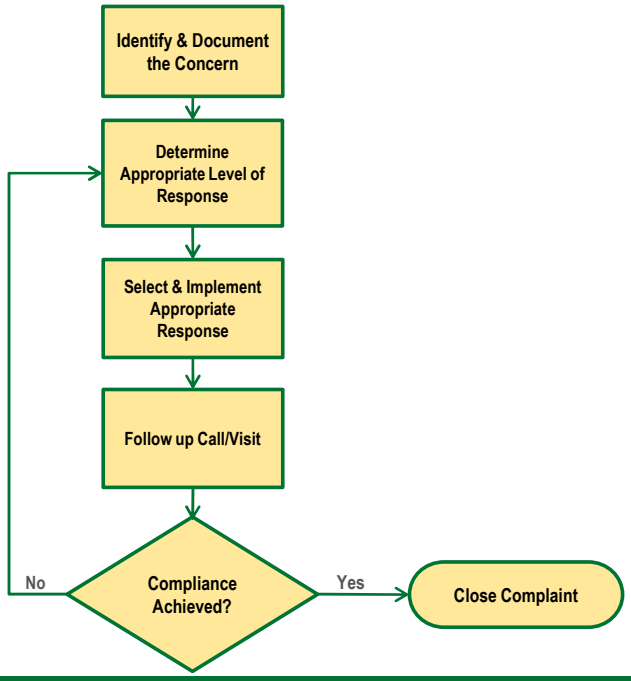
17

Response Remedies

- Once a storm water-related concern is identified, the appropriate level of response will be determined and an appropriate response remedy will be selected
- Three levels of responses available:

18

Response Remedies



19

Level 1 - No Enforcement Action

- **When**: County personnel are made aware of storm water-related concerns; but sufficient evidence does not exist to prove a violation is taking place
  - Example: Complaint is received stating that a storm water control has not been properly maintained; however, after a brief site inspection and/or verbal discussion, the County staff determines the storm water control is within compliance and no enforcement action is required.
- **Result**: Document concern and response using the Enforcement Response Documentation Form for future reference.

20

Level 2 - Informal Response

- **When**: First response option whenever a response is required
  - Except for situations that pose immediate or significant threat to human health or the environment, in which case a Level 3 response should be initiated
- **Result**: Establishes documentation necessary to implement formal enforcement actions through other agencies if necessary

- **Response Options**
  - Telephone conversations
  - Verbal notices
  - Meetings

21

Level 3 - Referral to Other Agencies

- **When:** Informal response proves insufficient to resolve the situation or the situation poses an immediate or significant threat to human health or the environment
- **Available Agencies**:
  - DEQ
  - Fire Department
  - RiverStone Health
  - Local Emergency Personnel
  - City of Billings Environmental Division
  - MDT Environmental Services

22

Additional Remedy Considerations

- Magnitude
- Duration
- Compliance History
- Good Faith of the Operator

23

01 MS4 Program Background

02 IDDE Program Overview, Policies, & Procedures

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

24

Enforcement Roles and Responsibilities

Enforcement Action	Delegated SWMP Team Member	SWMP Coordinator	Public Works Director
Telephone Conversation and/or Verbal Notice	Primary	Primary	Secondary
Meetings	Primary	Primary	Secondary
Referral to Other Agencies	N/A	Primary	Primary

25

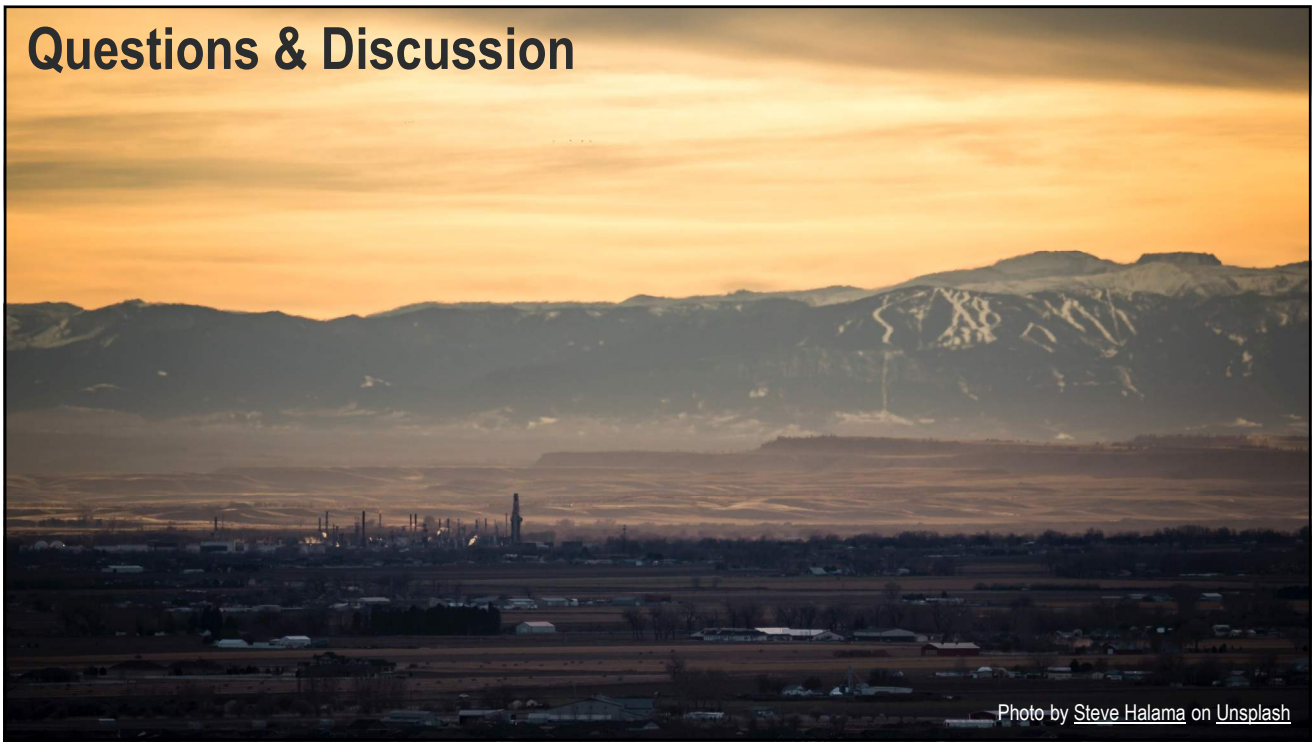
Example Responses and Escalation Process

- Examples of typical responses to common illicit discharge violations and a typical schedule for escalation of enforcement actions are shown below. Each situation has unique circumstances and concerns. Violations that pose a significant threat to human health and/or the environment will utilize more severe enforcement actions on a compressed timeframe in order to quickly eliminate the illicit discharge, abate any damages, and prevent recurrence.

Violation	Circumstances of Violation	Initial Level of Response	Initial Response Remedy
Dumping household chemicals into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Contractor discharging paint, concrete wash water, or other deleterious substance into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Restaurant or business discharging fat, oil, grease, or mop wash water into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Direct connection of anything other than storm water or clean groundwater into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Discharging wastewater from a RV, camper, or other source into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies

Response	Response Schedule	Responsibility
Telephone Conversation, Verbal Notice, and/or Meeting	Within 48 hours of Violation	SWMP Coordinator
Referral to Other Agencies	As deemed appropriate by the SWMP Coordinator and Public Works Director	SWMP Coordinator Public Works Director

26



27

28

1

Yellowstone County, MT MS4 Enforcement Response Plan Training – Post-Construction Site

January 13, 2020

2

01 MS4 General Permit Post-Construction Overview

02 Post-Construction Program Development

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

3

01 MS4 General Permit Post-Construction Overview

02 Post-Construction Program Development

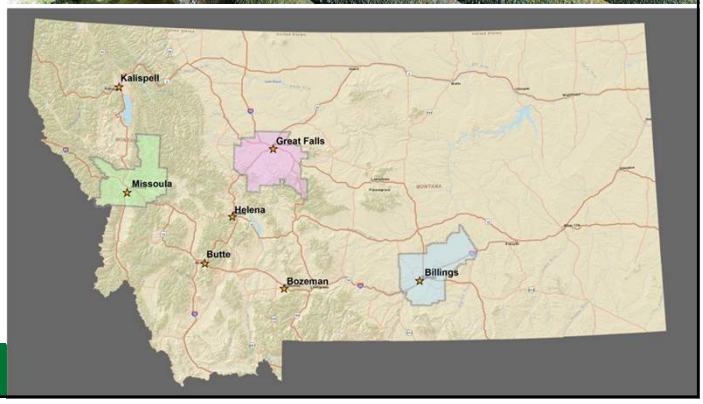
03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

4

MS4 Program Background

- EPA MS4 Permit Program
- Cities/Counties Regulated by Size
- Goal: Limit Pollutants through the implementation of BMPs consistence with the Storm Water Management Program (SWMP)



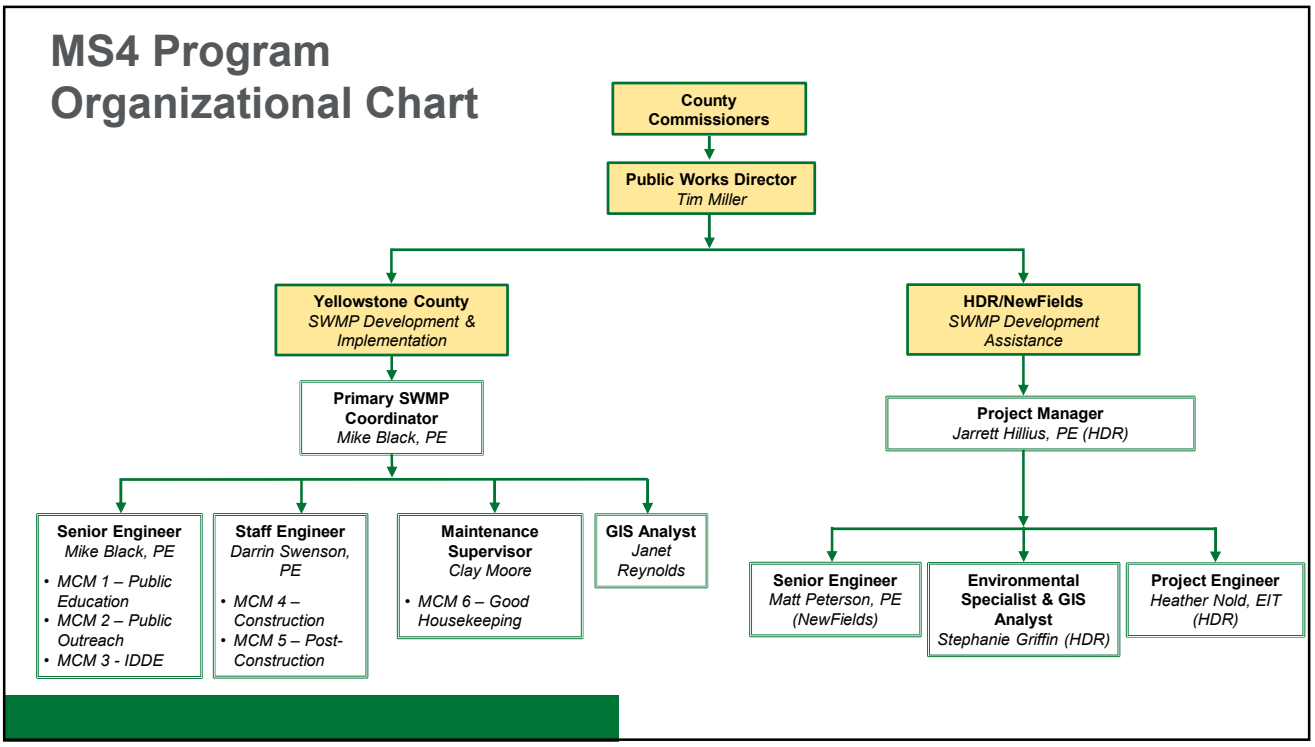
5

MS4 General Permit

- Permit Term: 2017 - 2021
- Storm Water Management Program
- Minimum Control Measures
  - MCM 1: Public Education & Outreach
  - MCM 2: Public Involvement & Participation
  - MCM 3: Illicit Discharge Detection & Elimination
  - MCM 4: Construction Site Storm Water Management
  - MCM 5: Post-Construction Site Storm Water Management in New & Redevelopment
  - MCM 6: Pollution Prevention/Good Housekeeping

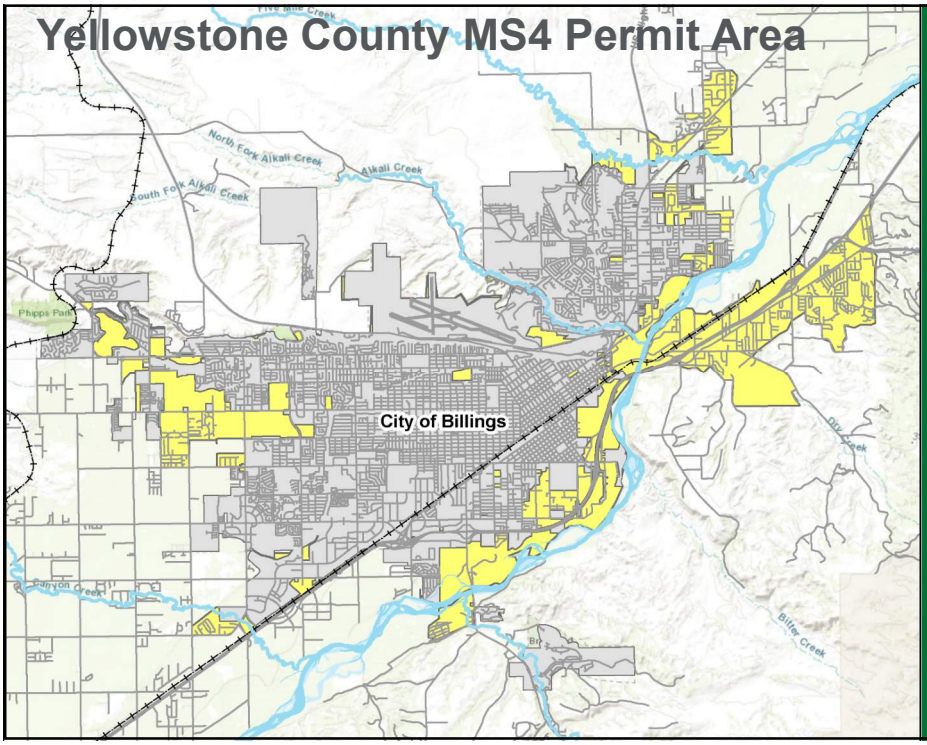
6

MS4 Program Organizational Chart



7

Yellowstone County MS4 Permit Area



Eight Watersheds

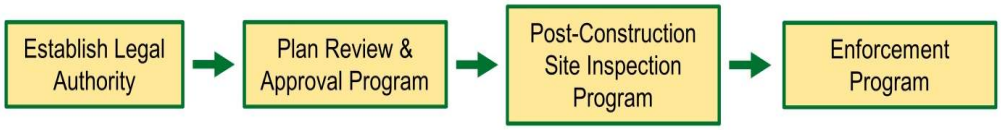
- Alkali Creek
- Brockway Coulee - Yellowstone River
- City of Billings - Yellowstone River
- Five Mile Creek
- Hogans Slough
- Lower Blue Creek
- Lower Canyon Creek
- Sevenmile Creek - Yellowstone River

8

MCM 5: Post-Construction Site Storm Water Management in New & Redevelopment

Addresses projects that disturb greater than or equal to 1 acre

- Elements of Construction Site Storm Water Management Program
  - ☐ Ordinance or Regulatory Mechanism (require post-construction storm water controls)
  - ☐ Plan Review and Approval Process (grading & drainage plan)
  - ☐ Post-Construction BMP Inspection Program
  - ☐ Program Enforcement



9

Post- Construction Design Standard

***Runoff Reduction Requirement*:**

Infiltrate, evapotranspire, or capture for reuse the runoff generated from the first 0.5" of rainfall from a 24-hour event

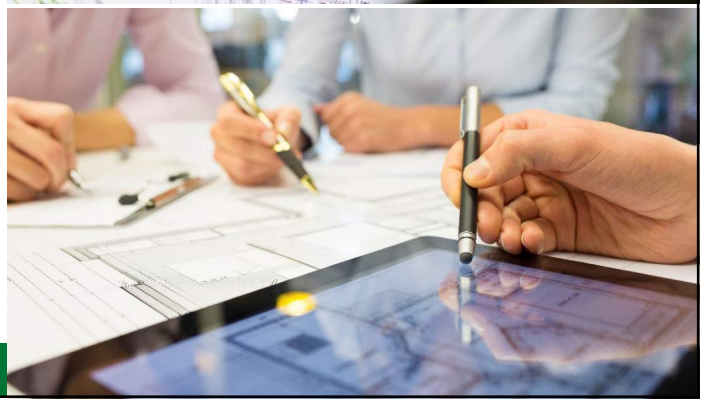
Secondary Options:

a.) Treat Onsite
b.) Manage Offsite
c.) Treat Offsite

10

Post-Construction Program Components

- Plan review and approval program
  - Plan review checklist
- Inspection program
  - Inspection staff
  - Inspection form
  - Project inventory
  - Inspection frequency protocol
- Enforcement program
  - Enforcement response plan



11

01 MS4 General Permit Post-Construction Overview

02 Post-Construction Program Development

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

12

Post-Construction Program Development

- Ordinance or Regulatory Mechanism
  - Updating subdivision regulations
- Plan Reviews & Approvals
  - Considering grading and drainage plan submittals for subdivision applications
- Inspections
  - Would conduct inspections during subdivision development process
- Enforcement
  - Use limited authority and referral to other agencies (Update ERP with subdivision regulation revisions)


13

01 MS4 General Permit Post-Construction Overview

02 Post-Construction Program Development

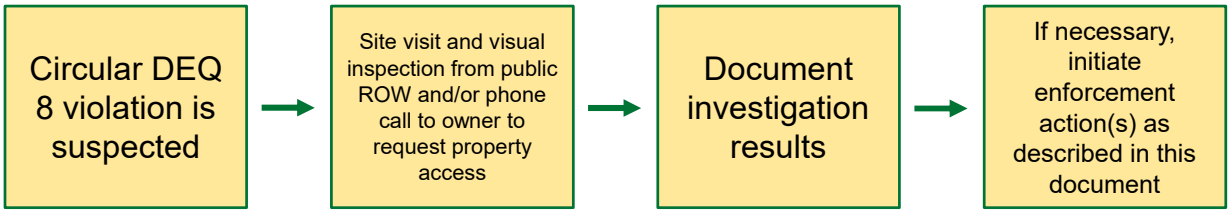
03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

14

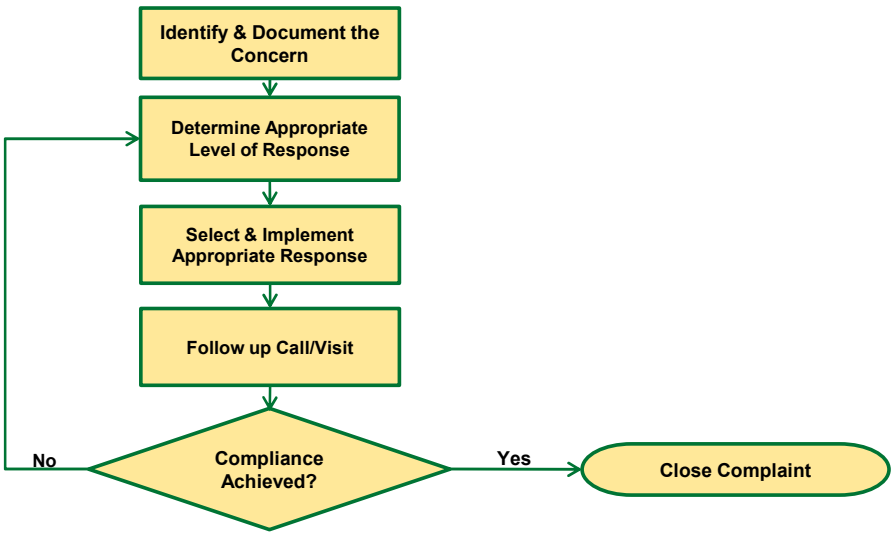
Post-Construction Site Storm Water - ERP

- The General Permit requires the County to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. The County subdivision regulations currently require regulated projects to abide by the Montana DEQ requirements (i.e., Montana Circular DEQ 8 requirements).
- The County may observe a suspected Circular DEQ 8 violation during the course of County operations or they may receive a complaint. When the SWMP team believes an observation or complaint requires investigation, a site visit and inspection (from public ROW) will be conducted. If necessary, the SWMP Coordinator may contact the property owner to request access to the property to further evaluate the situation. When a violation is confirmed, the SWMP Team will document the results of the investigation and initiate enforcement action(s) as described in this document and allowed by applicable laws to correct the issue.



15

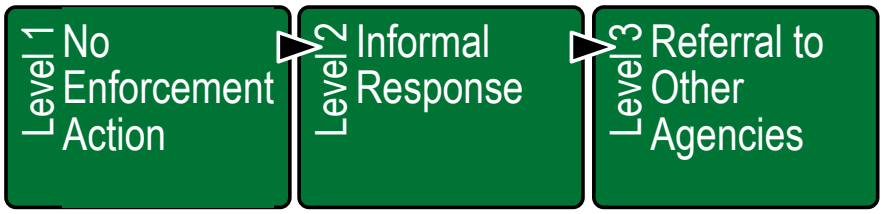
Enforcement Response Flowchart



16

Response Remedies

- Once a storm water-related concern is identified, the appropriate level of response will be determined and an appropriate response remedy will be selected. The County currently has three levels of responses available.



17

Level 1 - No Enforcement Action

- **When**: County personnel are made aware of storm water-related concerns; but sufficient evidence does not exist to prove a violation is taking place
  - Example: Complaint is received stating that a storm water control has not been properly maintained; however, after a brief site inspection and/or verbal discussion, the County staff determines the storm water control is within compliance and no enforcement action is required.
- **Result**: Document concern and response using the Enforcement Response Documentation Form for future reference.

18

Level 2 - Informal Response

- **When**: First response option whenever a response is required
  - Except for situations that pose immediate or significant threat to human health or the environment, in which case a Level 3 response should be initiated
- **Result**: Establishes documentation necessary to implement formal enforcement actions through other agencies if necessary
- **Response Options**
  - Telephone conversations
  - Verbal notices
  - Meetings

19

Level 3 - Referral to Other Agencies

- **When:** Informal response proves insufficient to resolve the situation or the situation poses an immediate or significant threat to human health or the environment
- **Available Agencies**:
  - DEQ
  - Fire Department
  - RiverStone Health
  - Local Emergency Personnel
  - City of Billings Environmental Division
  - MDT Environmental Services

20

Additional Remedy Considerations

- Magnitude
- Duration
- Compliance History
- Good Faith of the Operator

21

01 MS4 General Permit Post-Construction Overview

02 Post-Construction Program Development

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

22

Enforcement Roles and Responsibilities

Enforcement Action	Delegated SWMP Team Member	SWMP Coordinator	Public Works Director
Telephone Conversation and/or Verbal Notice	Primary	Primary	Secondary
Meetings	Primary	Primary	Secondary
Referral to Other Agencies	N/A	Primary	Primary

23

Escalation Process and Schedule for Post-Construction Related Concerns

- Examples of typical responses to common post-construction storm water violations and a typical schedule for escalation of enforcement actions. Each situation has unique circumstances and concerns.. Violations that pose a significant threat to human health and/or the environment will utilize more severe enforcement actions on a compressed timeframe in order to quickly eliminate the illicit discharge, abate any damages, and prevent recurrence.

Violation	Circumstances of Violation	Initial Level of Response	Initial Response Remedy
Failure to obtain approval of subdivision plans from DEQ and the County Planning Department	Operator initiated construction prior to receiving approval	Level 3	Referral to Other Agencies
Failure to construct post-construction storm water management facilities as shown on the plans and as required by DEQ Circular 8	Initial Incident	Level 3	Referral to Other Agencies
Failure to abide by the operation and maintenance plan submitted to DEQ for post-construction storm water management facilities	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Failure to notify the Public Works Department about modifying post-construction storm water management facilities	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Failure to notify the Public Works Department of a change of ownership	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies

Response	Response Schedule	Responsibility
Telephone Conversation, Verbal Notice, and/or Meeting	Within 48 hours of Violation	SWMP Coordinator
Referral to Other Agencies	As deemed appropriate by the SWMP Coordinator and Public Works Director	SWMP Coordinator Public Works Director

24


Questions & Discussion
CAT
Photo by Jason Jarrach on Unsplash

25

26

1

Yellowstone County, MT MS4 Enforcement Response Plan Training – Construction Sites

January 13, 2020

Photo by Troy Mortier on Unsplash

2


01
MS4 General Permit Construction Site Overview
02
Construction Program Development
03
Enforcement Response Plan Summary
04
Enforcement Response Plan Implementation

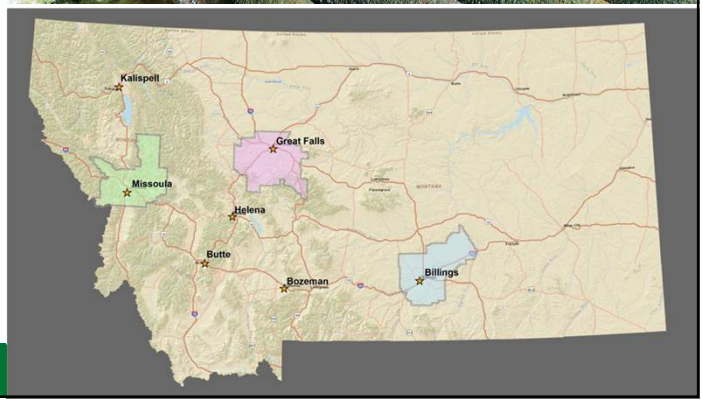
3


01
MS4 General Permit Construction Site Overview
02
Construction Program Development
03
Enforcement Response Plan Summary
04
Enforcement Response Plan Implementation

4

MS4 Program Background

- EPA MS4 Permit Program
- Cities/Counties Regulated by Size
- Goal: Limit Pollutants through the implementation of BMPs consistence with the Storm Water Management Program (SWMP)



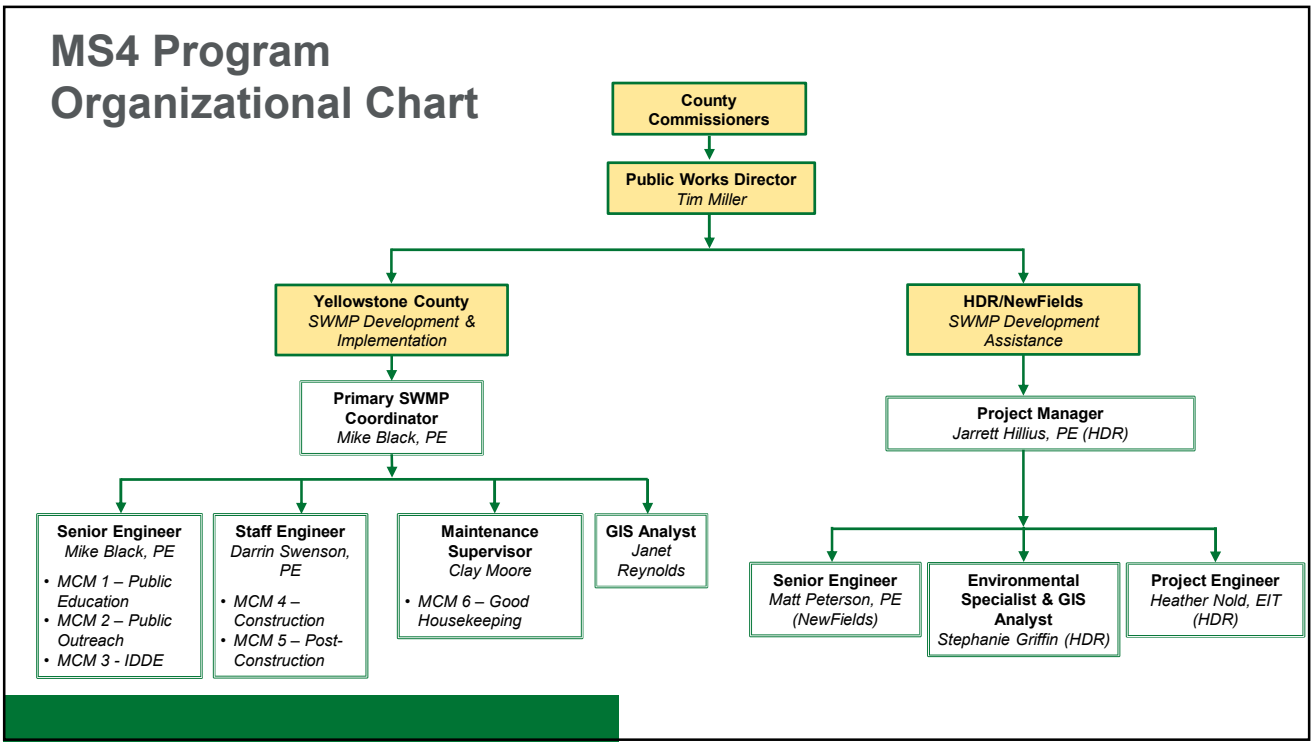
5

MS4 General Permit

- Permit Term: 2017 - 2021
- Storm Water Management Program
- Minimum Control Measures
  - MCM 1: Public Education & Outreach
  - MCM 2: Public Involvement & Participation
  - MCM 3: Illicit Discharge Detection & Elimination
  - MCM 4: Construction Site Storm Water Management
  - MCM 5: Post-Construction Site Storm Water Management in New & Redevelopment
  - MCM 6: Pollution Prevention/Good Housekeeping

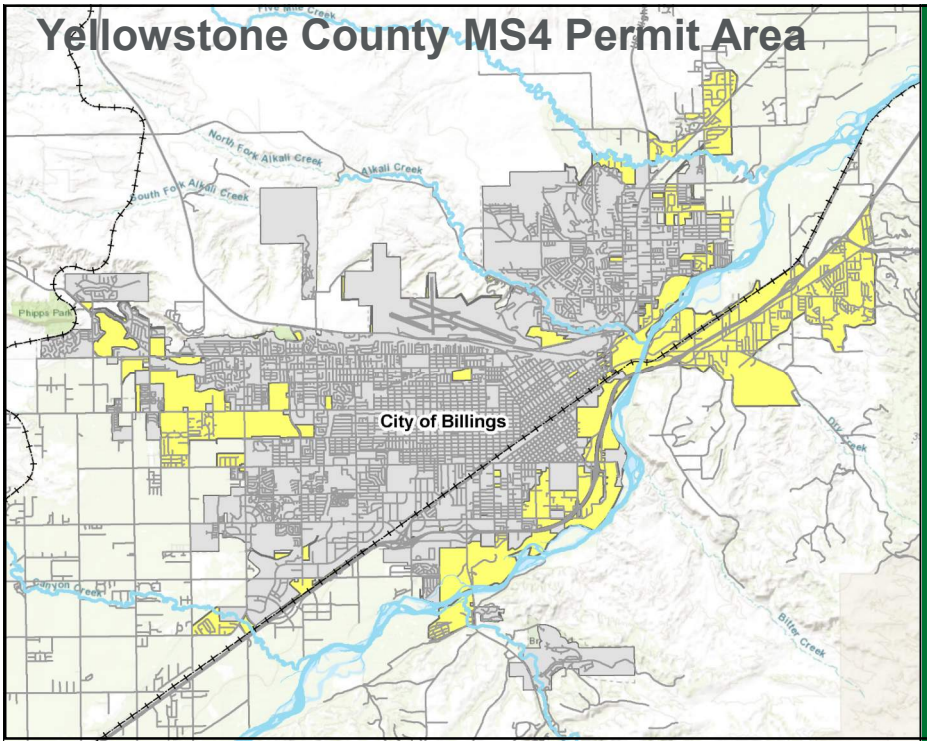
6

MS4 Program Organizational Chart



7

Yellowstone County MS4 Permit Area



Eight Watersheds

- Alkali Creek
- Brockway Coulee - Yellowstone River
- City of Billings - Yellowstone River
- Five Mile Creek
- Hogans Slough
- Lower Blue Creek
- Lower Canyon Creek
- Sevenmile Creek - Yellowstone River

8

MCM 4: Construction Site Storm Water Management

Addressing projects with land disturbance greater than or equal to 1 acre

- Elements of Construction Site Storm Water Management Program
  - ☐ Ordinance or Regulatory Mechanism (require construction storm water controls)
  - ☐ Plan Review and Approval Process (SWPPP)
  - ☐ Construction Site Inspection Program
  - ☐ Program Enforcement

Establish Legal Authority → Plan Review & Approval Program → Construction Site Inspection Program → Enforcement Program

9

Construction Program Components

- Plan review and approval program
  - Plan review checklist (SWPPP)
- Inspection program
  - Inspection staff
  - Inspection form
  - Project inventory
  - Inspection frequency protocol
- Enforcement program
  - Enforcement response plan

10

01 MS4 General Permit Construction Site Overview

02 Construction Program Development

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

11

Construction Program Development

- Ordinance or Regulatory Mechanism
  - Updating subdivision regulations
- Plan Reviews & Approvals
  - Considering SWPPP submittals for subdivision applications
- Inspections
  - Would conduct inspections during subdivision development process
- Enforcement
  - Use limited authority and referral to other agencies (Update ERP with subdivision regulation revisions)

12

01 MS4 General Permit Construction Site Overview

02 Construction Program Development

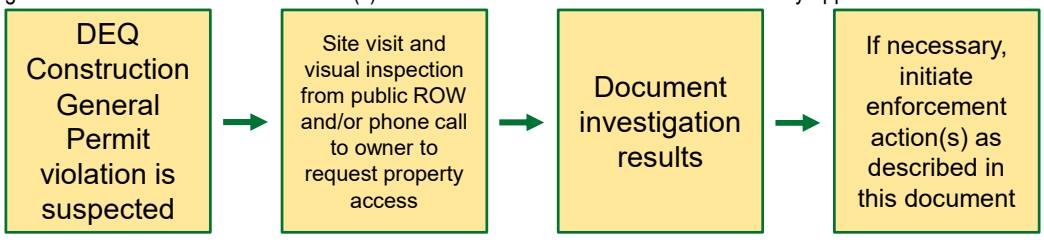
03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

13

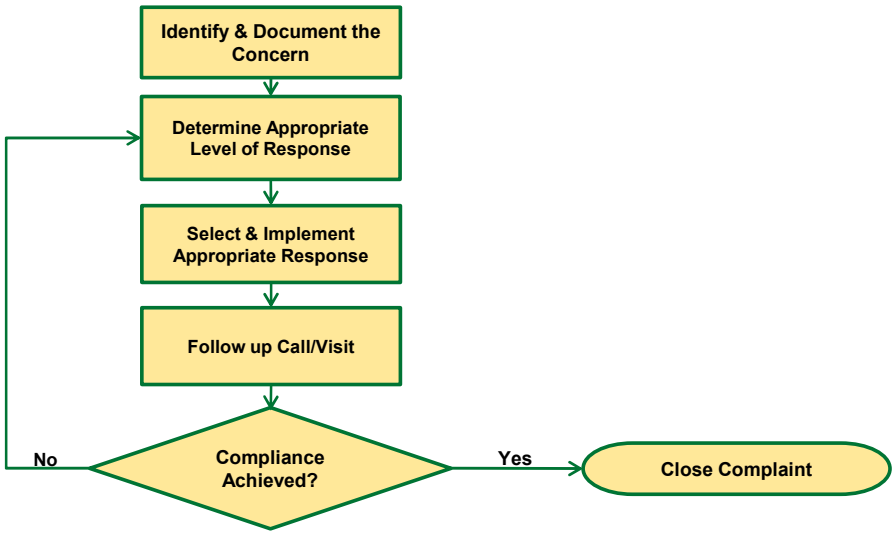
Construction Site Storm Water

- The General Permit requires the County to regulate storm water runoff from construction activities that result in a land disturbance ***of greater than or equal to one acre and from construction activities disturbing less than one acre if the activities are part of a larger common plan of development or sale that would disturb one acre or more.*** The County subdivision regulations currently require regulated projects to abide by the Montana DEQ requirements (i.e., Montana DEQ Construction General Permit requirements).
- The County may observe a suspected Construction General Permit violation during the course of County operations or they may receive a complaint. When the SWMP team believes an observation or complaint requires investigation, a site visit and inspection (from public ROW) will be conducted. If necessary, the SWMP Coordinator may contact the property owner to request access to the property to further evaluate the situation . When a violation is confirmed, the SWMP Team will document the results of the investigation and initiate enforcement action(s) as described in this document and allowed by applicable laws to correct the issue.



14

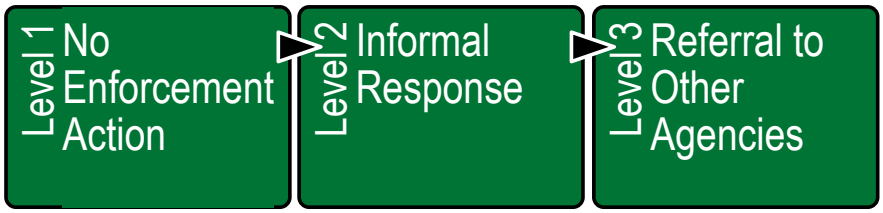
Enforcement Response Flowchart



15

Response Remedies

- Once a storm water-related concern is identified, the appropriate level of response will be determined and an appropriate response remedy will be selected. The County currently has three levels of responses available.



16

Level 1 - No Enforcement Action

- **When**: County personnel are made aware of storm water-related concerns; but sufficient evidence does not exist to prove a violation is taking place
  - Example: Complaint is received stating that a storm water control has not been properly maintained; however, after a brief site inspection and/or verbal discussion, the County staff determines the storm water control is within compliance and no enforcement action is required.
- **Result**: Document concern and response using the Enforcement Response Documentation Form for future reference.

17

Level 2 - Informal Response

- **When**: First response option whenever a response is required
  - Except for situations that pose immediate or significant threat to human health or the environment, in which case a Level 3 response should be initiated
- **Result**: Establishes documentation necessary to implement formal enforcement actions through other agencies if necessary

- **Response Options**
  - Telephone conversations
  - Verbal notices
  - Meetings

18

Level 3 - Referral to Other Agencies

- **When:** Informal response proves insufficient to resolve the situation or the situation poses an immediate or significant threat to human health or the environment
- **Available Agencies**:
  - DEQ
  - Fire Department
  - RiverStone Health
  - Local Emergency Personnel
  - City of Billings Environmental Division
  - MDT Environmental Services

19

Additional Remedy Considerations

- Magnitude
- Duration
- Compliance History
- Good Faith of the Operator

20

01 MS4 General Permit Construction Site Overview

02 Construction Program Development

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

21

Enforcement Roles and Responsibilities

Enforcement Action	Delegated SWMP Team Member	SWMP Coordinator	Public Works Director
Telephone Conversation and/or Verbal Notice	Primary	Primary	Secondary
Meetings	Primary	Primary	Secondary
Referral to Other Agencies	N/A	Primary	Primary

22

Escalation Process and Schedule for Construction Site Storm Water - Related Concerns

- Typical responses to common construction site storm water violations and a typical schedule for escalation of enforcement actions. Each situation has unique circumstances and concerns. Therefore, the tables below serve as guidance only. Violations that pose a significant threat to human health and/or the environment will utilize more severe enforcement actions on a compressed timeframe in order to quickly eliminate the illicit discharge, abate any damages, and prevent recurrence.

Violation	Circumstances of Violation	Initial Level of Response	Initial Response Remedy
Conducting earth disturbing activities without preparing a SWPPP and obtaining coverage under DEQ's Construction General Permit	Operator is unware of requirements	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Operator is aware of requirements but has not obtain coverage	Level 3	Referral to Other Agencies
Best management practices (BMPs) as listed on the SWPPP are: ▪ Not installed ▪ Not installed correctly ▪ Not regularly inspected ▪ Not maintained	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Poorly maintained construction site (i.e. lack of good housekeeping techniques, tracking soil offsite, excessive trash and debris, etc.)	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
SWPPP is not up-to-date	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
SWPPP is not located on site	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies

23

Escalation Process and Schedule for Construction Site Storm Water - Related Concerns Cont'd.

Response	Response Schedule	Responsibility
Telephone Conversation, Verbal Notice, and/or Meeting	Within 48 hours of Violation	SWMP Coordinator
Referral to Other Agencies	As deemed appropriate by the SWMP Coordinator and Public Works Director	SWMP Coordinator Public Works Director

24


Questions & Discussion
CAT
Photo by Jason Jarrach on Unsplash

25

26

Storm Water Pollution Prevention Standard Operating Procedures

for:

MetraPark

308 6th Avenue North
Billings, MT, 59101
(406) 256-2400

SOP Preparation Date: January 2021

Yellowstone County Public Works Department

Storm Water Management Program

DRAFT

SECTION 1.0 Facility Description and Contact Information

1.1 Facility Information

Facility Information

Name of Facility: MetraPark – Arena, Buildings, and Parking Lots

Street: 308 6th Avenue North

City: Billings State: MT ZIP Code: 59101

Discharge Information

Drainage Basin: City of Billings – Yellowstone River and Alkali Creek

Drainage Basin Receiving Waterbody: Alkali Creek and Yellowstone River

Does this facility discharge storm water *directly* into any segment of a receiving waterbody?[1]

☒Yes ☐No

Permit Information

Is this facility permitted by an MPDES Permit (in addition to MS4)? ☐Yes ☒No

If Yes, identify other discharge permits: _____

1.2 Contact Information/Responsible Parties

Metra Park Director of Operations:

Name: Jeff Seward

Telephone number: (406) 256-2407

Email address: jseward@metrapark.com

County Storm Water Management Program Coordinator:

Storm Water Management Contact Name (Primary): Mike Black

Telephone number: (406) 256-2735

Email address: mblack@co.yellowstone.mt.gov

1.3 Storm Water Pollution Prevention Team

The storm water pollution prevention team is responsible for implementing and maintaining storm water control measures, best management practices (BMPs), and taking corrective actions when required.

Name	Position/Title	Individual Responsibilities
Jeff Seward	Director of Operations	Site Storm Water Lead
Randy Pardis	Maintenance Superintendent	Site Storm Water Co-Lead
John Carney	Maintenance Foreman	Site Storm Water Co-Lead

[1] For purposes of this document, direct discharge refers to site runoff discharging directly into a stream or other receiving waterbody immediately upon leaving the bounds of the site or facility.

1.4 Site Description

The MetraPark complex is located at 308 6th Avenue North and consists of multiple facilities supporting events including concerts, rodeos, basketball, hockey, circus events, ice rink events, boxing, wrestling, and indoor football. The site has a total of 8 parking facilities that function as administration parking lots, primary parking lots, overflow parking lots, recreational vehicle (RV) parking lots, and equipment loading bays. The Operations Division at MetraPark is responsible for operation and maintenance (O&M) of these event facilities. Operation activities at the MetraPark arena and facilities include event cleanup, sidewalk winter operations, animal waste removal, fertilizer/pesticide application, building maintenance, and facility landscaping. O&M services at the parking lot include sweeping, plowing, sanding, snow removal, pavement and curb markings, and asphalt/concrete projects. A site plan is provided in Figure 1.

The site is scheduled to undergo a series of updates over the coming years. The conceptual master plan, developed by Charles D. Smith Architecture and Planning, is shown in the attachments. The planned updates include a hotel, restaurant, food truck court, RV park, carnival lot, first interstate arena, expo center, and livestock barns. During the construction of the master plan, a stormwater protection plan (SWPP) should be developed to identify best management practices and implement these practices on site to prevent stormwater pollution.

1.5 Purpose and Limitations

This standard operating procedure (SOP) document identifies potential storm water pollutants that could be discharged from the MetraPark, including the arena, buildings, and parking facilities, and storm water pollution best management practices (BMPs) to be installed, implemented, and maintained to minimize the discharge of pollutants from storm water runoff. This document will be updated to reflect any changes made to the MetraPark arena, buildings, and parking lots upon completion of the project.

This document is not expected to cover all necessary procedure actions. Operators are to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper containment of pollutants.

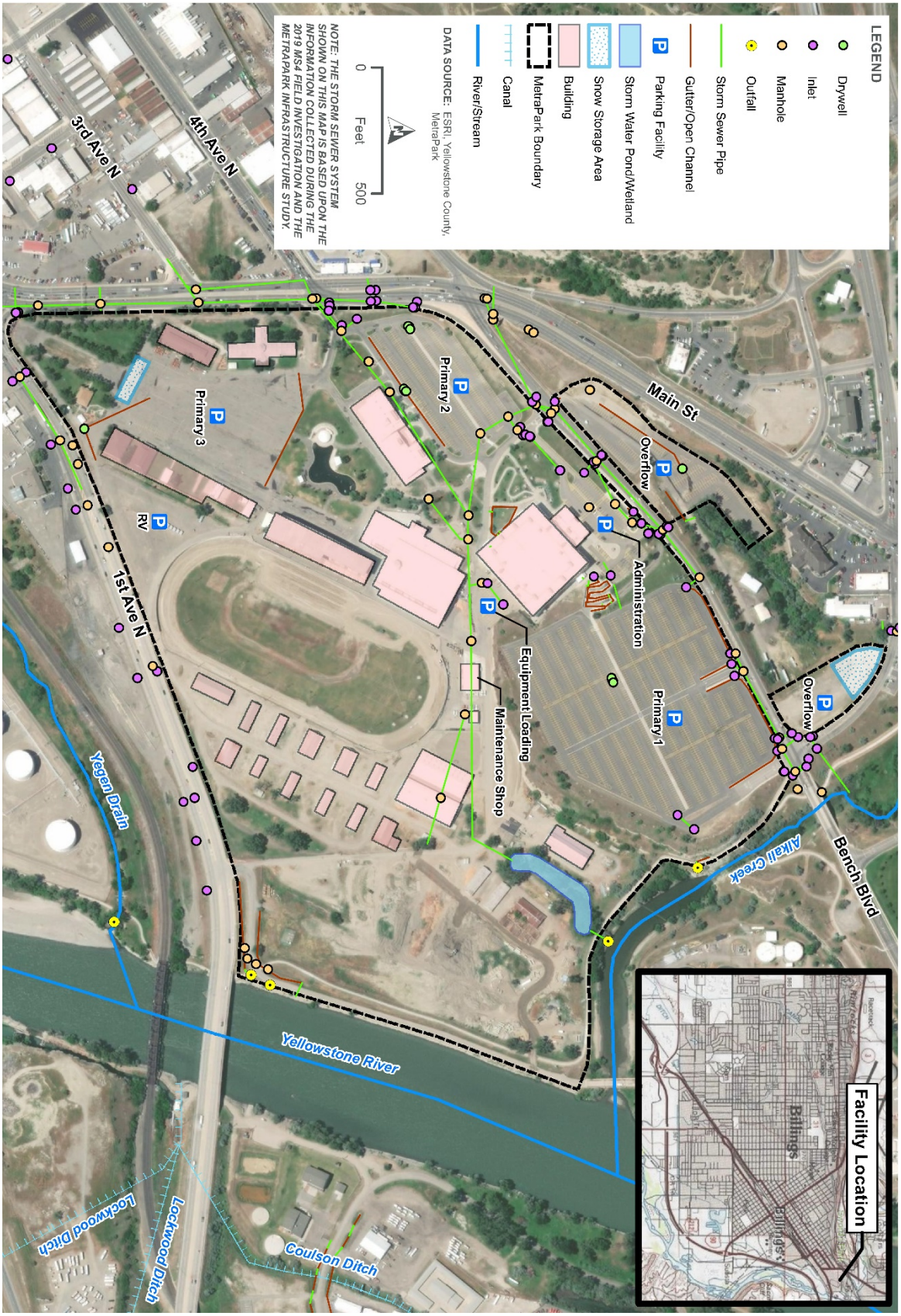


Figure 1. MetraPark – Parking Facility Site Plan

SECTION 2.0 Potential Storm Water Pollutant Sources

This section describes potential storm water pollutant sources associated with the parking facilities at MetraPark.

2.1 Potential Storm Water Pollutants Associated with Facility Activities

The MetraPark facilities serve various functions during events. General operational activities that occur within these facilities include event cleanup, sidewalk winter operations, removal of animal waste, building maintenance, facility landscaping, street maintenance/repairs, winter street operations, parking lot maintenance, catch basin cleaning, and solid waste management. A list of potential pollutants associated with these activities is provided in Table 1. Measures to be taken to reduce the potential for discharge of pollutants to the storm sewer system are identified in Section 3.2.2.

Table 1. MetraPark Activities and Potential Storm Water Pollutants

Activity	Potential Pollutants								
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil, Grease, Fuel	Organics	Pesticides/Herbicides	Hazardous Waste[1]
Event Cleanup			X						X
Sidewalk Winter Operations	X		X						X
Animal Waste Removal		X			X		X		
Building Maintenance	X		X	X		X	X		X
Facility Landscaping	X	X				X	X	X	
Street Maintenance/Repairs	X	X	X	X	X	X		X	X
Winter Street Operations	X		X			X			X
Parking Lot Maintenance	X	X	X	X	X	X		X	X
Catch Basin Cleaning	X	X	X	X	X	X	X	X	
Solid Waste Management		X	X	X	X	X	X		X

[1] Hazardous waste is typically any material that is potentially harmful to human health or the environment. Examples include antifreeze, household cleaners, and paints.

2.2 Spills and Leaks

Inadvertent spills and leaks could occur in the arena and building facilities during various events such as rodeos, concerts, the Montana Fair, and trade shows. Table 2 provides a list of locations where spills and leaks could occur and respective storm drain system discharge points outside the facilities. Spill response protocol is described in Section 3.2.3.

Table 2. Areas Where Potential Spills/Leaks Could Occur

Location	Discharge Point
Garbage Receptacles	Sheet flow to inlets, then to storm water inlet
Animal and Livestock Staging	Sheet flow to valley gutter, then to Yellowstone River
Maintenance Shop	Sheet flow to valley gutter, then to inlet/drywell
Equipment Loading Parking Facility	Sheet flow to inlets, then to storm water pond
Primary 3 Parking Facility	Sheet flow to valley gutter, then to inlet/drywell
RV Parking Facility	Sheet flow to valley gutter, then to inlet/drywell

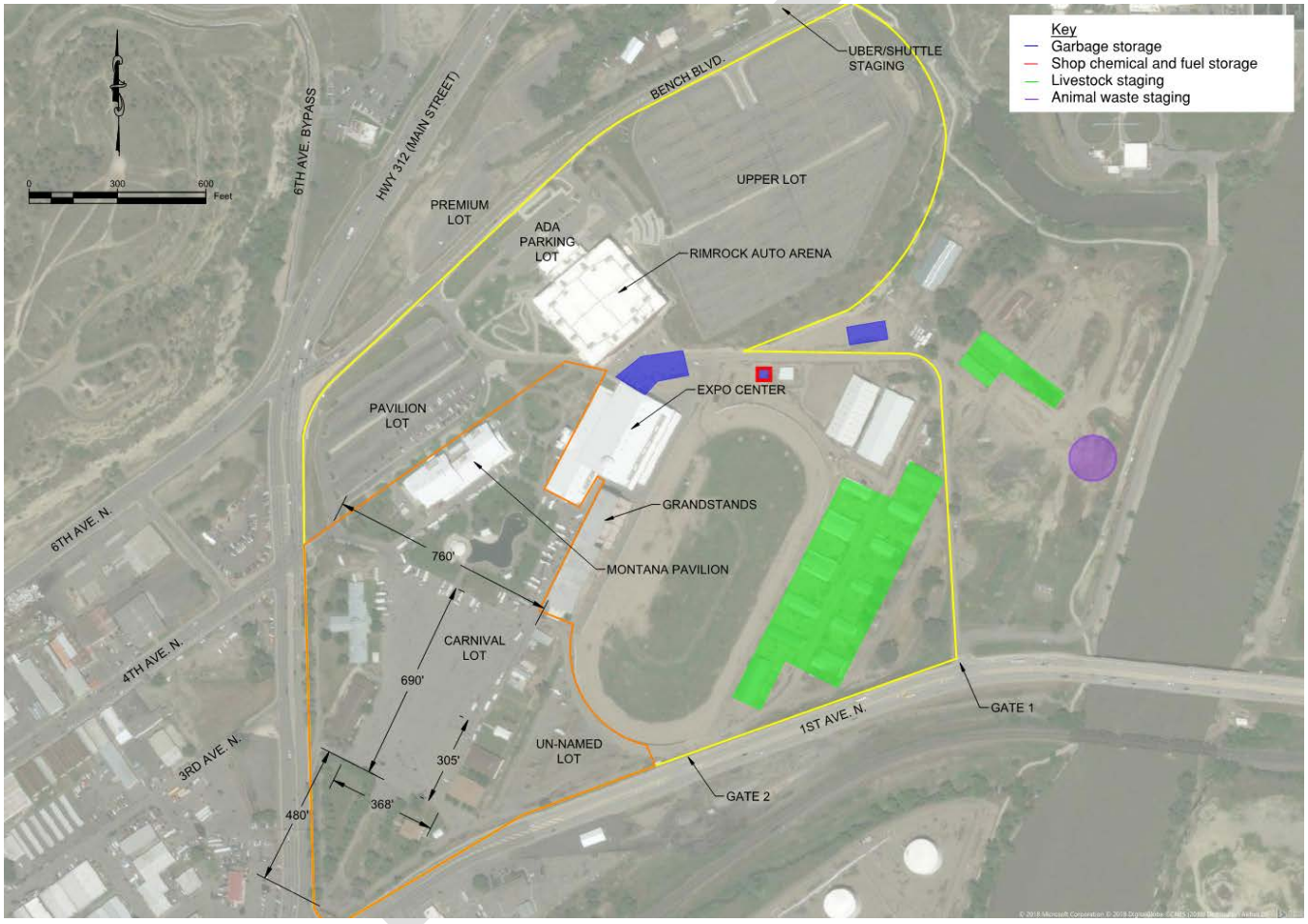


Figure 2. MetraPark – Facility Areas Where Potential Spills/Leaks Could Occur

SECTION 3.0 Storm Water Control Measures

This section describes the storm water BMPs to be installed, implemented, and maintained to minimize the discharge of pollutants from storm water runoff at the facility.

3.1 Structural BMPs

3.1.1 Storm Water Drainage System

The MetraPark complex overlaps between the City of Billings – Yellowstone River watershed and the Alkali Creek watershed. The drainage system within the parking facilities is composed of concrete valley gutters, drywells, inlets/catch basins, manholes, storm sewer pipe, and a storm water pond:

- Natural and man-made valley gutters convey runoff from four parking facilities to drywells.
- Inlets/catch basins capture runoff from multiple facilities, which is then conveyed through storm sewer piping to the storm water pond.
- The storm water pond is located on the eastern side of the MetraPark complex and discharges treated runoff directly into Alkali Creek.
- Primary snow storage areas are located within two parking facilities.

The storm water drainage system features associated with the facilities are shown on the site plan in Figure 1.

3.1.2 Permanent Storm Water Management BMPs

BMP Locations

Storm water runoff quality and quantity from the arena and facilities is controlled by the storm water pond and drywells. The pond consists of a BioHaven Floating Island which serves as a treatment wetland to help remove storm water pollutants and improve water quality.

BMP Inspection and Maintenance

The maintenance superintendent and maintenance foreman are responsible for inspection and maintenance of the site's storm water BMPs. Inspection and maintenance procedures include the following:

- Inspect valley gutters and drywells on an annual basis and after public events for sediment, trash, and structural damage. Remove sediment and trash from valley gutters and drywell grates to prevent clogging.
- Inspect inlets/catch basins on an annual basis and after public events for sediment, trash, and structural damage. Remove sediment and trash from the inlet/catch basin grates to prevent clogging and contact the County Storm Water Management Program Coordinator to coordinate the removal of excessive sediment.
- Empty and maintain all waste receptacles immediately following public events to prevent trash from entering the storm water drainage system.
- Inspect storm sewer piping on an annual basis for sediment, trash, and structural damage. A video inspection of the storm sewer piping may be necessary when drainage appears to be obstructed.
- Inspect the pond and outlet structure on a semi-annual basis and following significant rain events. Document any structural damage to the pond outlet structure and notify the County Storm Water Management Program Coordinator to coordinate rehabilitation activities. Remove obvious trash and debris from the pond, storm sewer outlets, and the pond outlet structure and contact the County

Storm Water Management Program Coordinator to coordinate the removal of excessive sediment and overgrown vegetation.

- Inspect the BioHaven Floating Island on an annual basis for vegetation growth and structural damage. Notify the County Storm Water Management Program Coordinator to coordinate the removal of dead vegetation, excessive vegetation, and to rehab any structural damages.
- Inspect snow storage areas for trash, adequate drainage, and soil erosion. Remove obvious trash and obstructions that prevent adequate drainage. If necessary, rehabilitate and seed eroded areas and install temporary BMPs (i.e. straw waddles, silt fence, etc.) until vegetation is established.
- Inspect snow storage areas in the spring for excessive sediment accumulation. Remove and dispose of excessive sediment to prevent it from entering the storm water drainage system.
- Remove animal waste from the site following fair and livestock events.

3.1.3 Snow Storage Areas

Primary snow storage areas are located within two parking areas.

- Inspect snow storage areas for trash, adequate drainage, and soil erosion. Remove obvious trash and obstructions that prevent adequate drainage. If necessary, rehabilitate and seed eroded areas and install temporary BMPs (i.e. straw waddles, silt fence, etc.) until vegetation is established.
- Inspect snow storage areas in the spring for excessive sediment accumulation. Remove and dispose of excessive sediment to prevent it from entering the storm water drainage system.

3.1.4 Chemical and Bulk Fuel Storage

The chemicals stored at the MetraPark Arena and facility include oil, antifreeze, road salts, diesel fuel, and window washer fluid. All chemicals are stored within the facility shop northeast of the Expo Center. To prevent mobilization of pollutants, minor and major spill procedures are to be followed as listed below.

3.2 Non-Structural BMPs

3.2.1 Employee Training

Maintenance staff in the Operations Division shall receive annual training on updates to the MetraPark storm water SOPs. New hires are to be trained on the SOPs within 90 days of their hire date. Training should be conducted by the maintenance superintendent or maintenance foreman.

3.2.2 Good Housekeeping

Good housekeeping procedures to be implemented by maintenance staff are listed in Table 3.

Table 3. Parking Facility Storm Water Management Good Housekeeping Procedures

Activity	Responsible Person/Position	BMP to Reduce Potential Pollution
Event Cleanup	Jeff Seward	Follow Solid Waste Management SOP
Sidewalk Winter Operations	Jeff Seward	Follow Winter Street Operations SOP
Animal Waste Removal	Jeff Seward	Regular removal
Building Maintenance	Jeff Seward	Follow Building Maintenance SOP
Facility Landscaping	Tommy Harrell	Follow Landscaping SOP
Street Maintenance and Repairs	Jeff Seward	Follow Landscaping SOP
Winter Street Operations	Randy Pardis	Follow Winter Street Operations SOP

Activity	Responsible Person/Position	BMP to Reduce Potential Pollution
Parking Lot Maintenance	Randy Pardis	Follow Parking Lot Maintenance SOP
Catch Basin Cleaning	Randy Pardis	Follow Parking Lot Maintenance SOP
Solid Waste Management	Jeff Seward	Follow Solid Waste Management SOP

3.2.3 Disposal of Animal Waste

The MetraPark facility hosts many fair and livestock events. Animal staging areas are on the southeast end of the site, adjacent to the Yellowstone River. Animal waste is removed from the barns and compiled into one pile until it can be removed from the site. If possible, the animal waste should be removed directly following the conclusion of events. If not feasible, plastic tarps or an equivalent should cover the pile of animal waste to reduce mobilization of waste into the river.

3.2.4 Spill Response

Spill response and cleanup is addressed by employee and contractor training, discussed in Section 3.2.1. MetraPark maintenance personnel are responsible for coordinating with contractors or vendors to verify that appropriate spill kits are kept onsite during events or site maintenance. Spill response procedures are provided below.

Spill Kit

Site spill kits to be used by maintenance personnel are in the maintenance shop. Contractors and vendors are responsible for providing individual spill kits during events or site maintenance. At a minimum, spill kits should contain the following items:

- Absorbent Pads
- Bags of Floor Dry/Sand
- Booms
- Disposal Bags
- Safety Goggles
- Rubber Gloves

Minor Spill Response Procedure

A minor spill is defined as one that poses no significant threat to human health or the environment. These spills generally involve less than 5 gallons and can usually be cleaned up by maintenance personnel. Other characteristics of a minor spill include:

- The spilled material is easily stopped or controlled at the time of the spill
- The spill is localized
- The spilled material is not likely to reach surface water or groundwater
- There is little danger to human health
- There is little danger of explosion

Use the following procedures in response to a minor spill:

1. Immediately notify the maintenance foreman and superintendent of the spill.
2. If necessary, physically contain the spill to prevent further migration from the facility.
    a. Stop or reduce continued release by ceasing activity.
    b. Block or slow the migration of spilled material.
    c. Close or plug leaks when possible.

2. Using proper personal protective equipment, obtain and use supplies from the spill kit for containment and absorption.
3. In consultation with the maintenance foreman and superintendent, clean up small spills that can be safely and effectively cleaned up by on-site personnel or hire a spill cleanup contractor.
4. Dispose of all contaminated products in accordance with applicable federal, state and local regulations.
5. Document the spill material, location, size, and date.

Major Spill Response Procedure

A major spill is defined as one involving a spill that cannot be safely and or adequately controlled or cleaned up by on-site personnel. Characteristics of a major spill include:

- The spill is large enough to spread beyond the immediate area
- The spill material entered surface water or ground water (regardless of the size)
- The spill requires special training and equipment to cleanup
- The spill material is a threat to human health
- There is a danger of fire or explosion

Use the following procedures in response to a major spill:

1. All workers shall maintain a distance away from the spill.
2. Notify the maintenance foreman, maintenance superintendent, and the director of operations of the spill and details regarding the spill.
3. If there is not an immediate health or safety danger and if actions can be implemented safely, a trained employee shall conduct obvious and immediately implementable containment measures in the following sequence:
    a. Stop or reduce continued release by ceasing activity, closing valves or flipping switches.
    b. Block or slow the migration of spilled material.
    c. Divert flow of the material to drains or exterior facility points.
    d. Close or plug drains when possible.
4. The director of operations will contact the Fire Department to notify the Hazardous Response Team.
5. The director of operations will coordinate cleanup with the Hazardous Response Team.
6. The director of operations will notify the Storm Water Program Coordinator.
7. Document the spill material, location, size, and date.
8. The Storm Water Program Coordinator will report any spills that impact receiving waterbodies to the Montana DEQ Water Protection Bureau within 24-hours of the incident.

Attachments: Activity SOPs

MetraPark Concept Master Plan

Landscaping SOP

Winter Street Operations SOP

Solid Waste Management (To Be Developed)

Building Maintenance (To Be Developed)

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE CATEGORY: Landscaping	SOP NUMBER: 01 ISSUE DATE: 12/2019	

ACTIVITIES:	TARGET POLLUTANTS:
Mowing **Tree Trimming** **Fertilizer/Pesticide/Herbicide Application** **Planting** **Equipment Fueling**	Sediment Nutrients Oil & Grease Organics Pesticides/Herbicides

GENERAL

THIS SOP IS NOT EXPECTED TO COVER ALL NECESSARY PROCEDURE ACTIONS. OPERATORS ARE ALLOWED TO ADAPT SOPS TO UNIQUE SITE CONDITIONS IN GOOD JUDGMENT WHEN IT IS NECESSARY FOR SAFETY AND THE PROPER AND EFFECTIVE CONTAINMENT OF POLLUTANTS.

DESCRIPTION OF ACTIVITIES AND POLLUTANT SOURCE

Landscaping activities that have the potential to discharge pollutants to storm water runoff and surface waters include mowing, tree trimming, fertilizer/pesticide/herbicide application, planting, and equipment fueling. These activities occur at most County owned buildings and County parks.

APPLICABILITY

The procedures outlined in this SOP shall be implemented by all employees conducting landscaping activities at County owned facilities.

BEST MANAGEMENT PRACTICES (TO BE IMPLEMENTED FOR ALL LANDSCAPING ACTIVITIES)

- Locate all storm drain collection structures and inlets prior to starting work.
- Use temporary catch basin protection when necessary.
- Inspect equipment for gas, oil, and other fluid leaks prior to use.
- Promptly clean up spills in accordance with the spill response and containment SOP.
- Collect and dispose of all trash in the work area.
- Conduct all equipment cleaning and maintenance at the County Shops.

THE FOLLOWING ACTIVITY PROCEDURES SHOULD BE FOLLOWED FOR EACH LISTED ACTIVITY

MOWING

County staff are responsible for maintaining grassy areas at County owned buildings and County parks. Mowing includes the operation of mowers, trimmers, edgers, and blowers to maintain aesthetics of County managed grassy areas. A variety of pollutants can be introduced to the storm water system and nearby surface waters while mowing. Implement the following procedures to minimize the potential for storm water pollution during the mowing process:

- Adjust mower height to match the area's intended use and minimize clippings.
- Avoid excessive soil and vegetation damage by varying mowing patterns.
- When bagging clippings ensure appropriate collection, transportation, and disposal of all clippings.
- Sweep or blow clippings from sidewalks and streets to grass areas when work is complete.
- Dispose of clippings at the County Shop stockpiles or the Billings Landfill.

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE CATEGORY: Landscaping	SOP NUMBER: 01 ISSUE DATE: 12/2019	

TREE TRIMMING

County Staff perform routine care for trees and shrubs at County owned buildings and County parks. Tree trimming includes the operation of trimmers, chippers, and blowers to maintain aesthetics of County managed trees and shrubs. Oil, grease, fuel, and organics can be introduced to the storm water system and nearby surface waters while trimming. Implement the following procedures to minimize potential for pollution during the trimming process:

- Collect all trimmings and debris in the area when work is complete.
- Sweep or blow chips from pavement(s) into soil areas.
- Dispose of trimmings and debris at the County Shop stockpiles or the Billings Landfill.

FERTILIZER/PESTICIDE/HERBICIDE APPLICATION

Properly trained and certified persons perform routine care for grassy areas at County owned buildings and County parks. Fertilizer, pesticide, and herbicide application includes the operation of sprayers and spreaders to maintain health of County managed grassy and vegetated areas. A variety of nutrients and chemicals can be introduced to the storm water system and nearby surface waters during treatment. Implement the following procedures to minimize potential for pollution in the fertilizer/pesticide/herbicide application process:

- Read and review all product information prior to use. This information includes but is not limited to, safety data sheets, product instructions, and federal and state regulations governing use.
- Avoid application within a minimum of 20 feet of storm drainage facilities and surface waters and 100 feet of any well head.
- Calibrate application equipment to avoid excessive material application.
- Check the weather forecast. Wind and or rain conditions (current and future) may not be acceptable for application. Do not use pesticides if rain is expected within a 24-hour period and only apply when wind speeds are less than 5 mph.
- Mix and prepare all fertilizers, pesticides, and herbicides away from storm drains, waterbodies, and soils, preferably inside a protected area within a watertight secondary container.
- Employ appropriate techniques to minimize off-target application spray drift and over broadcasting are possible pollutants to the storm water system.
- Clean spills immediately and follow product specified procedures.
- Rinse application equipment away from water bodies and storm drains. Do not dispose of chemicals to storm drain, sewer, or ground surface.
- Dispose of excess material following manufacturer's instructions.

PLANTING

Planting includes digging, planting/seeding, and backfilling to maintain aesthetics of County managed land. Sediment and nutrients can be introduced to the storm water system and nearby surface waters during planting if proper procedures are not followed. Implement the following procedures to minimize potential for pollution when planting:

- Prior to digging call Montana 811 by dialing 811 or 800-424-5555 to locate underground facilities.
- While digging place spoils near the hole for ease of backfilling, avoid placing spoils in or near the gutter, a storm drain, or water body.
- Do not add excessive amounts of compost or fertilizer while backfilling.

- Apply seed and cover using pre-determined application method and rate, in accordance with manufacturer's instructions.
- Sweep dirt from surrounding pavement(s) into the planter area.
- Remove extra spoils from the site responsibly, use a tarp if necessary to contain spoils during transport.
- Transport spoils to the County Shops.
- Larger planting projects may require installation of temporary storm water BMPs such as silt fence and biorolls. Contact the County storm water coordinator to discuss pollution prevention for planting projects that are near water bodies and will take more than two days to complete.

EQUIPMENT FUELING

Equipment fueling applies to all gas, diesel, or kerosene vehicles and equipment required for maintenance of County facilities. Harmful chemicals can be introduced to the storm water system and nearby surface waters if spills occur while fueling equipment. Implement the following procedures to minimize pollution during fueling:

- Use the fuel automatic shut off (where applicable) to prevent overfilling, and do not 'top off' the tank.
- Mobile fueling should be minimized, whenever practical transport vehicles and equipment to designated fueling areas.
- When fueling small equipment from portable containers, fuel in an area a minimum of 50 feet away from storm drains and water bodies.
- If a large fuel spill occurs (greater than 1 gallon), contact the County storm water coordinator and your supervisor to determine if specialized sill response procedures are necessary.

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE **CATEGORY:** Shop and Fleet Services	**SOP NUMBER:** 02 **ISSUE DATE:** 12/2019	
ACTIVITIES: **Vehicle Fueling** **Vehicle and Equipment Storage** **Vehicle Washing** **Material Storage** **Vehicle Maintenance**	**TARGET POLLUTANTS:** Sediment Oil, Grease, Fuel Organics Hazardous Waste	

GENERAL

THIS SOP IS NOT EXPECTED TO COVER ALL NECESSARY PROCEDURE ACTIONS. OPERATORS ARE ALLOWED TO ADAPT SOPS TO UNIQUE SITE CONDITIONS IN GOOD JUDGMENT WHEN IT IS NECESSARY FOR SAFETY AND THE PROPER AND EFFECTIVE CONTAINMENT OF POLLUTANTS.

DESCRIPTION OF ACTIVITIES AND POLLUTANT SOURCE

The shop and fleet service activities that have the potential to discharge pollutants to storm water runoff and surface waters include vehicle fueling, vehicle and equipment storage, vehicle washing, material storage, and vehicle maintenance. Pollutants associated with these activities include sediment, oil, grease, fuel, organics, and hazardous waste.

APPLICABILITY

The procedures outlined in this SOP shall be implemented by all employees conducting shop and fleet services at County owned facilities.

BEST MANAGEMENT PRACTICES (TO BE IMPLEMENTED FOR ALL SHOP AND FLEET SERVICE ACTIVITIES)

- Inspect vehicles and equipment for gas, oil, and other fluid leaks prior to use.
- Promptly clean up spills in accordance with the spill response and containment SOP.
- Collect and dispose of all trash in the work area.
- Keep work and storage areas clean for easy detection of leaks and spills.
- Conduct equipment cleaning and maintenance at the County Shop and Weed District facility.

THE FOLLOWING ACTIVITY PROCEDURES SHOULD BE FOLLOWED FOR EACH LISTED ACTIVITY

VEHICLE FUELING

Vehicle fueling applies to all gas and diesel vehicles used by County facilities staff. Harmful chemicals can be introduced to the storm water system and nearby surface waters if spills occur while fueling. Implement the following procedures to minimize potential pollution during fueling:

- Shut off the vehicle prior to fueling.
- Fuel vehicles at approved locations.
- Inspect fueling location for corrosion, leaks, cracks, scratches, and other physical damage that may lead to spills.
- Follow all posted warnings.
- Use the fuel automatic shut off (where applicable) to prevent overfilling, and do not 'top off' the tank.
- Remain by the fill nozzle while fueling.

- Mobile fueling should be minimized, whenever practical transport vehicles to designated fueling areas.
- If a large fuel spill occurs (greater than 1 gallon), contact the County storm water coordinator and your supervisor to determine if specialized spill response procedures are necessary.

VEHICLE AND EQUIPMENT STORAGE

Vehicles and equipment stored for any period of time have the potential to leak, spill, or release chemicals or hazardous materials into the storm water system and nearby surface waters. Storage occurs at the County Shop and Weed District Facility. Implement the following procedures to minimize potential pollution during vehicle and equipment storage:

- Whenever possible, store vehicles and equipment inside where floor drains are connected to an oil-water separator.
- Vehicles and equipment stored outside shall be in approved locations.
- Monitor stored vehicles and equipment closely for leaks, use a drip pan as needed.
- Drain fluids from leaking or wrecked vehicles as soon as possible. Dispose of fluids properly, as directed by the facility's superintendent.

VEHICLE WASHING

Vehicle washing removes snow, ice, mud, and dirt from the surface of vehicles. Washing occurs at the County Shop and Weed District facility or other approved locations. Pollutants associated with vehicle washing include sediment, oil, grease, and fuel. Implement the following procedures to minimize potential pollution during vehicle washing:

- Wash vehicles in designated areas only, with drainage connecting to the sanitary sewer system or the County Shop and Weed District facilities on-site collection system.
- Avoid using excess water and soap when washing vehicles.
- Never wash vehicles over or near a storm drain that is not within the County Shop and Weed District facility.
- Use hoses with automatic shut off nozzles to minimize water usage.

MATERIAL STORAGE

Material storage applies to automotive products, fertilizers, pesticides, paints, chemicals, and other similar materials. Material storage includes proper handling through unloading, use, storage, and disposal. Indoor and outdoor storage occurs at the County Shop and Weed District facility. Implement the following procedures to minimize potential pollution during material storage:

- Store materials indoors or under cover whenever possible.
- Store materials on elevated surfaces, limiting contact with storm water run-off when possible.
- Provide an adequate storage container for all materials.
- Inspect storage areas and containers regularly for leaks, spills, and proper storage of all materials.
- Properly dispose of materials that are outdated or beyond use.
- Label and store all hazardous materials according to manufacturer instructions.
- Use secondary containment as needed to prevent contact with storm water in the event of a leak.

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE **CATEGORY:** Shop and Fleet Services	**SOP NUMBER:** 02 **ISSUE DATE:** 12/2019	

VEHICLE MAINTENANCE

Vehicle maintenance is routine for all County owned vehicles. Preventative maintenance will occur at the County Shops, while emergency repairs may require off-site work. Potential pollutants associated with vehicle maintenance include oil, antifreeze, brake fluid, solvents, batteries, fuels, and cleaners. Implement the following procedures to minimize potential pollution during vehicle maintenance:

- Perform maintenance activities in a designated maintenance bay at the County Shop and Weed District facility whenever possible.
- If outdoor work is required, prevent spilling through use of oil pans or similar devices.
- Use absorbent pads and drip pans when necessary.
- Keep equipment clean and do not allow excessive build-up of oil and grease.
- Perform regular preventative maintenance to minimize occurrence of leaks and major repairs.
- Dispose of used fluids, rags, and absorbent pads in respective disposal containers within the County Shops.
- Follow spill response procedures as outlined in the County Shop and Weed District Facility SOP.

Yellowstone County MS4 Training

Subject: SWMP Team Training

Date: Wednesday, December 16, 2020

Location: Yellowstone County Shop, 3321 King Avenue East, Billings

Attendee Name	Position/Responsibility	Signature
Jarrett Hillius	HDR - Consultant	
Mike Black	YC-PW	
Joe Lockwood	Weed Coordinator	
BOBBB HILLIARD	ROAD + BRIDGE	
CLAY MOORE	R&B Asst. Dir.	
Greg Fisher	Shop Foreman	

Yellowstone County MS4 Training Agenda

Training Name:	SWMP Team Training
Date:	Wednesday, December 16, 2020
Location:	Yellowstone County Shop, 3321 King Avenue East, Billings
Attendees:	See attendance record form — Attendees Column 2 (Tab to add more rows)

Training Agenda

Time	Topic	Training Lead
8:30	Training Overview and Roll Call	Mike Black, Jarrett Hillius
8:35	Storm Water Awareness Illicit Discharge– A Grate Concern by Excal Visual	Mike Black
9:00	Storm Water Awareness Illicit Discharge- Enforcement Response Plan ▪ Overview of ERP to include o Summarize General Permit IDDE Requirements o County IDDE Program Overview, Policies, and Procedures o Enforcement Response Steps o Response Remedies o Enforcement Roles & Responsibilities o Escalation Process	Jarrett Hillius
9:15	Construction Site Storm Water Stormwater “Ground Control” by Excal Visual	Mike Black
9:45	Construction Site Storm Water Construction Site Storm Water ERP ▪ Overview of ERP to include o Summarize General Permit Construction Site Storm Water Management Requirements o County Construction Site Storm Water Management Program Overview, Policies, and Procedures o Enforcement Response Steps o Identifying and Investigating Construction Site Storm Water Concerns • Construction Activities and Locations • Receipt of Compliant or suspected violation • Inspection / Site Visit / Property Owner Contact	Jarrett Hillius

	• Documentation of Findings o Response Remedies o Enforcement Roles & Responsibilities o Escalation Process	
10:00	Post-Construction Site Storm Water Reduce Runoff: Slow it Down, Spread it Out, Soak it In by EPA	Mike Black
10:30	Post -Construction Site Storm Water Post - Construction Site Storm Water ERP ▪ Overview of ERP to include o Summarize General Permit Post-Construction Storm Water Management Requirements o County Post-Construction Storm Water Management Program Overview, Policies, and Procedures o Enforcement Response Steps o Identifying and Investigating Post-Construction Site Storm Water Concerns • Receipt of Compliant or suspected violation • Inspection / Site Visit / Property Owner Contact • Documentation of Findings o Response Remedies o Enforcement Roles & Responsibilities o Escalation Process	Jarrett Hillius
10:45	County Shop and Weed District Standard Operating Procedure Review ▪ Training to cover SOP topics: o Site Review including Facilities o SOP Overview o Potential SW Sources; activities, spills, leaks o Stormwater Controls; Drainage systems, BMPs, Chemical/Fuel Storage, Spill Response	Mike Black & Jarrett Hillius
11:00	Landscaping Standard Operating Procedure Review ▪ Training to cover BMPs for Landscaping Activities: o Mowing, Tree Trimming, Fertilizer/Pesticide/Herbicide Application o Planting, Backfilling, Digging o Equipment Fueling and Maintenance	Mike Black & Jarrett Hillius
11:15	Shop and Fleet Services Standard Operating Procedure Review ▪ Training to cover BMPs for Shop/Fleet Activities o Vehicles Fueling o Vehicles Storage and Washing o Vehicle Maintenance o Material Storage	Mike Black & Jarrett Hillius

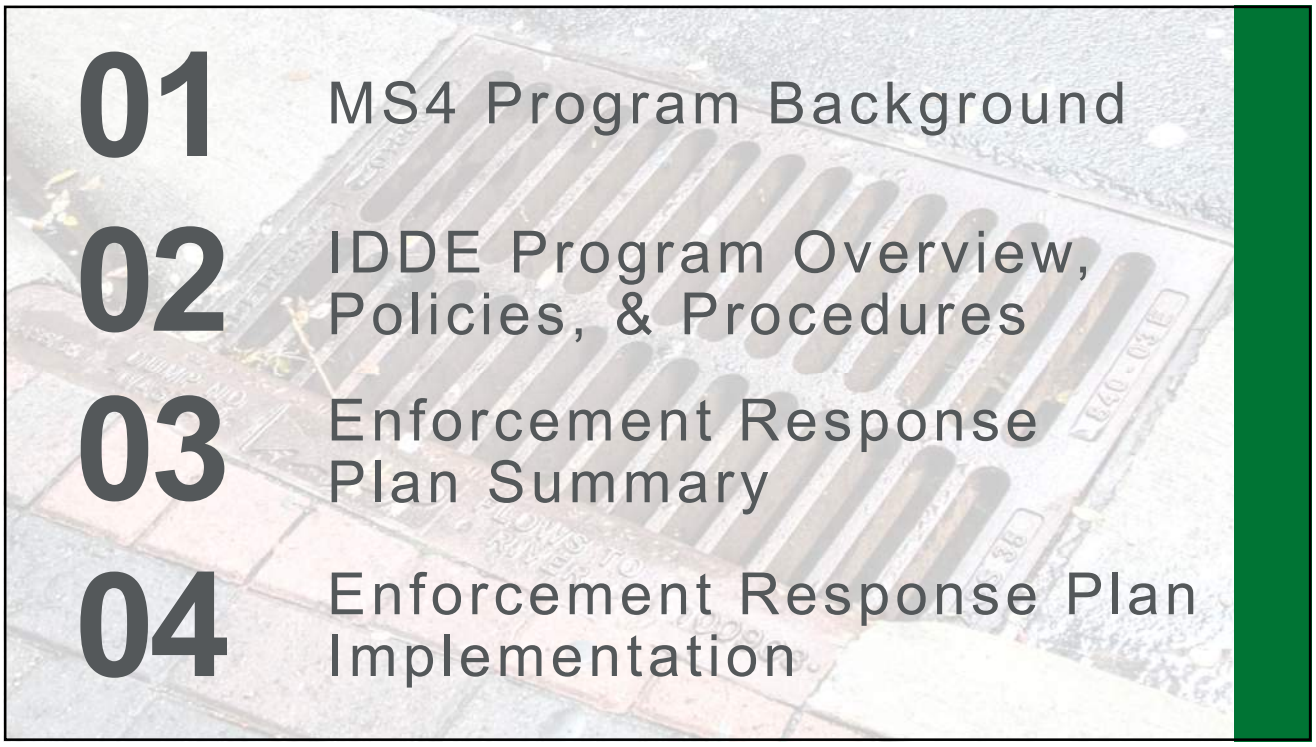
1

Yellowstone County, MT MS4 Illicit Discharge Enforcement Response Plan Training

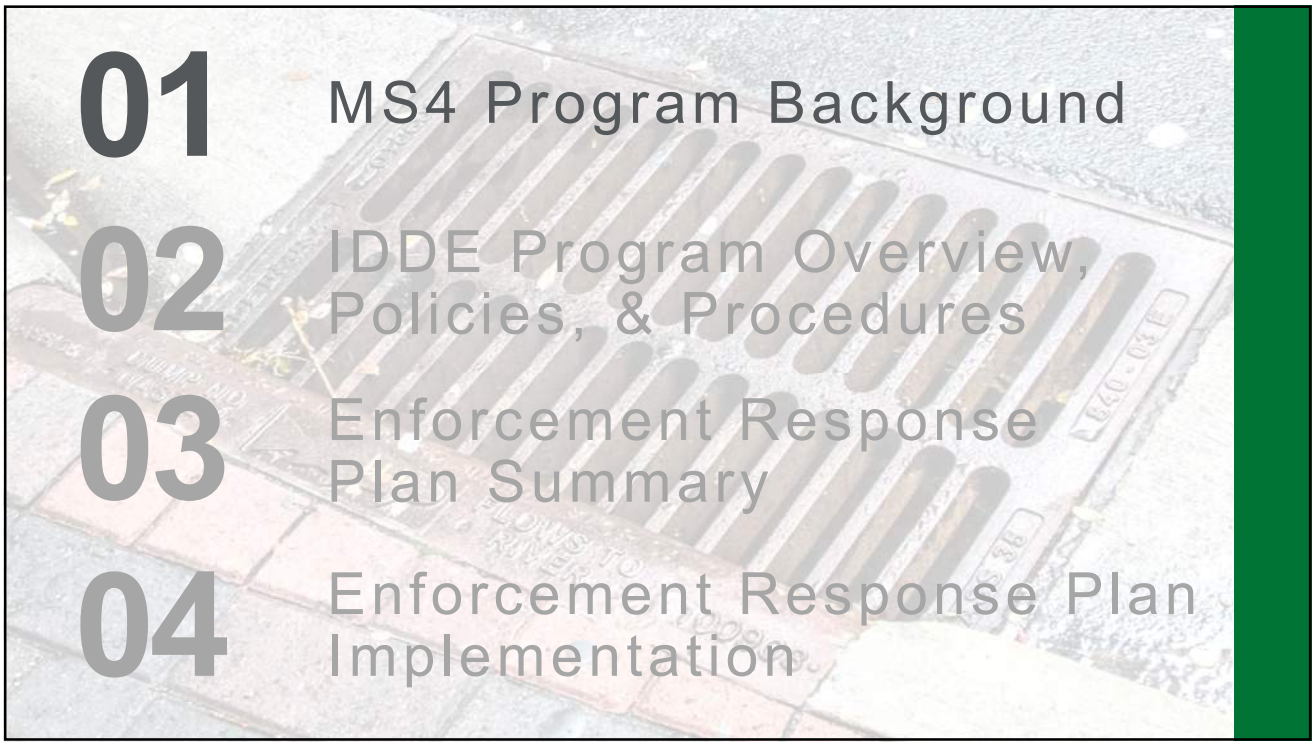
December 16, 2020

Photo by James Lewis on Unsplash

2


01
MS4 Program Background
02
IDDE Program Overview, Policies, & Procedures
03
Enforcement Response Plan Summary
04
Enforcement Response Plan Implementation

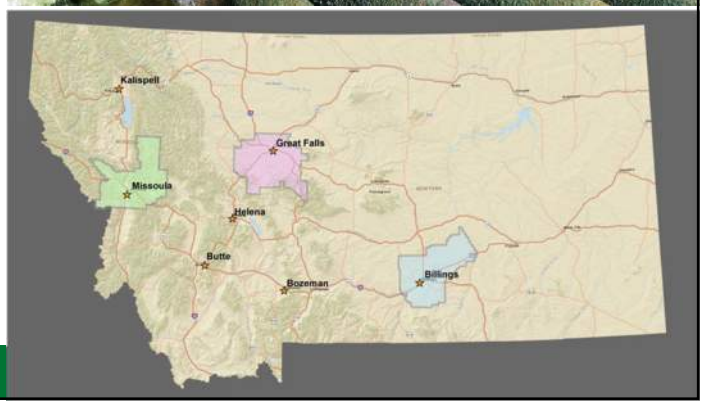
3


01
MS4 Program Background
02
IDDE Program Overview, Policies, & Procedures
03
Enforcement Response Plan Summary
04
Enforcement Response Plan Implementation

4

MS4 Program Background

- EPA MS4 (Municipal Separate Storm Sewer System) Permit Program
- Cities/Counties Regulated by Size
- Goal: Limit Pollutants through the implementation of BMPs consistence with the Storm Water Management Program (SWMP)



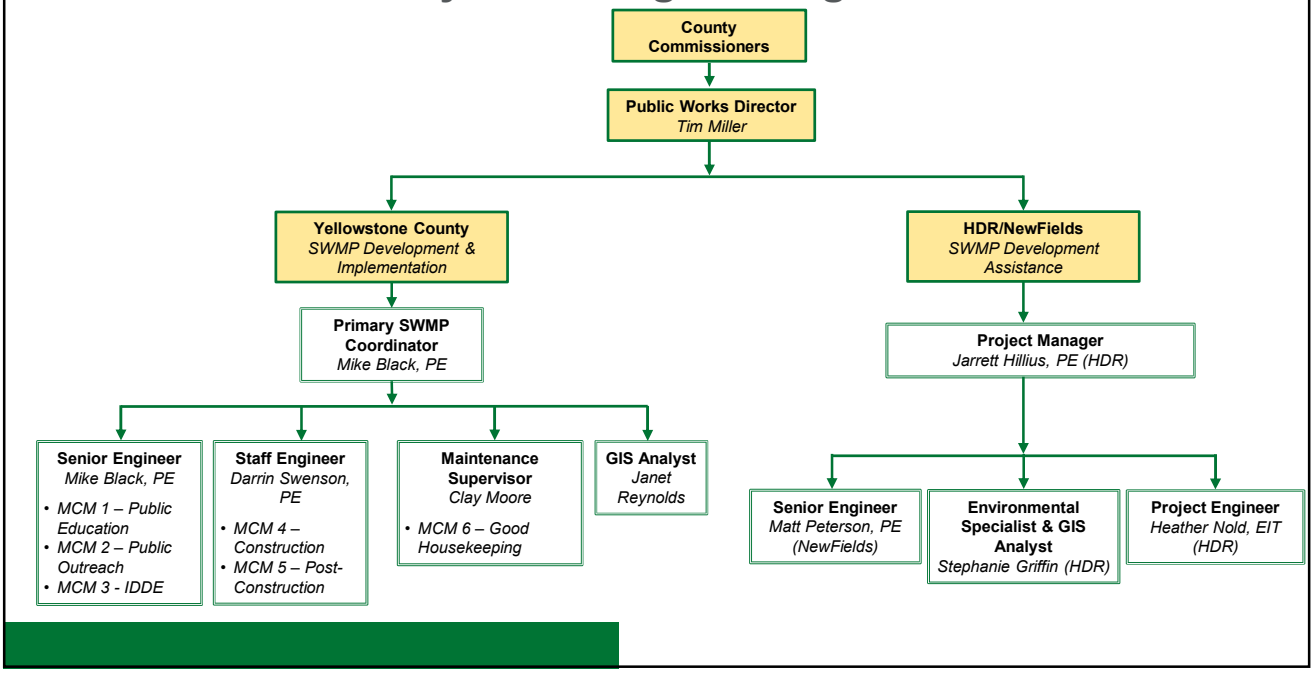
5

MS4 General Permit

- Storm Water Management Program
- Minimum Control Measures (MCM)
  - MCM 1: Public Education & Outreach
  - MCM 2: Public Involvement & Participation
  - MCM 3: Illicit Discharge Detection & Elimination
  - MCM 4: Construction Site Storm Water Management
  - MCM 5: Post-Construction Site Storm Water Management in New & Redevelopment
  - MCM 6: Pollution Prevention/Good Housekeeping

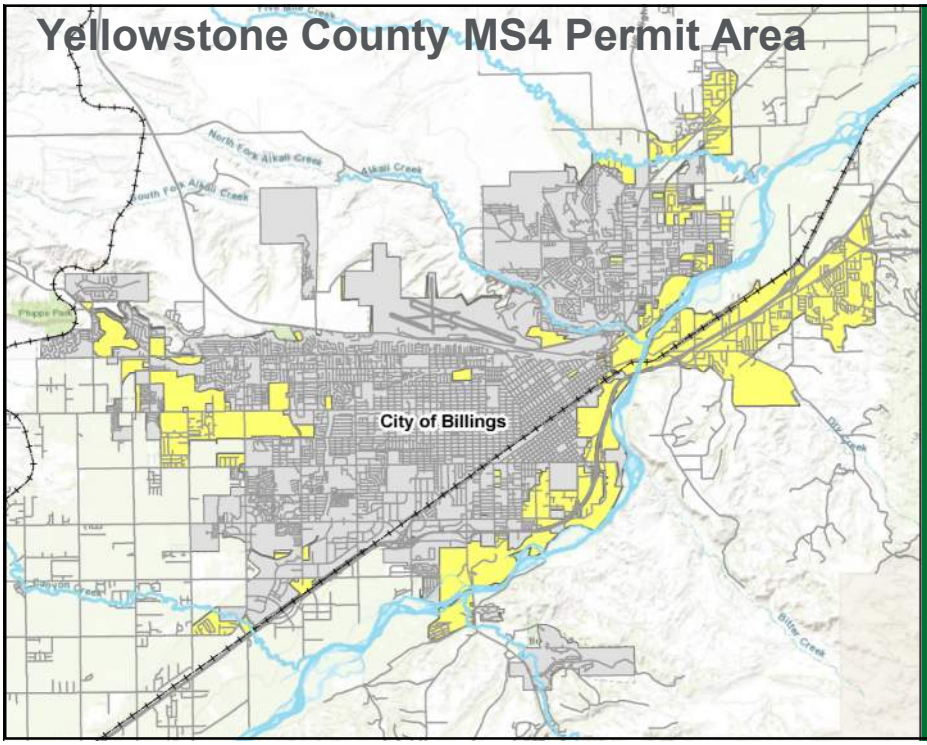
6

Yellowstone County MS4 Program Organizational Chart



7

Yellowstone County MS4 Permit Area



Eight Watersheds

- Alkali Creek
- Brockway Coulee - Yellowstone River
- City of Billings - Yellowstone River
- Five Mile Creek
- Hogans Slough
- Lower Blue Creek
- Lower Canyon Creek
- Sevenmile Creek - Yellowstone River

8

01 MS4 Program Background

02 IDDE Program Overview, Policies, & Procedures

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

9

MCM 3: Illicit Discharge Detection & Elimination

- Illicit Discharge: Any non-storm water discharge to a MS4 (with some exceptions, such as firefighting activities)
- Examples
  - Septic tank seepage
  - Laundry wastewater
  - Pesticides and fertilizers
  - Improper waste oil disposal

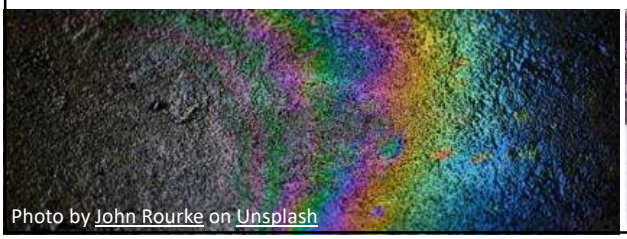


Photo by John Rourke on Unsplash

Photo by James Lewis on Unsplash

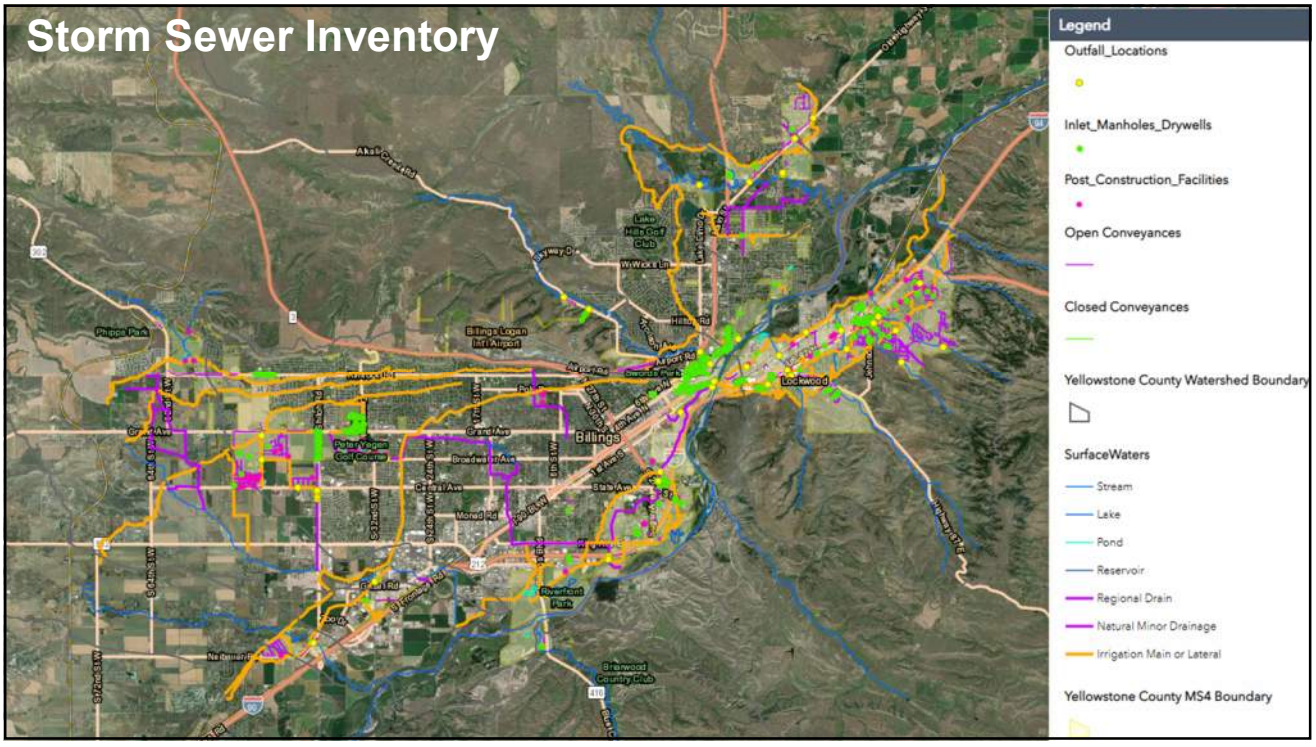
10

IDDE Program Elements

- Storm Water Sewer Inventory
- Allowable Non-Storm Water Discharge Evaluations
- Prohibit Illicit Discharges
- Outfall Inspections
- Illicit Discharge Investigations & Corrections
- Illicit Discharge Enforcement
- Investigation and Enforcement Documentation

11

Storm Sewer Inventory



12

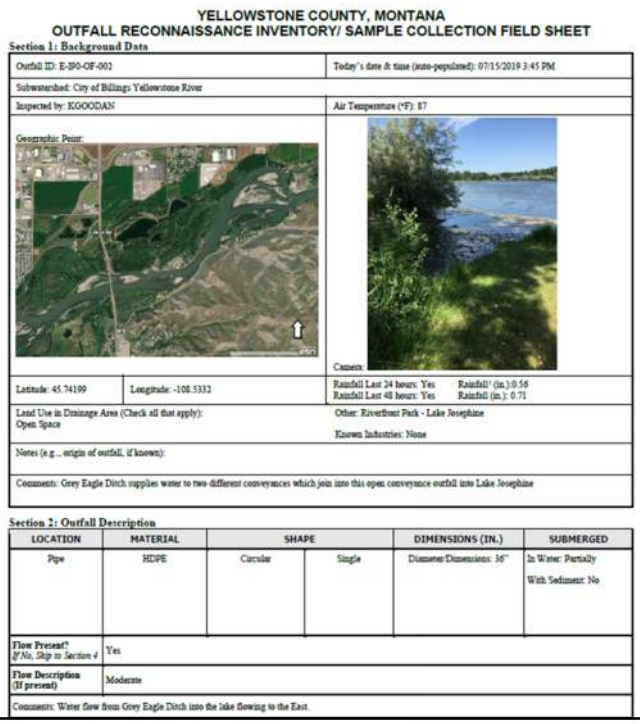
Illicit Discharge Prohibitions

- Work in progress
- Currently operating under limited authority to prohibit discharges
- Coordinate with RiverStone Health, DEQ, and others as applicable

13

Outfall Inspections

- 20 Outfalls
- 12 High-Priority Outfalls
- Annual Dry Weather Screenings
  - Outfall description
  - Outfall condition
  - Flow characterization (for flowing outfalls)
  - Data collection



YELLOWSTONE COUNTY, MONTANA
OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Outfall ID: E-B90-OF-002	Today's date & time (auto-populated): 07/15/2019 3:45 PM
Subwatershed: City of Billings Yellowstone River	
Inspected by: KGOODAN	Air Temperature (°F): 87
Geographic Point:	Camera:
Latitude: 45.74109 / Longitude: -108.5333	Rainfall Last 24 hours: Yes (Rainfall (in.): 0.56) Rainfall Last 48 hours: Yes (Rainfall (in.): 0.71)
Land Use in Drainage Area (Check all that apply): Open Space	Other: Riverfront Park - Lake Josephine Known Industries: None
Notes (e.g., origin of outfall, if known):	
Comments: Grey Eagle Ditch supplies water to two different conveyances which join into this open conveyance outfall into Lake Josephine	

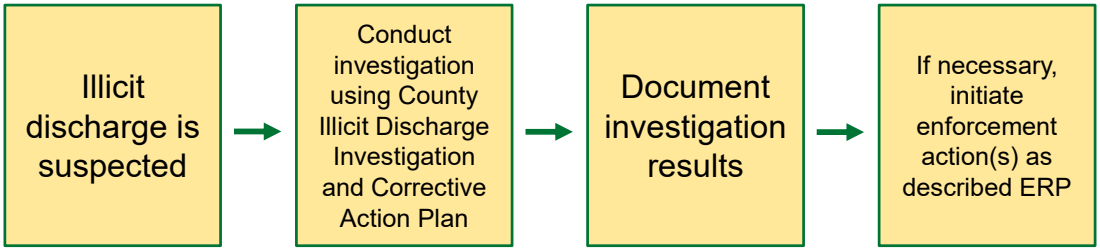
Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
Pipe	HDPE	Circular	Single	Diameter/Dimensions: 36"	In Water: Partially With Sediment: No
Flow Present? *If No, Skip to Section 4*	Yes				
Flow Description (If present)	Moderate				
Comments: Water flow from Grey Eagle Ditch into the lake flowing to the East.					

14

Investigation and Response

- When an illicit discharge is suspected, the SWMP Team will conduct an investigation in accordance with the Illicit Discharge Investigation and Corrective Action Plan to identify the source.
- When an illicit discharge is confirmed, the SWMP Team will document the results of the investigation and initiate enforcement action as allowed by applicable laws to abate the illicit connection or discharge.



15

Illicit Discharge Investigations

- Investigation & Corrective Action Plan

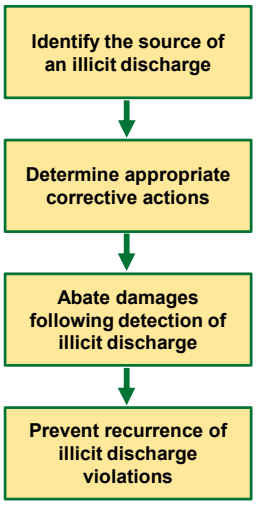


Photo by Kevin Maillefer on Unsplash

16

01 MS4 Program Background

02 IDDE Program Overview, Policies, & Procedures

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

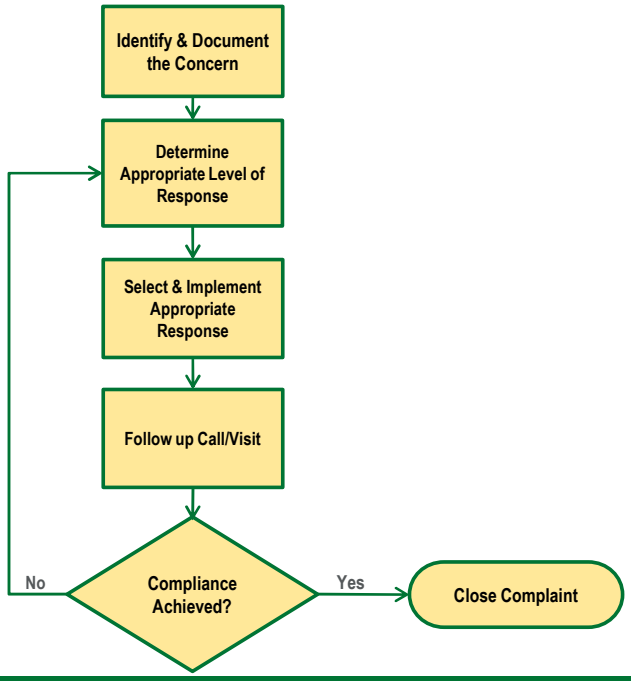
17

Response Remedies

- Once a storm water-related concern is identified, the appropriate level of response will be determined and an appropriate response remedy will be selected
- Three levels of responses available:

18

Response Remedies



19

Level 1 - No Enforcement Action

- **When**: County personnel are made aware of storm water-related concerns; but sufficient evidence does not exist to prove a violation is taking place
  - Example: Complaint is received stating that a storm water control has not been properly maintained; however, after a brief site inspection and/or verbal discussion, the County staff determines the storm water control is within compliance and no enforcement action is required.
- **Result**: Document concern and response using the Enforcement Response Documentation Form for future reference.

20

Level 2 - Informal Response

- **When**: First response option whenever a response is required
  - Except for situations that pose immediate or significant threat to human health or the environment, in which case a Level 3 response should be initiated
- **Result**: Establishes documentation necessary to implement formal enforcement actions through other agencies if necessary

- **Response Options**
  - Telephone conversations
  - Verbal notices
  - Meetings

21

Level 3 - Referral to Other Agencies

- **When:** Informal response proves insufficient to resolve the situation or the situation poses an immediate or significant threat to human health or the environment
- **Available Agencies**:
  - DEQ
  - Fire Department
  - RiverStone Health
  - Local Emergency Personnel
  - City of Billings Environmental Division
  - MDT Environmental Services

22

Additional Remedy Considerations

- Magnitude
- Duration
- Compliance History
- Good Faith of the Operator

23

01 MS4 Program Background

02 IDDE Program Overview, Policies, & Procedures

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

24

Enforcement Roles and Responsibilities

Enforcement Action	Delegated SWMP Team Member	SWMP Coordinator	Public Works Director
Telephone Conversation and/or Verbal Notice	Primary	Primary	Secondary
Meetings	Primary	Primary	Secondary
Referral to Other Agencies	N/A	Primary	Primary

25

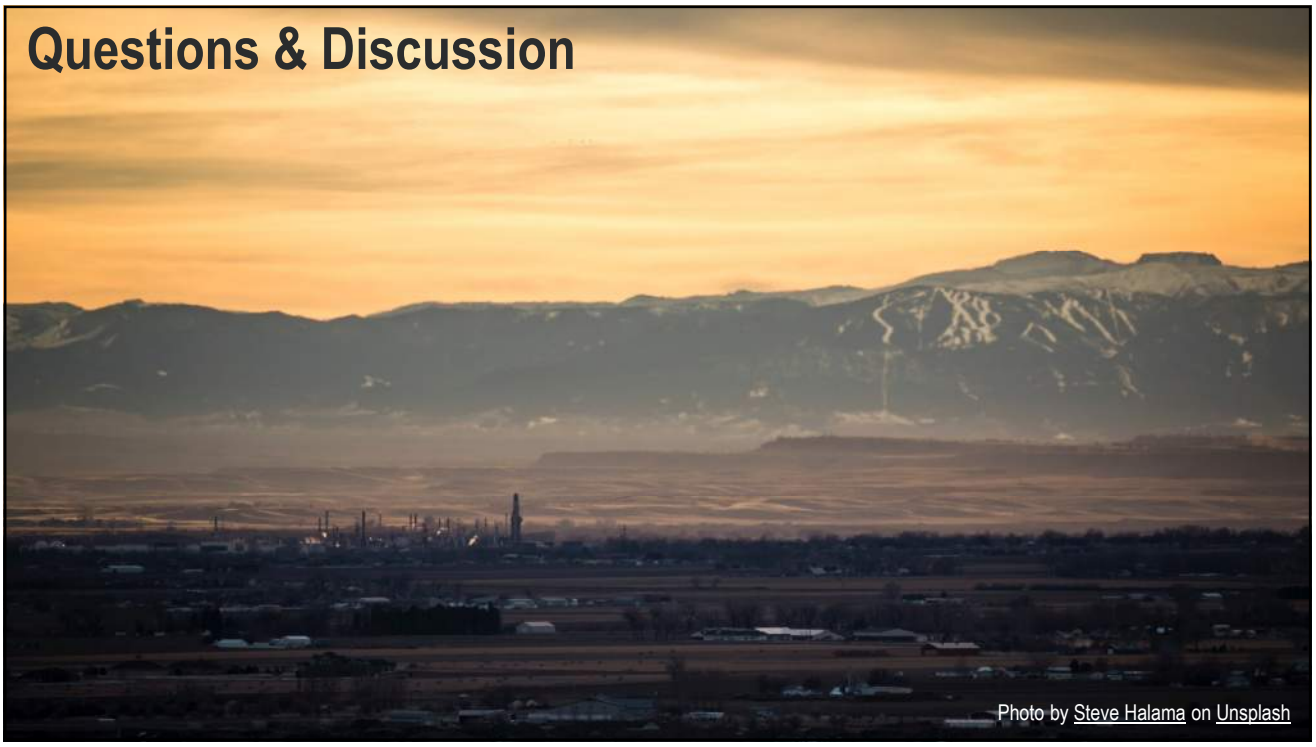
Example Responses and Escalation Process

- Examples of typical responses to common illicit discharge violations and a typical schedule for escalation of enforcement actions are shown below. Each situation has unique circumstances and concerns. Violations that pose a significant threat to human health and/or the environment will utilize more severe enforcement actions on a compressed timeframe in order to quickly eliminate the illicit discharge, abate any damages, and prevent recurrence.

Violation	Circumstances of Violation	Initial Level of Response	Initial Response Remedy
Dumping household chemicals into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Contractor discharging paint, concrete wash water, or other deleterious substance into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Restaurant or business discharging fat, oil, grease, or mop wash water into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Direct connection of anything other than storm water or clean groundwater into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Discharging wastewater from a RV, camper, or other source into a storm drain	Isolated Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies

Response	Response Schedule	Responsibility
Telephone Conversation, Verbal Notice, and/or Meeting	Within 48 hours of Violation	SWMP Coordinator
Referral to Other Agencies	As deemed appropriate by the SWMP Coordinator and Public Works Director	SWMP Coordinator Public Works Director

26



27

28

1

Yellowstone County, MT MS4 Enforcement Response Plan Training – Construction Sites

December 16, 2020

Photo by Troy Mortier on Unsplash

2

01 MS4 General Permit Construction Site Overview

02 Construction Program Development

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

3

01 MS4 General Permit Construction Site Overview

02 Construction Program Development

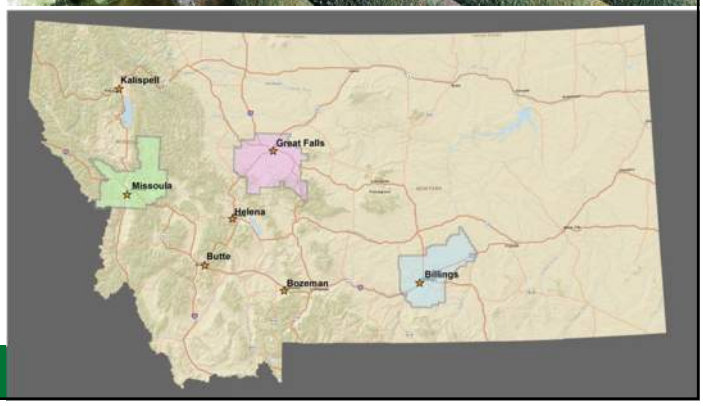
03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

4

MS4 Program Background

- EPA MS4 Permit Program
- Cities/Counties Regulated by Size
- Goal: Limit Pollutants through the implementation of BMPs consistence with the Storm Water Management Program (SWMP)



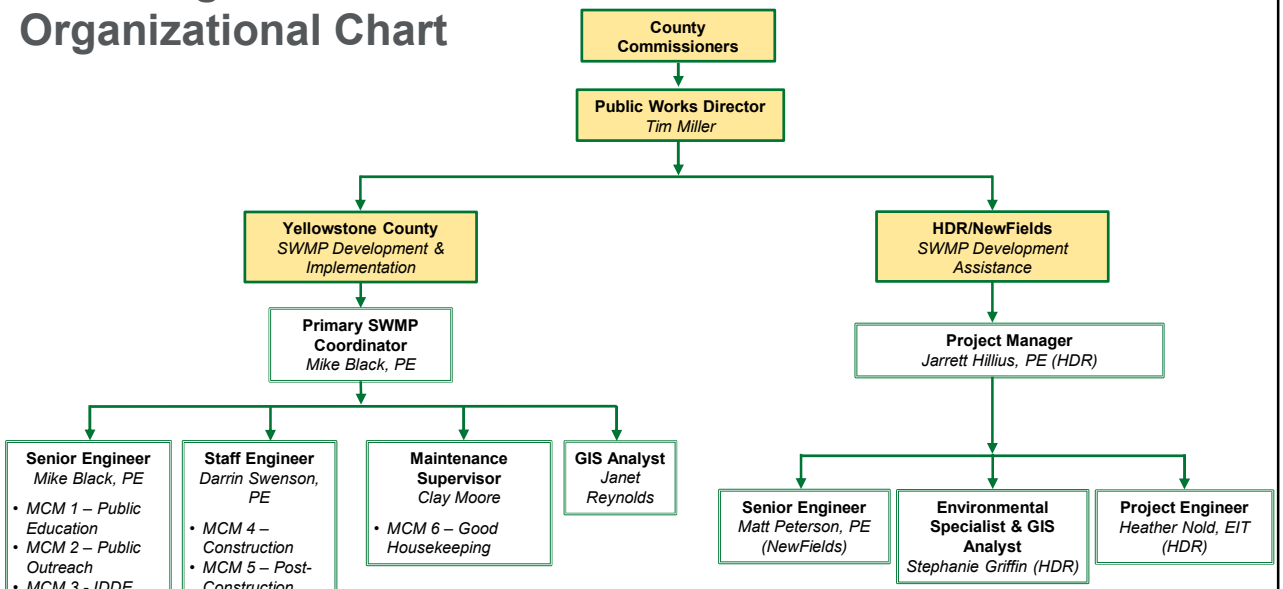
5

MS4 General Permit

- Permit Term: 2017 - 2021
- Storm Water Management Program
- Minimum Control Measures
  - MCM 1: Public Education & Outreach
  - MCM 2: Public Involvement & Participation
  - MCM 3: Illicit Discharge Detection & Elimination
  - MCM 4: Construction Site Storm Water Management
  - MCM 5: Post-Construction Site Storm Water Management in New & Redevelopment
  - MCM 6: Pollution Prevention/Good Housekeeping

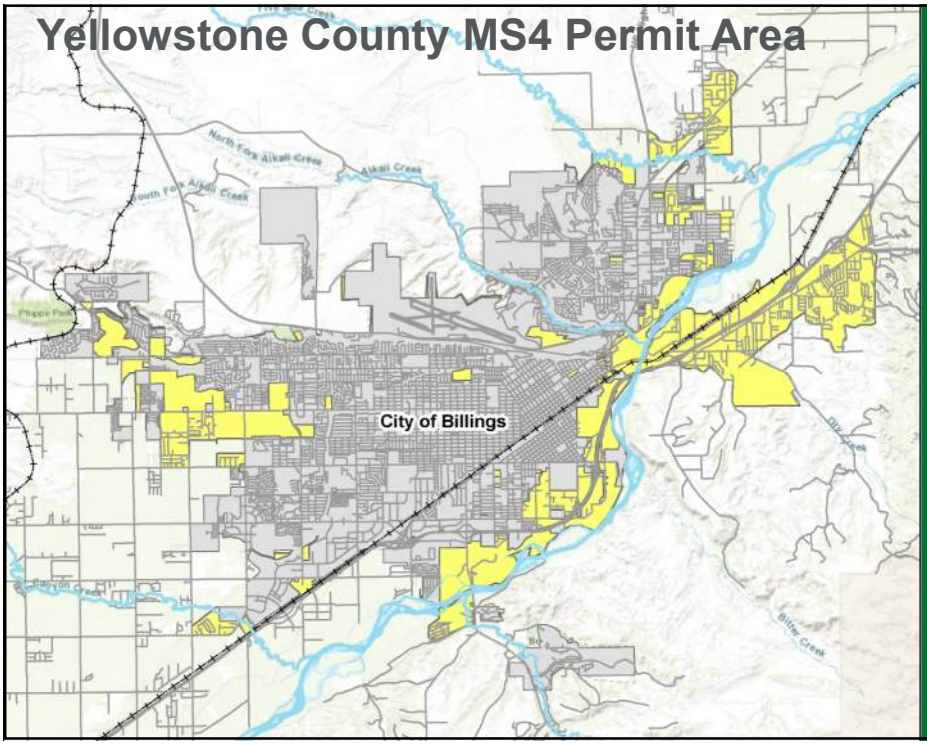
6

MS4 Program Organizational Chart



7

Yellowstone County MS4 Permit Area



Eight Watersheds

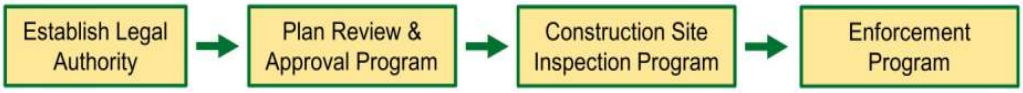
- Alkali Creek
- Brockway Coulee - Yellowstone River
- City of Billings - Yellowstone River
- Five Mile Creek
- Hogans Slough
- Lower Blue Creek
- Lower Canyon Creek
- Sevenmile Creek - Yellowstone River

8

MCM 4: Construction Site Storm Water Management

Addressing projects with land disturbance greater than or equal to 1 acre

- Elements of Construction Site Storm Water Management Program
  - ☐ Ordinance or Regulatory Mechanism (require construction storm water controls)
  - ☐ Plan Review and Approval Process (SWPPP)
  - ☐ Construction Site Inspection Program
  - ☐ Program Enforcement



9

Construction Program Components

- Plan review and approval program
  - Plan review checklist (SWPPP)
- Inspection program
  - Inspection staff
  - Inspection form
  - Project inventory
  - Inspection frequency protocol
- Enforcement program
  - Enforcement response plan

10

01 MS4 General Permit Construction Site Overview

02 Construction Program Development

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

11

Construction Program Development

- Ordinance or Regulatory Mechanism
  - Updating subdivision regulations
- Plan Reviews & Approvals
  - Considering SWPPP submittals for subdivision applications
- Inspections
  - Would conduct inspections during subdivision development process
- Enforcement
  - Use limited authority and referral to other agencies (Update ERP with subdivision regulation revisions)

12

01 MS4 General Permit Construction Site Overview

02 Construction Program Development

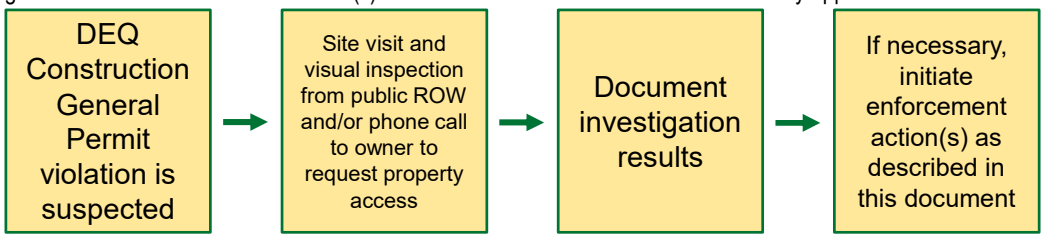
03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

13

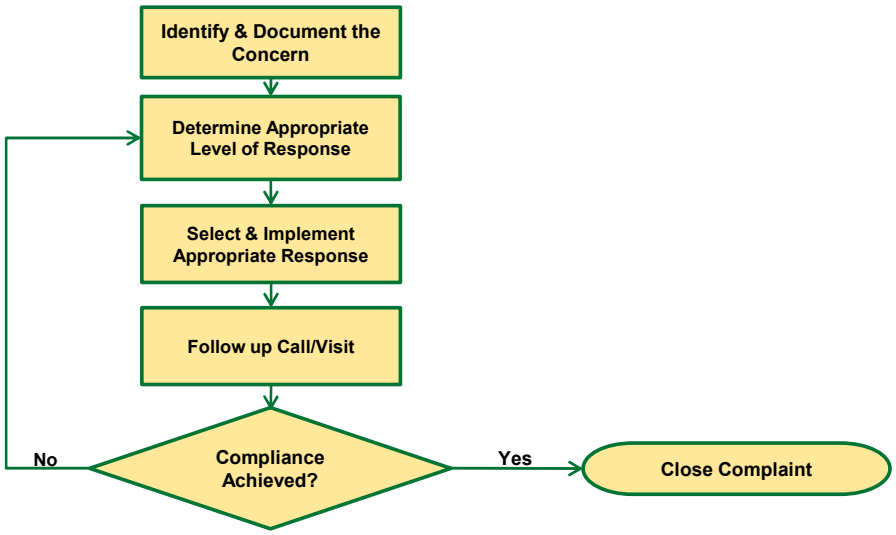
Construction Site Storm Water

- The General Permit requires the County to regulate storm water runoff from construction activities that result in a land disturbance ***of greater than or equal to one acre and from construction activities disturbing less than one acre if the activities are part of a larger common plan of development or sale that would disturb one acre or more.*** The County subdivision regulations currently require regulated projects to abide by the Montana DEQ requirements (i.e., Montana DEQ Construction General Permit requirements).
- The County may observe a suspected Construction General Permit violation during the course of County operations or they may receive a complaint. When the SWMP team believes an observation or complaint requires investigation, a site visit and inspection (from public ROW) will be conducted. If necessary, the SWMP Coordinator may contact the property owner to request access to the property to further evaluate the situation . When a violation is confirmed, the SWMP Team will document the results of the investigation and initiate enforcement action(s) as described in this document and allowed by applicable laws to correct the issue.



14

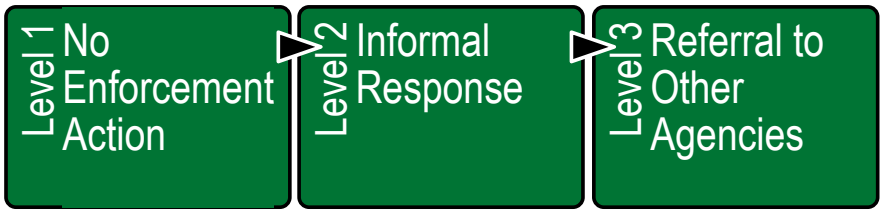
Enforcement Response Flowchart



15

Response Remedies

- Once a storm water-related concern is identified, the appropriate level of response will be determined and an appropriate response remedy will be selected. The County currently has three levels of responses available.



16

Level 1 - No Enforcement Action

- **When**: County personnel are made aware of storm water-related concerns; but sufficient evidence does not exist to prove a violation is taking place
  - Example: Complaint is received stating that a storm water control has not been properly maintained; however, after a brief site inspection and/or verbal discussion, the County staff determines the storm water control is within compliance and no enforcement action is required.
- **Result**: Document concern and response using the Enforcement Response Documentation Form for future reference.

17

Level 2 - Informal Response

- **When**: First response option whenever a response is required
  - Except for situations that pose immediate or significant threat to human health or the environment, in which case a Level 3 response should be initiated
- **Result**: Establishes documentation necessary to implement formal enforcement actions through other agencies if necessary

- **Response Options**
  - Telephone conversations
  - Verbal notices
  - Meetings

18

Level 3 - Referral to Other Agencies

- **When:** Informal response proves insufficient to resolve the situation or the situation poses an immediate or significant threat to human health or the environment
- **Available Agencies**:
  - DEQ
  - Fire Department
  - RiverStone Health
  - Local Emergency Personnel
  - City of Billings Environmental Division
  - MDT Environmental Services

19

Additional Remedy Considerations

- Magnitude
- Duration
- Compliance History
- Good Faith of the Operator

20

01 MS4 General Permit Construction Site Overview

02 Construction Program Development

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

21

Enforcement Roles and Responsibilities

Enforcement Action	Delegated SWMP Team Member	SWMP Coordinator	Public Works Director
Telephone Conversation and/or Verbal Notice	Primary	Primary	Secondary
Meetings	Primary	Primary	Secondary
Referral to Other Agencies	N/A	Primary	Primary

22

Escalation Process and Schedule for Construction Site Storm Water - Related Concerns

- Typical responses to common construction site storm water violations and a typical schedule for escalation of enforcement actions. Each situation has unique circumstances and concerns. Therefore, the tables below serve as guidance only. Violations that pose a significant threat to human health and/or the environment will utilize more severe enforcement actions on a compressed timeframe in order to quickly eliminate the illicit discharge, abate any damages, and prevent recurrence.

Violation	Circumstances of Violation	Initial Level of Response	Initial Response Remedy
Conducting earth disturbing activities without preparing a SWPPP and obtaining coverage under DEQ's Construction General Permit	Operator is unware of requirements	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Operator is aware of requirements but has not obtain coverage	Level 3	Referral to Other Agencies
Best management practices (BMPs) as listed on the SWPPP are: ▪ Not installed ▪ Not installed correctly ▪ Not regularly inspected ▪ Not maintained	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Poorly maintained construction site (i.e. lack of good housekeeping techniques, tracking soil offsite, excessive trash and debris, etc.)	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
SWPPP is not up-to-date	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
SWPPP is not located on site	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies

23

Escalation Process and Schedule for Construction Site Storm Water - Related Concerns Cont'd.

Response	Response Schedule	Responsibility
Telephone Conversation, Verbal Notice, and/or Meeting	Within 48 hours of Violation	SWMP Coordinator
Referral to Other Agencies	As deemed appropriate by the SWMP Coordinator and Public Works Director	SWMP Coordinator Public Works Director

24


Questions & Discussion
CAT
Photo by Jason Jarrach on Unsplash

25

26

1

Yellowstone County, MT MS4 Enforcement Response Plan Training – Post-Construction Site

December 16, 2020

2

01 MS4 General Permit Post-Construction Overview

02 Post-Construction Program Development

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

3

01 MS4 General Permit Post-Construction Overview

02 Post-Construction Program Development

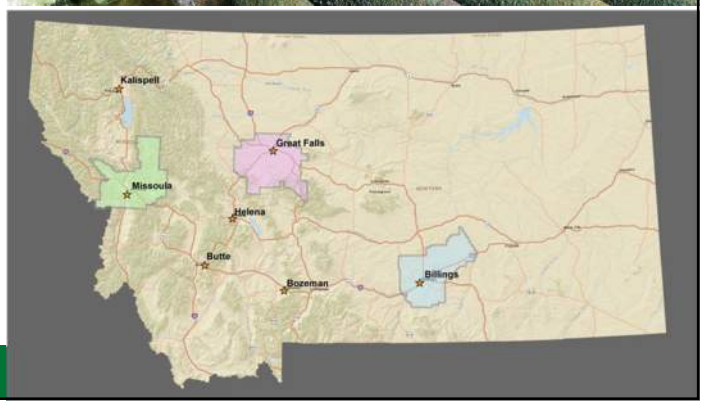
03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

4

MS4 Program Background

- EPA MS4 Permit Program
- Cities/Counties Regulated by Size
- Goal: Limit Pollutants through the implementation of BMPs consistence with the Storm Water Management Program (SWMP)



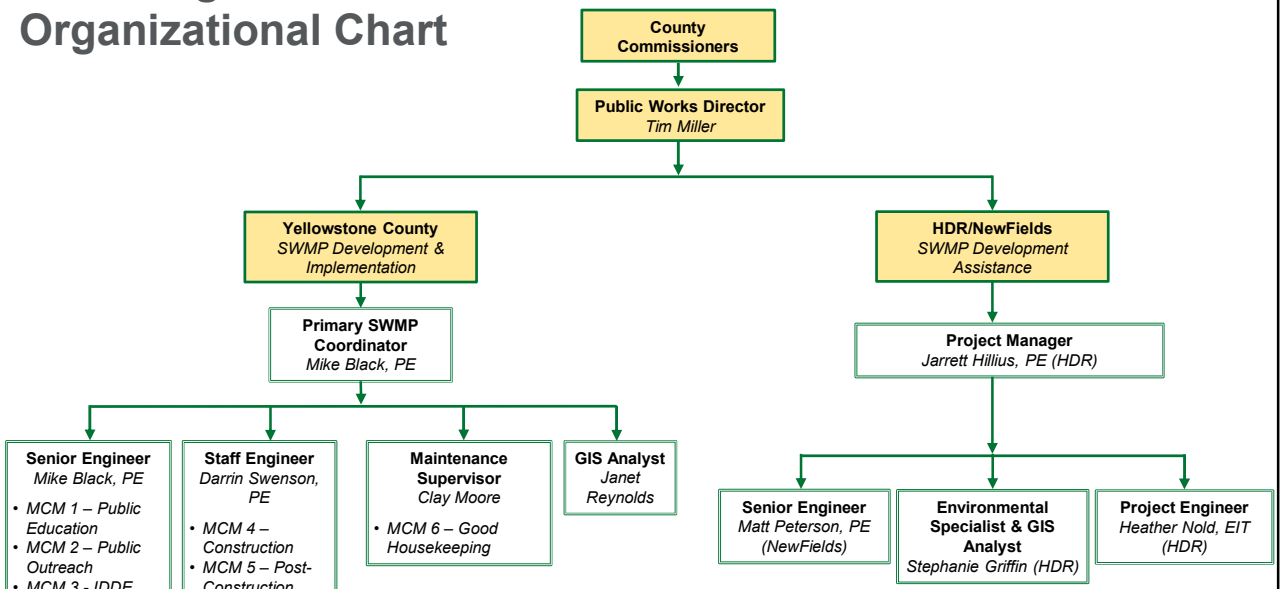
5

MS4 General Permit

- Permit Term: 2017 - 2021
- Storm Water Management Program
- Minimum Control Measures
  - MCM 1: Public Education & Outreach
  - MCM 2: Public Involvement & Participation
  - MCM 3: Illicit Discharge Detection & Elimination
  - MCM 4: Construction Site Storm Water Management
  - MCM 5: Post-Construction Site Storm Water Management in New & Redevelopment
  - MCM 6: Pollution Prevention/Good Housekeeping

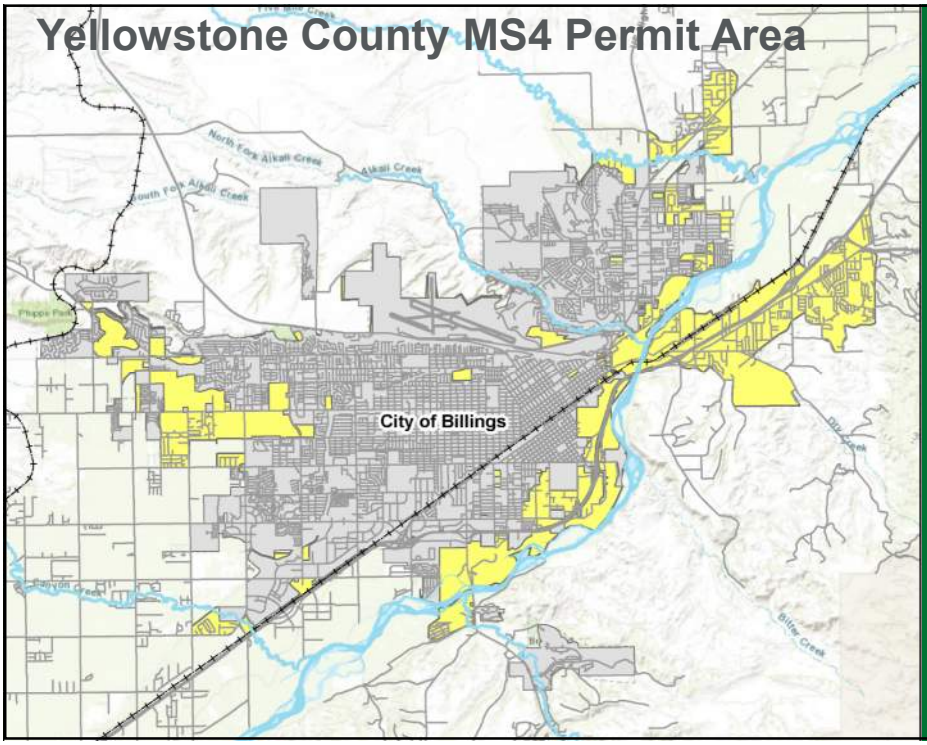
6

MS4 Program Organizational Chart



7

Yellowstone County MS4 Permit Area



Eight Watersheds

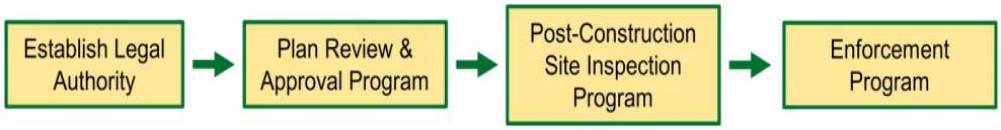
- Alkali Creek
- Brockway Coulee - Yellowstone River
- City of Billings - Yellowstone River
- Five Mile Creek
- Hogans Slough
- Lower Blue Creek
- Lower Canyon Creek
- Sevenmile Creek - Yellowstone River

8

MCM 5: Post-Construction Site Storm Water Management in New & Redevelopment

Addresses projects that disturb greater than or equal to 1 acre

- Elements of Construction Site Storm Water Management Program
  - ☐ Ordinance or Regulatory Mechanism (require post-construction storm water controls)
  - ☐ Plan Review and Approval Process (grading & drainage plan)
  - ☐ Post-Construction BMP Inspection Program
  - ☐ Program Enforcement



9

Post- Construction Design Standard

***Runoff Reduction Requirement*:**

Infiltrate, evapotranspire, or capture for reuse the runoff generated from the first 0.5" of rainfall from a 24-hour event

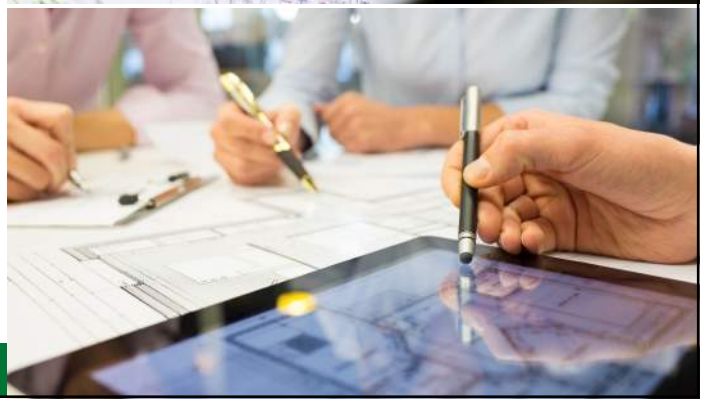
Secondary Options:

a.) Treat Onsite
b.) Manage Offsite
c.) Treat Offsite

10

Post-Construction Program Components

- Plan review and approval program
  - Plan review checklist
- Inspection program
  - Inspection staff
  - Inspection form
  - Project inventory
  - Inspection frequency protocol
- Enforcement program
  - Enforcement response plan



11

01 MS4 General Permit Post-Construction Overview

02 Post-Construction Program Development

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

12

Post-Construction Program Development

- Ordinance or Regulatory Mechanism
  - Updating subdivision regulations
- Plan Reviews & Approvals
  - Considering grading and drainage plan submittals for subdivision applications
- Inspections
  - Would conduct inspections during subdivision development process
- Enforcement
  - Use limited authority and referral to other agencies (Update ERP with subdivision regulation revisions)


13

01 MS4 General Permit Post-Construction Overview

02 Post-Construction Program Development

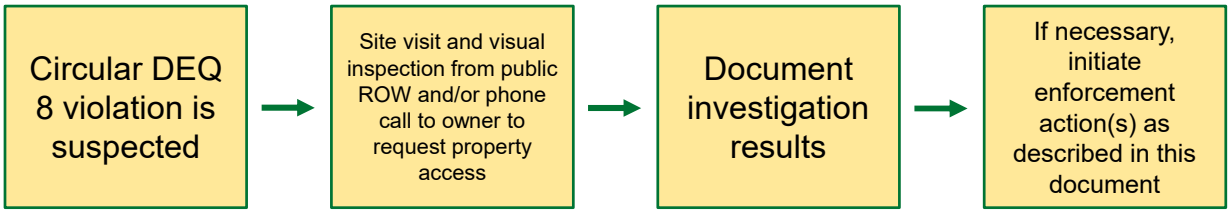
03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

14

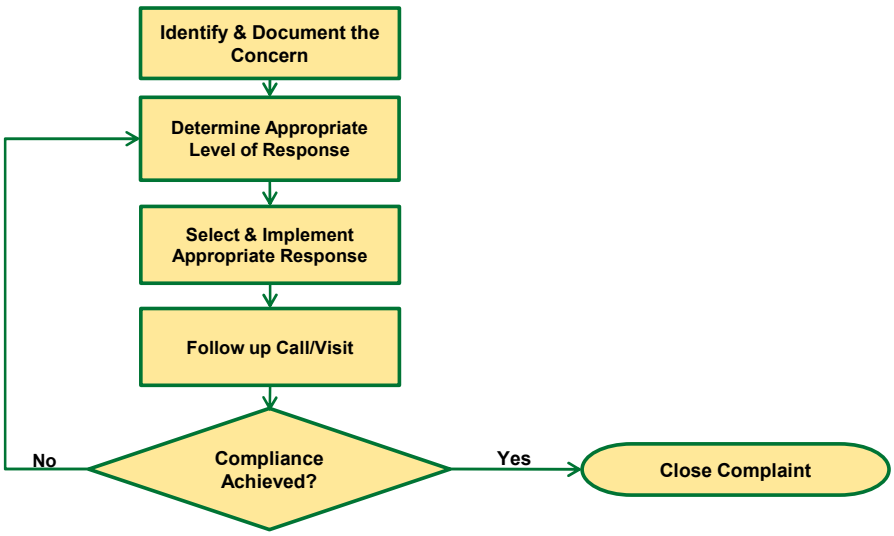
Post-Construction Site Storm Water - ERP

- The General Permit requires the County to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. The County subdivision regulations currently require regulated projects to abide by the Montana DEQ requirements (i.e., Montana Circular DEQ 8 requirements).
- The County may observe a suspected Circular DEQ 8 violation during the course of County operations or they may receive a complaint. When the SWMP team believes an observation or complaint requires investigation, a site visit and inspection (from public ROW) will be conducted. If necessary, the SWMP Coordinator may contact the property owner to request access to the property to further evaluate the situation. When a violation is confirmed, the SWMP Team will document the results of the investigation and initiate enforcement action(s) as described in this document and allowed by applicable laws to correct the issue.



15

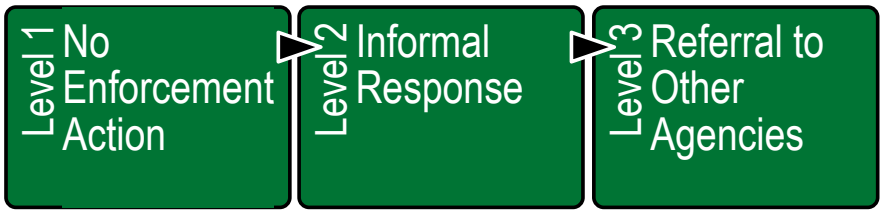
Enforcement Response Flowchart



16

Response Remedies

- Once a storm water-related concern is identified, the appropriate level of response will be determined and an appropriate response remedy will be selected. The County currently has three levels of responses available.



17

Level 1 - No Enforcement Action

- **When**: County personnel are made aware of storm water-related concerns; but sufficient evidence does not exist to prove a violation is taking place
  - Example: Complaint is received stating that a storm water control has not been properly maintained; however, after a brief site inspection and/or verbal discussion, the County staff determines the storm water control is within compliance and no enforcement action is required.
- **Result**: Document concern and response using the Enforcement Response Documentation Form for future reference.

18

Level 2 - Informal Response

- **When**: First response option whenever a response is required
  - Except for situations that pose immediate or significant threat to human health or the environment, in which case a Level 3 response should be initiated
- **Result**: Establishes documentation necessary to implement formal enforcement actions through other agencies if necessary
- **Response Options**
  - Telephone conversations
  - Verbal notices
  - Meetings

19

Level 3 - Referral to Other Agencies

- **When:** Informal response proves insufficient to resolve the situation or the situation poses an immediate or significant threat to human health or the environment
- **Available Agencies**:
  - DEQ
  - Fire Department
  - RiverStone Health
  - Local Emergency Personnel
  - City of Billings Environmental Division
  - MDT Environmental Services

20

Additional Remedy Considerations

- Magnitude
- Duration
- Compliance History
- Good Faith of the Operator

21

01 MS4 General Permit Post-Construction Overview

02 Post-Construction Program Development

03 Enforcement Response Plan Summary

04 Enforcement Response Plan Implementation

22

Enforcement Roles and Responsibilities

Enforcement Action	Delegated SWMP Team Member	SWMP Coordinator	Public Works Director
Telephone Conversation and/or Verbal Notice	Primary	Primary	Secondary
Meetings	Primary	Primary	Secondary
Referral to Other Agencies	N/A	Primary	Primary

23

Escalation Process and Schedule for Post-Construction Related Concerns

- Examples of typical responses to common post-construction storm water violations and a typical schedule for escalation of enforcement actions. Each situation has unique circumstances and concerns.. Violations that pose a significant threat to human health and/or the environment will utilize more severe enforcement actions on a compressed timeframe in order to quickly eliminate the illicit discharge, abate any damages, and prevent recurrence.

Violation	Circumstances of Violation	Initial Level of Response	Initial Response Remedy
Failure to obtain approval of subdivision plans from DEQ and the County Planning Department	Operator initiated construction prior to receiving approval	Level 3	Referral to Other Agencies
Failure to construct post-construction storm water management facilities as shown on the plans and as required by DEQ Circular 8	Initial Incident	Level 3	Referral to Other Agencies
Failure to abide by the operation and maintenance plan submitted to DEQ for post-construction storm water management facilities	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Failure to notify the Public Works Department about modifying post-construction storm water management facilities	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies
Failure to notify the Public Works Department of a change of ownership	Initial Incident	Level 2	Telephone Conversation, Verbal Notice, and/or Meeting
	Repeat Incident	Level 3	Referral to Other Agencies

Response	Response Schedule	Responsibility
Telephone Conversation, Verbal Notice, and/or Meeting	Within 48 hours of Violation	SWMP Coordinator
Referral to Other Agencies	As deemed appropriate by the SWMP Coordinator and Public Works Director	SWMP Coordinator Public Works Director

24


Questions & Discussion
CAT
Photo by Jason Jarrach on Unsplash

25

26

Storm Water Pollution Prevention Standard Operating Procedures

for:

County Shop and Weed District

3319 King Ave E
Billings, MT, 59101
(406) 256-2708

SOP Effective Date: December 2019

Yellowstone County Public Works Department

Storm Water Management Program

SECTION 1.0 Facility Description and Contact Information

1.1 Facility Information

Facility Information

Name of Facility: County Shop and Weed District
Street: 3319 King Ave E
City: Billings State: MT ZIP Code: 59101

Discharge Information

Drainage Basin: City of Billings – Yellowstone River
Drainage Basin Receiving Waterbody: Yellowstone River
Does this facility discharge storm water *directly* into any segment of a receiving waterbody?[1]
☐Yes ☒No

Permit Information

Is this facility permitted by an MPDES Permit (in addition to MS4)? ☐Yes ☒No
If Yes, identify other discharge permits: _____

1.2 Contact Information/Responsible Parties

County Shop Superintendent:

Name: Clay Moore
Telephone number: (406) 256-6812
Email address: cmoore@co.yellowstone.mt.gov

County Weed District Superintendent:

Name: Joe Lockwood
Telephone number: (406) 256-2731
Email address: jlockwood@co.yellowstone.mt.gov

County Storm Water Management Program Coordinator:

Storm Water Management Contact Name (Primary): Mike Black
Telephone number: (406) 256-2735
Email address: mblack@co.yellowstone.mt.gov

1.3 Storm Water Pollution Prevention Team

The storm water pollution prevention team is responsible for implementing and maintaining storm water control measures/BMPs, and taking corrective actions when required.

Name	Position/Title	Individual Responsibilities
Clay Moore	Assistant Road and Bridge Director	Facility Storm Water Lead
Greg Fisher	County Shop Foreperson	Shop Storm Water Lead
Andy Dean	Road Foreperson	Road Storm Water Lead
Joe Lockwood	County Weed District Superintendent	Weed District Storm Water Lead

[1] For purposes of this document, direct discharge refers to site runoff discharging directly into a stream or other receiving waterbody immediately upon leaving the bounds of the site or facility.

1.4 Site Description

The County Shops and Weed District (CSWD), located at 3319 King Ave E, includes Fleet Maintenance (County Shop), Road and Bridge Division, and the County Weed District. Fleet Maintenance services include preventative maintenance and repairs to the County's fleet of vehicles and equipment, acquisition and disposal of vehicles and equipment, and re-fueling services. Road and Bridge Division services include plowing, sanding, snow removal, asphalt projects, concrete projects, pothole repair, and street maintenance. The County Weed District is primarily responsible for assisting public, private, and other government agencies within Yellowstone County to manage and control existing noxious weeds and to prevent the growth of new invasive species. A site plan of the 10.5 acre facility is provided in Figure 1.

1.5 Purpose and Limitations

This standard operating procedure (SOP) document identifies potential storm water pollutants that could be discharged from the site and storm water pollution best management practices (BMPs) to be installed, implemented, and maintained to minimize the discharge of pollutants from storm water runoff. The potential pollutants and BMPs identified in the document only address management of storm water associated with County activities. Management of potential pollutants covered under separate permits (i.e., storm water discharges associated with industrial activity) are not addressed in this document.

This document is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper and effective containment of pollutants.

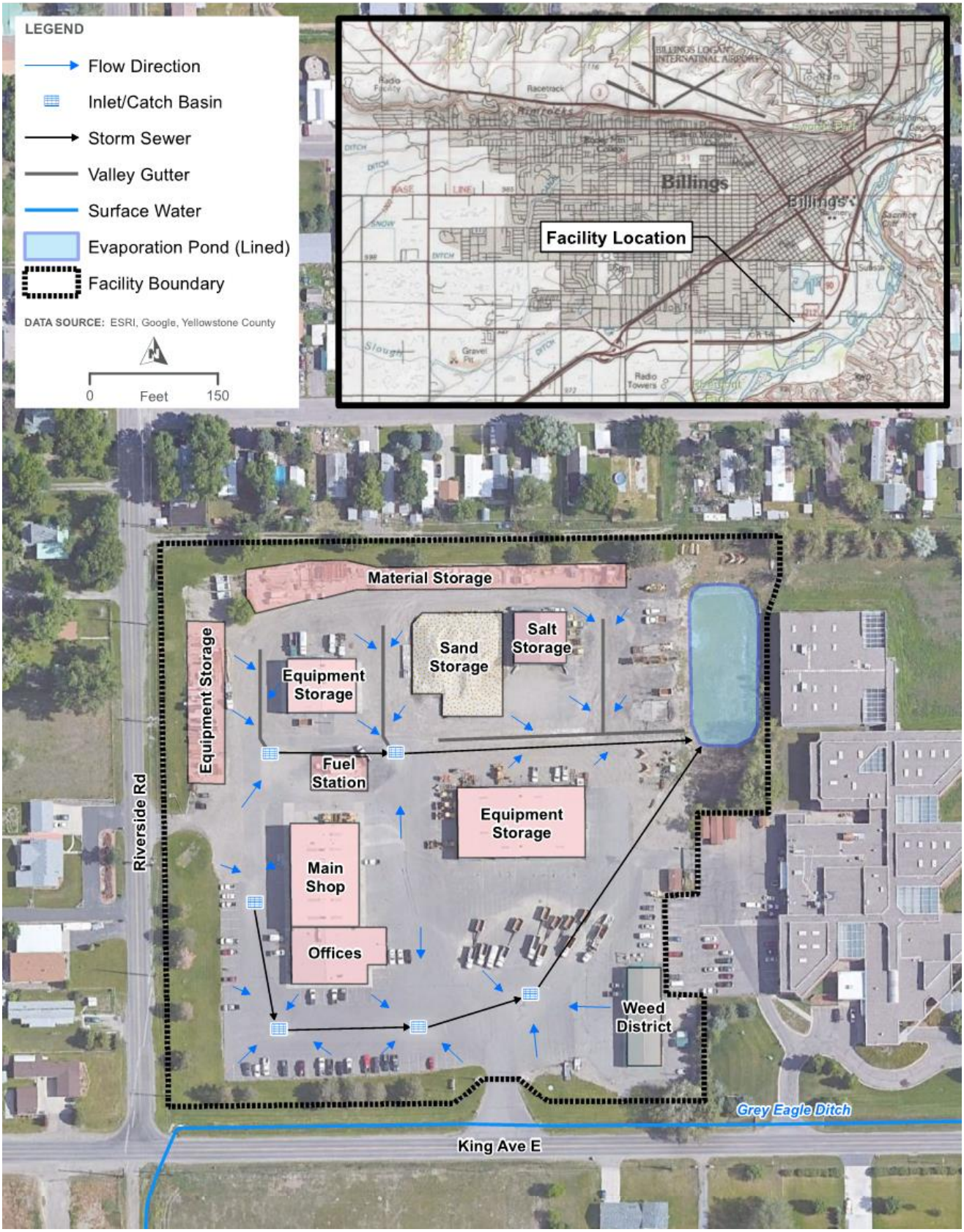


Figure 1. County Shop and Weed District Site Plan

SECTION 2.0 Potential Storm Water Pollutant Sources

This section describes potential storm water pollutant sources associated with the CSWD facility.

2.1 Potential Storm Water Pollutants Associated with Facility Activities

The primary operations at the CSWD facility consist of shop and fleet services, street maintenance and repairs, winter street operations, parking lot maintenance, noxious weed abatement, and recycling of pesticide containers. A list of activities with the potential to discharge pollutants to the storm drainage system associated with this facility is provided in Table 1. Measures to be taken to reduce the potential for discharge of pollutants associated with these activities are identified in Section 3.2.2.

Table 1. County Shop and Weed District Facility Activities and Potential Storm Water Pollutants

Activity	Potential Pollutants								
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil, Grease, Fuel	Organics	Pesticides/Herbicides	Hazardous Waste
Landscaping	X	X				X	X	X	
Container Recycling		X	X				X	X	
Weed Control[1]		X					X	X	
Street Maintenance and Repairs [1]	X		X	X	X	X		X	X
Winter Street Operations [1]	X		X			X			X
Parking Lot Maintenance [1]	X		X	X	X	X		X	X
Catch basin cleaning	X	X	X	X	X	X	X	X	
Excavation and stockpiles (only stockpiles)	X					X			
Building Maintenance	X	X	X	X	X	X	X	X	X
Shop and Fleet Services				X		X	X		X
1. Activity performed off-site.									

2.2 Spills and Leaks

Table 2 provides a list of locations where spills that would discharge contaminants to the storm drain system could occur. Spill response protocol is described in Section 3.2.3.

Table 2. Areas Where Potential Spills/Leaks Could Occur

Location	Discharge Point
Main Shop	Interior bays (oil/water separator)
Equipment Storage	Sheet flow to catch basins, then to evaporation pond
Fuel Station	Sheet flow to catch basins, then to evaporation pond
Weed District Building	Interior bay (floor drains)

SECTION 3.0 Storm Water Control Measures

This section describes the storm water BMPs to be installed, implemented, and maintained to minimize the discharge of pollutants from storm water runoff at the facility.

3.1 Structural BMPs

3.1.1 Storm Water Drainage System

The site is located within the City of Billings-Yellowstone River watershed which eventually discharges to the Yellowstone River. All storm water that is generated at the facility is stored and managed on site. The facility drainage system is composed of natural valley gutters, catch basins, storm sewer piping, and a lined evaporation pond:

- Four natural valley gutters are located on the northern side of the property.
- Six catch basins are located throughout the facility's parking lot.
- Storm sewer piping conveys runoff from the catch basins to the evaporation pond.
- The evaporation pond is located in the northeast corner of the property and it is a lined with a geosynthetic membrane.

The facility's storm water drainage system features are shown on the site plan in Figure 1.

3.1.2 Permanent Storm Water Management BMPs

BMP Locations

Storm water runoff is conveyed to the lined evaporation pond located in the northeast corner of the property. The pond is the main storm water BMP for the facility and manages both runoff quality and quantity.

BMP Inspection and Maintenance

The facility superintendent is responsible to inspect and direct maintenance of the site's storm water BMPs:

- Inspect the natural valley gutters on a semi-annual basis to verify that positive drainage is provided. Re-grade any areas that restrict positive drainage to the catch basins.
- Inspect the catch basins on a monthly basis and following rain events for sediment, debris, and structural damage. Remove obvious trash and debris to prevent clogging and contact the County Storm Water Management Program Coordinator to coordinate the removal of excessive sediment.
- Inspect the pond on a semi-annual basis and following significant rain events. Remove obvious trash and debris from the pond and storm sewer outlets. Contact the County Storm Water Management Program Coordinator to coordinate the removal of excessive sediment and overgrown vegetation.
- Remove excessive sediment deposits, overgrown vegetation, trash, and debris.
- Inspect the pond liner on an annual basis during dry weather (e.g. July to September) for rips, punctures, or tears. Repair damaged areas immediately and notify the storm water management program coordinator.

3.1.3 Chemical and Bulk Fuel Storage

Chemical and bulk fluid is primarily stored in the Main Shop and in the Weed District building. All maintenance fluid used for vehicles and fleet trucks is stored in appropriate containers within the Main Shop along with respective material safety data sheets (MSDS). The Main Shop has a capture system along the outer perimeter of each maintenance bay to contain any chemical spills. This capture system is connected to an oil-water separator located in the Main Shop. A re-fueling station with an above ground fuel storage tank

is located on the northern side of the Main Shop. Small concrete valley gutters surround the fuel storage tank in order to capture and contain any spills. All pesticide and herbicide chemicals are stored in appropriate containers within the interior bay of the Weed District building along with respective MSDS. A floor drain and spill container is located within the interior bay to contain any spills.

3.2 Non-Structural BMPs

3.2.1 Employee Training

Employee training is an important aspect of the facility's daily operation. Shop staff, road crews, and Weed District employees shall all receive annual training on updates to the facility's SOPs. Additionally, new hires are to be trained on the SOPs within 90 days of their hire date. Training should be conducted by one of the storm water leads listed in Section 1.3.

3.2.2 Good Housekeeping

Good housekeeping procedures to be implemented by facility staff are listed in Table 3.

Table 3. Vehicle Maintenance Facility Storm Water Management Good Housekeeping Procedures

Activity	Responsible Person/Position	BMP to Reduce Potential for Pollution
Landscaping	Greg Fisher	Follow Landscaping SOP
Container Recycling	Greg Fisher	Follow Container Recycling SOP
Weed Control	Joe Lockwood	Follow Weed Control SOP
Street Maintenance and Repairs	Clay Moore	Follow Street Maintenance and Repairs SOP
Winter Street Operations	Clay Moore	Follow Winter Street Operations SOP
Parking Lot Maintenance	Clay Moore	Follow Parking Lot Maintenance SOP
Catch basin cleaning	Clay Moore	Follow Utility Maintenance SOP
Excavation and stockpiles (only stockpiles)	Clay Moore	
Building Maintenance	Greg Fisher	Follow Building Maintenance SOP
Shop and Fleet Services	Greg Fisher	Follow Shop and Fleet Services SOP

3.2.3 Spill Response

Spill response and cleanup is addressed by employee training, discussed in Section 3.2.1. Spill response procedures are provided below.

Facility Spill Kit

The facility has multiple spill kits located throughout the maintenance shop that are readily accessible when needed. The spill kits contain the following items:

- Absorbent Pads
- Sand (obtained from stockpile when needed)
- Booms
- Disposal Bags
- Safety Goggles
- Rubber Gloves

Minor Spill Response Procedure

A minor spill is defined as one that poses no significant threat to human health or the environment. These spills generally involve less than 5 gallons and can usually be cleaned up by County personnel. Other characteristics of a minor spill include:

- The spilled material is easily stopped or controlled at the time of the spill
- The spill is localized
- The spilled material is not likely to reach surface water or groundwater
- There is little danger to human health
- There is little danger of explosion

Use the following procedures in response to a minor spill:

1. Immediately notify the direct supervisor about the spill.
2. If necessary, physically contain the spill to prevent further migration from the facility or project site.
    a. Stop or reduce continued release by ceasing activity, closing valves or flipping switches.
    b. Obtain supplies from the spill kit that are intended to be used for containment and absorption.
    c. Using proper personal protective equipment, block or slow the migration of spilled material.
    d. Close or plug drains when possible.
2. In consultation with the direct supervisor, clean up small spills that can be effectively managed by County staff or hire a spill cleanup contractor.
3. Dispose of all contaminated products in accordance with applicable federal, state and local regulations.
4. Document the spill material, location, size, and date.

Major Spill Response Procedure

A major spill is defined as one involving a spill that cannot be safely and or adequately controlled or cleaned up by on-site personnel. Characteristics of a major spill include:

- The spill is large enough to spread beyond the immediate area
- The spill material entered surface water or ground water (regardless of the size)
- The spill requires special training and equipment to cleanup
- The spill material is a threat to human health
- There is a danger of fire or explosion

Use the following procedures in response to a major spill:

1. All workers shall immediately evacuate the spill site to a safe distance away from the spill.
2. Notify the direct supervisor about the spill and provide details regarding the spill.
3. If there is not an immediate health or safety danger and if actions can be implemented safely, a trained employee shall conduct obvious and immediately implementable containment measures in the following sequence:
    a. Stop or reduce continued release by ceasing activity, closing valves or flipping switches.
    b. Block or slow the migration of spilled material.
    c. Close or plug drains when possible.
4. The direct supervisor will contact the Fire Department to notify the Hazardous Response Team.
5. The direct supervisor will coordinate cleanup with the Hazardous Response Team.
6. Document the spill material, location, size, and date.

Attachments: Activity SOPs

Landscaping SOP
Container Recycling SOP *(To Be Developed)*
Weed Control SOP *(To Be Developed)*
Street Maintenance and Repairs SOP *(To Be Developed)*
Winter Street Operations SOP *(To Be Developed)*
Parking Lot Maintenance SOP *(To Be Developed)*
Catch Basin Cleaning SOP *(To Be Developed)*
Excavation and Stockpiles SOP *(To Be Developed)*
Building Maintenance SOP *(To Be Developed)*
Shop and Fleet Services SOP

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE CATEGORY: Landscaping	SOP NUMBER: 01 ISSUE DATE: 12/2019	

ACTIVITIES:	TARGET POLLUTANTS:
Mowing **Tree Trimming** **Fertilizer/Pesticide/Herbicide Application** **Planting** **Equipment Fueling**	Sediment Nutrients Oil & Grease Organics Pesticides/Herbicides

GENERAL

THIS SOP IS NOT EXPECTED TO COVER ALL NECESSARY PROCEDURE ACTIONS. OPERATORS ARE ALLOWED TO ADAPT SOPS TO UNIQUE SITE CONDITIONS IN GOOD JUDGMENT WHEN IT IS NECESSARY FOR SAFETY AND THE PROPER AND EFFECTIVE CONTAINMENT OF POLLUTANTS.

DESCRIPTION OF ACTIVITIES AND POLLUTANT SOURCE

Landscaping activities that have the potential to discharge pollutants to storm water runoff and surface waters include mowing, tree trimming, fertilizer/pesticide/herbicide application, planting, and equipment fueling. These activities occur at most County owned buildings and County parks.

APPLICABILITY

The procedures outlined in this SOP shall be implemented by all employees conducting landscaping activities at County owned facilities.

BEST MANAGEMENT PRACTICES (TO BE IMPLEMENTED FOR ALL LANDSCAPING ACTIVITIES)

- Locate all storm drain collection structures and inlets prior to starting work.
- Use temporary catch basin protection when necessary.
- Inspect equipment for gas, oil, and other fluid leaks prior to use.
- Promptly clean up spills in accordance with the spill response and containment SOP.
- Collect and dispose of all trash in the work area.
- Conduct all equipment cleaning and maintenance at the County Shops.

THE FOLLOWING ACTIVITY PROCEDURES SHOULD BE FOLLOWED FOR EACH LISTED ACTIVITY

MOWING

County staff are responsible for maintaining grassy areas at County owned buildings and County parks. Mowing includes the operation of mowers, trimmers, edgers, and blowers to maintain aesthetics of County managed grassy areas. A variety of pollutants can be introduced to the storm water system and nearby surface waters while mowing. Implement the following procedures to minimize the potential for storm water pollution during the mowing process:

- Adjust mower height to match the area's intended use and minimize clippings.
- Avoid excessive soil and vegetation damage by varying mowing patterns.
- When bagging clippings ensure appropriate collection, transportation, and disposal of all clippings.
- Sweep or blow clippings from sidewalks and streets to grass areas when work is complete.
- Dispose of clippings at the County Shop stockpiles or the Billings Landfill.

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE CATEGORY: Landscaping	SOP NUMBER: 01 ISSUE DATE: 12/2019	

TREE TRIMMING

County Staff perform routine care for trees and shrubs at County owned buildings and County parks. Tree trimming includes the operation of trimmers, chippers, and blowers to maintain aesthetics of County managed trees and shrubs. Oil, grease, fuel, and organics can be introduced to the storm water system and nearby surface waters while trimming. Implement the following procedures to minimize potential for pollution during the trimming process:

- Collect all trimmings and debris in the area when work is complete.
- Sweep or blow chips from pavement(s) into soil areas.
- Dispose of trimmings and debris at the County Shop stockpiles or the Billings Landfill.

FERTILIZER/PESTICIDE/HERBICIDE APPLICATION

Properly trained and certified persons perform routine care for grassy areas at County owned buildings and County parks. Fertilizer, pesticide, and herbicide application includes the operation of sprayers and spreaders to maintain health of County managed grassy and vegetated areas. A variety of nutrients and chemicals can be introduced to the storm water system and nearby surface waters during treatment. Implement the following procedures to minimize potential for pollution in the fertilizer/pesticide/herbicide application process:

- Read and review all product information prior to use. This information includes but is not limited to, safety data sheets, product instructions, and federal and state regulations governing use.
- Avoid application within a minimum of 20 feet of storm drainage facilities and surface waters and 100 feet of any well head.
- Calibrate application equipment to avoid excessive material application.
- Check the weather forecast. Wind and or rain conditions (current and future) may not be acceptable for application. Do not use pesticides if rain is expected within a 24-hour period and only apply when wind speeds are less than 5 mph.
- Mix and prepare all fertilizers, pesticides, and herbicides away from storm drains, waterbodies, and soils, preferably inside a protected area within a watertight secondary container.
- Employ appropriate techniques to minimize off-target application spray drift and over broadcasting are possible pollutants to the storm water system.
- Clean spills immediately and follow product specified procedures.
- Rinse application equipment away from water bodies and storm drains. Do not dispose of chemicals to storm drain, sewer, or ground surface.
- Dispose of excess material following manufacturer's instructions.

PLANTING

Planting includes digging, planting/seeding, and backfilling to maintain aesthetics of County managed land. Sediment and nutrients can be introduced to the storm water system and nearby surface waters during planting if proper procedures are not followed. Implement the following procedures to minimize potential for pollution when planting:

- Prior to digging call Montana 811 by dialing 811 or 800-424-5555 to locate underground facilities.
- While digging place spoils near the hole for ease of backfilling, avoid placing spoils in or near the gutter, a storm drain, or water body.
- Do not add excessive amounts of compost or fertilizer while backfilling.

- Apply seed and cover using pre-determined application method and rate, in accordance with manufacturer's instructions.
- Sweep dirt from surrounding pavement(s) into the planter area.
- Remove extra spoils from the site responsibly, use a tarp if necessary to contain spoils during transport.
- Transport spoils to the County Shops.
- Larger planting projects may require installation of temporary storm water BMPs such as silt fence and biorolls. Contact the County storm water coordinator to discuss pollution prevention for planting projects that are near water bodies and will take more than two days to complete.

EQUIPMENT FUELING

Equipment fueling applies to all gas, diesel, or kerosene vehicles and equipment required for maintenance of County facilities. Harmful chemicals can be introduced to the storm water system and nearby surface waters if spills occur while fueling equipment. Implement the following procedures to minimize pollution during fueling:

- Use the fuel automatic shut off (where applicable) to prevent overfilling, and do not 'top off' the tank.
- Mobile fueling should be minimized, whenever practical transport vehicles and equipment to designated fueling areas.
- When fueling small equipment from portable containers, fuel in an area a minimum of 50 feet away from storm drains and water bodies.
- If a large fuel spill occurs (greater than 1 gallon), contact the County storm water coordinator and your supervisor to determine if specialized sill response procedures are necessary.

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE **CATEGORY:** Shop and Fleet Services	**SOP NUMBER:** 02 **ISSUE DATE:** 12/2019	
ACTIVITIES: **Vehicle Fueling** **Vehicle and Equipment Storage** **Vehicle Washing** **Material Storage** **Vehicle Maintenance**	**TARGET POLLUTANTS:** Sediment Oil, Grease, Fuel Organics Hazardous Waste	

GENERAL

THIS SOP IS NOT EXPECTED TO COVER ALL NECESSARY PROCEDURE ACTIONS. OPERATORS ARE ALLOWED TO ADAPT SOPS TO UNIQUE SITE CONDITIONS IN GOOD JUDGMENT WHEN IT IS NECESSARY FOR SAFETY AND THE PROPER AND EFFECTIVE CONTAINMENT OF POLLUTANTS.

DESCRIPTION OF ACTIVITIES AND POLLUTANT SOURCE

The shop and fleet service activities that have the potential to discharge pollutants to storm water runoff and surface waters include vehicle fueling, vehicle and equipment storage, vehicle washing, material storage, and vehicle maintenance. Pollutants associated with these activities include sediment, oil, grease, fuel, organics, and hazardous waste.

APPLICABILITY

The procedures outlined in this SOP shall be implemented by all employees conducting shop and fleet services at County owned facilities.

BEST MANAGEMENT PRACTICES (TO BE IMPLEMENTED FOR ALL SHOP AND FLEET SERVICE ACTIVITIES)

- Inspect vehicles and equipment for gas, oil, and other fluid leaks prior to use.
- Promptly clean up spills in accordance with the spill response and containment SOP.
- Collect and dispose of all trash in the work area.
- Keep work and storage areas clean for easy detection of leaks and spills.
- Conduct equipment cleaning and maintenance at the County Shop and Weed District facility.

THE FOLLOWING ACTIVITY PROCEDURES SHOULD BE FOLLOWED FOR EACH LISTED ACTIVITY

VEHICLE FUELING

Vehicle fueling applies to all gas and diesel vehicles used by County facilities staff. Harmful chemicals can be introduced to the storm water system and nearby surface waters if spills occur while fueling. Implement the following procedures to minimize potential pollution during fueling:

- Shut off the vehicle prior to fueling.
- Fuel vehicles at approved locations.
- Inspect fueling location for corrosion, leaks, cracks, scratches, and other physical damage that may lead to spills.
- Follow all posted warnings.
- Use the fuel automatic shut off (where applicable) to prevent overfilling, and do not 'top off' the tank.
- Remain by the fill nozzle while fueling.

- Mobile fueling should be minimized, whenever practical transport vehicles to designated fueling areas.
- If a large fuel spill occurs (greater than 1 gallon), contact the County storm water coordinator and your supervisor to determine if specialized spill response procedures are necessary.

VEHICLE AND EQUIPMENT STORAGE

Vehicles and equipment stored for any period of time have the potential to leak, spill, or release chemicals or hazardous materials into the storm water system and nearby surface waters. Storage occurs at the County Shop and Weed District Facility. Implement the following procedures to minimize potential pollution during vehicle and equipment storage:

- Whenever possible, store vehicles and equipment inside where floor drains are connected to an oil-water separator.
- Vehicles and equipment stored outside shall be in approved locations.
- Monitor stored vehicles and equipment closely for leaks, use a drip pan as needed.
- Drain fluids from leaking or wrecked vehicles as soon as possible. Dispose of fluids properly, as directed by the facility's superintendent.

VEHICLE WASHING

Vehicle washing removes snow, ice, mud, and dirt from the surface of vehicles. Washing occurs at the County Shop and Weed District facility or other approved locations. Pollutants associated with vehicle washing include sediment, oil, grease, and fuel. Implement the following procedures to minimize potential pollution during vehicle washing:

- Wash vehicles in designated areas only, with drainage connecting to the sanitary sewer system or the County Shop and Weed District facilities on-site collection system.
- Avoid using excess water and soap when washing vehicles.
- Never wash vehicles over or near a storm drain that is not within the County Shop and Weed District facility.
- Use hoses with automatic shut off nozzles to minimize water usage.

MATERIAL STORAGE

Material storage applies to automotive products, fertilizers, pesticides, paints, chemicals, and other similar materials. Material storage includes proper handling through unloading, use, storage, and disposal. Indoor and outdoor storage occurs at the County Shop and Weed District facility. Implement the following procedures to minimize potential pollution during material storage:

- Store materials indoors or under cover whenever possible.
- Store materials on elevated surfaces, limiting contact with storm water run-off when possible.
- Provide an adequate storage container for all materials.
- Inspect storage areas and containers regularly for leaks, spills, and proper storage of all materials.
- Properly dispose of materials that are outdated or beyond use.
- Label and store all hazardous materials according to manufacturer instructions.
- Use secondary containment as needed to prevent contact with storm water in the event of a leak.

YELLOWSTONE COUNTY STORM WATER POLLUTION PREVENTION STANDARD OPERATING PROCEDURE **CATEGORY:** Shop and Fleet Services	**SOP NUMBER:** 02 **ISSUE DATE:** 12/2019	

VEHICLE MAINTENANCE

Vehicle maintenance is routine for all County owned vehicles. Preventative maintenance will occur at the County Shops, while emergency repairs may require off-site work. Potential pollutants associated with vehicle maintenance include oil, antifreeze, brake fluid, solvents, batteries, fuels, and cleaners. Implement the following procedures to minimize potential pollution during vehicle maintenance:

- Perform maintenance activities in a designated maintenance bay at the County Shop and Weed District facility whenever possible.
- If outdoor work is required, prevent spilling through use of oil pans or similar devices.
- Use absorbent pads and drip pans when necessary.
- Keep equipment clean and do not allow excessive build-up of oil and grease.
- Perform regular preventative maintenance to minimize occurrence of leaks and major repairs.
- Dispose of used fluids, rags, and absorbent pads in respective disposal containers within the County Shops.
- Follow spill response procedures as outlined in the County Shop and Weed District Facility SOP.

Appendix K. 2020 Monitoring Results

Table A-1. Comprehensive Summary of All Monitoring Results

Monitoring Site ID	Receiving Waterbody	Location Type	Sampling Period	Sample Date	TSS (mg/l)	TN (mg/l)	TP (mg/l)	Copper (mg/l)	Lead (mg/l)	Zinc (mg/l)	Oil & Grease (mg/l)	pH	Organics (COD) (mg/l)	Water Temperature (°C)
001A 3rd Ave N. & N. 9th St	Yellowstone River	Primarily Commercial	1st Half 2017	4/21/2017	183.0	4.459	0.823	0.033	0.0960	0.2356	*ND*	8.1	226.0	-
			2nd Half 2017	-	-	-	-	-	-	-	-	-	-	-
			1st Half 2018	4/23/2018	305.0	2.004	0.463	0.035	0.0220	0.2340	2.0	8.7	138.0	9.7
			2nd Half 2018	-	-	-	-	-	-	-	-	-	-	-
			1st Half 2019	-	-	-	-	-	-	-	-	-	-	-
			2nd Half 2019	-	-	-	-	-	-	-	-	-	-	-
			1st Half 2020	-	-	-	-	-	-	-	-	-	-	-
			2nd Half 2020											
			1st Half 2021											
			2nd Half 2021											
			Long-term Median Concentration		*244.0*	*3.232*	*0.643*	*0.034*	*0.0590*	*0.2348*	*2.0*	*8.4*	*182.0*	*9.7*
002A Maier Road V-Ditch	Yellowstone River	Primarily Residential	1st Half 2017	-	-	-	-	-	-	-	-	-	-	-
			2nd Half 2017	-	-	-	-	-	-	-	-	-	-	-
			1st Half 2018	6/17/2018	460.0	8.600	0.432	0.019	0.0100	0.2980	*ND*	7.7	60.0	16.0
			2nd Half 2018	-	-	-	-	-	-	-	-	-	-	-
			1st Half 2019	-	-	-	-	-	-	-	-	-	-	-
			2nd Half 2019	-	-	-	-	-	-	-	-	-	-	-
			1st Half 2020	6/17/2020	102.0	2.100	0.587	0.008	0.0040	0.1360	*ND*	7.4	71.0	16.8
			2nd Half 2020											
			1st Half 2021											
			2nd Half 2021											
			Long-term Median Concentration		*281.0*	*5.350*	*0.5095*	*0.0135*	*0.0070*	*0.2170*	-	*7.55*	*65.5*	*16.4*
001B Johnson Ln & Old Hardin Road Catch Basin	Yellowstone River	Primarily Commercial	1st Half 2017	-	-	-	-	-	-	-	-	-	-	-
			2nd Half 2017	-	-	-	-	-	-	-	-	-	-	-
			1st Half 2018	6/17/2018	442.0	6.000	0.950	0.033	0.0153	0.3760	2.0	7.4	226.0	15.0
			2nd Half 2018	-	-	-	-	-	-	-	-	-	-	-
			1st Half 2019	-	-	-	-	-	-	-	-	-	-	-
			2nd Half 2019	10/22/2019	*NT*	12.600	1.200	0.080	0.0346	1.0400	*ND*	7.9	609.0	18.0
			1st Half 2020	6/17/2020	142.0	1.500	0.358	0.014	0.0070	0.1800	*ND*	8.1	107.0	21.7
			2nd Half 2020											
			1st Half 2021											
			2nd Half 2021											
			Long-term Median Concentration		*292.0*	*6.000*	*0.950*	*0.033*	*0.0153*	*0.3760*	*2.0*	*7.9*	*226.00*	*18*
002B Unnamed Creek & HWY 87	Yellowstone River	Primarily Residential	1st Half 2017	-	-	-	-	-	-	-	-	-	-	-
			2nd Half 2017	-	-	-	-	-	-	-	-	-	-	-
			1st Half 2018	-	-	-	-	-	-	-	-	-	-	-
			2nd Half 2018	-	-	-	-	-	-	-	-	-	-	-
			1st Half 2019	-	-	-	-	-	-	-	-	-	-	-
			2nd Half 2019	12/23/2019	1120.0	6.900	1.610	0.091	0.0457	0.6880	1.0	8.2	484.0	13.0
			1st Half 2020	6/17/2020	957.0	4.500	1.120	0.055	0.0335	0.4040	*ND*	7.9	288.0	16.8
			2nd Half 2020											
			1st Half 2021											
			2nd Half 2021											
			Long-term Median Concentration		*1038.5*	*5.700*	*1.365*	*0.073*	*0.0396*	*0.5460*	*1.0*	*8.05*	*386.0*	*14.9*

ND = Parameter not detected at reporting limit
NT = Laboratory testing not performed

ANALYTICAL SUMMARY REPORT

June 25, 2020

Yellowstone County Public Works
PO Box 35024
Billings, MT 59107-5024

Work Order: B20061557

Project Name: Yellowstone MS4

Energy Laboratories Inc Billings MT received the following 1 sample for Yellowstone County Public Works on 6/17/2020 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B20061557-001	Inlet by Flying J on Old Hardin Rd	06/17/20 11:38	06/17/20	Aqueous	Metals by ICP/ICPMS, Total Chemical Oxygen Demand Oil & Grease, Gravimetric Nitrogen, Nitrate + Nitrite Nitrogen, Total Kjeldahl Nitrogen, Total (TKN+NO3+NO2) pH Metals Digestion by E200.2 Preparation for COD testing HACH 8000 E365.1 Digestion, Total P TKN preparation E351.2 Preparation for TSS A2540 D Phosphorus, Total Solids, Total Suspended Turbidity

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: Yellowstone County Public Works
Project: Yellowstone MS4
Work Order: B20061557

Report Date: 06/25/20

CASE NARRATIVE

Tests associated with analyst identified as ELI-G were subcontracted to Energy Laboratories, 400 W Boxelder Rd, Gillette, WY, EPA Number WY00006.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works
Project: Yellowstone MS4
Lab ID: B20061557-001
Client Sample ID: Inlet by Flying J on Old Hardin Rd

Report Date: 06/25/20
Collection Date: 06/17/20 11:38
DateReceived: 06/17/20
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	8.1	s.u.	H	0.1		A4500-H B	06/17/20 18:17 / pjw
pH Measurement Temp	20	C				A4500-H B	06/17/20 18:17 / pjw
Turbidity	105	NTU		0.1		A2130 B	06/17/20 15:33 / pjw
Solids, Total Suspended TSS @ 105 C	142	mg/L		10		A2540 D	06/19/20 13:26 / keh
AGGREGATE ORGANICS							
Oxygen Demand, Chemical (COD)	107	mg/L	D	20		E410.4	06/19/20 12:03 / mas
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.08	mg/L		0.01		E353.2	06/24/20 12:10 / srh
Nitrogen, Kjeldahl, Total as N	1.4	mg/L		0.5		E351.2	06/18/20 14:52 / zas
Nitrogen, Total	1.5	mg/L		0.5		Calculation	06/24/20 17:01 / bas
Phosphorus, Total as P	0.358	mg/L		0.005		E365.1	06/18/20 16:15 / zas
METALS, TOTAL							
Copper	0.014	mg/L		0.005		E200.8	06/20/20 02:33 / pap
Lead	0.007	mg/L		0.001		E200.8	06/20/20 02:33 / pap
Zinc	0.18	mg/L		0.01		E200.8	06/20/20 02:33 / pap
ORGANIC CHARACTERISTICS							
Oil & Grease (HEM)	ND	mg/L		1		E1664A	06/24/20 08:19 / eli-g

- The pH of the sample at the time of E1664A analysis was >2. Additional preservative was added prior to analysis.

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
H - Analysis performed past the method holding time

QA/QC Summary Report

Prepared by Gillette, WY Branch

Client: Yellowstone County Public Works **Work Order:** B20061557 **Report Date:** 06/24/20

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E1664A									Batch: 200624A
Lab ID: MBLK2006240736	Method Blank				Run: BAL-ACCU-124_200624A				06/24/20 08:07
Oil & Grease (HEM)	ND	mg/L	0.9						
Lab ID: LCS2006240736	Laboratory Control Sample				Run: BAL-ACCU-124_200624A				06/24/20 08:08
Oil & Grease (HEM)	35	mg/L	5.0	88	78	114			
Lab ID: LCSD2006240736	Laboratory Control Sample Duplicate				Run: BAL-ACCU-124_200624A				06/24/20 08:08
Oil & Grease (HEM)	34	mg/L	5.0	86	78	114	1.4	18	
Lab ID: G20060406-002EMS	Sample Matrix Spike				Run: BAL-ACCU-124_200624A				06/24/20 08:09
Oil & Grease (HEM)	37	mg/L	5.0	90	78	114			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061557 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A2130 B**										Batch: 200617A-TURB-W
Lab ID: **MBLK (DI H2O)**	Method Blank					Run: HACH2100N_200617A				06/17/20 15:06
Turbidity		0.08	NTU	0.08						
Lab ID: **Turb - 20 NTU**	Laboratory Control Sample					Run: HACH2100N_200617A				06/17/20 15:06
Turbidity		19.8	NTU	0.10	99	90	110			
Lab ID: **Turb - 1.0 NTU**	Laboratory Control Sample					Run: HACH2100N_200617A				06/17/20 15:07
Turbidity		1.02	NTU	0.10	102	90	110			
Lab ID: **B20061533-001ADUP**	Sample Duplicate					Run: HACH2100N_200617A				06/17/20 15:17
Turbidity		478	NTU	0.10				1.5	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061557 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 D										Batch: 145720
Lab ID: MB-1_200619B	Method Blank					Run: BAL #SD-15_200619B				06/19/20 13:25
Solids, Total Suspended TSS @ 105 C		ND	mg/L	0.5						
Lab ID: LCS-2_200619B	Laboratory Control Sample					Run: BAL #SD-15_200619B				06/19/20 13:25
Solids, Total Suspended TSS @ 105 C		102	mg/L	10	102	80	120			
Lab ID: B20061495-001BDUP	Sample Duplicate					Run: BAL #SD-15_200619B				06/19/20 13:25
Solids, Total Suspended TSS @ 105 C		162	mg/L	10				0.6	5	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061557 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC _101-B_200617A
Lab ID: pH 8	2	Initial Calibration Verification Standard								06/17/20 09:53
pH		8.01	s.u.	0.10	100	98	102			
pH Measurement Temp		21.7	C			0	0			
Method: A4500-H B										Batch: R343734
Lab ID: B20061571-004ADUP	2	Sample Duplicate				Run: PHSC _101-B_200617A				06/17/20 18:01
pH		10.4	s.u.	0.10				0.0	3	
pH Measurement Temp		18.9	C							

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061557 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E351.2										Analytical Run: FIA204-B_200618A
Lab ID: ICV		Initial Calibration Verification Standard								06/18/20 09:54
Nitrogen, Kjeldahl, Total as N		10.5	mg/L	0.50	105	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/18/20 14:49
Nitrogen, Kjeldahl, Total as N		10.9	mg/L	0.50	109	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/18/20 15:02
Nitrogen, Kjeldahl, Total as N		10.9	mg/L	0.50	109	90	110			
Method: E351.2										Batch: 145678
Lab ID: MB-145678		Method Blank				Run: FIA204-B_200618A				06/18/20 14:27
Nitrogen, Kjeldahl, Total as N		ND	mg/L	0.3						
Lab ID: LCS-145678		Laboratory Control Sample				Run: FIA204-B_200618A				06/18/20 14:29
Nitrogen, Kjeldahl, Total as N		10.8	mg/L	0.50	108	90	110			
Lab ID: B20061598-001BMS		Sample Matrix Spike				Run: FIA204-B_200618A				06/18/20 14:38
Nitrogen, Kjeldahl, Total as N		12.2	mg/L	0.50	105	90	110			
Lab ID: B20061598-001BMSD		Sample Matrix Spike Duplicate				Run: FIA204-B_200618A				06/18/20 14:39
Nitrogen, Kjeldahl, Total as N		12.6	mg/L	0.50	109	90	110	3.2	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061557 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2										Analytical Run: FIA203-B_200624B
Lab ID: ICV		Initial Calibration Verification Standard								06/24/20 11:50
Nitrogen, Nitrate+Nitrite as N		0.544	mg/L	0.010	96	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/24/20 12:14
Nitrogen, Nitrate+Nitrite as N		0.998	mg/L	0.010	100	90	110			
Method: E353.2										Batch: R344180
Lab ID: MBLK		Method Blank				Run: FIA203-B_200624B				06/24/20 11:51
Nitrogen, Nitrate+Nitrite as N		0.009	mg/L	0.006						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA203-B_200624B				06/24/20 11:52
Nitrogen, Nitrate+Nitrite as N		1.01	mg/L	0.010	101	90	110			
Lab ID: B20061533-001DMS		Sample Matrix Spike				Run: FIA203-B_200624B				06/24/20 11:59
Nitrogen, Nitrate+Nitrite as N		0.990	mg/L	0.010	91	90	110			
Lab ID: B20061533-001DMSD		Sample Matrix Spike Duplicate				Run: FIA203-B_200624B				06/24/20 12:00
Nitrogen, Nitrate+Nitrite as N		0.986	mg/L	0.010	90	90	110	0.4	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061557 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E365.1										Analytical Run: FIA202-B_200618C
Lab ID: ICV		Initial Calibration Verification Standard								06/18/20 15:46
Phosphorus, Total as P		0.519	mg/L	0.0050	104	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/18/20 16:06
Phosphorus, Total as P		0.519	mg/L	0.0050	104	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/18/20 16:22
Phosphorus, Total as P		0.524	mg/L	0.0050	105	90	110			
Method: E365.1										Batch: 145684
Lab ID: MB-145684		Method Blank				Run: FIA202-B_200618C				06/18/20 15:49
Phosphorus, Total as P		ND	mg/L	0.004						
Lab ID: LCS-145684		Laboratory Control Sample				Run: FIA202-B_200618C				06/18/20 15:51
Phosphorus, Total as P		0.198	mg/L	0.0050	99	90	110			
Lab ID: B20061524-011CMS		Sample Matrix Spike				Run: FIA202-B_200618C				06/18/20 16:09
Phosphorus, Total as P		0.229	mg/L	0.0050	104	90	110			
Lab ID: B20061524-011CMSD		Sample Matrix Spike Duplicate				Run: FIA202-B_200618C				06/18/20 16:11
Phosphorus, Total as P		0.226	mg/L	0.0050	102	90	110	1.3	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061557 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E410.4										Analytical Run: SPEC3_200619D
Lab ID: CCV		Continuing Calibration Verification Standard								06/19/20 12:03
Oxygen Demand, Chemical (COD)		50.5	mg/L	5.0	101	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/19/20 12:03
Oxygen Demand, Chemical (COD)		50.1	mg/L	5.0	100	90	110			
Method: E410.4										Batch: 145716
Lab ID: MB-145716		Method Blank				Run: SPEC3_200619D				06/19/20 12:03
Oxygen Demand, Chemical (COD)		ND	mg/L	3						
Lab ID: LCS-145716		Laboratory Control Sample				Run: SPEC3_200619D				06/19/20 12:03
Oxygen Demand, Chemical (COD)		24.2	mg/L	5.0	99	90	110			
Lab ID: B20061621-001BMS		Sample Matrix Spike				Run: SPEC3_200619D				06/19/20 12:03
Oxygen Demand, Chemical (COD)		115	mg/L	5.0	92	90	110			
Lab ID: B20061621-001BMSD		Sample Matrix Spike Duplicate				Run: SPEC3_200619D				06/19/20 12:03
Oxygen Demand, Chemical (COD)		115	mg/L	5.0	92	90	110	0.0	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061557 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS208-B_200619A	
Lab ID: QCS	3	Initial Calibration Verification Standard							06/19/20 22:10	
Copper		0.0533	mg/L	0.010	107	90	110			
Lead		0.0491	mg/L	0.010	98	90	110			
Zinc		0.0496	mg/L	0.010	99	90	110			
Method: E200.8									Batch: 145735	
Lab ID: MB-145735	3	Method Blank				Run: ICPMS208-B_200619A			06/20/20 02:02	
Copper		ND	mg/L	0.0004						
Lead		ND	mg/L	0.00004						
Zinc		ND	mg/L	0.0010						
Lab ID: LCS4-145735	3	Laboratory Control Sample				Run: ICPMS208-B_200619A			06/20/20 02:06	
Copper		0.101	mg/L	0.0050	101	85	115			
Lead		0.0969	mg/L	0.0010	97	85	115			
Zinc		0.102	mg/L	0.010	102	85	115			
Lab ID: B20061541-001CMS4	3	Sample Matrix Spike				Run: ICPMS208-B_200619A			06/20/20 02:21	
Copper		0.108	mg/L	0.0050	100	70	130			
Lead		0.101	mg/L	0.0010	97	70	130			
Zinc		0.237	mg/L	0.010	101	70	130			
Lab ID: B20061541-001CMSD	3	Sample Matrix Spike Duplicate				Run: ICPMS208-B_200619A			06/20/20 02:25	
Copper		0.111	mg/L	0.0050	103	70	130	2.8	20	
Lead		0.102	mg/L	0.0010	98	70	130	1.0	20	
Zinc		0.241	mg/L	0.010	106	70	130	1.8	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Yellowstone County Public Works

B20061557

Login completed by: Quincee Jones
Date Received: 6/17/2020
Reviewed by: BL2000\tedwards
Received by: tkb
Reviewed Date: 6/19/2020
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	15.4°C		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

Sample Inlet by Flying J on Old Hardin Road for Nitrate + Nitrite, Total Kjeldahl Nitrogen, and Total Phosphorous was received at pH >2. Sulfuric Acid (2 mL) was added in the laboratory to preserve to pH <2.

The sample for Total Metals was preserved to pH <2 with 2 mL of nitric acid per 250 mL in the laboratory. In accordance with the Clean Water Act, this sample must be held for 24 hours prior to analysis.

The Oil & Grease are unpreserved per Mike Black at the time of sample delivery.

ENERGY
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Page _____ of _____

Account Information (Billing information)

Company/Name	Mike Black
Contact	Yellowstone County
Phone	254-7926
Mailing Address	PO Box 35024
City, State, Zip	Billings MT
Email	mblack@co.yellowstone.mt.gov
Receive Invoice	☒ Hard Copy ☐ Email
Receive Report	☒ Hard Copy ☐ Email
Purchase Order	Yes
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐ Hard Copy ☐ Email

Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	Yellowstone MS4
Sampler Name	Mike Black
Sampler Phone 406	208-0553
Sample Origin State	MT
EPA/State Compliance	☐ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	Inlet by Flying J on Old Hardin Rd	6-17-20	11:38a	6		X		B20061557
2								
3								
4								
5								
6								
7								
8								
9								
10								

Analysis Requested

Custody Record MUST be signed		Date/Time	Signature		Received by (print)	Date/Time	Signature
	Relinquished by (print) Mike Black						
	Relinquished by (print)	Date/Time	Signature		Received by Laboratory (print) Taylor Burris	Date/Time 06/17/2020 12:02	Signature

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

Leslie, Taylor

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

BOTTLE ORDER 136179

SHIPPED TO: Yellowstone County Public Works

Contact: Mike Black

Order Created by: Tabitha Edwards
Shipped From: Billings, MT
Ship Date: 9/11/2019
VIA: PickUp

Phone: (406) 256-2735
Project: MS4

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
Water Samples (3 Sets)							
250 mL Plastic	1	A4500-H B	pH	0.25 hrs			1
		A2130 B	Turbidity	48.00 hrs			
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Total		■ HNO3	Cu, Pb, Zn	1
500 mL Plastic	1	E410.4	Chemical Oxygen Demand		☐ H2SO4		1
		E353.2	Nitrogen, Nitrate + Nitrite				
		Calculation	Nitrogen, Total (TKN+NO3+NO2)				
		E351.2	Nitrogen, Total Kjeldahl				
		E365.1	Phosphorus, Total				
1 Liter Clear Glass Narrow Mouth	2	E1664A	Oil & Grease, Gravimetric		☐ H2SO4		1
1 Liter Plastic Wide Mouth	1	A2540 D	Solids, Total Suspended				1

■ HNO3 - Nitric Acid ☐ H2SO4 - Sulfuric Acid ■ NaOH - Sodium Hydroxide

■ ■ ☐

ZnAc - Zinc Acetate	HCl - Hydrochloric Acid	H3PO4 - Phosphoric Acid	**We strongly suggest that the samples are shipped the same day as they are collected.**

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

ANALYTICAL SUMMARY REPORT

June 25, 2020

Yellowstone County Public Works
PO Box 35024
Billings, MT 59107-5024

Work Order: B20061541

Project Name: Yellowstone County MS4

Energy Laboratories Inc Billings MT received the following 1 sample for Yellowstone County Public Works on 6/17/2020 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B20061541-001	Maier/Rosebud	06/17/20 12:35	06/17/20	Aqueous	Metals by ICP/ICPMS, Total Chemical Oxygen Demand Oil & Grease, Gravimetric Nitrogen, Nitrate + Nitrite Nitrogen, Total Kjeldahl Nitrogen, Total (TKN+NO3+NO2) pH Metals Digestion by E200.2 Preparation for COD testing HACH 8000 E365.1 Digestion, Total P TKN preparation E351.2 Preparation for TSS A2540 D Phosphorus, Total Solids, Total Suspended Turbidity

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: Yellowstone County Public Works
Project: Yellowstone County MS4
Work Order: B20061541

Report Date: 06/25/20

CASE NARRATIVE

Tests associated with analyst identified as ELI-G were subcontracted to Energy Laboratories, 400 W Boxelder Rd, Gillette, WY, EPA Number WY00006.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works
Project: Yellowstone County MS4
Lab ID: B20061541-001
Client Sample ID: Maier/Rosebud

Report Date: 06/25/20
Collection Date: 06/17/20 12:35
DateReceived: 06/17/20
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.4	s.u.	H	0.1		A4500-H B	06/17/20 17:40 / pjw
pH Measurement Temp	19	C				A4500-H B	06/17/20 17:40 / pjw
Turbidity	90.7	NTU		0.1		A2130 B	06/17/20 15:17 / pjw
Solids, Total Suspended TSS @ 105 C	102	mg/L		10		A2540 D	06/19/20 13:26 / keh
AGGREGATE ORGANICS							
Oxygen Demand, Chemical (COD)	71	mg/L	D	10		E410.4	06/19/20 12:03 / mas
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	1.97	mg/L		0.01		E353.2	06/24/20 12:03 / srh
Nitrogen, Kjeldahl, Total as N	2.1	mg/L		0.5		E351.2	06/18/20 14:43 / zas
Nitrogen, Total	4.1	mg/L		0.5		Calculation	06/24/20 17:01 / bas
Phosphorus, Total as P	0.587	mg/L		0.005		E365.1	06/18/20 16:14 / zas
METALS, TOTAL							
Copper	0.008	mg/L		0.002		E200.8	06/20/20 02:17 / pap
Lead	0.0040	mg/L		0.0003		E200.8	06/20/20 02:17 / pap
Zinc	0.136	mg/L		0.008		E200.8	06/20/20 02:17 / pap
ORGANIC CHARACTERISTICS							
Oil & Grease (HEM)	ND	mg/L		1		E1664A	06/24/20 08:18 / eli-g

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
H - Analysis performed past the method holding time

QA/QC Summary Report

Prepared by Gillette, WY Branch

Client: Yellowstone County Public Works **Work Order:** B20061541 **Report Date:** 06/24/20

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E1664A**									Batch: 200624A
Lab ID: **MBLK2006240736**	Method Blank				Run: BAL-ACCU-124_200624A				06/24/20 08:07
Oil & Grease (HEM)	ND	mg/L	0.9						
Lab ID: **LCS2006240736**	Laboratory Control Sample				Run: BAL-ACCU-124_200624A				06/24/20 08:08
Oil & Grease (HEM)	35	mg/L	5.0	88	78	114			
Lab ID: **LCSD2006240736**	Laboratory Control Sample Duplicate				Run: BAL-ACCU-124_200624A				06/24/20 08:08
Oil & Grease (HEM)	34	mg/L	5.0	86	78	114	1.4	18	
Lab ID: **G20060406-002EMS**	Sample Matrix Spike				Run: BAL-ACCU-124_200624A				06/24/20 08:09
Oil & Grease (HEM)	37	mg/L	5.0	90	78	114			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061541 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A2130 B**										Batch: 200617A-TURB-W
Lab ID: **MBLK (DI H2O)**		Method Blank				Run: HACH2100N_200617A				06/17/20 15:06
Turbidity		0.08	NTU	0.08						
Lab ID: **Turb - 20 NTU**		Laboratory Control Sample				Run: HACH2100N_200617A				06/17/20 15:06
Turbidity		19.8	NTU	0.10	99	90	110			
Lab ID: **Turb - 1.0 NTU**		Laboratory Control Sample				Run: HACH2100N_200617A				06/17/20 15:07
Turbidity		1.02	NTU	0.10	102	90	110			
Lab ID: **B20061533-001ADUP**		Sample Duplicate				Run: HACH2100N_200617A				06/17/20 15:17
Turbidity		478	NTU	0.10				1.5	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061541 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A2540 D**										Batch: 145720
Lab ID: **MB-1_200619B**	Method Blank					Run: BAL #SD-15_200619B				06/19/20 13:25
Solids, Total Suspended TSS @ 105 C		ND	mg/L	0.5						
Lab ID: **LCS-2_200619B**	Laboratory Control Sample					Run: BAL #SD-15_200619B				06/19/20 13:25
Solids, Total Suspended TSS @ 105 C		102	mg/L	10	102	80	120			
Lab ID: **B20061495-001BDUP**	Sample Duplicate					Run: BAL #SD-15_200619B				06/19/20 13:25
Solids, Total Suspended TSS @ 105 C		162	mg/L	10				0.6	5	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061541 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC _101-B_200617A
Lab ID: pH 8	2	Initial Calibration Verification Standard								06/17/20 09:53
pH		8.01	s.u.	0.10	100	98	102			
pH Measurement Temp		21.7	C			0	0			
Method: A4500-H B										Batch: R343734
Lab ID: B20061571-001ADUP	2	Sample Duplicate				Run: PHSC _101-B_200617A				06/17/20 17:24
pH		10.6	s.u.	0.10				0.0	3	
pH Measurement Temp		16.8	C							

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061541 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E351.2										Analytical Run: FIA204-B_200618A
Lab ID: ICV		Initial Calibration Verification Standard								06/18/20 09:54
Nitrogen, Kjeldahl, Total as N		10.5	mg/L	0.50	105	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/18/20 10:48
Nitrogen, Kjeldahl, Total as N		10.2	mg/L	0.50	102	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/18/20 14:49
Nitrogen, Kjeldahl, Total as N		10.9	mg/L	0.50	109	90	110			
Method: E351.2										Batch: 145678
Lab ID: MB-145678		Method Blank				Run: FIA204-B_200618A				06/18/20 14:27
Nitrogen, Kjeldahl, Total as N		ND	mg/L	0.3						
Lab ID: LCS-145678		Laboratory Control Sample				Run: FIA204-B_200618A				06/18/20 14:29
Nitrogen, Kjeldahl, Total as N		10.8	mg/L	0.50	108	90	110			
Lab ID: B20061598-001BMS		Sample Matrix Spike				Run: FIA204-B_200618A				06/18/20 14:38
Nitrogen, Kjeldahl, Total as N		12.2	mg/L	0.50	105	90	110			
Lab ID: B20061598-001BMSD		Sample Matrix Spike Duplicate				Run: FIA204-B_200618A				06/18/20 14:39
Nitrogen, Kjeldahl, Total as N		12.6	mg/L	0.50	109	90	110	3.2	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061541 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2										Analytical Run: FIA203-B_200624B
Lab ID: ICV		Initial Calibration Verification Standard								06/24/20 11:50
Nitrogen, Nitrate+Nitrite as N		0.544	mg/L	0.010	96	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/24/20 12:14
Nitrogen, Nitrate+Nitrite as N		0.998	mg/L	0.010	100	90	110			
Method: E353.2										Batch: R344180
Lab ID: MBLK		Method Blank				Run: FIA203-B_200624B				06/24/20 11:51
Nitrogen, Nitrate+Nitrite as N		0.009	mg/L	0.006						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA203-B_200624B				06/24/20 11:52
Nitrogen, Nitrate+Nitrite as N		1.01	mg/L	0.010	101	90	110			
Lab ID: B20061533-001DMS		Sample Matrix Spike				Run: FIA203-B_200624B				06/24/20 11:59
Nitrogen, Nitrate+Nitrite as N		0.990	mg/L	0.010	91	90	110			
Lab ID: B20061533-001DMSD		Sample Matrix Spike Duplicate				Run: FIA203-B_200624B				06/24/20 12:00
Nitrogen, Nitrate+Nitrite as N		0.986	mg/L	0.010	90	90	110	0.4	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061541 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E365.1										Analytical Run: FIA202-B_200618C
Lab ID: ICV		Initial Calibration Verification Standard								06/18/20 15:46
Phosphorus, Total as P		0.519	mg/L	0.0050	104	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/18/20 16:06
Phosphorus, Total as P		0.519	mg/L	0.0050	104	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/18/20 16:22
Phosphorus, Total as P		0.524	mg/L	0.0050	105	90	110			
Method: E365.1										Batch: 145684
Lab ID: MB-145684		Method Blank				Run: FIA202-B_200618C				06/18/20 15:49
Phosphorus, Total as P		ND	mg/L	0.004						
Lab ID: LCS-145684		Laboratory Control Sample				Run: FIA202-B_200618C				06/18/20 15:51
Phosphorus, Total as P		0.198	mg/L	0.0050	99	90	110			
Lab ID: B20061524-011CMS		Sample Matrix Spike				Run: FIA202-B_200618C				06/18/20 16:09
Phosphorus, Total as P		0.229	mg/L	0.0050	104	90	110			
Lab ID: B20061524-011CMSD		Sample Matrix Spike Duplicate				Run: FIA202-B_200618C				06/18/20 16:11
Phosphorus, Total as P		0.226	mg/L	0.0050	102	90	110	1.3	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061541 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E410.4**										Analytical Run: SPEC3_200619D
Lab ID: **CCV**		Continuing Calibration Verification Standard								06/19/20 12:03
Oxygen Demand, Chemical (COD)		50.5	mg/L	5.0	101	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard								06/19/20 12:03
Oxygen Demand, Chemical (COD)		50.1	mg/L	5.0	100	90	110			
Method: **E410.4**										Batch: 145716
Lab ID: **MB-145716**		Method Blank				Run: SPEC3_200619D				06/19/20 12:03
Oxygen Demand, Chemical (COD)		ND	mg/L	3						
Lab ID: **LCS-145716**		Laboratory Control Sample				Run: SPEC3_200619D				06/19/20 12:03
Oxygen Demand, Chemical (COD)		24.2	mg/L	5.0	99	90	110			
Lab ID: **B20061621-001BMS**		Sample Matrix Spike				Run: SPEC3_200619D				06/19/20 12:03
Oxygen Demand, Chemical (COD)		115	mg/L	5.0	92	90	110			
Lab ID: **B20061621-001BMSD**		Sample Matrix Spike Duplicate				Run: SPEC3_200619D				06/19/20 12:03
Oxygen Demand, Chemical (COD)		115	mg/L	5.0	92	90	110	0.0	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061541 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS208-B_200619A	
Lab ID: QCS	3	Initial Calibration Verification Standard							06/19/20 22:10	
Copper		0.0533	mg/L	0.010	107	90	110			
Lead		0.0491	mg/L	0.010	98	90	110			
Zinc		0.0496	mg/L	0.010	99	90	110			
Method: E200.8									Batch: 145735	
Lab ID: MB-145735	3	Method Blank				Run: ICPMS208-B_200619A			06/20/20 02:02	
Copper		ND	mg/L	0.0004						
Lead		ND	mg/L	0.00004						
Zinc		ND	mg/L	0.0010						
Lab ID: LCS4-145735	3	Laboratory Control Sample				Run: ICPMS208-B_200619A			06/20/20 02:06	
Copper		0.101	mg/L	0.0050	101	85	115			
Lead		0.0969	mg/L	0.0010	97	85	115			
Zinc		0.102	mg/L	0.010	102	85	115			
Lab ID: B20061541-001CMS4	3	Sample Matrix Spike				Run: ICPMS208-B_200619A			06/20/20 02:21	
Copper		0.108	mg/L	0.0050	100	70	130			
Lead		0.101	mg/L	0.0010	97	70	130			
Zinc		0.237	mg/L	0.010	101	70	130			
Lab ID: B20061541-001CMSD	3	Sample Matrix Spike Duplicate				Run: ICPMS208-B_200619A			06/20/20 02:25	
Copper		0.111	mg/L	0.0050	103	70	130	2.8	20	
Lead		0.102	mg/L	0.0010	98	70	130	1.0	20	
Zinc		0.241	mg/L	0.010	106	70	130	1.8	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Yellowstone County Public Works

B20061541

Login completed by: Briana G. Sangiuliano
Reviewed by: BL2000\darcy
Reviewed Date: 6/19/2020

Date Received: 6/17/2020
Received by: qej
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	19.3°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

The sample for Nutrients was received at pH >2. Sulfuric acid (2 mL) was added in the laboratory to preserve to pH <2.

The sample for Total Metals was received at pH >2. Nitric acid (2 mL) was added in the laboratory to preserve to pH <2. In accordance with the Clean Water Act, this sample must be held for 24 hours prior to analysis.

ENERGY
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	Yellowstone County
Contact	Mike Black
Phone	208-0553
Mailing Address	PO Box 35024
City, State, Zip	Billings MT 5907
Email	mblack@co.yellowstone.mt.gov
Receive Invoice ☐Hard Copy ☐Email	Receive Report ☐Hard Copy ☐Email
Purchase Order: yes	Quote:	Bottle Order: 136179

Report Information (if different than Account Information)

Company/Name	
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report ☐Hard Copy ☐Email	
Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____	

Comments

Project Information

Project Name, PWSID, Permit, etc.	Yellowstone County MS4
Sampler Name: Mike Black	Sampler Phone: 208-0553
Sample Origin State: MT	EPA/State Compliance ☐ Yes ☐ No

URANIUM MINING CLIENTS MUST indicate sample type.
☐ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e (2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

Analysis Requested

All turnaround times are standard unless marked as RUSH
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	See Attached	RUSH TAT	ELI LAB ID Laboratory Use Only
1	Maier/Rosebud	6-17-20	12:35p	6				B20061541
2								
3								
4								
5								
6								
7								
8								
9								
10								

Custody Record MUST be signed			
Relinquished by (print): Mike Black	Date/Time: 6-17-20 1:05pm	Signature: [signature]	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by Laboratory (print): [signature]	Date/Time: 06/17/2020 13:05	Signature: [signature]

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc may be subcontracted to other certified laboratories in order to complete the analysis requested
This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report

ELI-COC 10/18 v.3

BOTTLE ORDER 136179

SHIPPED TO: Yellowstone County Public Works

Contact: Mike Black

Order Created by: Tabitha Edwards
Shipped From: Billings, MT
Ship Date: 9/11/2019
VIA: PickUp

Phone: (406) 256-2735
Project: MS4

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
Water Samples (3 Sets)							
250 mL Plastic	1	A4500-H B	pH	0.25 hrs			1
		A2130 B	Turbidity	48.00 hrs			
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Total		HNO3	Cu, Pb, Zn	1
500 mL Plastic	1	E410.4	Chemical Oxygen Demand		H2SO4		1
		E353.2	Nitrogen, Nitrate + Nitrite				
		Calculation	Nitrogen, Total (TKN+NO3+NO2)				
		E351.2	Nitrogen, Total Kjeldahl				
		E365 1	Phosphorus, Total				
1 Liter Clear Glass Narrow Mouth	2	E1664A	Oil & Grease, Gravimetric		H2SO4		1
1 Liter Plastic Wide Mouth	1	A2540 D	Solids, Total Suspended				1

HNO3 - Nitric Acid | H2SO4 - Sulfuric Acid | NaOH - Sodium Hydroxide
ZnAc - Zinc Acetate | HCl - Hydrochloric Acid | H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.
Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

ANALYTICAL SUMMARY REPORT

June 29, 2020

Yellowstone County Public Works
PO Box 35024
Billings, MT 59107-5024

Work Order: B20061533

Project Name: Yellowstone County

Energy Laboratories Inc Billings MT received the following 1 sample for Yellowstone County Public Works on 6/17/2020 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B20061533-001	Highway 87 Mid Location	06/17/20 12:20	06/17/20	Aqueous	Metals by ICP/ICPMS, Total Chemical Oxygen Demand Oil & Grease, Gravimetric Nitrogen, Nitrate + Nitrite Nitrogen, Total Kjeldahl Nitrogen, Total (TKN+NO3+NO2) pH Metals Digestion by E200.2 Preparation for COD testing HACH 8000 E365.1 Digestion, Total P TKN preparation E351.2 Preparation for TSS A2540 D Phosphorus, Total Solids, Total Suspended Turbidity

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: Yellowstone County Public Works
Project: Yellowstone County
Work Order: B20061533

Report Date: 06/29/20

CASE NARRATIVE

Tests associated with analyst identified as ELI-G were subcontracted to Energy Laboratories, 400 W Boxelder Rd, Gillette, WY, EPA Number WY00006.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works
Project: Yellowstone County
Lab ID: B20061533-001
Client Sample ID: Highway 87 Mid Location

Report Date: 06/29/20
Collection Date: 06/17/20 12:20
DateReceived: 06/17/20
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.9	s.u.	H	0.1		A4500-H B	06/17/20 17:35 / pjw
pH Measurement Temp	19	C				A4500-H B	06/17/20 17:35 / pjw
Turbidity	471	NTU		0.1		A2130 B	06/17/20 15:14 / pjw
Solids, Total Suspended TSS @ 105 C	957	mg/L		10		A2540 D	06/19/20 13:26 / keh
AGGREGATE ORGANICS							
Oxygen Demand, Chemical (COD)	288	mg/L	D	50		E410.4	06/19/20 12:03 / mas
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.08	mg/L		0.01		E353.2	06/24/20 11:58 / srh
Nitrogen, Kjeldahl, Total as N	4.4	mg/L		0.5		E351.2	06/18/20 14:42 / zas
Nitrogen, Total	4.5	mg/L		0.5		Calculation	06/24/20 17:01 / bas
Phosphorus, Total as P	1.12	mg/L	D	0.01		E365.1	06/18/20 16:20 / zas
METALS, TOTAL							
Copper	0.055	mg/L		0.002		E200.8	06/20/20 02:13 / pap
Lead	0.0335	mg/L		0.0003		E200.8	06/20/20 02:13 / pap
Zinc	0.404	mg/L		0.008		E200.8	06/20/20 02:13 / pap
ORGANIC CHARACTERISTICS							
Oil & Grease (HEM)	ND	mg/L		1		E1664A	06/24/20 08:18 / eli-g

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
H - Analysis performed past the method holding time

QA/QC Summary Report

Prepared by Gillette, WY Branch

Client: Yellowstone County Public Works **Work Order:** B20061533 **Report Date:** 06/24/20

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E1664A**									Batch: 200624A
Lab ID: **MBLK2006240736**	Method Blank				Run: BAL-ACCU-124_200624A				06/24/20 08:07
Oil & Grease (HEM)	ND	mg/L	0.9						
Lab ID: **LCS2006240736**	Laboratory Control Sample				Run: BAL-ACCU-124_200624A				06/24/20 08:08
Oil & Grease (HEM)	35	mg/L	5.0	88	78	114			
Lab ID: **LCSD2006240736**	Laboratory Control Sample Duplicate				Run: BAL-ACCU-124_200624A				06/24/20 08:08
Oil & Grease (HEM)	34	mg/L	5.0	86	78	114	1.4	18	
Lab ID: **G20060406-002EMS**	Sample Matrix Spike				Run: BAL-ACCU-124_200624A				06/24/20 08:09
Oil & Grease (HEM)	37	mg/L	5.0	90	78	114			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061533 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A2130 B**										Batch: 200617A-TURB-W
Lab ID: **MBLK (DI H2O)**		Method Blank				Run: HACH2100N_200617A				06/17/20 15:06
Turbidity		0.08	NTU	0.08						
Lab ID: **Turb - 20 NTU**		Laboratory Control Sample				Run: HACH2100N_200617A				06/17/20 15:06
Turbidity		19.8	NTU	0.10	99	90	110			
Lab ID: **Turb - 1.0 NTU**		Laboratory Control Sample				Run: HACH2100N_200617A				06/17/20 15:07
Turbidity		1.02	NTU	0.10	102	90	110			
Lab ID: **B20061533-001ADUP**		Sample Duplicate				Run: HACH2100N_200617A				06/17/20 15:17
Turbidity		478	NTU	0.10				1.5	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061533 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A2540 D**										Batch: 145720
Lab ID: **MB-1_200619B**	Method Blank					Run: BAL #SD-15_200619B				06/19/20 13:25
Solids, Total Suspended TSS @ 105 C		ND	mg/L	0.5						
Lab ID: **LCS-2_200619B**	Laboratory Control Sample					Run: BAL #SD-15_200619B				06/19/20 13:25
Solids, Total Suspended TSS @ 105 C		102	mg/L	10	102	80	120			
Lab ID: **B20061495-001BDUP**	Sample Duplicate					Run: BAL #SD-15_200619B				06/19/20 13:25
Solids, Total Suspended TSS @ 105 C		162	mg/L	10				0.6	5	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061533 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC _101-B_200617A
Lab ID: pH 8	2	Initial Calibration Verification Standard								06/17/20 09:53
pH		8.01	s.u.	0.10	100	98	102			
pH Measurement Temp		21.7	C			0	0			
Method: A4500-H B										Batch: R343734
Lab ID: B20061571-001ADUP	2	Sample Duplicate				Run: PHSC _101-B_200617A				06/17/20 17:24
pH		10.6	s.u.	0.10				0.0	3	
pH Measurement Temp		16.8	C							

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061533 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E351.2										Analytical Run: FIA204-B_200618A
Lab ID: ICV		Initial Calibration Verification Standard								06/18/20 09:54
Nitrogen, Kjeldahl, Total as N		10.5	mg/L	0.50	105	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/18/20 10:48
Nitrogen, Kjeldahl, Total as N		10.2	mg/L	0.50	102	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/18/20 14:49
Nitrogen, Kjeldahl, Total as N		10.9	mg/L	0.50	109	90	110			
Method: E351.2										Batch: 145678
Lab ID: MB-145678		Method Blank				Run: FIA204-B_200618A				06/18/20 14:27
Nitrogen, Kjeldahl, Total as N		ND	mg/L	0.3						
Lab ID: LCS-145678		Laboratory Control Sample				Run: FIA204-B_200618A				06/18/20 14:29
Nitrogen, Kjeldahl, Total as N		10.8	mg/L	0.50	108	90	110			
Lab ID: B20061598-001BMS		Sample Matrix Spike				Run: FIA204-B_200618A				06/18/20 14:38
Nitrogen, Kjeldahl, Total as N		12.2	mg/L	0.50	105	90	110			
Lab ID: B20061598-001BMSD		Sample Matrix Spike Duplicate				Run: FIA204-B_200618A				06/18/20 14:39
Nitrogen, Kjeldahl, Total as N		12.6	mg/L	0.50	109	90	110	3.2	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061533 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2										Analytical Run: FIA203-B_200624B
Lab ID: ICV		Initial Calibration Verification Standard								06/24/20 11:50
Nitrogen, Nitrate+Nitrite as N		0.544	mg/L	0.010	96	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/24/20 12:14
Nitrogen, Nitrate+Nitrite as N		0.998	mg/L	0.010	100	90	110			
Method: E353.2										Batch: R344180
Lab ID: MBLK		Method Blank				Run: FIA203-B_200624B				06/24/20 11:51
Nitrogen, Nitrate+Nitrite as N		0.009	mg/L	0.006						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA203-B_200624B				06/24/20 11:52
Nitrogen, Nitrate+Nitrite as N		1.01	mg/L	0.010	101	90	110			
Lab ID: B20061533-001DMS		Sample Matrix Spike				Run: FIA203-B_200624B				06/24/20 11:59
Nitrogen, Nitrate+Nitrite as N		0.990	mg/L	0.010	91	90	110			
Lab ID: B20061533-001DMSD		Sample Matrix Spike Duplicate				Run: FIA203-B_200624B				06/24/20 12:00
Nitrogen, Nitrate+Nitrite as N		0.986	mg/L	0.010	90	90	110	0.4	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061533 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E365.1										Analytical Run: FIA202-B_200618C
Lab ID: ICV		Initial Calibration Verification Standard								06/18/20 15:46
Phosphorus, Total as P		0.519	mg/L	0.0050	104	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/18/20 16:06
Phosphorus, Total as P		0.519	mg/L	0.0050	104	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								06/18/20 16:22
Phosphorus, Total as P		0.524	mg/L	0.0050	105	90	110			
Method: E365.1										Batch: 145684
Lab ID: MB-145684		Method Blank				Run: FIA202-B_200618C				06/18/20 15:49
Phosphorus, Total as P		ND	mg/L	0.004						
Lab ID: LCS-145684		Laboratory Control Sample				Run: FIA202-B_200618C				06/18/20 15:51
Phosphorus, Total as P		0.198	mg/L	0.0050	99	90	110			
Lab ID: B20061524-011CMS		Sample Matrix Spike				Run: FIA202-B_200618C				06/18/20 16:09
Phosphorus, Total as P		0.229	mg/L	0.0050	104	90	110			
Lab ID: B20061524-011CMSD		Sample Matrix Spike Duplicate				Run: FIA202-B_200618C				06/18/20 16:11
Phosphorus, Total as P		0.226	mg/L	0.0050	102	90	110	1.3	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061533 **Report Date:** 06/25/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E410.4**										Analytical Run: SPEC3_200619D
Lab ID: **CCV**		Continuing Calibration Verification Standard								06/19/20 12:03
Oxygen Demand, Chemical (COD)		50.5	mg/L	5.0	101	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard								06/19/20 12:03
Oxygen Demand, Chemical (COD)		50.1	mg/L	5.0	100	90	110			
Method: **E410.4**										Batch: 145716
Lab ID: **MB-145716**		Method Blank				Run: SPEC3_200619D				06/19/20 12:03
Oxygen Demand, Chemical (COD)		ND	mg/L	3						
Lab ID: **LCS-145716**		Laboratory Control Sample				Run: SPEC3_200619D				06/19/20 12:03
Oxygen Demand, Chemical (COD)		24.2	mg/L	5.0	99	90	110			
Lab ID: **B20061621-001BMS**		Sample Matrix Spike				Run: SPEC3_200619D				06/19/20 12:03
Oxygen Demand, Chemical (COD)		115	mg/L	5.0	92	90	110			
Lab ID: **B20061621-001BMSD**		Sample Matrix Spike Duplicate				Run: SPEC3_200619D				06/19/20 12:03
Oxygen Demand, Chemical (COD)		115	mg/L	5.0	92	90	110	0.0	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Yellowstone County Public Works **Work Order:** B20061533 **Report Date:** 06/29/20

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**									Analytical Run: ICPMS208-B_200619A	
Lab ID: **QCS**	3	Initial Calibration Verification Standard							06/19/20 22:10	
Copper		0.0533	mg/L	0.010	107	90	110			
Lead		0.0491	mg/L	0.010	98	90	110			
Zinc		0.0496	mg/L	0.010	99	90	110			
Method: **E200.8**									Batch: 145735	
Lab ID: **MB-145735**	3	Method Blank				Run: ICPMS208-B_200619A			06/20/20 02:02	
Copper		ND	mg/L	0.0004						
Lead		ND	mg/L	0.00004						
Zinc		ND	mg/L	0.0010						
Lab ID: **LCS4-145735**	3	Laboratory Control Sample				Run: ICPMS208-B_200619A			06/20/20 02:06	
Copper		0.101	mg/L	0.0050	101	85	115			
Lead		0.0969	mg/L	0.0010	97	85	115			
Zinc		0.102	mg/L	0.010	102	85	115			
Lab ID: **B20061541-001CMS4**	3	Sample Matrix Spike				Run: ICPMS208-B_200619A			06/20/20 02:21	
Copper		0.108	mg/L	0.0050	100	70	130			
Lead		0.101	mg/L	0.0010	97	70	130			
Zinc		0.237	mg/L	0.010	101	70	130			
Lab ID: **B20061541-001CMSD**	3	Sample Matrix Spike Duplicate				Run: ICPMS208-B_200619A			06/20/20 02:25	
Copper		0.111	mg/L	0.0050	103	70	130	2.8	20	
Lead		0.102	mg/L	0.0010	98	70	130	1.0	20	
Zinc		0.241	mg/L	0.010	106	70	130	1.8	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Yellowstone County Public Works

B20061533

Login completed by: Briana G. Sangiuliano
Date Received: 6/17/2020
Reviewed by: BL2000\darcy
Received by: qej
Reviewed Date: 6/19/2020
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	18.9°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

The sample for Nutrients was received at pH >2. Sulfuric acid (2 mL) was added in the laboratory to preserve to pH <2.

The sample for Total Metals was received at pH >2. Nitric acid (2 mL) was added in the laboratory to preserve to pH <2. In accordance with the Clean Water Act, this sample must be held for 24 hours prior to analysis.

ENERGY
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	Yellowstone County
Contact	Mike Black
Phone	208-0553
Mailing Address	PO Box 35024
City, State, Zip	Billings MT 59107
Email	mblack@co.yellowstone.mt.gov
Receive Invoice ☒Hard Copy ☐Email	Receive Report ☒Hard Copy ☐Email
Purchase Order: Yes	Quote:	Bottle Order: 136179

Report Information (if different than Account Information)

Company/Name	
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report ☐Hard Copy ☐Email	
Special Report/Formats ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____	

Comments

Project Information

Project Name, PWSID, Permit, etc.	Yellowstone County		
Sampler Name	Hwy 87 mid	Sampler Phone	208-0553
Sample Origin State	MT	EPA/State Compliance	☐ Yes ☐ No

URANIUM MINING CLIENTS MUST indicate sample type.
☐ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e (2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

Analysis Requested

See Attached

All turnaround times are standard unless marked as RUSH

Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	RUSH TAT	ELI LAB ID Laboratory Use Only
1	Highway 87 mid location	6-17-20	12:10pm	6			B20061533
2							
3							
4							
5							
6							
7							
8							
9							
10							

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Mike Black	6-17-20 1:00pm				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print): Dianna Jones	Date/Time: 6/17/20 13:30	Signature: Dianna Jones

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

BOTTLE ORDER 136179

SHIPPED TO: Yellowstone County Public Works

Contact: Mike Black

Order Created by: Tabitha Edwards
Shipped From: Billings, MT
Ship Date: 9/11/2019
VIA: PickUp

Phone: (406) 256-2735
Project: MS4

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
Water Samples (3 Sets)							
250 mL Plastic	1	A4500-H B	pH	0 25 hrs			1
		A2130 B	Turbidity	48 00 hrs			
250 mL Plastic	1	E200 7_8	Metals by ICP/ICPMS, Total		■ HNO3	Cu, Pb, Zn	1
500 mL Plastic	1	E410 4	Chemical Oxygen Demand		☐ H2SO4		1
		E353 2	Nitrogen, Nitrate + Nitrite				
		Calculation	Nitrogen, Total (TKN+NO3+NO2)				
		E351.2	Nitrogen, Total Kjeldahl				
		E365 1	Phosphorus, Total				
1 Liter Clear Glass Narrow Mouth	2	E1664A	Oil & Grease, Gravimetric		☐ H2SO4		1
1 Liter Plastic Wide Mouth	1	A2540 D	Solids, Total Suspended				1

■ HNO3 - Nitric Acid ☐ H2SO4 - Sulfuric Acid ■ NaOH - Sodium Hydroxide
■ ZnAc - Zinc Acetate ■ HCl - Hydrochloric Acid ☐ H3PO4 - Phosphoric Acid

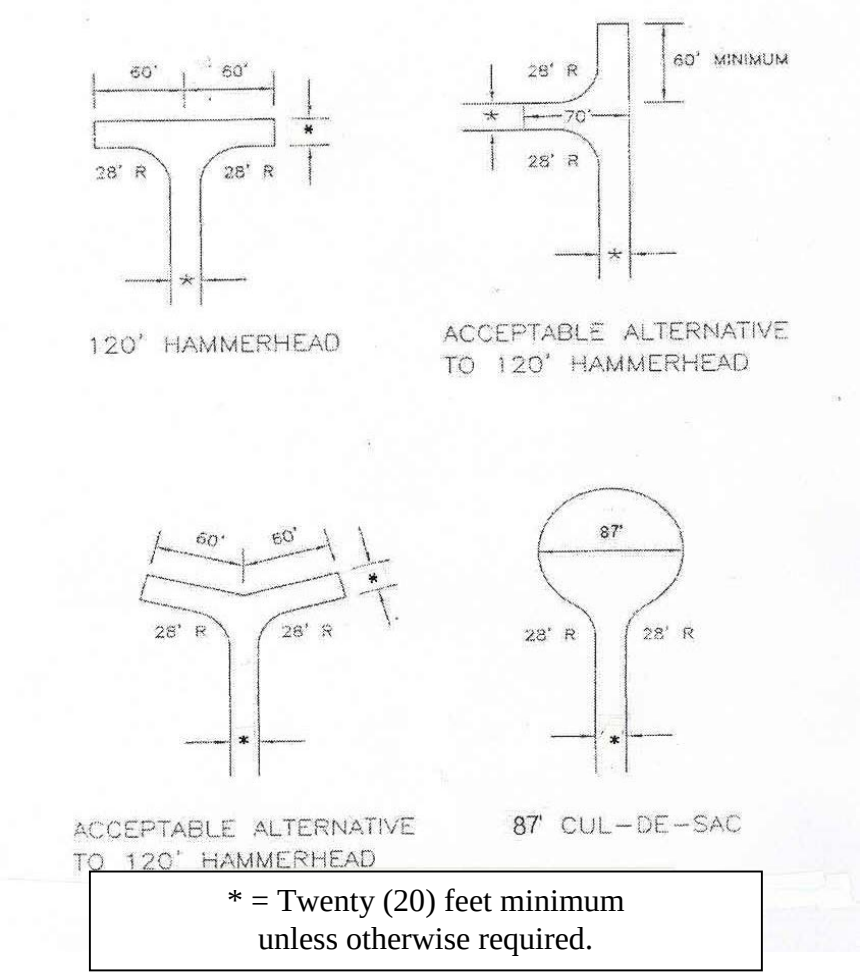
We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.
Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

Appendix L. Yellowstone County Subdivision Storm Water Regulations – Section 4.7

Figure 4.6.C.5. Turn-around Standards for Access Driveways



* = Twenty (20) feet minimum unless otherwise required.

Section 4.7 Storm Drainage Facilities.

A. **General:** Facilities and design for storm water drainage shall be provided in accordance with standards set by the Montana Department of Environmental Quality (MDEQ). The subdivider shall provide a storm water collection and conveyance system which is designed and constructed in accordance with MDEQ standards and which may be connected to an existing storm drainage system. If there is no existing storm drainage system in the area or if the existing system has insufficient capacity to carry the additional discharge, the subdivider shall provide an onsite area for retention or detention with controlled outlet capacity, if needed. Such on-site retention or detention and controlled outlet shall be utilized only if specifically approved by the MDEQ.

B. **Drainage Discharge:** Discharge of storm drainage is subject to the following:

1. Storm drain systems shall not discharge into sanitary sewer facilities.

2. Storm drain systems shall not discharge into agricultural water user's facilities without the written permission of the appropriate irrigation district.

3. Stormwater detention or retention ponds may be located within public park land at the discretion of the County Park Board. Such areas shall not count toward the park land dedication requirement unless they are approved by the County Park Board, designed to serve as an amenity to the park, and fit into the planned uses and improvements to the park (See Chapter 10 of these Regulations).

C. **Easements:** Easements may be required between lots and along public rights-of-way to manage storm drainage in subdivisions.

D. **Location of Facilities:** If any onsite retention or detention facility is used it shall be included as part of the lots, public right-of-way or parkland. No separate parcels shall be created exclusively for such facilities.

E. **System Maintenance:** If any onsite retention or detention facilities are utilized, unless otherwise provided, a special maintenance district shall be created prior to filing the final subdivision plat in order to provide funds for the maintenance of such facilities.

F. **Future Improvements:** If any onsite retention or detention facility is used, a waiver of right to protest the creation of a future storm drain system special improvement district shall be executed by the subdivider and recorded and filed with the final plat.

G. **Municipal Separate Storm Sewer System (MS4):** Yellowstone County is part of a program to reduce pollutants in storm water runoff from construction activities that result in a land disturbance of greater than or equal to one (1) acre, within the MS4 boundary and outside the city limits in Billings. A map of the MS4 boundary is available in the Public Works Department. Development inside the MS4 boundary may be required to follow the procedures described below.

   Any person or person that perform(s) construction activities within the MS4 boundary that result in a land disturbance of greater than or equal to one (1) acre, shall obtain a permit or permission from MDEQ and abide by all of their rules, requirements, and conditions. This shall include construction plan submittal to MDEQ. A copy of the submittal, along with any responses or replies from MDDEQ shall also be submitted to the Yellowstone County Public Works Department. The final DEQ approved storm water management plan for all subdivisions shall be provided with the final plat and recorded as part of the final DEQ documents when the final plat is recorded.

Section 4.8 Sanitary Sewer System.

A. If the subdivision is within the service area of a public sanitary sewer system, and sanitary sewer services are within 500 feet of the boundary of the subdivision, the subdivider shall install complete sanitary sewer system facilities in accordance with the requirements of the sewer district involved and the Montana Department of Environmental Quality (MDEQ). If the boundary of the subdivision is more than 500 feet from sanitary sewer services, the subdivider will sign a waiver of right to protest future sanitary sewer infrastructure improvements and assessments.

Meeting Summary

Subject:	Low Impact Development Infrastructure Discussion and Evaluation
Date:	Wednesday, February 03, 2021
Location:	WebEx Meeting
Attendees:	Mike Black, PE – Yellowstone County Tim Miller – Yellowstone County Monica Plecker – Yellowstone County Mark English – Yellowstone County Matt Peterson, PE – NewFields Jarrett Hillius – HDR Heather Nold – HDR

An evaluation of the County's applicable regulations (identified below) was conducted prior to the meeting using the Code and Ordinance Worksheet (COW) developed by the Center for Watershed Protection (2017). The full 94 question evaluation was not conducted, rather a subset of questions from each category of the worksheet, relevant to Yellowstone County, were selected for this evaluation.

The group discussed the attached presentation. Group conclusions are noted in the presentation and additional discussion summary is provided as follows.

Meeting Summary

Introduction

- Define LID
  - Preserve natural site features
  - Minimize and disconnect impervious areas
  - Disperse small scale BMPs throughout the site
  - Control storm water close to its source
  - Create multifunctional landscapes
- MCM 5 Requirements – incorporate recommendations and requirements into plans, policies, and ordinances which allow and support the utilization of the LID concepts on public and private property.
  - Discuss and evaluate barriers within County regulations
  - Identify opportunities for change and address inconsistencies
  - Summarize and agree on outcomes

Selected Regulations and Policies for Evaluation

- Zoning Regulations
- Subdivision Regulations
- Road Policies
- Roadway Standards
- Floodplain Regulations

Evaluation and Discussion

Notes regarding the objectives discussed in detail are provided below. The objectives identified by the group for further consideration (i.e., opportunities for change) are underlined.

- Residential Streets and Parking Lots

- Objective – Design residential streets for the minimum required pavement width needed to support travel lanes; on-street parking; and emergency, maintenance, and service vehicle access. These widths should be based on traffic volume.
  - Discussion – The group expressed concern that the County does not have adequate equipment to maintain permeable pavements on roadways; however, they agreed that parking lots may be more appropriate for permeable pavement applications.
- Objective – Wherever possible, residential street right-of-way widths should reflect the minimum required to accommodate the travel-way, the sidewalk, and vegetated open channels. Utilities and storm drains should be located within the pavement section of the right-of-way wherever feasible.
  - Discussion – Public utilities are already allowed within the pavement section. The County road typical section within 60' right-of-way includes an open drainage swale which agrees with LID principles. A reduction of the 60' right-of-way would necessitate removal of the open swale from the road typical section.
- Objective – Minimize the number of residential street cul-de-sacs and incorporate landscaped areas to reduce their impervious cover. The radius of cul-de-sacs should be the minimum required to accommodate emergency and maintenance vehicles. Alternative turnarounds should be considered.
  - Discussion – Current County Subdivision Regulations agree with the COW's cul-de-sac recommendations.
- Objective – Where density, topography, soils, and slope permit, vegetated open channels should be used in the street right-of-way to convey and treat stormwater runoff.
  - Discussion – Current County Subdivision Regulations agree with the COW's vegetated channel recommendations; primarily because curb and gutter sections are rarely used on County roads.
- Objective – Reduce the overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in spillover parking areas.
  - Discussion – Potential inconsistency identified within the Zoning Regulations, where one section encourages permeable pavements and another section requires paved (asphalt or concrete) parking lots. This was identified as an area for potential future revisions to the regulations, although the group agreed that pervious pavements would likely be allowed on private parking lots if requested by a developer.
- Objective – Wherever possible, provide stormwater treatment for parking lot runoff using bioretention areas, filter strips, and/or other practices that can be integrated into required landscaping areas and traffic islands.
  - Discussion – The Zoning Regulations have extensive guidance/requirements related to parking lot landscaping. The current requirements are in agreement with the COW's recommendations.

- Lot Development
  - Objective – Advocate open space development that incorporates smaller lot sizes to minimize total impervious area, reduce total construction costs, conserve

natural areas, provide community recreational space, and promote watershed protection.
    - Discussion – The subdivision regulations are generally in agreement with the COW recommendations; however, the group agreed that implementation of open space is limited and the majority of subdivisions utilize the cash in lieu option. This is a topic that could be addressed in future planning documents or subdivision regulation revisions.
  - Objective – Relax side yard setbacks and allow narrower frontages to reduce total road length in the community and overall site imperviousness. Relax front setback requirements to minimize driveway lengths and reduce overall lot imperviousness.
    - Discussion – Current County regulations are already in agreement with this objective.
  - Objective – Promote more flexible design standards for residential subdivision sidewalks. Where practical, consider locating sidewalks only on one side of the street and provide common walkways linking pedestrian areas.
    - Discussion – Sidewalks were identified as a potential opportunity for regulation revisions to better align with COW recommendations. Sidewalk sections are not common to County roads or subdivisions.
    -
  - Objective – Reduce overall lot imperviousness by promoting alternative driveway surface and shared driveways that connect two or more homes together.
    - Discussion – Driveway widths could be reduced. Other portions of the current regulations are generally in agreement with the COW recommendations.
  - Objective – Clearly specify how community open space will be managed and designate a sustainable legal entity responsible for managing both natural and recreational open space.
    - Discussion – Current County regulations are already in agreement with this objective in the form of subdivision park space requirements.
- Conservation of Natural Areas
  - Objective – Create a variable width, naturally vegetated buffer system along all perennial streams that also encompasses critical environmental features such as the 100-year floodplain, steep slopes, and freshwater wetlands.
    - Discussion – Yellowstone County expressed concerns that these would be expensive to install and maintain, regardless of natural or native plant materials used.
  - Objective – The riparian stream buffer should be preserved or restored with native vegetation that can be maintained throughout the plan review, delineation, construction, and occupancy stages of development.
    - Minimal discussion on this topic.
  - Objective – Clearing and grading of forests and native vegetation at a site should be limited to the minimum amount needed to build lots, allow access, and provide fire protection. A fixed portion of any community open space should be managed as protected green space in a consolidated manner.
    - Discussion – The group discussed the possibility of regulating grading to prevent sediment pollution. It was identified that construction is not

allowed on steep slopes. This would be a good avenue to pursue revisions to regulations.

- Objective – Conserve trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native plants. Wherever practical, manage community open space, street rights of way, parking lot islands, and other landscaped areas to promote natural vegetation.
- Objective – New stormwater outfalls should not discharge unmanaged stormwater into jurisdictional wetlands, sole source aquifers, or other water bodies.
  - Discussion – This was identified as a potential avenue to revise regulations.

- Runoff Reduction
  - Objective – The stormwater code should include specific standards to reduce post construction runoff volume.
    - Discussion – This objective was identified as an ongoing initiative in Yellowstone County. Subdivision regulation revisions are currently being developed.
  - Objective – Erosion and sediment control standards should specify protection of post construction practices during active construction
    - Discussion – This was identified as an objective that could be achieved in construction requirements with the County Subdivision Regulations. Subdivision regulation revisions are currently being developed.
  - Objective – The subdivision codes and zoning regulations should include provisions for runoff reduction practice easements, inspector right-of-entry, maintenance requirements, and post construction inspections.
    - Discussion – This was identified as an objective that could be achieved in construction requirements with the County Subdivision Regulations. It was discussed that effort would be required to explain impact of this initiative to the Board of County Commissioners. The group expressed their concerns that there may be public disapproval with the amount of regulation involved in this objective, but that it would be worthwhile to consider further.

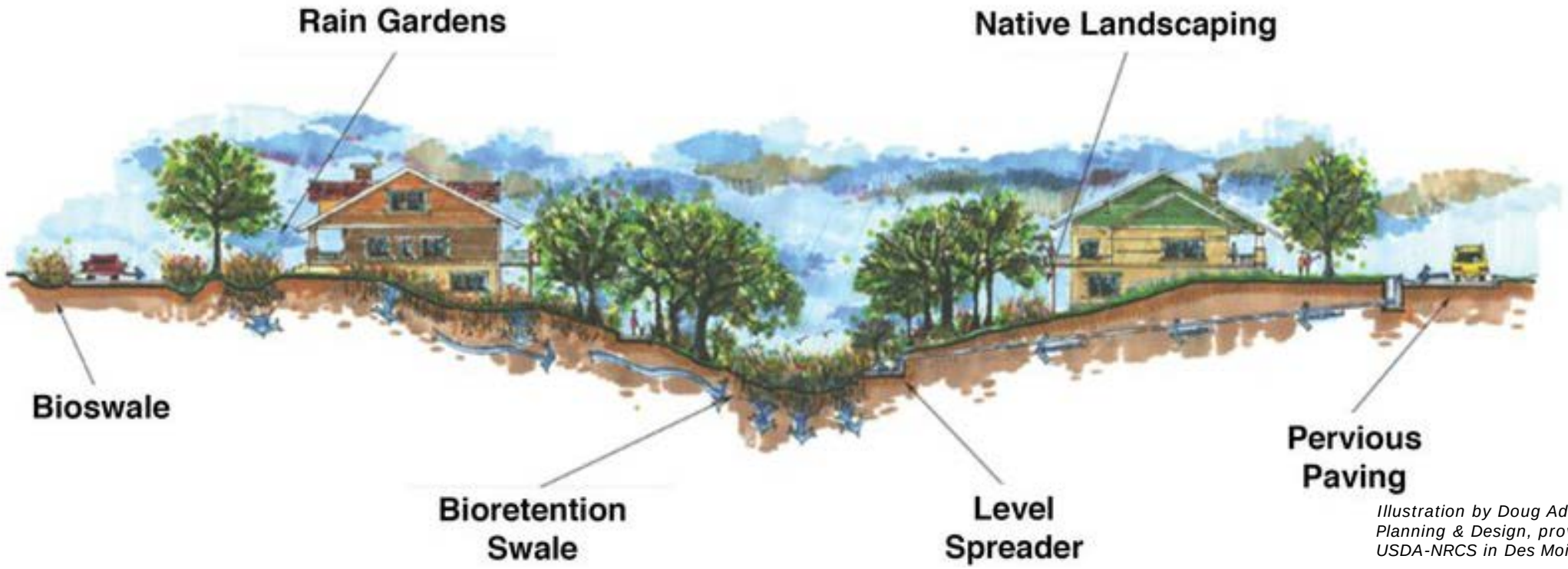


Illustration by Doug Adamson, RDG Planning & Design, provided by USDA-NRCS in Des Moines, Iowa.

YELLOWSTONE COUNTY STORM WATER MANAGEMENT PROGRAM

LOW IMPLACT DEVELOPMENT INFRASTRUCTURE DISCUSSION AND EVALUATION

FEBRUARY 3, 2021

YELLOWSTONE COUNTY SWMP – LID EVALUATION

Permit Requirements & Intro to LID

Selected Regulations & Policies

Regulation & Policy Evaluation

Results Discussion & Future Considerations

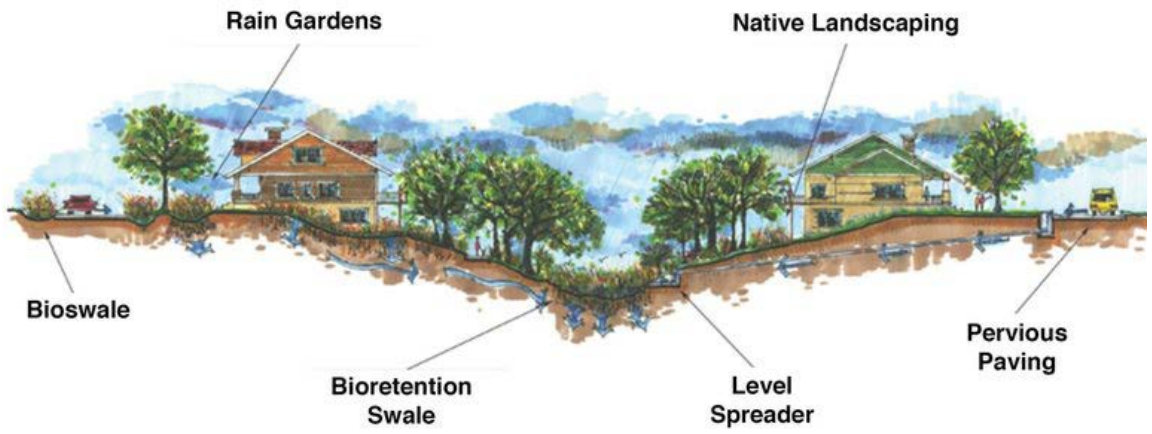


Illustration by Doug Adamson, RDG Planning & Design, provided by USDA-NRCS in Des Moines, Iowa.

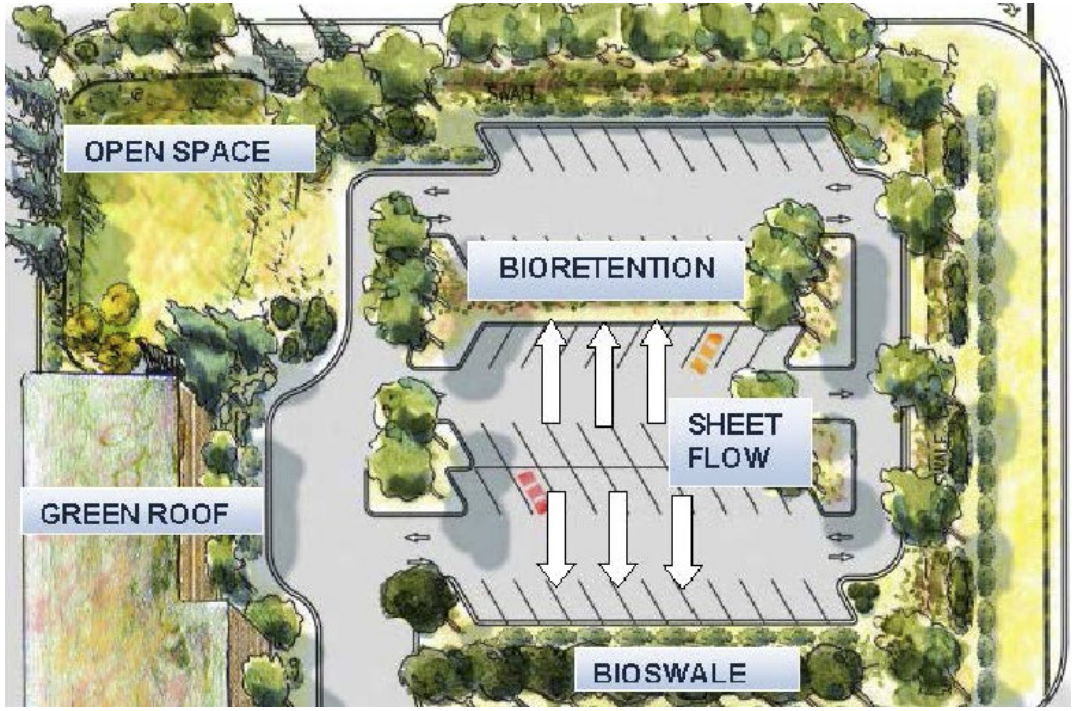
PERMIT REQUIREMENTS – LOW IMPACT DEVELOPMENT

- Incorporate recommendations and requirements into plans, policies and ordinances which allow and support the utilization of LID concepts on public and private property
- Conduct a discussion to evaluate existing barriers to implementing LID infrastructure into codes, ordinances and policies
- The outcome must identify opportunities for change and address potential inconsistencies between policies
- Submit summary of discussion outcomes with annual report

INTRO TO LOW IMPACT DEVELOPMENT

LID Principles

- Preserve natural site features
- Minimize & disconnect impervious areas
- Disperse small scale BMPs throughout the site
- Control storm water close to its source
- Create multifunctional landscapes



Source: City of Atlanta, GA Department of Watershed Management

INTRO TO LOW IMPACT DEVELOPMENT

LID Principles

- **Preserve natural site features**
- Minimize & disconnect impervious areas
- Disperse small scale BMPs throughout the site
- Control storm water close to its source
- Create multifunctional landscapes

Examples

- Wetlands
- Floodplains
- Woodlands
- Riparian areas
- Permeable soils

INTRO TO LOW IMPACT DEVELOPMENT

LID Principles

- Preserve natural site features
- **Minimize & disconnect impervious areas**
- Disperse small scale BMPs throughout the site
- Control storm water close to its source
- Create multifunctional landscapes

Examples

- Use permeable pavement systems
- Route downspouts away from paved surfaces
- Use street layouts that reduce impervious area

INTRO TO LOW IMPACT DEVELOPMENT

LID Principles

- Preserve natural site features
- Minimize & disconnect impervious areas
- **Disperse small scale BMPs throughout the site**
- Control storm water close to its source
- Create multifunctional landscapes

Examples

- Multiple small BMPs instead of one large BMP
  - Ponds
  - Bioretention
  - Permeable pavers
  - Bioswales

INTRO TO LOW IMPACT DEVELOPMENT

LID Principles

- Preserve natural site features
- Minimize & disconnect impervious areas
- Disperse small scale BMPs throughout the site
- **Control storm water close to its source**
- Create multifunctional landscapes

Examples

- Design site with multiple small subwatersheds
- Manage storm water in small decentralized structures

INTRO TO LOW IMPACT DEVELOPMENT

LID Principles

- Preserve natural site features
- Minimize & disconnect impervious areas
- Disperse small scale BMPs throughout the site
- Control storm water close to its source
- **Create multifunctional landscapes**

Examples

- Open space
- Permeable pavements for hardscapes

YELLOWSTONE COUNTY SWMP – LID EVALUATION

Permit Requirements & Intro to LID

Selected Regulations & Policies

Regulation & Policy Evaluation

Results Discussion & Future Considerations

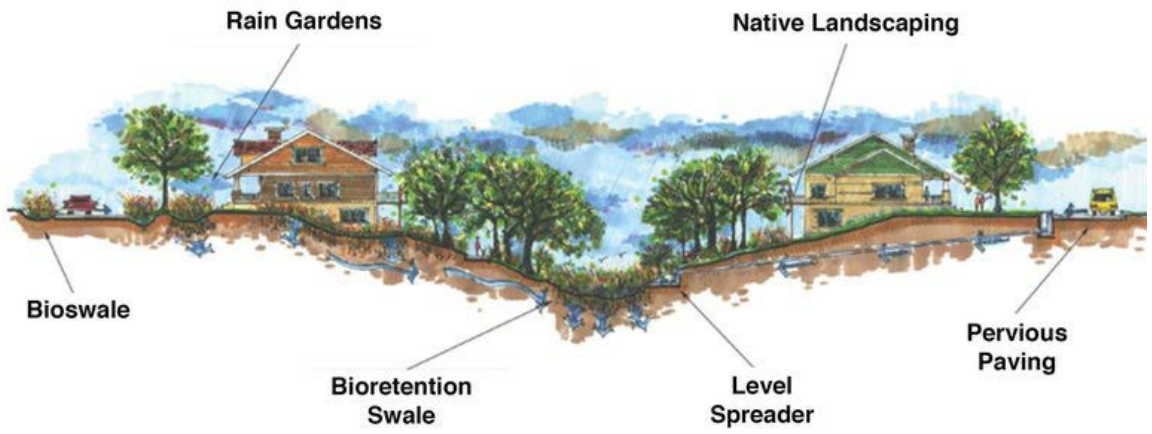


Illustration by Doug Adamson, RDG Planning & Design, provided by USDA-NRCS in Des Moines, Iowa.

PERMIT REQUIREMENTS – LOW IMPACT DEVELOPMENT

- Incorporate recommendations and requirements into plans, policies and ordinances which allow and support the utilization of LID concepts on public and private property

- Conduct a discussion to evaluate existing barriers to implementing LID infrastructure into codes, ordinances and policies
- The outcome must identify opportunities for change and address potential inconsistencies between policies
- Submit summary of discussion outcomes with annual report

APPLICABLE COUNTY REGULATIONS & POLICIES

Selected Categories to Evaluate

Applicable Regulations & Policies

APPLICABLE COUNTY REGULATIONS & POLICIES

Selected Categories to Evaluate

- Residential Streets and Parking Lots
- Lot Development
- Natural Areas
- Runoff Reduction

Applicable Regulations & Policies

APPLICABLE COUNTY REGULATIONS & POLICIES

Selected Categories to Evaluate

- Residential Streets and Parking Lots
- Lot Development
- Natural Areas
- Runoff Reduction

Applicable Regulations & Policies

- Zoning Regulations
- Subdivision Regulations
- Road Policies
- Roadway Standards
- Floodplain Regulations

YELLOWSTONE COUNTY SWMP – LID EVALUATION

Permit Requirements & Intro to LID

Selected Regulations & Policies

Regulation & Policy Evaluation

Results Discussion & Future Considerations

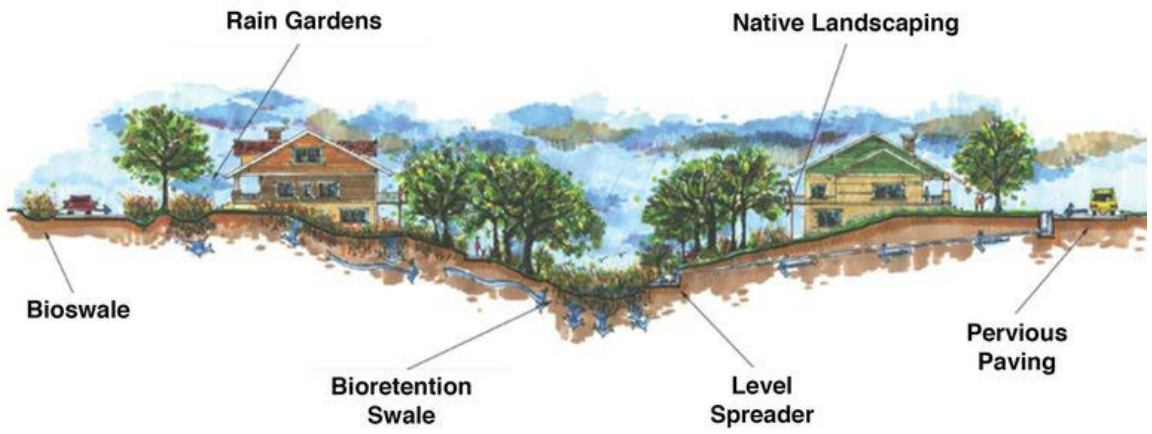
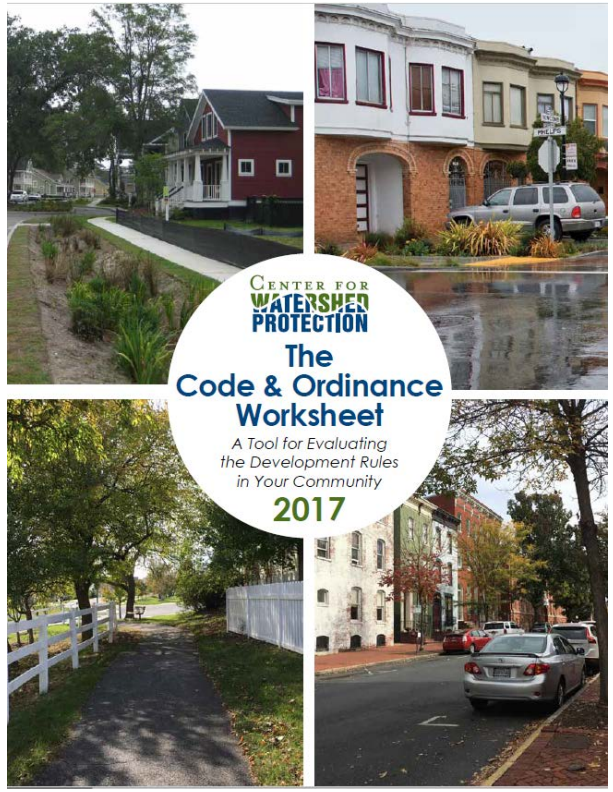


Illustration by Doug Adamson, RDG Planning & Design, provided by USDA-NRCS in Des Moines, Iowa.

REGULATION AND POLICY EVALUATION

- Code & Ordinance Worksheet
- Four Categories
  - Residential Streets & Parking Lots
  - Lot Development
  - Conservation of Natural Areas
  - Runoff Reduction
- Selected a Portion of the COW Questions for Consideration & Discussion
- Highlight Positives & LID Barriers



RESIDENTIAL STREETS AND PARKING LOTS

Street Width

- **Principle: Design residential streets for the minimum required pavement width needed to support travel lanes; on-street parking; and emergency, maintenance, and service vehicle access. These widths should be based on traffic volume.**

Selected Questions

- Are curb extensions that narrow the roadway (such as pinchpoints, gateways, and chicanes) permissible?
  - Not applicable (no curb/gutter in County)
- Are permeable paving materials allowable on low-volume streets and/or parking lanes?
  - No (Subdivision Regs: 4.6.B.13 – p. 52)

RESIDENTIAL STREETS AND PARKING LOTS

Right-of-Way Width

- **Principle: Wherever possible, residential street right-of-way widths should reflect the minimum required to accommodate the travel-way, the sidewalk, and vegetated open channels. Utilities and storm drains should be located within the pavement section of the right-of-way wherever feasible.**

Selected Questions

- Is the recommended right-of-way width for a low-volume residential street less than 45 feet?
  - No – 60ft (Subdivision Regs 4.6.B.7 – p. 46)
  - Maybe as little as 56' ?
- Does the code allow utilities to be placed under the paved section of the right-of-way to limit clearing and allow a compact development footprint?
  - Public Utilities – Yes
  - Private Utilities - No

RESIDENTIAL STREETS AND PARKING LOTS

Cul-de-Sacs

- **Principle: Minimize the number of residential street cul-de-sacs and incorporate landscaped areas to reduce their impervious cover. The radius of cul-de-sacs should be the minimum required to accommodate emergency and maintenance vehicles. Alternative turnarounds should be considered.**

Selected Questions

- Do the street or subdivision standards allow street layouts that minimize the use of cul-de-sacs?
  - Yes (Subdivision Regs 4.6.A.4 – p. 42)
- Is the minimum radius for cul-de-sacs 48 feet or less?
  - Yes (Standard Drawing 130 – p. 59)
- Are alternative turnarounds such as hammerheads and loop roads allowed?
  - Yes (Subdivision Regs 4.6.B.6 – p. 46)

RESIDENTIAL STREETS AND PARKING LOTS

Vegetated Channels

- **Principle: Where density, topography, soils, and slope permit, vegetated open channels should be used in the street right-of-way to convey and treat stormwater runoff.**

Selected Questions

- Are open section vegetated channels allowed where density, topography, soils, and slope permit?
  - Yes (Subdivision Regs 4.6.B.7 – p. 46)
- Are runoff reduction practices permissible within curb extensions or landscape strips?
  - Not applicable, no curb and gutter in County

RESIDENTIAL STREETS AND PARKING LOTS

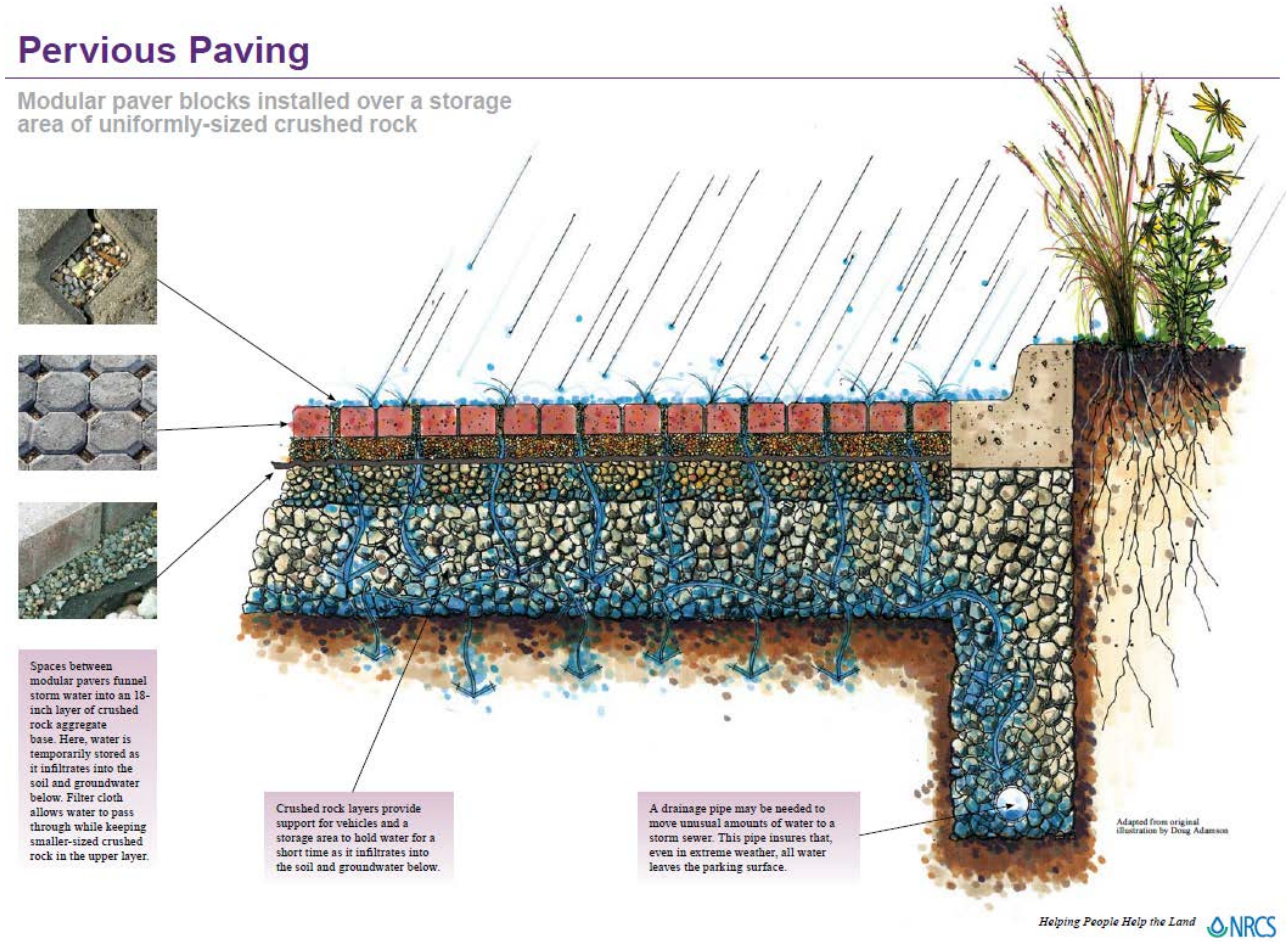
Parking Lots

- **Principle: Reduce the overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in spillover parking areas.**
- **Wherever possible, provide stormwater treatment for parking lot runoff using bioretention areas, filter strips, and/or other practices that can be integrated into required landscaping areas and traffic islands.**

Selected Questions

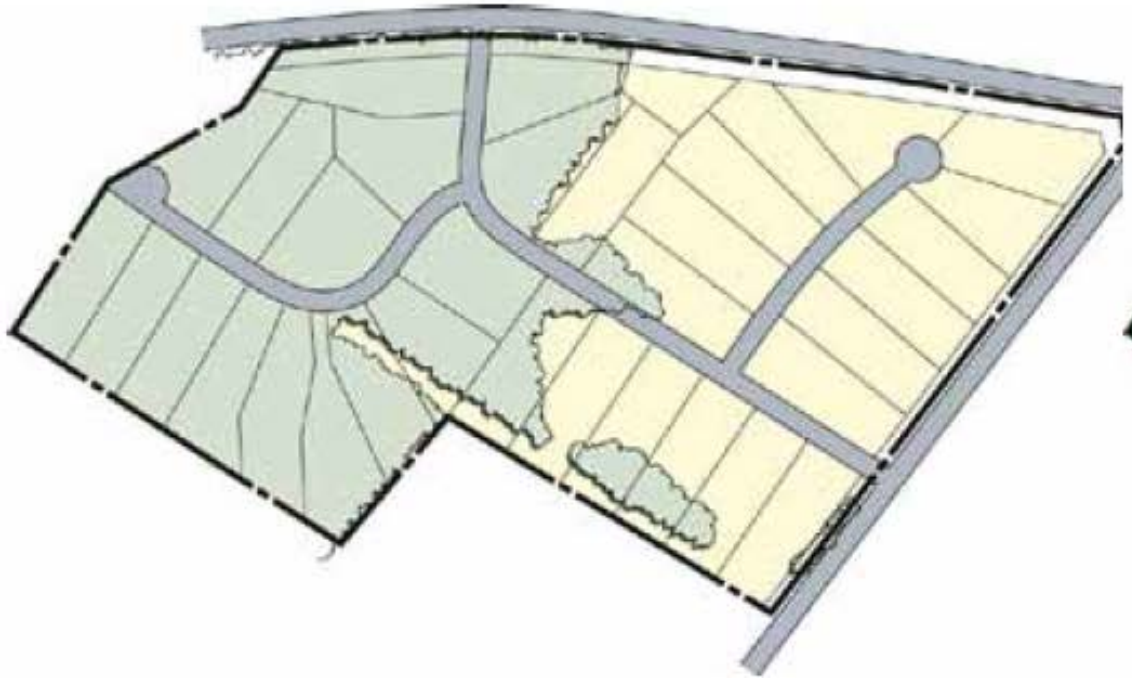
- Can pervious materials be used for parking areas, including spillover or special event parking?
  - No (Zoning Regs. 27-1215(a)(1) p. 166) *
  - Yes? (Zoning Regs. 27-1106.E p. 154)
- Is a minimum percentage of a parking lot required to be landscaped?
  - Yes (Zoning Regs. 27-1106 p. 153)
- Is the use of runoff reduction practices within landscaped areas, setbacks, or parking areas allowed?
  - Yes (Zoning Regs. 27-1106.E p. 154)

RESIDENTIAL STREETS AND PARKING LOTS



LOT DEVELOPMENT

Open Space Design



LOT DEVELOPMENT

Open Space Design

- **Principle: Advocate open space development that incorporates smaller lot sizes to minimize total impervious area, reduce total construction costs, conserve natural areas, provide community recreational space, and promote watershed protection.**

Selected Questions

- Do the ordinances require or allow open space in subdivisions?
  - Yes (Subdivision Regs. Chapter 10)

  Park Space or Cash In Lou
- Is a minimum percentage of the buildable portion of the site required to be set aside as open space?
  - Yes (Subdivision Regs. Chapter 10)
- Are flexible site design criteria available for developers that utilize open space or cluster design options (e.g., setbacks/lot lines, road widths, lot sizes and shapes)?
  - Yes (Subdivision Regs. Chapter 7)

LOT DEVELOPMENT

Setbacks & Frontages

- **Principle: Relax side yard setbacks and allow narrower frontages to reduce total road length in the community and overall site imperviousness. Relax front setback requirements to minimize driveway lengths and reduce overall lot imperviousness.**

Selected Questions

- Are irregular lot shapes (e.g., pie-shaped, flag lots, zipper lots) allowed in the community?
  - Yes, with certain conditions
- Does the code allow for variances to setback and frontage requirements?
  - Yes (Zoning regs)

LOT DEVELOPMENT

Sidewalks

- **Principle: Promote more flexible design standards for residential subdivision sidewalks. Where practical, consider locating sidewalks only on one side of the street and provide common walkways linking pedestrian areas.**

Selected Questions

- Can minimum sidewalk widths for residential neighborhoods be reduced to 5 feet where safe and appropriate?
  - Yes/Done (Subdivision Regs p. 16)
- Are alternative sidewalk construction materials that increase infiltration allowed?
  - No (except for trails/in parks)

LOT DEVELOPMENT

Driveways

- **Principle: Reduce overall lot imperviousness by promoting alternative driveway surface and shared driveways that connect two or more homes together.**

Selected Questions

- Are minimum driveway widths 9 feet or less (one lane) or 18 feet or less (two lanes)?
  - No – 12' (Subdivision Regs 4.6.B.16 – p. 54) *
- Can pervious materials (e.g., grass, gravel, permeable pavements, etc.) be used for residential driveways?
  - Yes
- Are shared driveways permitted in residential developments?
  - Yes (Subdivision Regs 4.6.B.16 – p. 54)

LOT DEVELOPMENT

Open Space Management

- **Principle: Clearly specify how community open space will be managed and designate a sustainable legal entity responsible for managing both natural and recreational open space.**

Selected Questions

- Does the open space design ordinance require identification of an entity (e.g., conservation organization, community association) who will be responsible for managing the open space?
  - Yes
- Are there standards for the open space requiring interconnections, prioritized lists of resources to be conserved, and access standards?
  - No

NATURAL AREAS

Buffer Systems

- **Principle: Create a variable width, naturally vegetated buffer system along all perennial streams that also encompasses critical environmental features such as the 100-year floodplain, steep slopes, and freshwater wetlands.**

Selected Questions

- Do the development standards in the community require a vegetated buffer along waterways?
  - No
- Are buffer widths greater for sensitive resources (e.g., designated high quality streams) or in certain zones (e.g., drinking water protection)?
  - N/A

NATURAL AREAS

Buffer Management

- **Principle: The riparian stream buffer should be preserved or restored with native vegetation that can be maintained throughout the plan review, delineation, construction, and occupancy stages of development.**

Selected Questions

- Does the buffer ordinance specify that a minimum percentage of the buffer be maintained with native vegetation?
  - No / N/A
- Does the buffer ordinance outline prohibited uses and permitted uses that have little impact to the vegetated buffer?
  - No / N/A

NATURAL AREAS

Clearing and Grading

- **Principle: Clearing and grading of forests and native vegetation at a site should be limited to the minimum amount needed to build lots, allow access, and provide fire protection. A fixed portion of any community open space should be managed as protected green space in a consolidated manner.**

Selected Questions

- Is there any ordinance that requires the preservation of native soils, hydric soils, natural vegetation, or steep slopes at development sites?
  - No
- Do regulations limit the total portion of the site that can be cleared?
  - No
- Are the limits of disturbance required to be shown on construction plans and physically marked at the site?
  - No

NATURAL AREAS

Tree Conservation

- **Principle: Conserve trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native plants. Wherever practical, manage community open space, street rights of way, parking lot islands, and other landscaped areas to promote natural vegetation.**

Selected Questions

- Is a natural resources inventory required to identify and map natural areas?
  - Yes (Subdivision Regs Section 9)
- Is there an ordinance that requires conservation of some portion of forests, specimen trees, or other native vegetation at development sites?
  - No, but… landscape codes in zoning do incentivize preservation of mature trees

NATURAL AREAS

Stormwater Outfalls

- **Principle: New stormwater outfalls should not discharge unmanaged stormwater into jurisdictional wetlands, sole source aquifers, or other water bodies..**

Selected Questions

- Does the stormwater code contain special treatment criteria for discharges to impaired or sensitive waters, such as natural wetlands, lakes, trout streams, nutrient-sensitive estuaries, drinking water supplies, etc.?
  - No *
- Does a floodplain management ordinance exist that restricts or prohibits development within the 100-year floodplain?
  - Yes

RUNOFF REDUCTION

Stormwater Ordinance

- **Principle: The questions in this section are intended to ensure that runoff or volume reduction is included in the stormwater code.**

Selected Questions

- Does the stormwater code include specific standards to reduce postconstruction runoff volume (not just peak rate)?
  - Maybe? Or in Circular 8?

RUNOFF REDUCTION

Installation & Maintenance

- **Principle: The questions in this section are intended to ensure that post-construction (runoff reduction) practices are installed properly and that there are provisions to ensure long-term maintenance.**

Selected Questions

- Do erosion and sediment control standards specify protection of postconstruction practice sites during active construction?
  - No *
- Does the code include provisions for runoff reduction practice easements, inspector right-of-entry, maintenance agreements, and post construction inspections?
  - No *

YELLOWSTONE COUNTY SWMP – LID EVALUATION

Permit Requirements & Intro to LID

Selected Regulations & Policies

Regulation & Policy Evaluation

Results Discussion & Future Considerations

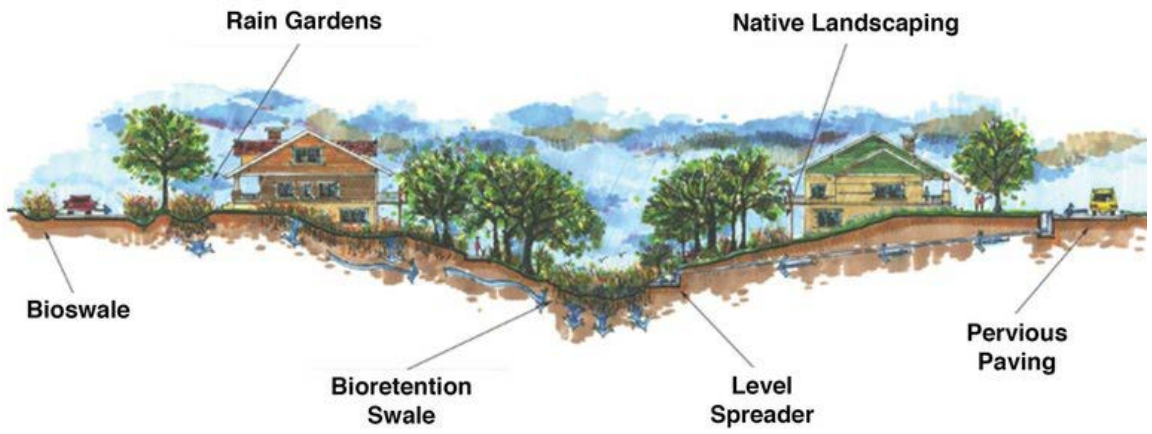


Illustration by Doug Adamson, RDG Planning & Design, provided by USDA-NRCS in Des Moines, Iowa.

EXISTING LID SUPPORTING COMPONENTS

- All answers in green text for the above evaluation.
- Subdivision Regulations – Chapter 7: Cluster Development and Planned Neighborhood Developments
  - *The purpose of this Chapter is to promote maximum flexibility in the design of new developments within Yellowstone County and to encourage innovation within a framework of timely, efficient and flexible design review. Developments that utilize innovative, progressive planning and site design techniques and methods to allow a mixture of land uses, densities, setbacks, and building heights are encouraged. Cluster developments are encouraged where community resources are present and desirable for protection or preservation. Those areas include but are not limited to wildlife habitat, river and stream corridors, wetlands, historical or archeological sites or prime agricultural lands. Planned Neighborhood Developments are encouraged where the proposed development is in excess of twenty acres and diversity in land use is desirable.*

- Zoning Landscaping Requirements
  - Section 27-1104 Street Frontage Landscaping
  - Section 27-1105 Bufferyards
  - Section 27-1106 Off Street Parking Lot Landscaping
- Zoning Parking Requirements
  - Section 27-1210 Joint Use

POTENTIAL OPPORTUNITIES

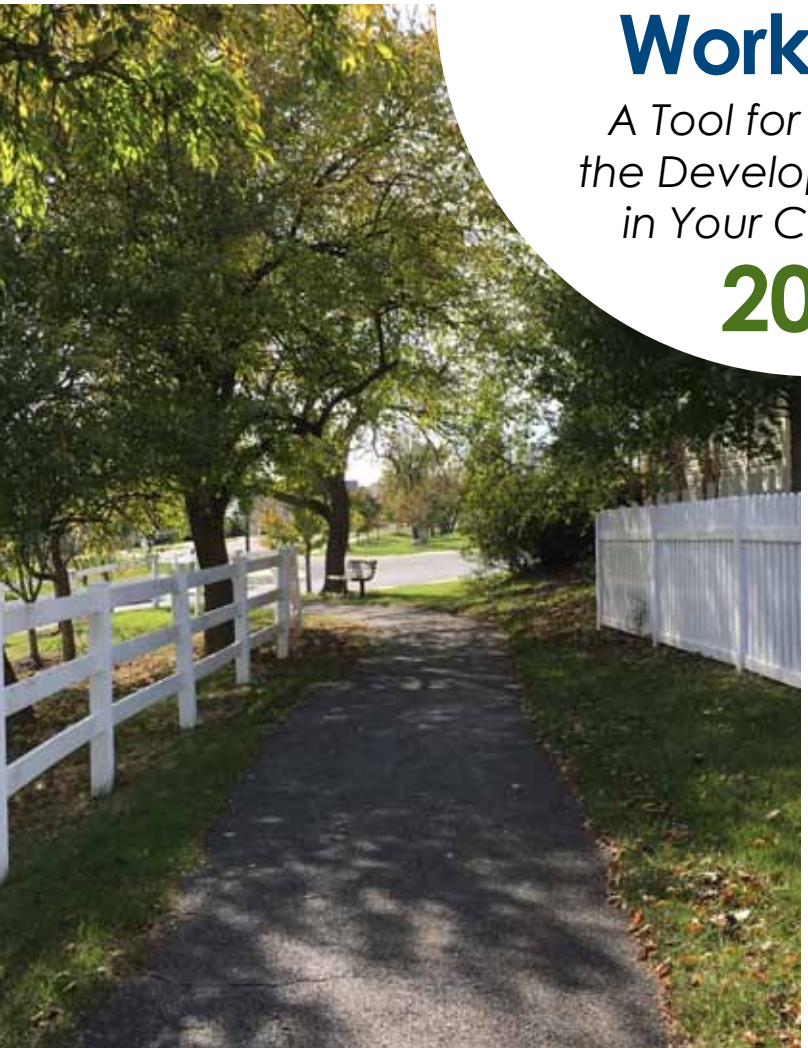
- Allow pervious pavements for parking lots
  - Zoning Regulations Section 27-1215(a)(1)
- ~~Consider allowance of permeable paving materials on low volume streets~~
  - ~~Subdivision Regulations 4.6.B.13~~
- ~~Reduce right-of-way width for subdivision streets~~
  - ~~Subdivision Regulations 4.6.B.7~~
- ~~Require vegetated buffer along waterways for new developments~~
- Require the preservation of native soils, hydric soils, natural vegetation, or steep slopes at development sites
- Require special treatment criteria for discharges to impaired or sensitive waters, such as natural wetlands, lakes, trout streams, nutrient-sensitive estuaries, drinking water supplies, etc.
- Add post-construction storm water requirements (MCM-5 permit requirement)
- Erosion and sediment control standards specify protection of postconstruction practice sites during active construction
- Include provisions for runoff reduction practice easements, inspector right-of-entry, maintenance agreements, and post construction inspections?

CENTER FOR WATERSHED PROTECTION

The Code & Ordinance Worksheet

A Tool for Evaluating the Development Rules in Your Community

2017



3290 North Ridge Road, Suite 290 • Ellicott City, MD 21043
www.cwp.org • info@cwp.org

Cover photo credit (upper right): San Francisco Public Utilities Commission

All photos by Center for Watershed Protection unless otherwise noted.

Acknowledgements

Center for Watershed Protection project team:

- Karen Cappiella
- Bill Hodgins
- Julie Schneider
- Chris Swann
- Jordan Fox
- Lisa Fraley McNeal
- Hye Yeong Kwon
- Dave Hirschman, Hirschman Water & Environment
- Kim Roberts, Down to Earth Design

The Center appreciates the input of the following individuals who participated in initial interviews to help guide the Code and Ordinance Worksheet updates:

- Clayton Black, Carroll County, MD
- Juli Beth Hinds, Orion Planning + Design
- Adrienne Kotula, James River Association
- Christine Olsenius
- Ivar Ridgeway, Los Angeles Regional Water Control Board
- John Rozum, NOAA
- Ania Truszczynski, PhD, Georgia Environmental Protection Division

The Center is also grateful to those who provided review of the draft revised Code and Ordinance Worksheet:

- Melissa Andrews, Delaware Valley Regional Planning Commission
- Randall Arendt, Greener Prospects
- Clayton Black, Carroll County, MD
- Ann Hutchinson, Natural Lands Trust
- Adrienne Kotula, James River Association
- John Rozum, NOAA
- Neal Shapiro, City of Santa Monica
- Jeff Shinrock, Red Eagle Development
- Aaron Villere, National Association of City Transportation Officials

The Center would like to acknowledge the following sources that were useful in developing the revised Code and Ordinance Worksheet questions:

- *Tackling Barriers to Green Infrastructure: An Audit of Local Codes and Ordinances* (University of Wisconsin Sea Grant, and 1,000 Friends of Wisconsin, 2014)
- *Water Quality Scorecard: Incorporating Green Infrastructure Practices at the Municipal, Neighborhood and Site Scales* (EPA, 2007)
- *Ordinance Assessment* (Chicago Metropolitan Agency for Planning, 2013)

Introduction to Better Site Design and the Code and Ordinance Worksheet

Published in 1998, the Center for Watershed Protection's Better Site Design Handbook outlines 22 model development principles for site design that act to reduce impervious cover, conserve open space, prevent stormwater pollution, and reduce the overall cost of development. The model development principles were created through a national Site Planning Roundtable, a consensus-based process initiated to create more environmentally sensitive, economically viable and locally appropriate development. The roundtable consisted of over 30 influential individuals from various organizations around the nation, including environmental groups, transportation officials, planners, realtors, homebuilders, land trusts, fire officials, county managers and more.

For each model development principle, the Better Site Design Handbook summarized practices that were recommended around the nation at the time, outlined their economic and environmental benefits, addressed perceived and real barriers, and presented national case studies. The Better Site Design Handbook also presented a process for evaluating local development regulations based on the model development principles so that strategic code changes could be made in the community. The tool provided to facilitate an in-depth review of codes and ordinances at the local level was the Code and Ordinance Worksheet (COW). Since its creation, the COW has been used by the Center to conduct 13 local site planning roundtables and review local development regulations in over 75 communities in Maryland, Pennsylvania, Virginia, South Carolina, Ohio, Wisconsin, New York, Alabama, and the District of Columbia. Other organizations, such as the Cumberland River Compact, Southeast Watershed Forum, Pennsylvania Environmental Council, Potomac Conservancy, James River Association, and Tennessee Valley Authority, have used the Better Site Design process to make updates to their local codes or to conduct their own roundtables.

Runoff Reduction Practices

Runoff reduction practices, often interchangeably referred to as Green Infrastructure practices or Low Impact Development practices, are stormwater treatment strategies that aim to replicate pre-development hydrology by reducing runoff volume. Many runoff reduction practices integrate trees and other vegetation, and runoff volume is reduced through disconnecting impervious cover, infiltration, evapotranspiration, collection and re-use, and other mechanisms.

Green rooftop

Porous asphalt

Rain garden

Cistern

Why an Update?

Much has happened in the world of stormwater management and site planning since the release of the Better Site Design Handbook in 1998. Programmatic and regulatory changes driven by the advent of the National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer system (MS4) program have advanced the thinking about how stormwater is managed on development sites. The result has been a shift from primarily using ponds, wetlands and other large practices that detain and slowly release runoff to the integration of small stormwater management practices throughout the landscape to promote infiltration and reduce runoff. This shift has necessitated another look at how local development regulations can influence and sometimes create barriers to the use of these "runoff reduction" practices.

Since the Better Site Design Handbook was published, the development of total maximum daily loads (TMDLs) for numerous urban streams and rivers has created a need for MS4s to install stormwater management practices on developed sites as retrofits. Stormwater ordinance language that creates barriers to installing runoff reduction practices on new or redevelopment sites can also act to discourage their use as retrofits.

The 22 model development principles and the COW were developed during a time when seminal research on the important connection between impervious cover and stream health had recently been published (CWP, 1998; Schueler, 1994). New suburban development was widespread, and many communities were concerned that their local codes and ordinances created standards that resulted in excessive impervious cover (Figures 1-3). Therefore, the original COW was primarily intended to influence new residential and commercial development and, as a result, most of the COW questions applied to low or medium density (suburban) neighborhoods. The update recognizes that while the overall goals of reducing impervious cover, conserving natural areas and preventing stormwater pollution can apply to any community, some of the COW questions are not relevant for certain types of development. The instructions for using the revised COW explain how to determine which questions are most applicable for the type of development that is most prevalent in your community (e.g., new rural, suburban or urban development, redevelopment).

Figure 1. This low-density residential street accommodates two travel lanes and two on-street parking lanes, despite the fact that each house has a three-car garage and large driveway and will rarely if ever need that much on-street parking.

Figure 2. This cul-de-sac with a 50-foot radius creates a large bulb of rarely-used impervious cover.

Figure 3. This commercial parking lot sits largely empty because it was not designed for local parking demand (Photo credit: Todd Gill, Fayetteville Flyer).

The COW update also considered revised standards and supporting research on topics such as recommended stream buffer widths, parking ratios, parking stall dimensions needed to accommodate today's vehicle sizes, differing setbacks for fire-prone regions versus humid regions, and the impact of state water law on the use of rainwater harvesting practices.

Who Should Use the COW?

The COW is intended to help communities evaluate their local development regulations to identify revisions that allow or require site developers to minimize impervious cover, conserve natural areas and use runoff reduction practices to manage stormwater. The COW can be completed by municipal staff or by non-governmental organizations who wish to improve the environmental footprint and character of development in their community. It is a tool that can be used by communities who are experiencing or anticipating moderate to high pressure for new development (urban, suburban, or rural) or redevelopment.

In addition to the environmental benefits of reduced runoff and protection of natural areas, other benefits of using this tool to revise local codes and ordinances include:

- Stormwater permitting agencies are increasingly requiring the use of Runoff Reduction practices to the maximum extent practical, so removing barriers to their use can facilitate meeting permit requirements. Some state MS4 Permits (e.g., Maryland, Georgia, California, Connecticut, West Virginia) even require that permittees review their local codes and ordinances and revise them to remove barriers and better integrate Runoff Reduction practices.
- Communities who are embracing Runoff Reduction, either voluntarily or to meet volume-based stormwater management requirements or to help reduce combined sewer overflows, can better meet their goals by removing local code barriers.
- Reducing the impact of new and redevelopment can help MS4s with local or regional TMDL requirements to stay "under the cap" while still allowing for growth.
- Changing regulations to promote developments that conserve natural areas and use runoff reduction practices can support both resiliency planning and sustainability planning efforts.
- Better Site Design can reduce construction costs for developers and increase profits.
- Better Site Design also results in safer streets, neighborhood designs that promote a sense of community, more open space for recreation, and more walkable neighborhoods.

How to Use the COW

The COW allows an in-depth review of the codes and ordinances (i.e., the development rules) that shape HOW development occurs in your community. Programs, institutional frameworks and informal policies are not included in this review unless specifically documented in the codes or in a plan, manual, or other document referenced by the code. Additional resources on conducting local stormwater, forestry, wetland or other local environmental program reviews are provided in the Resources section of this document.

The model development principles and the COW are not intended to address WHERE development occurs. Rather, the assumption is that development is already planned and communities completing the COW wish to reduce the impact of expected development on local water resources, while improving neighborhood character and reducing construction costs. Many other tools and resources are available for communities who wish to change where development happens, most of which fall under the umbrella of watershed planning and Smart Growth. A list of resources is provided in the Resources section of this document.

The COW worksheet is subdivided into four categories:

1. Residential Streets and Parking Lots (Principles 1 - 10)
2. Lot Development (Principles 11 - 16)
3. Conservation of Natural Areas (Principles 17 - 22)
4. Runoff Reduction

The first three sections consist of a series of questions that correspond to each of the model development principles. Section four contains new questions added to address stormwater management standards, particularly the inclusion of runoff reduction practices. Points are assigned based on how well the current development rules agree with the site planning practices identified in the questions. The revised COW provides some

background and rationale for each principle and related questions. The Better Site Design Handbook (CWP, 1998) provides additional background and research on each principle.

Preparing to Complete the Code and Ordinance Worksheet

The first step is to identify the development rules that apply in your community. Few communities include all of their rules in a single document. Rather, the development process is usually shaped by a mix of local regulations and policies, each of which may be administered by a different agency. In some cases, state and federal agencies may also exercise some authority over the local development process (e.g., wetlands, design of larger roads, stormwater management). Where this is the case, the local code will reference these state or federal standards. This task can be streamlined by having a knowledgeable person (e.g., a local land use planner or plan reviewer) read through the COW questions and make an initial list of codes and ordinances that apply for the particular community. A list of potential documents to gather is provided in Table 1.

Six Steps for Using the Code and Ordinance Worksheet

1. Gather codes, ordinances, and other documents
2. Identify authorities who administer the rules
3. Select the appropriate COW questions for your community
4. Review the regulations to find answers to the COW questions
5. Use the COW Scoring Spreadsheet to record answers, points and notes
6. Identify priority actions for the short and long term

The next step is to gather the relevant codes and ordinances. Most municipal ordinances, as well as state and federal regulations, are available online. The COW Scoring Spreadsheet provided at https://owl.cwp.org includes a worksheet to list the relevant codes and the link where each can be found. As you complete the review, you may find it necessary to also obtain design manuals, review checklists, guidance documents or specifications that are referenced in the codes in order to answer the COW questions. So identifying and gathering the relevant documents is an iterative process.

Table 1. Relevant Documents for Completing the COW

Zoning Ordinance
Subdivision Ordinance
Street Standards or Road Design Manual
Parking Requirements
Building Code
Stormwater Management, Rainwater or Drainage Ordinance
Stormwater Management Design Manual
Buffer or Floodplain Regulations
Environmental Regulations
Tree Protection or Landscaping Ordinance
Erosion and Sediment Control Ordinances
Fire Code
Grading Ordinance
Health Codes

Next, you must identify the local, state, and federal authorities that actually administer or enforce the development rules within your community. This step should be relatively easy and will provide a better understanding of the intricacies of the development review process and helps identify key members of a future local

roundtable focused on changing the development rules. The COW Scoring Spreadsheet provides a worksheet for recording the agencies that influence development in your community and listing specific contacts. Space is provided for local agencies, as well as state and federal agencies.

Completing the Worksheet

Once you have located the documents that outline your development rules and identified the authorities responsible for development in your community, you are ready for the next step. You can now use the COW Scoring Spreadsheet to compare your development rules to the model development principles. This may be a good project for an intern or graduate student to work on with input from municipal staff. In many communities that have used the COW, a non-profit organization has taken the lead on completing the worksheet, in partnership with municipal staff. Both approaches can greatly reduce the time commitment by local staff.

The worksheet is presented in the next section of this document and includes 94 questions, as well as the 22 model development principles for reference. Each question focuses on a specific site design standard, such as the minimum diameter of cul-de-sacs, the minimum width of streets, or the minimum waterway buffer width. The codes, ordinances, and other related documents you have compiled will be used to answer the questions. If your development rule agrees with the site planning benchmark, you are awarded points. If your development rule does not agree with

Selecting the COW Worksheet that Best Fits Your Community

The developed landscape is a continuum from natural areas to the urban core. Some regional planners identify transects in land use forms across this continuum with multiple breaks in their classifications. The COW Scoring Sheet simplifies these breaks with four categories: rural, suburban, urban and highly urban.

Rural

The rural landscape is characterized by open space dominated by woodland, agriculture, and other open areas. It contains scattered residential lots and subdivisions on relatively large lots. There is an auto-oriented land use pattern with limited non-residential uses. Development is primarily served by on-lot sewer and water systems. (Photo credit: Dorothy Cappiella)

Suburban

The suburban landscape is dominated by residential subdivisions containing primarily single-family housing, as well as concentrations of non-residential land uses. This landscape has an auto-oriented transportation network and can be served by public sewer and water systems or by on-lot systems. Open areas are present with the opportunity for conservation practices, buffers for natural areas and open space management. (Photo credit: Matt Rath)

Urban

The urban landscape includes historic population centers that provide commerce, civic, and cultural activities for the surrounding area. These landscapes have a pedestrian-orientation with sidewalk systems and are often served by mass transit. Public sewer and water systems are the norm here. Urban landscapes include both medium and high density areas and may experience redevelopment as well as some new construction on the few remaining unbuilt areas.

Highly Urban

Highly urban landscapes are similar to urban landscapes except that the primary development activity here is redevelopment. (Photo credit: Ted Eytan)

the site planning benchmark, or does not address it at all (in other words, the code is "silent" on the issue) you are not awarded points.

The COW can be used by rural, suburban and urban communities experiencing new development, as well as urban communities where redevelopment is prevalent. However, not all questions will be applicable in all communities. The COW Scoring Spreadsheet provides space in which to record your answers to the COW questions. The spreadsheet contains a separate section for each major community type: rural, suburban, urban and highly urban. Select the worksheet that is most appropriate for the type of development occurring in your community. Questions that are not applicable to each type of development have been grayed out and the total possible score has been adjusted accordingly.

If the mix of questions contained in the rural, suburban, urban and highly urban worksheets aren't quite right for your community, it is possible to tailor the COW questions and scoring for your municipality. Simply complete all the relevant questions in any of the four worksheets (overriding the grayed out cells where necessary). Then adjust the scoring by changing the number of total possible points to reflect the total possible score for the questions you answered. This tailoring may be useful when a specific set of questions do not apply to your community (e.g., tree conservation or tree planting questions in an arid desert environment, or rainwater harvesting questions in a state where water rights law prohibits this practice) or where local conditions are such that the pre-assigned questions for your community type are not an exact fit.

For each question, if the answer is Yes, enter the associated number of points in the "Yes" column. Most questions are worth one point for a Yes answer, but BLUE questions are worth two points and ORANGE questions are worth 0.5 points. If the answer is No; the question is not applicable (for example, the question is about a requirement in the open space ordinance but your community does not have an open space ordinance); or the codes do not address the question at all, enter an "x" in the appropriate column (No, N/A, or Codes are Silent). No points are given for these answers. Note that "Codes are Silent" is only an option for certain questions. Other questions will have a clear Yes or No answer (e.g., Does the buffer ordinance outline prohibited and allowable uses?").

Use the Notes column to record details about your responses, such as specific code language or a reference to the specific code section where the answer was found. Other notes that could be made in this column include whether or not the recommended standard is something the municipality has authority over versus a state or federal authority, and notes on any impending updates to the local codes or ordinances. This will assist later on with determining the next steps and prioritizing the necessary changes.

Calculating Your Score

The total number of points possible varies with the community type; therefore the final score is presented as a percentage of the total possible points. The COW Scoring Spreadsheet automatically calculates the total points received as well as the percentage. Your overall score provides a general indication of your community's ability to support environmentally sensitive development. As a general rule, if your overall score is lower than 80%, then it may be advisable to systematically reform your local development rules. However, it is important not to get hung up on the score or to compare it to other jurisdictions. The COW is intended to provide a constructive assessment of the current development regulations and identify the top opportunities for improvement.

How to Use the Results

Once you have completed the worksheet, go back and review your responses. For COW questions with "No" or "Codes are Silent" answers, evaluate their relative importance in your community. The next step is to use the COW benchmarks to develop short-term (1-3 years) and long-term (3-5 years) action items for the most important items. These action items can be recorded in the Action Items worksheet of the COW Scoring Spreadsheet. Some factors to consider in determining relative importance and whether actions are short or long term include:

- Time the revisions with planned updates to codes and ordinances
- Focus on the code changes that are under municipal control
- Focus on codes that give you the most bang for your buck
- Target specific areas that need the most improvement first (e.g., development rules that govern road design)
- Consider local support/local importance of specific principles
- Prioritize changes that remove direct barriers
- Consider relative ease of proposed changes (e.g., adopting a stream buffer ordinance may be a longer road than changing parking lot design standards)

When State or Federal Rules Apply

The goal of the local code and ordinance review is to identify changes that can be made at the local level. However, sometimes the local codes reference a state or federal standard which cannot be changed through a local site planning roundtable process. Communities may be able to address the identified problems through adoption of a local ordinance but the authority granted to local governments to do so varies by state.

In some states, cities, municipalities, and/or counties are granted the ability to pass laws to govern themselves as they see fit (so long as they obey the state and federal constitutions). In other states, municipalities only have the rights that are expressly granted to them by the state legislature. In these states, a city or county must obtain permission from the state legislature if it wishes to pass a law or ordinance which is not specifically permitted under existing state legislation. https://en.wikipedia.org/wiki/Home_rule_in_the_United_States

It is important to remember that the Better Site Design principles and therefore the COW questions are not independent of each other. For example, reducing lot sizes to allow for clustering of homes can preserve significant open space and reduce overall impervious cover, but the higher density may mean having to use curb and gutter rather than open section roads, limiting some opportunities for stormwater treatment. Similarly, reducing front yard setbacks can reduce overall imperviousness by reducing driveway length; however, this may result in a need to provide on-street parking, making road widths wider and ultimately cancelling out the reduction in impervious cover achieved through shorter driveways. In each situation, tradeoffs must be made. Users of the COW may want to decide which specific design principles are more important for their communities given the advantages and potential drawbacks of each practice. This can assist with identifying the top code changes to move forward on once the COW has been completed.

This review also directly leads into the next step: making the recommended changes. Municipal staff may simply proceed with the short-term changes through their usual process of updates. Another option is a site planning roundtable process conducted at the local government level. The primary tasks of a local roundtable are to systematically review existing development rules and then determine if changes can or should be made. By providing a much-needed framework for overcoming barriers to better development, the site planning roundtable can serve as an important tool for local change. The Better Site Design Handbook (CWP, 1998) provides detailed information on how to conduct a site planning roundtable.

The COW is a useful tool to identify actions for improving local development regulations. However, having "good" codes and ordinances only works if their provisions are actually implemented. Therefore, the importance of implementing and enforcing the codes cannot be overstated. Some useful publications for designing effective code and ordinance language are listed in the Resources section of this document.

Code and Ordinance Worksheet

Residential Streets and Parking Lots

These principles focus on those codes, ordinances and standards that determine the size, shape, and construction of parking lots and roadways.

1. Street Width

Principle: Design residential streets for the minimum required pavement width needed to support travel lanes; on-street parking; and emergency, maintenance, and service vehicle access. These widths should be based on traffic volume.

Figure 4. Road widths are minimized in this Savannah, GA neighborhood; yet are wide enough to allow access for emergency vehicles

In many cities and jurisdictions, local street design manuals and standard plans require or incentivize roadways that are overbuilt for motor vehicle traffic, with wide travel-ways and large corner radii that increase impervious surfaces while increasing risk to street users. Revising local street standards to consider design speed, street type and traffic volume presents a significant opportunity to reduce impervious cover, by allowing for more compact roadways and intersections. When curb extensions are permitted, they unlock street space to introduce pervious surface and integrate runoff reduction practices within the street environment. Permeable pavements in roadways also provide a means to retain stormwater away from the street surface.

While there may be opportunities to reduce street widths on arterial roads, high volume roads and/or non-residential streets, their design is often determined by state standards and are therefore not addressed in this local code review.

	Questions	Points
1	**Is the minimum roadway width allowed for streets in neighborhoods with low volume roads (less than 400 average daily trips according to AASHTO, 2001) between 18-22 feet (where bicycle lanes are not present)?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
2	**Are curb extensions that narrow the roadway (such as pinchpoints, gateways, and chicanes) permissible?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

Questions		Points
3	**Are permeable paving materials allowable on low-volume streets and/or parking lanes?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

2. Street Length

Principle: Reduce total length of residential streets by examining alternative street layouts to determine the best option for increasing the number of homes per unit length.

Minimizing street length in residential neighborhoods can reduce the overall imperviousness created by the development and also minimize the associated land disturbance. The most common street network types include grid and curvilinear (which uses a hierarchical street pattern that includes cul-de-sacs) as well as various hybrids of the two. Although grid patterns are generally less efficient than curvilinear patterns (Canada Mortgage and Housing Corporation, 2002), the grid pattern has advantages such as greater dispersal of traffic, being more pedestrian friendly, and providing greater direct access.

The best street layout option for most neighborhoods will utilize some aspects of the grid and curvilinear systems; however, there is no one street layout that is guaranteed to minimize total street length in residential developments. Generally, a more compact street network can be achieved by reducing frontage distances and side yard setbacks and by allowing narrower lots. Smaller lots clustered together (e.g., open space developments) can also reduce the total street length. Reducing the number of non-frontage roads is another strategy for minimizing street length. Traditional Neighborhood Development is another type of design that lends itself to reduced street length because of the focus on walkability and connectedness. Long streets serving only one or two homes should be discouraged.

Types of Curb Extensions

Pinchpoints

Curb extensions at mid-block or intersection corners that narrow a street by extending the sidewalk or widening the planting strip. These can include mid-block crossing locations. (Photo credit: Kevin Robert Perry)

Gateways

A curb extension located at the entrance to a neighborhood street narrows the crossing length for pedestrians and reinforces a low-speed operating environment. (Photo credit: Dongho Chang, Seattle Department of Transportation)

Chicanes

A series of narrowings or curb extensions that alternate from one side of the street to the other forming S-shaped curves can be implemented to reduce motor vehicle speeds and unlock roadway space for pervious surface or bioretention (Photo credit: thisisbossi)

Questions		Points
4	**Does the subdivision, Planned Unit Development, or Unified Development ordinance identify reducing street length as a goal of neighborhood street design?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

3. Right-of-Way Width

Principle: Wherever possible, residential street right-of-way widths should reflect the minimum required to accommodate the travel-way, the sidewalk, and vegetated open channels. Utilities and storm drains should be located within the pavement section of the right-of-way wherever feasible.

Similar to street width, many communities' codes specify right-of-way widths that are based on blanket application of high-volume street design standards. This results in very wide rights-of-way that require greater clearing during road construction and consume more land that could be used for housing lots. Reducing right-of-way widths can result in less clearing and encourage more compact site design.

One component of the right-of-way that actually has a benefit to being wide is the planting strip between the sidewalk and the street as well as any median strips. These areas not only provide opportunity for stormwater treatment using bioretention or other runoff reduction practices, but they can be planted with large trees to provide shade, capture rainfall, and generally beautify and improve our neighborhoods. Increasing the width of these planting strips to at least six feet (to accomodate large shade trees) can increase the overall right-of-way width but is a tradeoff that is well worth it, especially if some existing trees can be preserved.

Questions		Points
5	**Is the recommended right-of-way width for a low-volume residential street less than 45 feet?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
6	**Does the code allow utilities to be placed under the paved section of the right-of-way to limit clearing and allow a compact development footprint?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

Questions		Points
7	**If street trees are required, is the planting area required to be at least 6 feet to provide sufficient rooting space to support large trees?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
	N/A	*0*

4. Cul-de-Sacs

Principle: Minimize the number of residential street cul-de-sacs and incorporate landscaped areas to reduce their impervious cover. The radius of cul-de-sacs should be the minimum required to accommodate emergency and maintenance vehicles. Alternative turnarounds should be considered.

A cul-de-sac is a local street open at only one end. A large "bulb" is located at the closed end to enable emergency and service vehicles to turn around without having to back up. Cul-de-sacs are a prominent feature in many contemporary residential developments and many communities require that the bulb be 60 feet or more in radius, creating a large circle of impervious cover that is never fully utilized for turning movements. The research on cul-de-sac radii shows the following:

- *AASHTO (2011) recommends a 30 foot minimum radius for residential areas. However, some state transportation agencies (e.g., Pennsylvania Department of Transportation) will not provide road maintenance funds to municipalities if cul-de-sac radius is less than 40 feet.*
- *The International Fire Code (IFC) (ICC, 2015) specifies a minimum 48 foot radius for dead end roads greater than 150 feet in length. However, the IFC also gives the local fire department authority to determine the turning radius and to select equipment that has a more narrow turning radius. Cities and towns across the country with narrow streets and tight turns have purchased specialized emergency vehicles that can operate in these environments (City and County of San Francisco Board of Supervisors, 2015). These vehicles are designed to incorporate features that improve their operability, such as rear-mounted pumpers on fire engines and use of short-jacked ladders on fire trucks.*
- *The National Fire Protection Association's 2017 standard for fire protection infrastructure for land development in wildland, rural and suburban areas (standard NFPA 1141) requires a 60 foot minimum radius. This standard is applicable for hard-to-access and rural areas as well as those communities who may not already have adopted local building or fire codes.*

Neighborhoods that use cul-de-sac turnarounds (typically suburban but sometimes urban or rural developments) can produce less impervious cover if local codes are revised to reduce the minimum cul-de-sac radius to the IFC recommendation of 48 feet. Local fire officials can also determine whether this radius can be further reduced through investment in specialized emergency vehicles.

Questions		Points
8	**Do the street or subdivision standards allow street layouts that minimize the use of cul-de-sacs?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
9	**Is the minimum radius for cul-de-sacs 48 feet or less?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
10	**Can a landscaped island be created within the cul-de-sac?**	
	YES, and the cul-de-sac must be graded to the island with an overflow to the storm drain system, so that it can be used for stormwater treatment	*2*
	YES, but curbing is required or the island must be raised, limiting its use for stormwater treatment	*1*
	NO	*0*
	CODES ARE SILENT	*0*
11	**Are alternative turnarounds such as hammerheads and loop roads allowed?**	
	YES, alternative turnarounds are specifically mentioned in the ordinance with specific design/construction guidance provided by reference	*1*
	YES, alternative turnarounds are allowed, but no specific guidance provided on design	*0.5*
	NO	*0*
	CODES ARE SILENT	*0*

Cul-De-Sac Alternatives

Each of the options shown below serve about four homes.

1. This cul-de-sac with a 50-foot radius creates about 8,250 square feet of impervious cover

2. This loop lane reduces the need for backing up of vehicles and creates about 10% less impervious cover than Option 1.

3. This cul-de-sac also has a 50-foot radius but incorporates a vegetated island. This alternative creates about 15% less impervious cover than Option 1.

4. This hammerhead or t-shaped turnaround produces about 80% less impervious cover than Option 1. This alternative is good for very short (< 200 feet) streets. (Photo Source: Google Earth)

5. Vegetated Open Channels

Principle: Where density, topography, soils, and slope permit, vegetated open channels should be used in the street right-of-way to convey and treat stormwater runoff.

Many jurisdictions require curb and gutter systems along residential streets to direct stormwater runoff. By contrast, vegetated open channels that incorporate runoff reduction practices such as dry swales, bioretention, biofilters, or vegetated swales, are often prohibited in subdivision codes. Vegetated open channels remove pollutants by allowing infiltration and filtering to occur, encourage groundwater recharge and reduce the volume of runoff generated from a site. These are generally only applicable in low or medium density developments. In neighborhoods with medium to high housing densities or other conditions that limit the use of vegetated open channels, runoff reduction practices can be integrated into curb extensions or landscape strips.

Questions		Points
12	**Are open section vegetated channels allowed where density, topography, soils, and slope permit?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
13	**Are runoff reduction practices permissible within curb extensions or landscape strips?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

6. Parking Ratios

Principle: The required parking ratio governing a particular land use or activity should be enforced as both a maximum and a minimum in order to curb excess parking space construction. Existing parking ratios should be reviewed for conformance, taking into account local and national experience to see if lower ratios are warranted and feasible.

Parking demand is defined as "the number of spaces that should be provided to serve a particular land use, given factors such as the prices of parking and the availability of alternative travel modes" (ULI 2014). Parking ratios found in parking codes are intended to reflect parking demand for a particular land use and are typically stated as the number of spaces per square foot of building space, number of dwelling units, persons, or building occupancy. In reality, parking ratios in many communities do not accurately reflect the local parking demand, because they may be taken directly from another community's parking code, be based on studies of parking demand from another region, and/or do not consider local factors that can affect parking demand (e.g., price of parking, availability of public transportation, density or economic vitality). In addition, parking ratios are typically set as minimums, even when drawn from studies of peak parking demand. The result is that some parking lots have far more spaces than are actually needed, particularly in areas of mixed land use, where there are good travel options, and parking is managed for efficiency or cost (Litman, 2016).

Communities with Reduced Parking Ratios

As part of the Citywide Zoning Update effort, the City of Oakland, CA recently updated its regulations related to off-street parking and loading. These regulations had not been comprehensively reviewed since 1965 and the "one size fits all" approach to parking ratios often resulted in too much parking. The revisions have addressed this problem by eliminating parking requirements in certain zones and in other zones the amount of parking provides is determined on a project-by-project basis to reflect local demand.
These updates to the parking regulations were developed based upon an evaluation of existing parking policies and issues in Oakland, as well as a review of strategies implemented in other cities.

http://www2.oaklandnet.com/Government/o/PBN/OurOrganization/PlanningZoning/OAK030572

Other cities such as Fayetteville, AR are also addressing the problem of "excess" parking by changing their codes to eliminate minimum parking requirements for non-residential properties.

https://www.fayettevilleflyer.com/2015/10/07/fayetteville-eliminates-minimum-parking-requirements/

One approach to estimate parking demand is to start with industry standards—such as those identified in the Institute of Transportation Engineers (ITE) Parking Generation document and the Urban Land Institute (ULI) and National Parking Association (NPA)'s The Dimensions of Parking—and adjust these values to reflect local characteristics. The ITE values are based primarily on suburban sites with isolated single land uses with free parking, and not intended for highly developed areas, although the more recent editions have begun to segregate the data into various factors that influence parking demand (ITE, 2012; Kimley Horn, 2016). ULI and NPA (2010) provides recommended base parking ratios for the most common land uses found in mixed-use developments. With either source, the values should be considered base ratios to be adjusted based on local data following the process outlined in ULI and NPA (2010). A second approach to estimate parking demand (often used for event facilities) is to forecast the number of person-trips or vehicle-trips or the number of people expected to be present at peak and off-peak hours (ULI and NPA, 2010).

Questions		Points
14	**Do parking ratios reflect local parking demand?**	
	YES, they are based on a local study of parking demand, or are based on ITE or ULI values and adjusted for local conditions	*1*
	NO, we simply use the ITE or ULI values, base them on a neighboring community's standards, or we do not know where they came from	*0*
15	**Are parking requirements set as maximums?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

7. Parking Codes

Principle: Parking codes should be revised to lower parking requirements where mass transit is available or enforceable shared parking arrangements are made.

Parking demand represents the actual number of parking spaces required to accommodate parking needs of a particular land use. Mass transit can lower parking demand directly by reducing the number of vehicles driven, and therefore, vehicles parked. Cervero, Adkins, and Sullivan (2010) found there is an oversupply of parking near Transit Oriented Developments (TODs), sometimes by as much as 25–30%, when compared to parking generation rates from the ITE. Similarly, Ewing et al. (2017) found that the ratio of demand to supply was between 58 and 84% for five TODs across the country, even with parking built at 23 to 61% of ITE's guidelines.

Shared parking is a strategy that reduces the number of parking spaces needed by allowing a parking facility to serve multiple users or destinations. This approach is most successful when destinations have different peak periods during the day or week, or if they share patrons that can park at one facility and walk to multiple destinations (Litman, 2016).

Questions		Points
16	**Are shared parking arrangements allowed?**	
	YES, shared parking is allowed by-right	*2*
	YES, shared parking is allowed with special exception	*1*
	NO	*0*
	CODES ARE SILENT	*0*

Questions		Points
17	**Are parking ratios reduced if shared parking arrangements are in place?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
	N/A	*0*
18	**Is the parking ratio reduced when multi-modal transit (e.g., mass transit, bike share or car share programs) is provided?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
19	**Can the number of parking spaces be reduced and additional parking be maintained as green space until needed for redevelopment projects?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
20	**Are parking credits provided when nearby on-street parking is available?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

8. Parking Lots

Principle: Reduce the overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in spillover parking areas.

The size of a parking lot is driven by stall geometry, lot layout, and parking ratios. Many parking codes require a standard stall dimension that is geared toward larger vehicles, ranging from 162-190 square feet – often 10 feet wide and 19 feet long. The Parking Consultants Council has adopted a 6'7" wide by 17'3" long vehicle as their "design vehicle" for determining parking space and aisle dimensions (ULI and NPA, 2010). These dimensions represent the 85th percentile vehicle, which has varied slightly since 1999 but remained within an inch or two of the stated dimensions (ULI and NPA, 2010). Therefore, many communities may be able to reduce their standard parking stall dimensions while still accommodating the vast majority of today's vehicles.

Parking codes can also be amended to require that a fixed percentage of all stalls be dedicated for compact cars, with correspondingly smaller dimensions. The number of cars on the road that can comfortably fit in a compact stall has decreased considerably, from about 40-50% in 1994 to less than 20% in 2014 (ITE, 1994;

ULI and NPA 2010). However, compact stalls create up to 30% less impervious cover than standard stalls so can be an important strategy for reducing impervious cover in large parking lots.

Impervious cover can also be reduced through the use of alternative paving materials (e.g., permeable pavement, grass pavers) on regularly used parking stalls and parking lanes as well as in spillover areas for larger parking lots. Most parking codes do not distinguish between regular parking areas that are used most of the time and spillover parking, which is used only a few days per year or for special events. These are ideal locations for permeable pavers, reinforced turf products or other permeable parking options. However, if no distinction is made in the parking code, the result can be creation of enormous paved parking areas that stand empty the vast majority of the year. Communities may wish to require designation of spillover parking areas for larger parking lots and promote the use of alternative paving materials in these areas.

Figure 5. Concrete grid pavers are a good option to reduce runoff from parking lots

Questions		Points
21	**Is the minimum stall width for a standard parking space 9 feet or less?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
22	**Is the minimum stall length for a standard parking space 18 feet or less?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
23	**Is a fixed proportion (e.g., 15%) of the spaces at larger commercial parking lots required to have smaller dimensions for compact cars?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
24	**Can pervious materials be used for parking areas, including spillover or special event parking?**	
	YES	*2*
	NO	*0*
	CODES ARE SILENT	*0*

9. Structured Parking

Principle: Provide meaningful incentives to encourage structured parking to make it more economically viable.

Vertical parking structures can reduce impervious cover by reducing acreage converted for parking. However, in suburban and rural areas where land is relatively inexpensive, surface parking costs much less than a parking garage. In highly urban areas, garages are generally more economical to build than purchasing additional land. In urban and urbanizing areas, local governments should consider using incentives to encourage the building of multi-level, underground, and under the building parking garages. These incentives could come in the form of tax credits; stormwater waivers; or density, floor area, or height bonuses.

Questions		Points
25	Are there any incentives for developers to provide parking within garages rather than surface parking lots?	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

10. Parking Lot Runoff

Principle: Wherever possible, provide stormwater treatment for parking lot runoff using bioretention areas, filter strips, and/or other practices that can be integrated into required landscaping areas and traffic islands.

Many parking lots are almost completely impervious and they represent a significant source of stormwater pollutants and runoff. In addition to reducing the amount of impervious cover, another option is to require onsite stormwater management. Landscaping areas used to enhance the appearance of a parking lot and associated development can also be used for stormwater management. Some options include: bioretention, bio swales, perimeter sand filters, filter strips, and structural soils with trees.

Figure 6. This landscape area is designed to accept and treat stormwater runoff in this Portland, OR parking lot

Another option is to plant large trees within the landscaped areas due to their ability to reduce stormwater runoff, promote infiltration, and take up nutrients and other pollutants. A minimum width of 6 feet is recommended to support large, mature trees (Cappiella et al, 2006). Layouts that cluster trees and allow them to share rooting space are also encouraged. Lastly, even the paved portion of the lot can provide stormwater treatment through the use of permeable pavement (e.g. porous asphalt, pervious concrete or permeable pavers) in parking lot driving lanes and parking stalls.

Questions		Points
26	**Is a minimum percentage of a parking lot required to be landscaped?**	
	YES	*2*
	NO	*0*
	CODES ARE SILENT	*0*
27	**Is the use of runoff reduction practices within landscaped areas, setbacks, or parking areas allowed?**	
	YES	*2*
	NO	*0*
	CODES ARE SILENT	*0*
28	**Are flush curbs and/or curb cuts and depressed landscaped areas allowed so that runoff can be directed into vegetated landscaped islands or runoff reduction practices?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
29	**Are dimensions for landscaped areas sufficient to plant large trees?**	
	YES, a minimum width 6 feet or greater is specified	*1*
	NO, a minimum width less than 6 feet is specified	*0*
	CODES ARE SILENT	*0*
	N/A	0
30	**Do vegetated stormwater management areas count toward required landscape minimums?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
	N/A	*0*

Lot Development

Principles 11 through 16 focus on the regulations that determine lot size, lot shape, housing density, and the overall design and appearance of our neighborhoods.

11. Open Space Design

Principle: Advocate open space development that incorporates smaller lot sizes to minimize total impervious area, reduce total construction costs, conserve natural areas, provide community recreational space, and promote watershed protection.

Open space design accommodates the same number of lots on one portion of a site and conserves the remaining half or more as protected land (Figure 7). When applied in rural or low-density suburban areas, open space design (also referred to as Conservation Design in these landscapes) first identifies unbuildable wetlands, floodplains, and steep slopes, preserves all of them, and then protects half of the remaining buildable lands. The same concept applies in higher density/sewered suburban and urban landscapes, except that less land is protected. The minimum goal of conserving 50% of the buildable land has been incorporated into model ordinances adopted by several states (e.g., Pennsylvania, North Carolina, and several New England states).

In open space design, conservation of open space is achieved in part by clustering lots. It should be noted that simply using the technique of clustering lots is not sufficient to qualify as open space design. With clustering, lot standards are more flexible; but in the absence of open space design standards, the resulting open space often consists of leftover bits of unusable property.

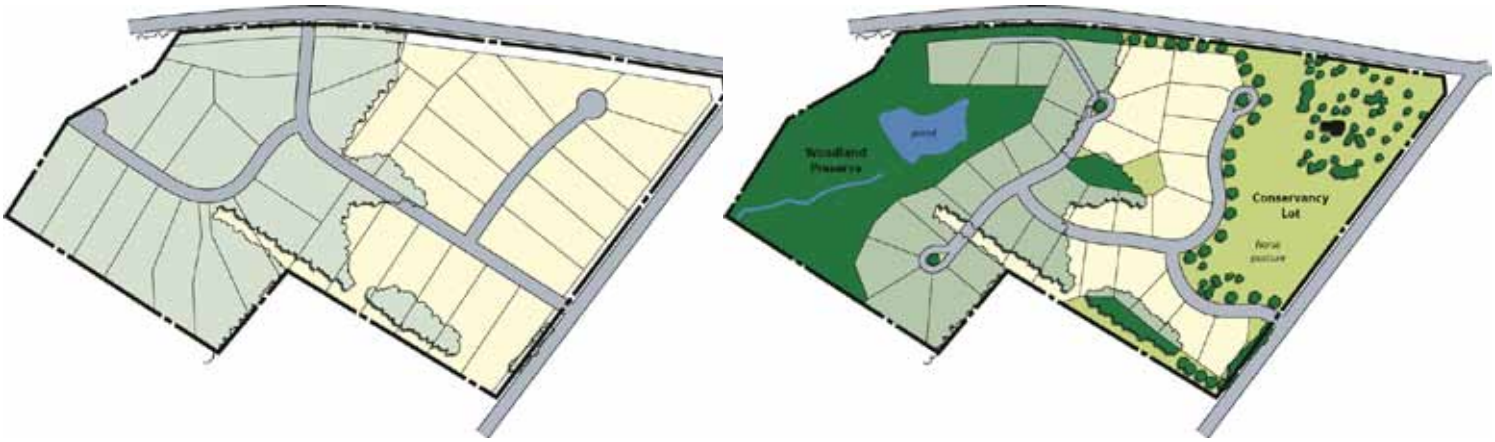


Figure 7. Conventional and open space design options for the Stratford Hall development in Weddington, NC. In both figures, 35 homes are shown on a 35-acre parcel served by public sewer. The figure on the left (conventional development) consists entirely of lots of nearly one acre in area, at a density of one dwelling unit (du)/acre. The figure on the right clusters smaller lots (about 15,000 square feet) on half the parcel, so that the other half can be preserved as open space. The density on the developed portion is about two du/acre, and the density on the other half is 0 du/acre, for an average density of one du/acre, the same as in the conventional option (Source: Randall Arendt, graphics by Natural Lands Trust).

Open space design is most applicable in suburban and rural landscapes but can be used in urban landscapes, with some caveats. Where public sewer is not available, the minimum lot size should be sufficient to provide space for on-site sewage disposal systems, unless alternatives to on-lot septic systems are allowed. Such alternatives may be off-lot individual drainfields located in the common open space, or private central sewage treatment facilities. Open space developments may rely on public sewer if located in a current service area in which case the minimum lot size becomes irrelevant. In rural districts, the extension of water/sewer service beyond currently approved boundaries is not advisable.

Questions		Points
31	**Do the ordinances require or allow open space subdivisions?**	
	YES, they are required in a designated open space zoning district	*2*
	YES, open space designs are an allowable option (through an overlay zone)	*1*
	NO	*0*
	CODES ARE SILENT	*0*
32	**Is land conservation or impervious cover reduction a major stated goal or objective of the open space design ordinance?**	
	YES	*1*
	NO	*0*
	N/A	*0*
33	**Is a minimum percentage of the buildable portion of the site required to be set aside as open space?**	
	YES, at least 50%	*2*
	YES, less than 50%	*1*
	NO	*0*
	N/A	*0*
34	**Is the open space determined through a stepwise design process where open space is identified first?**	
	YES	*1*
	NO	*0*
	N/A	*0*
35	**Is open space design a by-right form of development versus a more burdensome conditional use or warrant?**	
	YES	*1*
	NO	*0*
	N/A	*0*

Questions		Points
36	**Are flexible site design criteria available for developers that utilize open space or cluster design options (e.g., setbacks/lot lines, road widths, lot sizes and shapes)?**	
	YES	*1*
	NO	*0*
	N/A	*0*
37	**Are density bonuses and/or penalties used to encourage use of open space design?**	
	YES, density penalties are given for conventional development	*2*
	YES, density bonuses are provided for open space designs that exceed the minimum requirements for open space protection, up to an established maximum	*2*
	YES, density bonuses are provided for open space designs that exceed the minimum requirements for open space protection, with no cap on density bonuses	*1*
	NO	*0*
	N/A	*0*

12. Setbacks and Frontages

Principle: Relax side yard setbacks and allow narrower frontages to reduce total road length in the community and overall site imperviousness. Relax front setback requirements to minimize driveway lengths and reduce overall lot imperviousness.

Conventional zoning standards usually dictate that each house be set back a minimum distance from property lines and require a minimum road frontage width. Together, these standards tend to increase the total site impervious cover. For example, frontage widths and side yard setbacks directly influence the length of roads and sidewalks, while front yard setbacks influence driveway length. Relaxing these minimum requirements can reduce site imperviousness and allow site designers flexibility in residential lot design while also addressing parking, traffic, and fire safety concerns.

Figure 8. Reduced front yard setbacks result in shorter driveways and reduced frontage distance and side yard setbacks result in shorter streets in this Savannah, GA development.

Questions		Points
38	**Are irregular lot shapes (e.g., pie-shaped, flag lots, zipper lots) allowed in the community?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
39	**Does the code allow for variances to setback and frontage requirements?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

13. Sidewalks

Principle: Promote more flexible design standards for residential subdivision sidewalks. Where practical, consider locating sidewalks only on one side of the street and provide common walkways linking pedestrian areas.

Figure 9. The roadway comprises a significant portion of impervious cover in this neighborhood, compared to sidewalks (Photo credit: Dorothy Cappiella)

The intent of this principle is to ensure that sidewalk design standards for residential areas are flexible and do not result in excessive impervious cover. While locating sidewalks on only one side of the street may be appropriate in some rural neighborhoods, sidewalks represent only a small proportion of total site impervious cover (from 1% to 7% of total impervious cover, depending on density, based on analysis of data from Cappiella and Brown 2001). Therefore, communities may get more "bang for their buck" by focusing on reducing roadway widths rather than eliminating or reducing sidewalk widths to reduce impervious surfaces while at the same time achieving better safety and mobility outcomes.

Sidewalk widths of 5 feet may be appropriate in some neighborhoods but wider walkways will be needed as density increases. Road type, land use/density, roadway characteristics and other variables are important factors to consider in determining suitable sidewalk widths. Some guidance is provided below:

- *The United States Access Board's Guidelines for Pedestrian Facilities in the Public Right-of-Way include a continuous clear width of at least 4 feet for sidewalks. If sidewalk width is less than 5 feet, passing spaces must be provided at set intervals. These accessibility guidelines for safe passage can usually be met through driveways, intersections and other methods. https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines/chapter-r3-technical-requirements*
- *The recommended minimum width to allow two people to walk side by side is 5-6 feet (NACTO, 2013, PBIC, 2015).*

- *Wider sidewalks of 8-10 feet may be desirable where sidewalks are located on only one side of the street, sidewalks are directly adjacent to moving traffic, streets are within walking distance of schools, or where higher pedestrian traffic is expected (PBIC, 2015; NACTO, 2013).*
- *Higher density residential neighborhoods (e.g., downtown residential areas that are walkable to commercial areas) may need increased widths of up to 10-12 feet. http://www.sfbetterstreets.org/design-guidelines/sidewalk-width/*

Figure 10. This paved trail connecting neighborhood streets provides a pleasant alternative to walking along the street to travel to nearby parks, bus stops and other locations.

Questions		Points
40	**Can minimum sidewalk widths for residential neighborhoods be reduced to 5 feet where safe and appropriate?**	
	YES	*2*
	NO	*0*
	CODES ARE SILENT	*0*
41	**Can alternate pedestrian networks (e.g., paved trails through common areas, walkways and bike trails connecting from cul-de-sacs to other streets) be substituted for sidewalks in the right-of-way?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
42	**Are alternative sidewalk designs that provide sufficient soil rooting volume for street trees (e.g., pop-outs or bulb-outs, curving sidewalks, tree islands) allowed?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
43	**Are alternative sidewalk construction materials that increase infiltration allowed?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

14. Driveways

Principle: Reduce overall lot imperviousness by promoting alternative driveway surface and shared driveways that connect two or more homes together.

Questions		Points
44	**Are minimum driveway widths 9 feet or less (one lane) or 18 feet or less (two lanes)?**	
	YES	*1*
	NO	*0*
45	**Can pervious materials (e.g., grass, gravel, permeable pavements, etc.) be used for residential driveways?**	
	YES	*2*
	NO	*0*
	CODES ARE SILENT	*0*
46	**Can a "two track" design be used for residential driveways?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
47	**Are shared driveways permitted in residential developments?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

Figure 11. This shared driveway in Jordan Cove, CT helps to reduce impervious cover and is also constructed using permeable materials.

Figure 12. A "two-track" driveway is another way to reduce driveway imperviousness

15. Open Space Management

Principle: Clearly specify how community open space will be managed and designate a sustainable legal entity responsible for managing both natural and recreational open space.

If open space developments are not allowed in your community, select N/A for each question below.

	Questions	Points
48	**Does the open space design ordinance require identification of an entity (e.g., conservation organization, community association) who will be responsible for managing the open space?**	
	YES	*2*
	NO	*0*
	N/A	*0*
49	**Can open space be managed by a land trust or other qualified public or private land conservation organization (e.g., municipal parks department) through conservation easements or transfer of ownership?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
	N/A	*0*
50	**If open space cannot be managed by a third party, are there enforceable requirements to establish an association that can effectively manage the open space?**	
	YES	*1*
	NO	*0*
	N/A	*0*
51	**Are secure and permanent funding arrangements required to be established for the long-term management and maintenance of open space?**	
	YES	*1*
	NO	*0*
	N/A	*0*

Questions		Points
52	**Are there standards for the open space requiring interconnections, prioritized lists of resources to be conserved, and access standards?**	
	YES	*1*
	NO	*0*
	N/A	*0*
53	**Are allowable and unallowable uses for open space in residential developments defined?**	
	YES	*1*
	NO	*0*
	N/A	*0*
54	**Are long-term management plans that conserve natural systems required for all open space areas?**	
	YES	*1*
	NO	*0*
	N/A	*0*
55	**Is open space in a natural condition required to be protected in perpetuity by a binding conservation easement or similar legal instrument?**	
	YES	*1*
	NO	*0*
	N/A	*0*

16. Rooftop Runoff

Principle: Direct rooftop runoff to pervious areas such as yards, open channels, or vegetated areas and avoid routing rooftop runoff to the roadway and the stormwater conveyance system.

Use of rainwater harvesting practices in the arid and semi-arid West may be prohibited by water rights law. The complex legal landscape associated with the doctrine of prior appropriation complicates the process of determining whether rainwater harvesting is allowable. For example, some states clearly have jurisdiction over atmospheric rainwater, while others do not or may only under certain circumstances. In states that have jurisdiction over precipitation, some require a permit for harvest and use of rainwater, while others do not require a permit or specifically exempt rainwater harvesting. In states where a permit is required, only some actually outline a formal process by which a property owner can apply, while others do not accept permit applications. If you live in a state that prohibits or requires a permit for rainwater harvesting, some of the rooftop practices below may not be applicable in your community. EPA's Green Infrastructure in Arid and Semi-Arid Climates is a good resource to evaluate how water law may impact rainwater harvesting in your state: https://www3.epa.gov/npdes/pubs/arid_climates_casestudy.pdf.

Questions		Points
56	**Can downspouts be disconnected such that rooftop runoff flows to storage tanks, pervious areas, runoff reduction practices, etc.?**	
	YES	*2*
	NO	*0*
	CODES ARE SILENT	*0*
57	**Do current grading or drainage requirements allow for temporary ponding of stormwater on front yards or rooftops?**	
	YES	*2*
	NO	*0*
	CODES ARE SILENT	*0*
58	**Is temporary storage of rainwater in storage tanks (e.g., rain barrels or cisterns) permitted?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*
59	**Do the stormwater BMP design specifications for green roofs address structural concerns (e.g. how to determine design load of roof)?**	
	YES	*1*
	NO	*0*
60	**Do local plumbing codes allow harvested rainwater for exterior uses such as irrigation and non-potable interior uses such as toilet flushing?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

Figure 13. Three options for managing rooftop runoff in Washington, DC: 1) rain barrel, 2) green roof, and 3) disconnected downspout directed to a rain garden

Natural Areas

The natural areas principles address codes and ordinances that promote (or impede) protection of existing natural areas and incorporation of open spaces into new development.

17. Buffer Systems

Principle: Create a variable width, naturally vegetated buffer system along all perennial streams that also encompasses critical environmental features such as the 100-year floodplain, steep slopes, and freshwater wetlands.

Vegetated systems along shorelines, wetlands, and streams can protect water quality, reduce flooding impacts, provide wildlife habitat, serve as a recreation resource, and offer economic benefits to the local community. Optimal buffer widths vary with the type of waterway and the desired benefit (e.g., water quality protection versus habitat).

Figure 14. A forested buffer on either side of the stream helps to protect water quality and habitat (Photo credit: Dorothy Cappiella)

Questions		Points
61	**Do the development standards in the community require a vegetated buffer along waterways?**	
	YES	*2*
	NO	*0*
62	**Is the definition of waterway, or the regulated buffer, expansive enough to include (check all that apply):**	
	Perennial streams	*0.5*
	Ephemeral and intermittent streams	*0.5*
	Lakes	*0.5*
	Estuaries and shorelines	*0.5*
	Wetlands	*0.5*
	Vernal ponds	*0.5*
	NO	*0*
	CODES ARE SILENT	*0*
	N/A	*0*

Questions		Points
63	**Is the minimum buffer width 50 feet or more?**	
	YES, width is 100 feet or greater	*2*
	YES, width is between 50 and 99 feet	*1*
	NO, width is < 50 feet	*0*
	CODES ARE SILENT	*0*
	N/A	*0*
64	**Are buffer widths greater for sensitive resources (e.g., designated high quality streams) or in certain zones (e.g., drinking water protection)?**	
	YES	*1*
	NO	*0*
	N/A	*0*
65	**Is expansion of the buffer to include adjacent wetlands, steep slopes, or the 100-year floodplain required?**	
	YES	*1*
	NO	*0*
	N/A	*0*

18. Buffer Management

Principle: The riparian stream buffer should be preserved or restored with native vegetation that can be maintained throughout the plan review, delineation, construction, and occupancy stages of development.

The key to effective buffer preservation and management is the adoption and active enforcement of a strong buffer ordinance that requires a plan that outlines the legal rights and responsibilities for the long-term management of the buffer. Education of landowners is vital to preventing encroachment within the buffer, as well as real penalties for violation of buffer requirements to emphasize the importance of maintaining buffer integrity.

Questions		Points
66	**Does the buffer ordinance specify that a minimum percentage of the buffer be maintained with native vegetation?**	
	YES	*2*
	NO	*0*
	N/A	*0*

Questions		Points
67	**Does the buffer ordinance outline prohibited uses and permitted uses that have little impact to the vegetated buffer?**	
	YES	*1*
	NO	*0*
	N/A	*0*
68	**Does the ordinance specify enforcement mechanisms?**	
	YES	*1*
	NO	*0*
	N/A	*0*
69	**Does the buffer ordinance specify a preference for buffers to be located on a parcel of common ownership (e.g., a homeowners' association)?**	
	YES	*1*
	NO	*0*
	N/A	*0*

19. Clearing and Grading

Principle: Clearing and grading of forests and native vegetation at a site should be limited to the minimum amount needed to build lots, allow access, and provide fire protection. A fixed portion of any community open space should be managed as protected green space in a consolidated manner.

Conservation of natural areas within a site can reduce erosion and sediment and clearing and grading costs while maintaining natural features of the site. Common ordinances that can be adapted to limit clearing include: erosion and sediment control, grading, forest conservation or tree protection, and open space development.

Questions		Points
70	**Is there any ordinance that requires the preservation of native soils, hydric soils, natural vegetation, or steep slopes at development sites?**	
	YES	*2*
	NO	*0*
71	**Do regulations limit the total portion of the site that can be cleared?**	
	YES	*1*
	NO	*0*

Questions		Points
72	**Are the limits of disturbance required to be shown on construction plans and physically marked at the site?**	
	YES	*1*
	NO	*0*
73	**Are reserve septic field areas allowed to be left undisturbed until needed?**	
	YES	*1*
	NO	*0*
	CODES ARE SILENT	*0*

20. Tree Conservation

Principle: Conserve trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native plants. Wherever practical, manage community open space, street rights of way, parking lot islands, and other landscaped areas to promote natural vegetation.

Native trees, shrubs, and grasses are important contributors to the overall quality and viability of the environment. Preservation and restoration of natural areas can provide aesthetic, environmental, and economic benefits. These will accrue as increased land values, reduced small drainage complaints, creation of habitat for wildlife, better stormwater management, lower ambient temperature, increased safety for residents, and provision of passive recreation space.

In regions of the country where trees are not the predominant native cover, the questions below may not be applicable or can be adjusted to promote preservation and planting of plants that are native to the landscape. For example, xeriscaping is an option for parts of the country where water supplies are limited. This technique uses drought tolerant native plants to landscape and can greatly increase water conservation compared to lawn-focused landscaping.

Questions		Points
74	**Is a natural resources inventory required to identify and map natural areas?**	
	YES, and significant natural areas such as high quality forest stands, wildlife habitat and travel corridors, productive cropland, and specimen trees must be identified	*2*
	YES, but no requirements to assess resource quality	*1*
	NO	*0*

Questions		Points
75	**Is there an ordinance that requires conservation of some portion of forests, specimen trees, or other native vegetation at development sites?**	
	YES, specific conservation thresholds are identified	*2*
	YES, no specific conservation thresholds identified	*1*
	NO	*0*
76	**Do tree conservation requirements identify or reference methods for delineating and protecting the critical root zone of trees (sometimes referred to as "drip line")?**	
	YES	*1*
	NO	*0*
	N/A	*0*
77	**Do forest/tree conservation requirements specify planting new trees at sites where none exist?**	
	YES	*1*
	NO	*0*
	N/A	*0*
78	**Are trees and native plant materials permissible for landscaping in yards, common areas, and other open spaces?**	
	YES, some portion of landscaping must include trees and other native vegetation provided in recommended species list	*2*
	YES, trees and native vegetation are allowed per recommended species list	*1*
	NO, landscaping ordinance requires turfgrass or includes vegetation height standards that preclude use of native plants	*0*
79	**Does the community have an urban forestry plan that supports/is referenced by the landscaping ordinance?**	
	YES	*1*
	NO	*0*
80	**Do landscaping requirements identify or reference specifications for soil amendments, planting methods, species selection, and maintenance?**	
	YES	*1*
	NO	*0*

21. Land Conservation Incentives

Principle: Incentives and flexibility in the form of density compensation, buffer averaging, property tax reduction, stormwater credits, and by right open space development should be encouraged to promote conservation of stream buffers, forests, meadows, and other areas of environmental value. In addition, off-site mitigation consistent with locally adopted watershed plans should be encouraged.

Conservation and protection measures that require excessive administrative hurdles, such as lengthy plan reviews, additional upfront costs to developers and unclear appeal procedures can create major barriers to implementation. Incentives and flexibility are an effective way to promote adoption of conservation and protection measures.

Figure 15. Maryland's unique Forest Conservation Act helps to protect forest from development impacts and required planting new trees at sites where there is little forest to conserve

Questions		Points
81	**Are there any incentives to developers (e.g., open space design, density bonuses, stormwater credits, or expedited design review) to conserve land above and beyond what is already required (e.g., steep slopes, wetlands)?**	
	YES	*2*
	NO	*0*
	CODES ARE SILENT	*0*
82	**Is flexibility to meet land conservation requirements (e.g. density compensation, buffer or lot averaging, by-right open space development, transferable development rights, off-site mitigation) offered to developers?**	
	YES	*2*
	NO	*0*
	CODES ARE SILENT	*0*

22. Stormwater Outfalls

Principle: New stormwater outfalls should not discharge unmanaged stormwater into jurisdictional wetlands, sole source aquifers, or other water bodies.

Stormwater runoff generated at development and redevelopment sites can represent a significant threat to the quality of streams, wetlands, and other surface and groundwater resources. Programmatic and regulatory changes, including MS4 Phase II and the adoption of TMDLs, have occurred in the field of stormwater management since the initial National Site Planning Roundtable. As a result, stormwater is required to be

treated for quality before discharge from most new development and redevelopment projects. Therefore, this principle should be a common practice in most development situations.

On the other hand, there are no federal laws that prohibit discharge of stormwater directly into a jurisdictional wetland without pretreatment (Section 404 regulates discharge of dredge or fill material but not stormwater). The definition of what is "jurisdictional" may not include all wetland types or sizes so it is important for local governments to fill this gap in wetland protection. Other types of natural resources may be sensitive to inputs of stormwater and could be better protected by adopting special stormwater criteria. The questions below are intended to address this changing landscape of regulations regarding stormwater discharges to natural areas.

Figure 16. This tidal wetland in coastal Virginia is protected through a setback and buffer, and the adjacent development benefits from the spectacular view and access for recreation.

Questions		Points
83	**Does the stormwater code contain special treatment criteria for discharges to impaired or sensitive waters, such as natural wetlands, lakes, trout streams, nutrient-sensitive estuaries, drinking water supplies, etc.?**	
	YES	*2*
	NO	*0*
84	**Does a floodplain management ordinance exist that restricts or prohibits development within the 100-year floodplain?**	
	YES	*2*
	NO	*0*
85	**Is there a local wetland protection ordinance?**	
	YES	*1*
	NO	*0*

Runoff Reduction

Due to changes in federal, state, and local environmental regulations and in the thinking regarding the best strategies for dealing with stormwater impacts, several new questions have been added to the COW to address potential code barriers to implementation of runoff reduction techniques.

Sections 23-25 focus on the regulations that pertain to stormwater management standards, particularly the inclusion of practices that reduce runoff.

23. Stormwater Codes

The questions in this section are intended to ensure that runoff or volume reduction is included in the stormwater code.

Traditionally, stormwater codes require detention (control of peak rates of runoff), and, more recently, water quality treatment. A newer generation of stormwater codes also addresses runoff volumes through a focus on retention so that post-development runoff characteristics replicate pre-development conditions. Examples of specific code requirements include reduce post-construction runoff volume associated with a particular rainfall depth (e.g., 1 inch) or a range of design storms, or not exceed the volume associated with a forested or pasture condition. Newer codes that address runoff reduction are likely to be complementary to more traditional peak rate/detention and water quality treatment standards.

One prerequisite for runoff reduction standards and their associated runoff reduction practices is they must be introduced early in site planning in order to be integrated with the rest of site plans and layout. Processes such as pre-application meetings can help with this early integration. Clear and local or regionally-based design guidance, such as an updated stormwater design manual, is also essential for the proper application and design of the practices. It is also essential that the local code is internally consistent regarding drainage and stormwater treatment in order to avoid conflicting or confusing design standards.

Questions		Points
86	**Do codes define rainwater harvesting and establish acceptable uses for rainwater (e.g., irrigation and toilet flushing) and corresponding treatment requirements?**	
	YES	*1*
	NO	*0*
	N/A	*0*
87	**Does the stormwater code include specific standards to reduce post-construction runoff volume (not just peak rate)?**	
	YES, runoff/volume reduction is required for most new development and redevelopment sites	*2*
	YES, the standards apply to some sites or are included as an alternative compliance method	*1*
	NO	*0*
	N/A	*0*
88	**Does the code require or have incentives for consideration of runoff reduction concepts early in the site planning process?**	
	YES, there are provisions for a pre-application meeting or similar	*2*
	YES, but the meetings are not mandatory for applicants	*1*
	NO	*0*
	N/A	*0*

Questions		Points
89	**If the code includes post-construction runoff reduction standards, is there reference to clear, understandable, and local or regionally-based design guidance or manual?**	
	YES, the code references design guidance or a manual	*2*
	YES, such a manual exists but it is not referenced in the code	*1*
	NO	*0*
	N/A	*0*
90	**Are drainage and treatment standards all in one place within the code and internally consistent?**	
	YES, codes are consolidated and consistent regarding applicability and methods	*1*
	NO, various code sections are conflicting or inconsistent	*0*
	N/A	*0*

24. Installation and Maintenance of Practices

The questions in this section are intended to ensure that post-construction (runoff reduction) practices are installed properly and that there are provisions to ensure long-term maintenance.

Installation and maintenance can be the "Achilles heel" of stormwater practices, especially small-scale runoff reduction practices. Many practices have failed due to these issues, and thus are not providing the hydrologic and water quality benefits they are intended to provide. For construction and installation, it is critically important that erosion and sediment control standards are integrated with the post-construction stormwater plan. For instance, areas designated for post-construction stormwater control must be protected from heavy equipment, compaction, and sediment during construction, especially if the post-construction practice will rely on infiltration or soil treatment. Post-construction practices, such as filter strips and riparian buffers, should be outside of the limits of disturbance during active construction. Performance bonds are important tools to ensure that installations are completed as per the approved plan.

Figure 17. Mulch replacement is one activity that may be included in a maintenance agreement for stormwater practices such as bioretention.

Long-term maintenance is another vital issue related to stormwater practice performance. The code can help ensure proper maintenance by making sure that practices are within easements (unless designed to be on private lots), inspectors have right-of-entry, maintenance agreements are in place that spell out the responsibilities of the property owner, and that there are periodic inspections during the post-construction phase.

Questions		Points
91	**Do erosion and sediment control standards specify protection of post-construction practice sites during active construction?**	
	YES, erosion control standards include these provisions	*2*
	YES, the code is not explicit but it is addressed during plan review	*1*
	NO	*0*
	N/A	*0*
92	**Does the code mandate performance bonds and periodic inspections to ensure proper installation of practices based on the approved plans?**	
	YES, the code includes bonding requirements and inspections during stormwater practice installation	*2*
	YES, the code includes bonding or inspections, but not both	*1*
	NO	*0*
	N/A	*0*
93	**Does the code include provisions for runoff reduction practice easements, inspector right-of-entry, maintenance agreements, and post-construction inspections?**	
	YES, all the provisions are included	*2*
	YES, 3 out of the 4 are included	*1*
	NO	*0*
	N/A	*0*

25. Off-Site Compliance

The question in this section is intended to ensure that off-site compliance or trading mechanisms are used judiciously and do not compromise local water quality.

States, regions, and localities are turning increasingly to off-site compliance strategies, such as pollution trading, banks, or allowing stormwater requirements to be met at alternative sites. These provisions can add flexibility and innovation, especially for tricky sites or areas where the local comprehensive plan calls for infill and redevelopment. However, overuse of these strategies can compromise local water quality because the treatment is happening elsewhere. A balanced off-site compliance program will require a certain level of "due diligence" treatment on-site wherever possible, while allowing flexibility for full compliance. Documentation should be provided to verify that on-site options are infeasible.

Questions		Points
94	**If off-site stormwater compliance is authorized, is some percentage of treatment required on-site?**	
	YES, applicants must provide on-site treatment to some level and provide documentation	*2*
	NO, many sites have automatic access to off-site compliance	*1*
	N/A	*0*

References

American Association of State Highway and Transportation Officials (AASHTO). 2011. *A Policy on Geometric Design of Highways and Streets, 6th ed.* American Association of State Highway and Transportation Officials, Washington, D.C.

American Association of State Highway and Transportation Officials (AASHTO). 2001. *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT< 400).* American Association of State Highway and Transportation Officials, Washington, D.C.

Arendt, R. 2015. *Rural By Design. Planning for Town and Country.* 2nd Edition. Planners' Press. 544 pp.

Canada Mortgage and Housing Corporation. 2002. *Residential Street Pattern Design*. Socio-Economic Series 75. https://www.cmhc-schl.gc.ca/publications/en/rh-pr/tech/socio75.html

Cappiella, K. and K. Brown. 2001. *Impervious Cover and Land Use in the Chesapeake Bay*. Center for Watershed Protection, Ellicott City, MD.

Cappiella, K., Schueler, T., and T. Wright. 2006. *Urban Watershed Forestry Manual. Part 2: Conserving and Planting Trees at Development Sites.* NA-TP-01-06. USDA Forest Service, Northeastern Area State and Private Forestry. Newtown Square, PA.

Center for Watershed Protection (CWP). 1998. *Rapid Watershed Planning Handbook*. Center for Watershed Protection, Ellicott City, MD.

Cervero, R., Adkins, A., & Sullivan, C. 2010. Are suburban TODs over-parked? *Journal of Public Transportation* 13(2): 47–70.

City and County of San Francisco Board of Supervisors, Budget and Legislative Analyst. 2015. *California Fire Code Governing Street Width and Specifications for Fire Engines in San Francisco.* Policy Analysis Report to supervisor Wiener dated January 13, 2015.

Ewing, R., Tian, G., Lyons, T., & Terzano, K. 2017. Trip and parking generation at transit oriented developments. *Landscape and Urban Planning* 160: 69-78. Available at http://www.sciencedirect.com/science/article/pii/S0169204616302687.

Institute of Transportation Engineers (ITE). 2012. *Trip Generation Manual. 9th Ed.* Institute of Transportation Engineers, Washington, DC.

Institute of Transportation Engineers (ITE). 2010. *Parking Generation. 4th Ed.* Institute of Transportation Engineers, Washington, DC. 351 pp.

Institute of Transportation Engineers (ITE). 1994. Guidelines for Parking Facility Location and Design. Institute of Transportation Engineers, Washington, DC.

Institute for Transportation Engineers (ITE). No date. Traffic Calming Measures- Chicane. http://www.ite.org/traffic/chicane.asp

International Code Council (ICC). 2015. *International Fire Code*. International Code Council. Washington, DC.

Kimley Horn, 2016. *Parking Generation – Replacing Flawed Standards with the Custom Realities of Park+*. White Paper Series. Vol #3. http://www.kimley-horn.com/wp-content/uploads/2017/02/PARK_Plus_Parking-Gen.pdf.

Litman, T. 2016. *Parking Management: Strategies, Evaluation and Planning*. Victoria Transport Policy Institute. http://www.vtpi.org/park_man.pdf

National Association of City Transportation Officials (NACTO). 2013. *Urban Street Design Guide*. Island Press. 192 pp. https://nacto.org/publication/urban-street-design-guide/street-design-elements/sidewalks/

National Fire Protection Association (NFPA). 2017. *NFPA 1141: Standards for Fire Protection Infrastructure for Land Development in Wildland, Rural and Suburban Areas.* National Fire Protection Association. Quincy, MA.

Pedestrian and Bicycle Information Center (PBIC). 2015. *Safe Routes to School Online Guide.*

http://guide.saferoutesinfo.org/engineering/sidewalks.cfm#width

Schueler, T.R., 1994. The Importance of Imperviousness. *Watershed Protection Techniques* 1(3): 100-111.

United States Environmental Protection Agency (USEPA). 2010. *Green Infrastructure in Arid and Semi-Arid Climates: Adapting Innovative Stormwater Management Techniques to the Water-Limited West*. United States Environmental Protection Agency, Washington, DC. https://www3.epa.gov/npdes/pubs/arid_climates_casestudy.pdf

Urban Land Institute (ULI) and National Parking Association (NPA). 2010. *The Dimensions of Parking, 5th Ed.* Urban Land Institute, Washington, DC. 204 pp.

Resources

Arendt, R. 2015. *Rural By Design. Planning for Town and Country.* 2nd Edition. Planners' Press. 544 pp.

Chicago Metropolitan Agency for Planning. 2013. *City of McHenry Comprehensive Plan and Ordinance Assessment.* Chicago Metropolitan Agency for Planning, Chicago, IL.

California Low Impact Development Portal: https://www.casqa.org/resources/california-lid-portal

Cappiella, K., Schueler, T., and T. Wright. 2006. *Urban Watershed Forestry Manual. Part 2: Conserving and Planting Trees at Development Sites.* NA-TP-01-06. USDA Forest Service, Northeastern Area State and Private Forestry. Newtown Square, PA.

Center for Watershed Protection (CWP). 1998. *Better Site Design: A Handbook for Changing Development Rules in Your Community*. Center for Watershed Protection. Ellicott City, MD.

Guidelines for Developing and Evaluating Tree Ordinances. 2001. www.isa-arbor.com/education/resources/educ_treeordinanceguidelines.pdf

Hirschman, D., Kosco, J. 2008. *Managing Stormwater in Your Community: A Guide for Building an Effective Post-Construction Program.* EPA Publication No: 833-R-08-001. Center for Watershed Protection, Ellicott City, MD.

McElfish, J. 2004. *Nature-Friendly Ordinances.* Environmental Law Institute. Washington, DC.

Morris, M. 2009. *Smart Codes (PAS SS6) Model Land Development Regulations*. APA Planning Advisory Service. 978-1-932364-70-5.

National Association of City Transportation Officials (NACTO). 2013. *Urban Street Design Guide*. Island Press. 192 pp. https://nacto.org/publication/urban-street-design-guide/street-design-elements/sidewalks/

Smart Growth America. 2015. *Smart Growth Implementation Toolkit.* https://smartgrowthamerica.org/resources/smart-growth-implementation-toolkit/

Strommen, B., Cappiella, K., Hirschman, D., and J. Tasillo. 2007. *A Local Ordinance to Protect Wetland Functions.* Article 4 in the Wetlands and Watershed Article Series. Center for Watershed Protection. Ellicott City, Maryland.

United States Environmental Protection Agency (USEPA) Smart Growth. *Codes that Support Smart Growth Development*. www.epa.gov/smartgrwoth/codes-support-smart-growth-development

United States Environmental Protection Agency (USEPA). 2010. *Green Infrastructure in Arid and Semi-Arid Climates: Adapting Innovative Stormwater Management Techniques to the Water-Limited West*. United States Environmental Protection Agency, Washington, DC. https://www3.epa.gov/npdes/pubs/arid_climates_casestudy.pdf

United States Environmental Protection Agency (USEPA). 2009. *Water Quality Scorecard: Incorporating Green Infrastructure Practices at the Municipal, Neighborhood and Site Scales*. U.S. EPA. Washington, DC. EPA 231-B-09-001.

University of Connecticut Center for Land Use Education and Research. *The State of Low Impact Development in Connecticut.* http://s.uconn.edu/stateoflid

University of Wisconsin Sea Grant and 1,000 Friends of Wisconsin. 2014. *Tackling Barriers to Green Infrastructure: An Audit of Local Codes and Ordinances.* http://seagrant.wisc.edu/Home/Topics/CoastalCommunities/Details.aspx?PostID=2462

Urban Land Institute (ULI) and National Parking Association (NPA). 2010. *The Dimensions of Parking, 5th Ed.* Urban Land Institute, Washington, DC. 204 pp.

Wenger, S. J., and L. Fowler. 2000. *Protecting Stream and River Corridors. Creating Effective Local Riparian Buffer Ordinances*. Carl Vinson Institute of Government, the University of Georgia. Athens, GA.