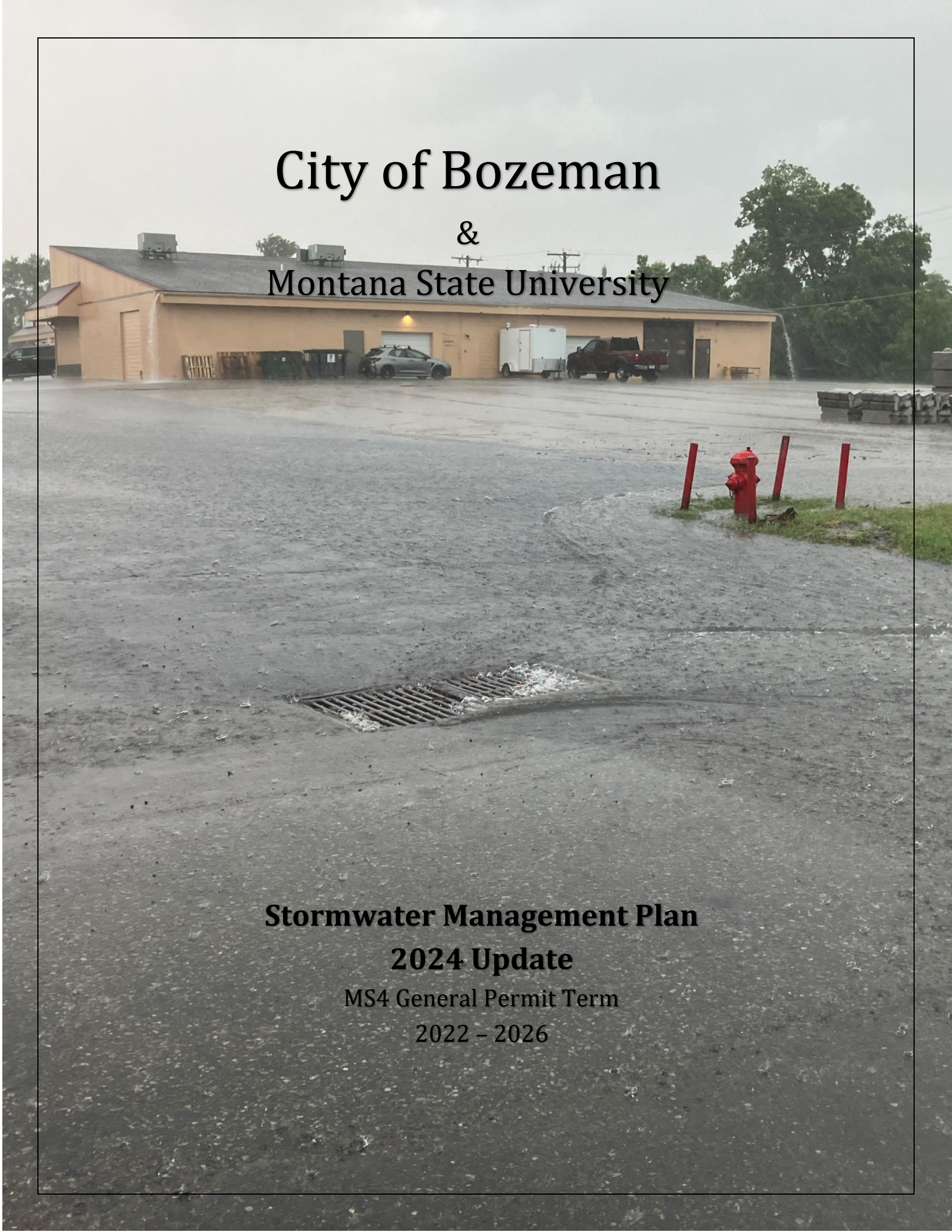

City of Bozeman

&

Montana State University

Stormwater Management Plan

2024 Update

MS4 General Permit Term

2022 – 2026

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Section 1.0

Program Administration

Graphic 1.0.1: Street flooding resulting from clogged infrastructure

Graphic 1.0.2: Failed stormwater pipe

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1.1 Introduction

This Stormwater Management Plan (SWMP) describes the City of Bozeman (City) and Montana State University (University), collectively known as the MS4, structural and administrative Best Management Practices (BMPs) engineered, implemented, maintained, and enforced to meet the following objectives:

- Protect public safety;
- Improve water quality; and
- Comply with environmental regulations.

This SWMP is an iterative and evolving document with updates occurring annually. Updates included in this SWMP document BMPs implemented up to and including calendar year 2024. The MS4 tracks updates in SWMP Section 9.0. SWMP Section 1.0 details the following components necessary to administer the MS4's Program for the 2022 – 2026 General Permit for Stormwater Discharges Associated with Small Municipal Separate Storm Sewer Systems (General Permit) permit term, including:

- Background Information (1.2)
- City Program Framework (1.3)
- University Program Framework (1.4)
- Stormwater Management Team (1.5)
- Sharing Responsibility (1.6)
- Collaborative Organizations (1.7)
- Additional Regulatory Responsibilities (1.8)
- Annual Report (1.9)
- Public Comments (1.10)

1.2 Background Information

The MS4 is an incorporated town located in Gallatin County, Montana, and has a population of 53,293 as of the 2020 Census (University population 16,841). The MS4's primary land-use type is residential and commercial, with isolated industrial areas. Other notable geographical details include:

- Elevation: 4820 ft.
- Climate: Cold continental, with warm and dry summers, cold and dry winters
- Average Temperature: 44.6 ˚F
- Average Precipitation: 18.4 inches (University rain gauge)

The MS4 is located at the headwaters of the Upper Missouri Watershed and possesses relatively pristine surface water quality that supports several beneficial uses, including aquatic life, drinking water, agriculture, and recreation. Numerous waterways originate within and pass through the MS4.

The MS4's most notable waterway is Bozeman Creek (aka Sourdough Creek), which originates in the Gallatin Mountains south of its jurisdictional boundary. Flowing north, Bozeman Creek enters the MS4 at its southeastern border and continues until its confluence with the E. Gallatin River. The Montana Department of Environmental Quality (MDEQ) determined that Bozeman Creek has various impairments from natural and anthropogenic sources when developing its 2013 Lower Gallatin Planning Area Total Maximum Daily Load Report (TMDL).

The second most notable waterway is Mandeville Creek, a small, spring fed watercourse that originates in the south end of Bozeman. Mandeville Creek flows north until its confluence with the E. Gallatin River. The MDEQ determined that Mandeville Creek has various impairments from natural and anthropogenic sources when developing its TMDL.

Numerous perennial and intermittent spring creeks flow through the MS4 in a web of channels, irrigation ditches, and pipes. The MDEQ has not completed an assessment of these waterways.

The MS4's water resources represent a significant community value and are the backbone of its tourism, recreation, and neighboring agricultural industries. A growing threat to these invaluable resources is stormwater runoff, which occurs when rainfall and snowmelt flow across developed surfaces, such as yards, roadways, parking lots, and rooftops. Stormwater picks up pollutants before entering storm sewers, such as drains, pipes, and ditches, and eventually discharges into the MS4's waterways. Stormwater runoff can result in property damage, public health threats, and environmental degradation if not proactively managed. Specific pollutants of concern include:

- Sediment: Sourced from barren ground, construction sites, road sand, unpaved roads and trails, gravel parking lots, windblown dust, and vehicle grime, resulting in suffocated aquatic habitat and alterations to stream channel morphology.
- Nitrogen and Phosphorous: Sourced from improper lawn fertilizer application, grass clippings, and yard debris, resulting in oxygen-depleting algae blooms.
- E.coli: Sourced from substandard septic systems and pet waste, resulting in toxic conditions for the public and wildlife.
- Floatables: Sourced from littering, overfilled garbage cans, and unsecured loads, resulting in clogged infrastructure, impaired aesthetic value, and endangered wildlife.
- Oil, Grease, Metals, and Detergents: Sourced from motor vehicles, car spills, and car washing, resulting in toxic conditions for humans and wildlife.
- Temperature: Sourced from extensive and continuous impervious areas and lack of shade, resulting in harmful impacts to coldwater fisheries.

To counter stormwater runoff's impacts, the United States Congress established the National Pollutant Discharge Elimination System (NPDES) as a part of the Clean Water Act (CWA) in 1972 to preserve and restore the health of the United States' Waters. The U.S. Environmental Protection Agency (EPA) is the lead organization tasked with the implementation and oversight of the CWA. In Montana, the MDEQ has primacy, allowing for further state-scale interpretation, enactment, and enforcement.

The NDPES program regulates water pollution through a series of permits focused on point sources, such as industrial facilities, wastewater plants, and stormwater discharges. The driving permit behind the development and implementation of this SWMP is the MDEQ's Phase 2 General Permit for Stormwater Discharges Associated with Small Municipal Separate Storm Sewer Systems (MS4 Permit), which requires the City and University to implement a variety of programs to prevent and mitigate polluted discharges to waterways.

The MDEQ designates the City as a traditional permittee and the University as a non-traditional permittee. Both parties are co-permittees because their storm sewers are connected, and they work together on various administrative programs. The MDEQ requires the MS4 to complete the following:

- Prepare and submit individual Notices of Intent (NOI).
- Receive authorizations to discharge from MDEQ after permit issuance in 2022.
- Prepare and submit individual Annual Reports.
- Develop, implement, and update this SWMP throughout the MS4 Permit term.

Also, the MDEQ requires the MS4 to administer a program that works to accomplish the following:

- Educate the public (SWMP Section 3.0)
- Engage citizens through involvement and participation (SWMP Section 3.0)

- Detect and eliminate illicit discharges and connections (SWMP Section 4.0)
- Regulate construction sites (SWMP Section 5.0)
- Regulate stormwater facilities constructed with new and re-development (SWMP Section 6.0)
- Mitigate polluted discharges from municipal facilities and operations (SWMP Section 7.0)
- Collect and analyze water quality and stormwater runoff data (SWMP Section 8.0)

The following sections of this SWMP outline the MS4's work within each of these programs.

1.3 City Program Framework

On June 25, 2012, the City adopted Ordinance 1831, creating a Stormwater Utility, providing revenue collection for the operation and maintenance of the City's stormwater system. Funding was initially allocated to inventory, map, and assess the condition of the City's storm sewer. This effort was in response to findings identified during a 2011 MDEQ MS4 Permit audit, which included one violation, 16 program deficiencies, and 23 improvement recommendations.

On March 3, 2014, the City presented the results of their inventory, mapping, and assessment effort to City Commissioners. The City inventoried over ten thousand individual assets, many of which were clogged, cracked, buried, or in disrepair. Also, a program administration review identified significant shortfalls. Commissioners directed the City to develop options for addressing known issues.

On April 21, 2014, the City presented three levels of service, differing primarily on the timeline required to address issues and the annual funding level. Commissioners decided to implement a program that included a funding level of $1.2 million annually for operations, treatment, and deferred maintenance.

On February 23, 2015, the City adopted a new level of service and a rate model to collect service fees based on individual property's impact on the stormwater system.

On December 1, 2015, the City implemented the final piece of the new rate model allowing a fully funded and functional Stormwater Utility for the first time in its history. The City's utility rate model includes the following components:

- Flat Charge: Charged evenly across the service area. Properties with a water meter receive a flat monthly charge per meter. The funding pays for deferred maintenance projects.
- Variable Charge: Charged proportionally to the amount of impervious area on a property. Impervious area does not allow water to soak into the ground during rain events, creating more stormwater runoff. Larger areas result in more impact on public storm sewers and waterways.
- Utility Credit: Properties that have installed quantity and quality-based stormwater controls receive a billing credit as these properties impact the stormwater system less than those without stormwater infrastructure.

The City's utility rate model includes the following funding allocations:

- Approximately $650,000 annually for deferred maintenance, which includes costs associated with the replacement and cleaning of storm sewer assets.
- Approximately $800,000 annually for operations and maintenance, which includes expenses related to personnel, reoccurring system maintenance, supplies, and equipment.
- Approximately $250,000 annually for system enhancements, which includes costs associated with stormwater treatment projects to remove pollutants before discharging to waterways.

The Stormwater, Building, Strategic Services, and Finance Divisions work collaboratively to update the rate model regularly as new and re-development occurs. The workflow includes:

1. Developers submit site plans through electronic permit software.

2. Stormwater Staff work in a shared folder to review site plans and digitize the impervious area.
3. Strategic Services Staff import the digitized polygons into the enterprise GIS and update each polygon's Equivalent Residential Unit (ERU) attribute.
4. Finance sends water meter notices to Staff when construction is nearing completion.
5. Stormwater Staff review impervious area data based on the address information provided by Finance and calculate an ERU total for each account, including percentage credit, if applicable.
6. Finance Staff update the ERU values in the software and generate a bill for customers.

Table 1.3.1 shows impervious area additions per year (single-family units and public roads excluded):

Table 1.3.1: Impervious Area Additions

Calendar Year	Impervious Acres Added	New Site Plans
2017-2020 Average	59	90
2021	70	70
2022	67	54
2023	80	48
2024	~65	45

- Fiscal Year 2022 Budget (July 1, 2021 - June 30, 2022)
- Resource Justification: Public budget approval process completed in June 2021. Staff gave a public presentation regarding past, current, and future work, and answered questions.
  - Program Effectiveness: See performance measures in SWMP Sections 2.0 - 8.0.
  - Resource Variation: +9% rate increase, steep increases in inflation this year
  - Staff: 8 FTEs, 1 additional Technician added, but several positions were vacant throughout the Fiscal Year

Table 1.3.2: FY22 Budget Totals

Fiscal Year	Budget
Salaries and Benefits	$676,084
Operating	$329,467
Capital	$675,000
Debt Service	$194,735
Total Budget:	$1,875,286

- Fiscal Year 2023 Budget (July 1, 2022 - June 30, 2023)
- Resource Justification: Public budget approval process completed in June 2023. Staff gave a public presentation regarding past, current, and future work, and answered questions.
  - Program Effectiveness: See performance measures in SWMP Sections 2.0 - 8.0.
  - Resource Variation: +9% rate increase
  - Staff: 8 FTEs, fully staffed at the end of the calendar year 2022

Table 1.3.3: FY23 Budget Totals

Fiscal Year	Budget
Salaries and Benefits	$802,382
Operating	$515,822
Capital	$672,250
Debt Service	$194,173
Total Budget:	$2,184,627

- Fiscal Year 2024 Budget (July 1, 2023 - June 30, 2024)
- Resource Justification: Public budget approval process completed in June 2023. Staff gave a public presentation regarding past, current, and future work, and answered questions.
  - Program Effectiveness: See performance measures in SWMP Sections 2.0 - 8.0.
  - Resource Variation: +3% rate increase
  - Staff: 8 FTEs

Table 1.3.4: FY24 Budget Totals

Fiscal Year	Budget
Salaries and Benefits	$930,000
Operating	$750,000
Capital	$649,600
Debt Service	$58,000
Total Budget:	$2,388,600

- Fiscal Year 2025 Budget (July 1, 2024 - June 30, 2025)
- Resource Justification: Public budget approval process completed in June 2024. Staff gave a public presentation regarding past, current, and future work, and answered questions.
  - Program Effectiveness: See performance measures in SWMP Sections 2.0 - 8.0.
  - Resource Variation: +3% rate increase
  - Staff: 8 FTEs

Table 1.3.5: FY25 Budget Totals

Fiscal Year	Budget
Salaries and Benefits	$888,000
Operating	$155,000
Capital	$1,055,000
Debt Service	0
Total Budget:	$2,100,000

1.4 University Program Framework

In 2024, the University has devoted approximately 760 hours to stormwater maintenance, management, and improvements and tracks work activities and labor using a work order system. In cooperation with the Engineering and Utilities Director, the Facilities Services Director coordinates and ensures MS4 Permit compliance.

1. Current Staff:
   - Director - Engineering and Utilities: Directional and political support (*80 hours per year*)
   - Director - Facilities Services: Overall program coordination. Administers and supports environmental compliance programs; manages support personnel; identifies and advocates for infrastructure projects; conducts training, inspections, permit reviews, data collection, and reporting; manages reoccurring infrastructure maintenance, structural inspections, repairs, and replacements *(350 hours/year)*
   - Support Staff and Contracted Services: Groundskeepers, laborers, plumbers, and street sweeping (*330 hours/year*)

The following representatives make up the University's Stormwater Management Team. Regular communication occurs, allowing for the exchange of necessary information:

- Leader (Primary): Edward Hook – Director, Facilities Services MCM 1-6
- Leader: Megan Sterl – Director, Engineering & Utilities MCM 1-6
- Leader: Ryan Brickman – Director, Safety & Risk Management MCM 1-3, 6
- Leader: Grant Peterson, Director, Campus Planning, Design & Construction MCM 1, 2, 4-6
- Leader: Kane Urdahl – Manager, Trades MCM 3-6
- Leader: Jim Waterman – Manager, Landscape & Grounds MCM 3-6
- Leader: Chris Catlett – Manager, Operations MCM 5-6
- Leader: Jacob Mueller – Custodial Services Supervisor MCM 3, 5-6

Current operating funding is not a line item but included in the general campus maintenance operations budget for Facilities Services. As allowable and necessary funds from Facilities Services General Operating and the Engineering and Utilities Infrastructure budget are allocated to specific stormwater improvement projects.

- Fiscal Year 2022 Approved Budget (July 1, 2021 - June 30, 2022)
  - Resource Justification: Budget approval process completed June 29, 2019
  - Program Effectiveness: See SWMP Sections 2.0 - 8.0.
  - Resource Allocation Variation: None
  - Success Determination: See SWMP Sections 2.0 - 8.0.
  - Staff: 0.35 FTEs

Table 1.4.1: FY22 Budget Totals

Fiscal Year	Budget
Operating	$126,500
Capital	-
Total Budget:	$126,500

- Fiscal Year 2023 Approved Budget (July 1, 2022 - June 30, 2023)
  - Resource Justification: Budget approval process completed June 29, 2019
  - Program Effectiveness: See SWMP Sections 2.0 - 8.0.
  - Resource Allocation Variation: None
  - Success Determination: See SWMP Sections 2.0 - 8.0.
  - Staff: 0.35 FTEs

Table 1.4.2: FY23 Budget Totals

Fiscal Year	Budget
Operating	$129,000
Capital	-
Total Budget:	$129,000

- Fiscal Year 2024 Approved Budget (July 1, 2023 - June 30, 2024)
  - Resource Justification: Budget approval process completed June 29, 2019
  - Program Effectiveness: See SWMP Sections 2.0 - 8.0.
  - Resource Allocation Variation: None
  - Success Determination: See SWMP Sections 2.0 - 8.0.
  - Staff: 0.35 FTEs

Table 1.4.3: FY24 Budget Totals	
Fiscal Year	**Budget**
Operating	$129,000
Capital (Current and 2023 Carry-over)	$180,000
Total Budget:	$309,000

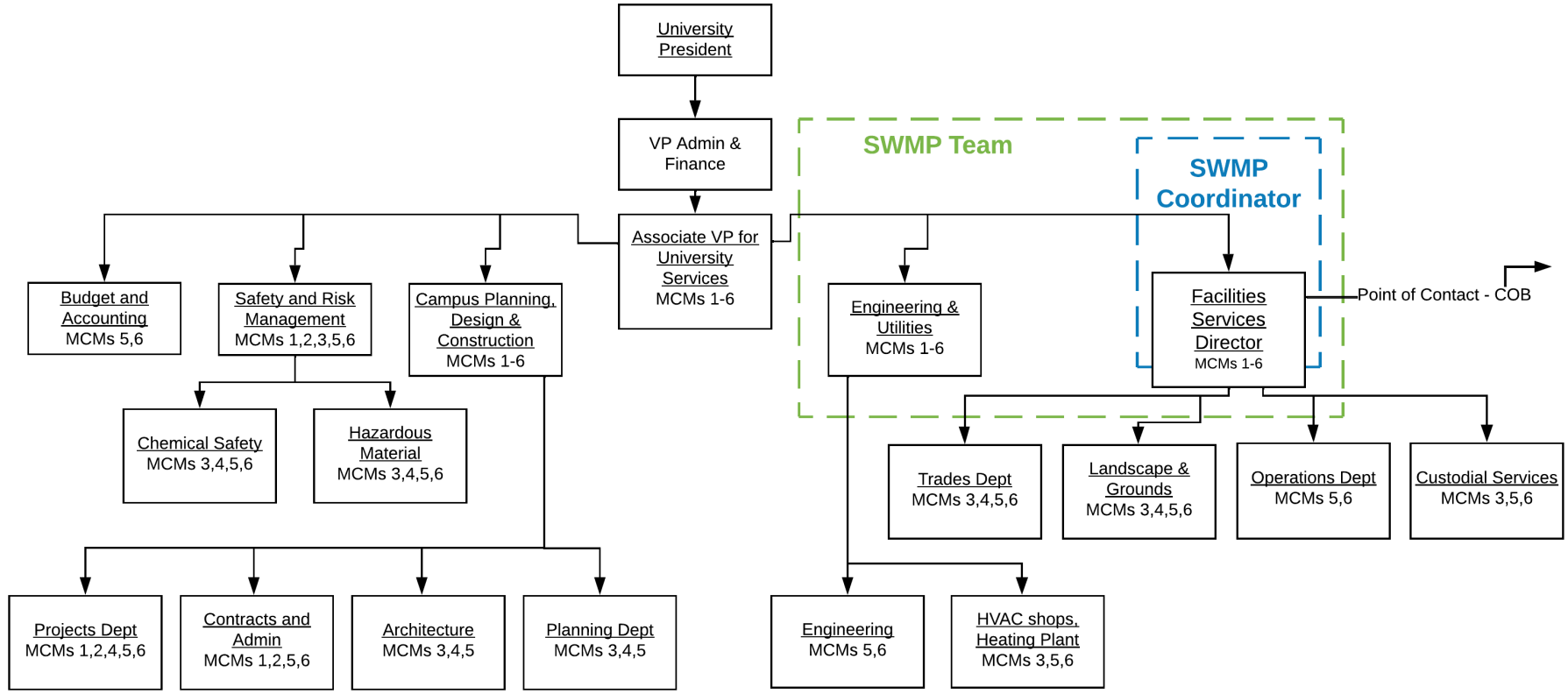
1.5 Stormwater Management Team

The MS4's Stormwater Management Team is described in Graphic 1.5.1 and the following section. A single point of contact links the organization charts.

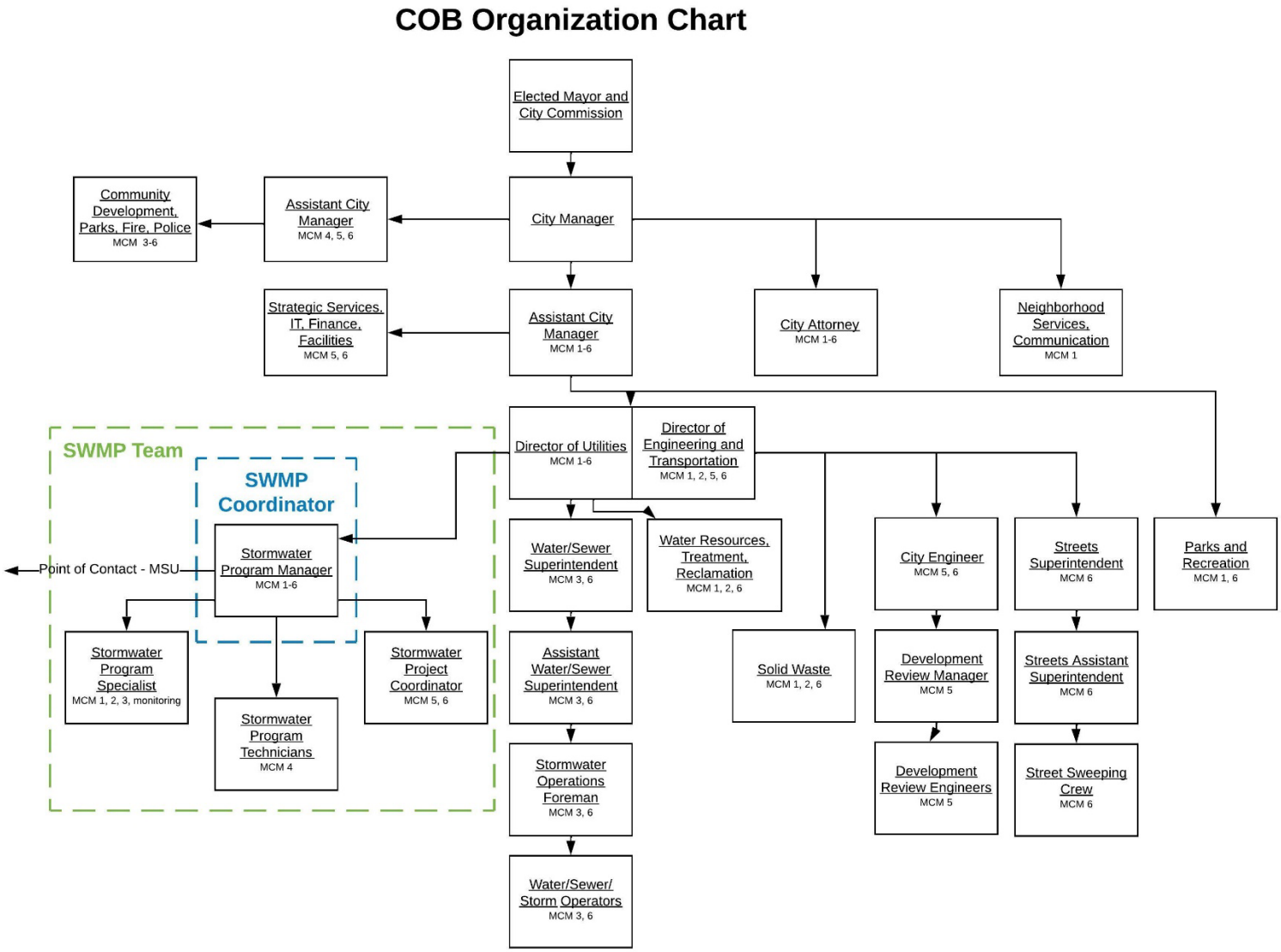
SWMP Team: Meets weekly and is comprised of the following positions:

1. Stormwater Program Manager: SWMP Coordinator as referred to in the MS4 Permit and the Enforcement Agent in Bozeman Municipal Code (BMC). Leads the SWMP Team, SWMP Subject Matter Experts, and coordination with SWMP Support Divisions. The Program Manager develops and manages the implementation of SWMP and MS4 Permit compliance activities, administers environmental compliance programs, manages personnel, prepares budgets, develops policies, coordinates infrastructure projects, and maintains the rate model. Primary permit responsibilities include:
   - Program Administration (SWMP Section 1.0)
   - Capital Project Program (SWMP Section 2.0)
   - Public Education Program (SWMP Section 3.0)
   - Illicit Discharge Detection and Elimination Program (SWMP Section 4.0)
   - Construction Site Management Program (SWMP Section 5.0)
   - Post Construction Program (SWMP Section 6.0)
   - Good Housekeeping Program (SWMP Section 7.0)
   - Sampling and Evaluation Program (SWMP Section 8.0)
2. Stormwater Program Specialist: Develops and implements water quality monitoring, BMP effectiveness research, and data analysis. Primary permit responsibilities include:
   - Public Education Program (SWMP Section 3.0)
   - Illicit Discharge Detection and Elimination Program (SWMP Section 4.0)
   - Good Housekeeping Program (SWMP Section 7.0)
   - Sampling and Evaluation Program (SWMP Section 8.0)
3. Stormwater Project Coordinator: Plans and manages stormwater conveyance, flood control, and treatment capital projects, implements the City's asset maintenance efforts, and regulates drainage infrastructure. Primary permit responsibilities include:
   - Capital Project Program (SWMP Section 2.0)
   - Post Construction Program (SWMP Section 6.0)
   - Good Housekeeping Program (SWMP Section 7.0)
4. Two Stormwater Program Technicians: Perform permit reviews, site inspections, and reporting tasks. They perform a majority of the field work associated with each MCM and assist in a variety of other tasks. Primary permit responsibilities include:
   - Construction Site Management Program (SWMP Section 5.0)

MSU Organization Chart



Graphic 1.5.1: MSU Organizational Chart



Graphic 1.5.2: City of Bozeman Organizational Chart

SWMP Subject Matter Experts (SME): Staff from these Divisions meet with the SWMP Team as necessary to discuss programmatic issues and are comprised of the following positions:

1. Engineering Division: Team that reviews and regulates new and redevelopment projects utilizing established engineering standards and Bozeman Municipal Code. The positions include the City Engineer, Development Review Manager, and a variety of staff engineers. Primary permit responsibilities include:
    - Post Construction Program (SWMP Section 6.0)
2. Operations and Maintenance: Team of five positions that operate and maintain the public storm sewer network, including the inspection, maintenance, and repair of infrastructure. This group also inspects underground pipes to identify illicit discharges and illegal connections. This team includes a Superintendent, Assistant Superintendent, Foreman, and two Operators. Primary permit responsibilities include:
    - Illicit Discharge Detection and Elimination Program (SWMP Section 4.0)
    - Good Housekeeping Program (SWMP Section 7.0)
3. Streets Division: Numerous positions that operate the City's street sweeping, spring and fall cleanups, and surface inlet grate obstruction removal and replacement activities. This team includes a Superintendent, Assistant Superintendent, and numerous Operators. Primary permit responsibilities include:
    - Good Housekeeping Program (SWMP Section 7.0)

SWMP Support Divisions: Group engaged by the SWMP Team as needs arise. Support Divisions do not typically participate in reoccurring meetings unless invited to discuss a particular topic.

1.6 Sharing Responsibility

The City and University work collaboratively on various programs, outlined further in a Memorandum Of Understanding (MOU), including:

- Participation in regular meetings.
- University payment of City stormwater fees, rate model update to occur during Q1 of each calendar year and an updated total should be in place by July 1.
- Performance tracking and reporting.
- Infrastructure project development and implementation.
- Inspection forms, training, methodologies, and program documentation sharing.
- Pollution event response and resolution, as requested.
- Stormwater treatment unit maintenance: The City measures and removes debris collected by University stormwater mechanical treatment units and incorporates totals into SWMP Section 8.0 annually, including:
    - University Field House Downstream Defender Mechanical Separation Unit
    - 11th and College Contech CDS Mechanical Separation Unit
- Water Sampling and Analysis Program: The City manages the University's portion of this program, including purchasing equipment, collecting samples/data, and analyzing results for the following:
    - Storm Event Monitoring
    - In-Stream Wet Weather Monitoring
    - Sediment Reduction Monitoring

- Long-Term Trend Monitoring

- Post Construction Program: The City completes six high-priority stormwater facility inspections on MSU property annually and provides completed reports.
- The City provides the University an updated SWMP by February 1 of each calendar year.

1.7 Collaborative Organizations

The MS4 collaborates with a variety of organizations, including:

- National Municipal Stormwater Alliance (NMSA): An organization formed in 2015 comprised of stormwater industry professionals that provides a unified voice for national scale policy changes, rules, issues, and initiatives.
- Montana Department of Environmental Quality (MDEQ): A state agency that administers and enforces the Montana Clean Water Act. MDEQ provides compliance training, conferences, and enforcement in cases where the MS4's resources become exhausted.
- Gallatin Local Water Quality District (GLWQD): A Gallatin County public agency that conducts water quality sampling and community education.
- Montana State Extension Water Quality: A University Extension agency that provides water quality sampling and community education.
- Montana Water Environment Association (MWEA): A Montana organization that represents water, wastewater, and stormwater professionals. MWEA is a member of the Water Environment Federation (WEF), which has over 34,000 members worldwide. WEF is working to raise knowledge regarding stormwater infrastructure, policy, and science at the national level.
- Gallatin Watershed Council (GWC): An education-based nonprofit organization that works to improve waterway health by implementing the Gallatin Watershed Restoration Plan.

1.8 Additional Regulatory Responsibilities

The following MPDES permits also fall under the purview of the MS4:

- General Permit for Stormwater Discharges Associated with Construction Activity (MTR100000): Construction projects that disturb one acre or more of land must obtain a stormwater discharge authorization from the MDEQ. The MS4 implements a Construction Management Program detailed in SWMP Section 5.0
- Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MTR000000) (MSGP): The MS4's Landfill obtains authorization to discharge stormwater from its facility. In 2022, the MS4's Water Reclamation Facility (WRF) was granted and complies with an MSGP "No Exposure Certification". MS4 staff assists WRF and Landfill personnel with required inspections, BMP development, training, reporting, and records keeping.

1.9 Annual Report

The MS4 submits individual Annual Report Forms, an updated SWMP, and relevant documents to the MDEQ by March 1 of each year.

1.10 Public Comments

The MS4 actively solicits input and feedback from the public for incorporation into this SWMP, including capital improvements described in Section 2.0 and the sampling plan described in Section 8.1, via a public comment form on the MS4's. Also, the MS4 publicly notices the SWMP after making annual updates in the Bozeman Daily Chronicle on the second and third Saturdays of March during each

calendar year. The MS4 considers and responds to all public comment related to the SWMP. The MS4 has received the following comments:

Table 1.10.1: Public Comments

#	Date	Topic	Comment	MS4 Response
1	5/23/2022	Water Quality	Mr. Oliver, my name is Hunter, I go to Bozeman Creative Center. I am in first grade. I really care about rivers. I think out city would be better if we kept our rivers clean. I have some good ideas about how we can do this! We can use shovels and take the trash out. Then I can play in the creeks without shoes on! – Hunter	Public Works Division Operations Manager responded after consulting with Stormwater and Streets personnel. Flooding is unavoidable due to clogged inlets and plowing is difficult due to parked cars. The City agreed to watch the area and complete work as practicable.
2	10/8/2023	Water Conservation	Storm water runoff is currently wasted while a large portion of tap water is used for landscaping each year. Is it possible for future expansion/new builds to require some sort of collection to redisperse for lawn care?	
3	2/21/2024	Water Quality & Construction	This is Bill Kleindl from LRES, who teaches water resources here on campus. As you know, I have worked with the City of Bozeman to help with their wetlands and waterways sensitive areas over the last several decades. I am currently under contract with them for permit review and code update work. This was an extension of consulting work I conducted in Seattle prior to moving to Bozeman. When I moved to Bozeman in the early 2000s, I was shocked at the general lack of sediment and erosion control at construction projects around the city, but I was especially surprised at the general lack of control at MSU projects. As you know, there are many well-established BMPs for S&E control for construction. I understand that there may be a lack of regulations that require these to be in place for the city, but MSU could require these for projects on campus. At a minimum, it could be a learning opportunity for civil students to explore S&E control practices. Craig, I recognize this is no longer your job now that you have left the city, but perhaps you could work with me to convince MSU facilities to either implement or require the contractors to place these controls on their project at the new rec center. This sediment likely drains to the 11th Street	Bill, MSU is a co-permittee on the MS4 permit with the City of Bozeman. The Wellness project has a formal SWPPP which includes sediment control. There is a sediment sock in the drain as well as a three chamber mechanical separator prior to hitting the 11th and College structure (a collaborative project between the City and MSU). The project also submits Stormwater reports on a bi-weekly basis which I review bot in writing and on site for accuracy/compliance. Spring is a brutal season as issues pop up quickly in freeze/thaw cycles. As you note tracking of sediment is the primary concern here. I have just finished walking the site and had a brief conversation with the contractor – formal report to them to follow. I would love the opportunity to talk stormwater management with CE students.

			storm sewer to the vortex weir at 11th and College, then into Mandeville Creek. E.J., I assume they are under contract to control sediment? Thoughts? I look forward to hearing from soon	
4	2024	Education & Engagement	Stormwater Facilities Plan Update Comment: There is a current lack of partnerships with outside groups in developing and implementing source reduction education programs	SWMP Sec. 3.4.1 includes the recommendations to partner with outside groups to promote and implement the Adopt a Drain program.
5	2024	Education & Engagement	Stormwater Facilities Plan Update Comment: Provide education on the benefits of LID projects.	SWMP Sec. 3.4.5 includes the recommendations to promote the benefits of LID on the Stormwater Division's website.

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Section 2.0
Capital Project Program

Graphic 2.0.1: Stormwater Inlet Retrofit

Graphic 2.0.2: South Tracy Ave. Storm Sewer Pipe Replacement

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2.1 Introduction

The MS4 strives to improve waterway health, protect public safety, and comply with its MS4 Permit by implementing a Capital Project Program with the following goals:

- Increasing storm sewer capacity;
- Maintaining the integrity of underground pipes and surface conveyances;
- Replacing and/or repairing failing infrastructure assets; and
- Identifying BMPs addressing Total Maximum Daily Load (TMDL) MS4-related requirements.

SWMP Section 2.0 details the following components necessary to administer the MS4's Capital Project Program, including:

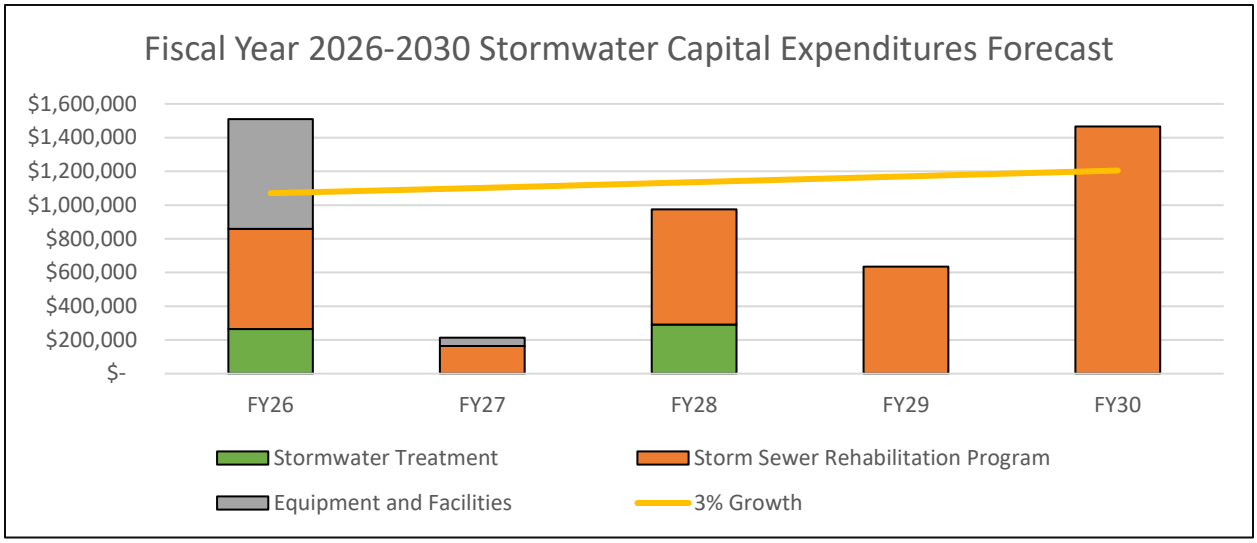
- Capital Improvement Planning (2.2)
- TMDL Action Plan (2.3)
- Planned Projects (2.4)
- Ongoing or Completed Projects (2.5)
- Pollutant Reduction Totals (2.6)
- Performance Measures (2.7)

2.2 Capital Improvement Planning

Each year, the City prepares a five-year Capital Improvement Plan (CIP) that outlines infrastructure projects and other capital needs. A critical component of the CIP is the TMDL Action Plan, which identifies measures and BMPs planned to address TMDL MS4-related requirements.

The CIP process is open for public comment, approved by the City Commission, and incorporated into the applicable fiscal year's budget. The City accounts for the following when preparing CIPs:

- Urban waterway/watershed priority
- Development and land use
- Infrastructure condition analysis
- Programmatic goals
- Available budget
- Project coordination with other stakeholders and utilities



Graphic 2.2.1 – Capital Expenditures Forecast

2.3 Total Maximum Daily Load Action Plan

In addition to adhering to the Minimum Control Measures, the MS4 implements specific projects to address 303(d) listed water quality impairments to the maximum extent practicable. For purposes of this permit term, the MS4 prioritizes the following waterways:

1. Bozeman Creek is the highest priority because of its total stormwater discharge points, known impairments, and the fact that it is the only waterway with a non-zero MS4 Waste Load Allocation (WLA). According to the TMDL, Total Suspended Solids (TSS) contributions from the MS4 to Bozeman Creek require a 37% or 81 tons/year reduction.
2. Mandeville Creek is the second-highest priority waterway because of its total stormwater discharge points, known impairments, shared responsibilities between co-permittees, and degraded state.
3. Three other impaired waterways, the East Gallatin River, Bridger Creek, and Rocky Creek benefit from the MS4's broad programmatic efforts, such as community education, pollution event response, and construction site management. Occasionally, a capital project will be sited in one of these drainages in conjunction with a road reconstruction project or other capital project already planned.

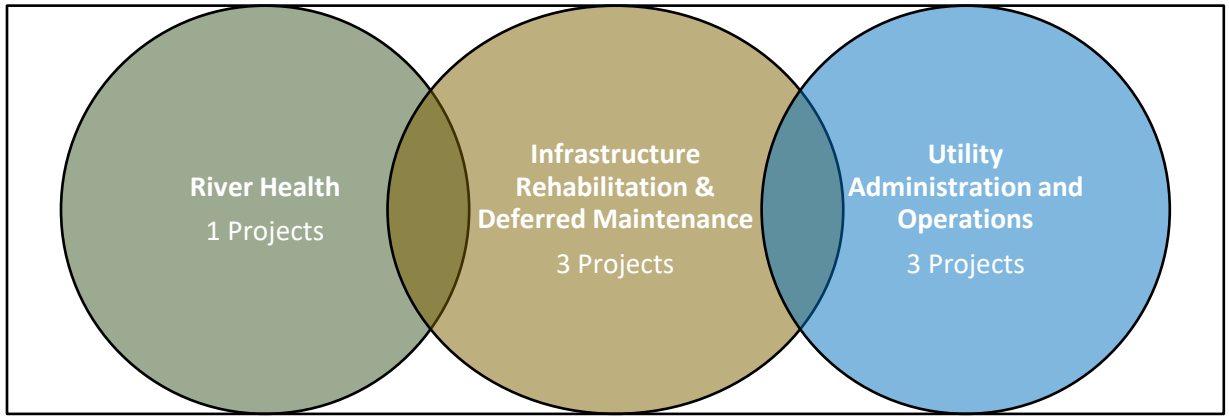
The MS4 targets pollutants of concern for its impaired waterbodies by taking the following project identification and development strategy:

1. Mitigate significant impacts through industry-standard structural treatment technologies, such as mechanical separation, confirmed to achieve 50% TSS removal through independent certification programs. This allows the MS4 to instal effective and maintainable treatment systems near stormwater discharge points that currently lack them.
2. Develop, implement, and maintain sustainable operation and education-based programs and initiatives, such as street sweeping, infrastructure cleaning, and community outreach, that target pollutants of concern.
3. Collect and analyze stormwater runoff, in-stream water quality, BMP effectiveness, and long-term monitoring data using an array of industry-standard gages and equipment to plan future investments and initiatives. This step allows the MS4 to monitor its pollutant reductions, impaired waterbody improvement, and investment and conduct program self-evaluation (See SWMP Sec. 8).
4. Pollutant reduction projects, such as boulevard infiltration galleries, were verified to achieve 100% TSS removal by capturing and infiltrating the water quality event. This step allows the MS4 to fine-tune the stormwater system to optimize treatment in larger urban watersheds and treat stormwater in smaller urban watersheds unsuitable for larger projects.

Table 2.3.1: MS4 Waterbody TMDL Impairments							
	Total Suspended Solids (TSS)	**Total Nitrogen (TN)**	**Total Phosphorus (TP)**	**E. coli**	**Chlorophyll-a**	**Alteration in stream-side or littoral vegetative cover**	**MS4 WLA/Load Reduction**
Bozeman Creek	X	X		X	X	X	TSS: 81 tons/year
Mandeville Creek		X	X				
Bridger Creek		X			X		
East Gallatin River		X	X				

2.4 Planned Capital Improvement Projects

Prioritization of untreated sub-basins within the Bozeman Creek watershed has been incorporated into financial planning. The MS4 plans to complete the following stormwater capital improvements to address TMDL Action Plan requirements:



Graphic 2.4.1: Planned pollutant reduction projects

Table 2.4.1: FY25-27 Pending and Planned Stormwater Capital Expenditures

	PROJECT	TYPE	DETAIL	FY25	FY26	FY27
1	River Health Project - Mechanical Stormwater Treatment Ph 4 (Peach St.)	Design & Construction	Water Quality 50%		$ 280,000	$ -
2	Deferred Maintenance Project - Historic Pipe and Infrastructure Replacement Program	Design & Construction	Conveyance Rehabilitation	$ 156,000	$ 535,400	$ 100,000
3	Deferred Maintenance Project - Annual Unplanned Infrastructure Rehab	Design & Construction	Unplanned Projects	$ 54,100	$ 59,100	$ 64,500
4	Infrastructure Rehabilitation - Manley Ditch	Construction	Conveyance Rehabilitation	$ 520,000	$ -	$ -
5	Utility Operation Project - Pipe Inspection Van (#01)	Equipment	Replace 2001 Ford E350 TV Van	$ 334,000	$ -	$ -
6	Utility Operation Project - Vacuum and Jetting Truck (#01)	Equipment	2015 Vactor, replace in FY26, 7 yr Lease (FY21)	-	$ 650,000	$ -
7	Utility Administration Project - Administration Vehicle	Equipment	Replace Dakota with SUV/Light Truck	-	$ -	$ 48,000
	Total Expenditure By Fiscal Year			***$ 1,055,000***	***$ 1,524,500***	***$ 212,500***

1. River Health Project: Mechanical Stormwater Treatment (Phase 4)
    - ID: STRH02 (Phase 4)
    - Description: Installation of a stormwater treatment unit near the intersections of N. Rouse Ave and E. Peach St.
    - Alternatives Considered: Staff has not identified an alternative treatment approach with comparable maintenance ease, construction footprint, or pollutant removal efficiency.
    - Advantages of Approval: The unit will collect approximately four tons of pollutants annually from 49 acres. This project addresses Bozeman Creek watershed Waste Load Allocation (TSS) and is critical for the TMDL Action Plan.
    - Additional Operating Cost in the Future: Staff will complete maintenance semi-annually using existing vacuuming equipment and drying beds. Debris will eventually be disposed of at the landfill.
2. Infrastructure Rehab. & Deferred Maint.: Historic Pipe Replacement Program
    - ID: STDM04
    - Description: Rehabilitation of several 100-year-old vitrified clay storm sewers, which have exceeded their life cycles, do not meet modern capacity standards, and include many structural failures.
    - Alternatives Considered: The infrastructure is critical to the City's storm sewer network. Delays will increase the chances of collapse, road failure, and flooding.
    - Advantages of Approval: This preventative project targets pipes prone to failure and surcharging. Rehabilitation will reduce risks by addressing structural and capacity deficiencies.
    - Additional Operating Cost in the Future: Stormwater Personnel will complete maintenance on a recurring schedule, including flushing, vacuuming, and inspection. Modern pipes in good condition require less effort to maintain.
3. Infrastructure Rehab. & Deferred Maint.: Annual Unplanned Pipe Rehabilitation and Drainage Projects
    - ID: STDM05
    - Description: An annual program funding the design and construction of unplanned pipe, drainage, and treatment projects.
    - Alternatives Considered: Use of internal crews and equipment to complete work. Staff determined that the workload required would reduce capacity applied towards critical services.
    - Advantages of Approval: Unplanned funds allow staff to be responsive to essential needs, increasing customer service, improving system efficiency, and reducing City liability.
    - Additional Operating Cost in the Future: Stormwater personnel will complete the maintenance of rehabilitated, repaired, or new infrastructure concurrently with existing public assets.
    - Co-Benefit(s): Improved public safety, enhanced water quality
4. Pipe Rehabilitation Program: Manley Ditch Rehabilitation
    - Purpose: Rehabilitate a historical irrigation drainage ditch and convey drainage from a 58-acre urban area to the Cherry Creek Fishing Access property.
    - Type: Ditch rehabilitation, bio-retention treatment areas, and flood control weirs
    - Treatment Efficiency: n/a
    - Treatment Area: n/a

- Discharge Location: Cherry Creek
- Date of Completion: 2025
- Co-Benefit(s): Improved public safety, enhanced water quality

5. Utility Operations: Pipe Inspection Van

   - ID: STOP04
   - Description: Replacement of the pipe inspection van purchased in 2001 and refurbished in 2015. The vehicle's chassis is heavily worn, and the onboard computer system is aged. The new truck should be delivered in February 2025.
   - Alternatives Considered: Continue using the existing vehicle, which could result in downtime and increasingly costly maintenance.
   - Advantages of Approval: The vehicle facilitates the City's pipe inspection program, which identifies maintenance needs, locates structural deficiencies, and detects illegal connections.
   - Additional Operating Cost in the Future: The Stormwater Division will fund operation and maintenance costs.

6. Utility Operations: Vacuum and Jetting Truck (#01)

   - ID: STOP08
   - Description: Replacement of the division's vacuum and jetting truck was purchased in 2015.
   - Alternatives Considered: Continue using the existing vehicle, resulting in downtime and increasingly costly maintenance.
   - Advantages of Approval: The vehicle facilitates infrastructure maintenance, pollution event cleanup, and vacuum excavation for pipe repairs.
   - Additional Operating Cost in the Future: The Stormwater Division will fund operation and maintenance costs.

7. Utility Operations: Administration Staff Vehicle

   - ID: STOP03
   - Description: Replacement of the Division's administration vehicle.
   - Alternatives Considered: Continue using the existing vehicle, resulting in downtime and increasingly costly maintenance and limited transport ability.
   - Advantages of Approval: The vehicle facilitates efficient transport of staff and equipment
   - Additional Operating Cost in the Future: The Stormwater Division will fund operation and maintenance costs.

2.5 Ongoing and/or Completed Projects

The MS4 has or is in the process of completing the following projects:

1. Utility Operations: Rate Model Study
   - Adequate rates will allow capital plan to keep up with growth, improve water quality, public safety and maintain compliance with permits. The new model will make it easier for staff to input needs and arrive at a consistent rate increase as needed to fund the utility.

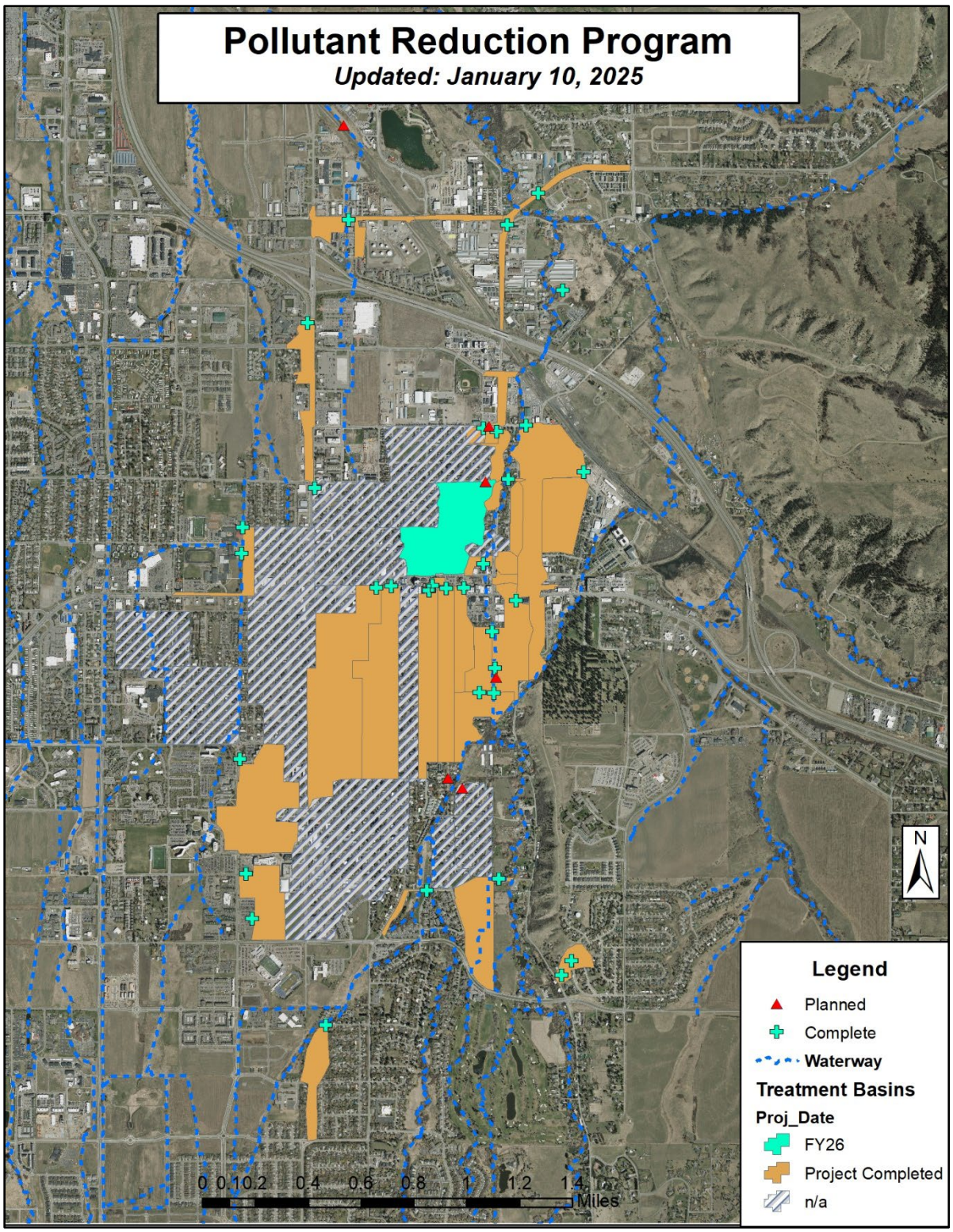
2. Pipe Rehabilitation Program: Downtown Storm Sewer Replacement

   - Purpose: Rehabilitate two storm sewer mains: South Tracy Ave. and South Black Ave.
   - Type: Pipe Replacement Project
   - Discharge Location: Bozeman Creek
   - Date of Completion: Summer 2025. South Tracy is complete, South Black has not yet begun.

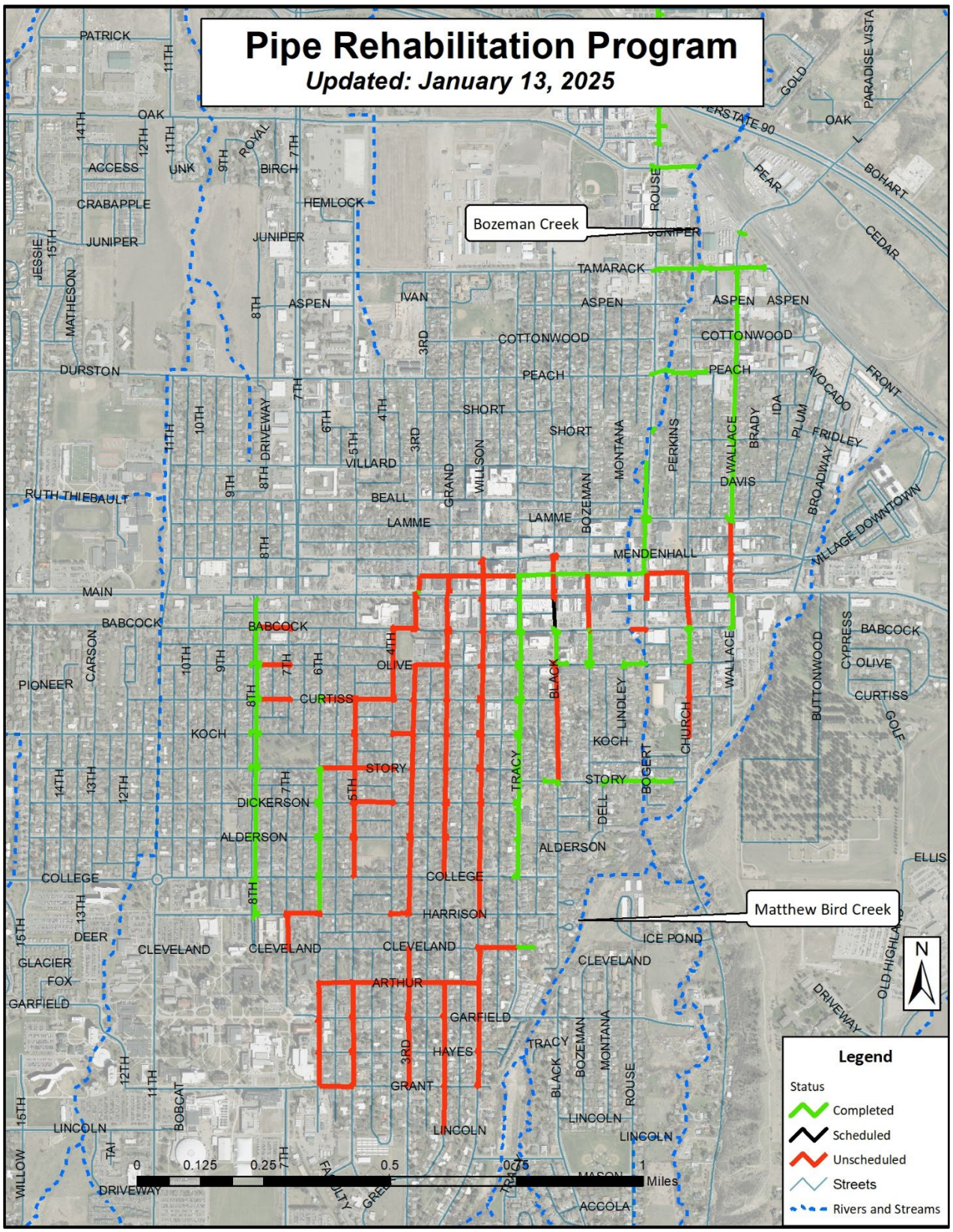
- Co-Benefit(s): Improved public safety, ease of maintenance

3. Utility Operations: Stormwater Facility Plan Update Phase 2
    - Purpose: The first phase of the facility plan was initiated in 2022. Results will better inform the scope of the second phase and complete several recommendations based on modeling and comparison to strategies and technologies used in other cities. The plan should be ready for final review and adoption in the spring of 2025.
    - Date of Completion: Summer 2025

4. Utility Operations: Street Sweeper
    - Purpose: Street sweeping protects air and water quality and maintains permit standing for the MS4. Removing sand reduces slip and skid hazards for motorists, bicyclists and pedestrians during warmer months.
    - Date of Completion: Early 2025



Graphic 2.5.1: Planned and completed pollutant reduction projects



Graphic 2.5.2: Planned and complete pipe rehabilitation projects

2.6 Pollutant Reduction Totals

The MS4 evaluates the effectiveness of its TMDL Action Plan, storm sewer system maintenance, and street sweeping programs by tracking the amount of sediment captured resulting from these efforts. SWMP Section 8.6 describes methods used for determining treatment unit maintenance pollution reduction totals. University Field House and College/11th mechanical separators are joint projects between the City and MSU. Another joint mechanical separator or other water quality project is planned for the east portion of MSU campus and surrounding City area as seen above in Graphic 2.5.1

Table 2.6.1: Treatment Unit Maintenance Pollution Reduction Totals

Watershed	2022	2023	2024	2025	2026
Bozeman Creek	43 Tons	73.4 Tons	69.9	-	-
Mandeville Creek	6 Tons	6.2 Tons	5.4	-	-
East Gallatin River	7 Tons	14.6 Tons	6.8	-	-
Total:	**56 Tons**	**94.2 Tons**	**82.1 Tons**	**-**	**-**

Table 2.6.2: 2024 Treatment Unit Totals by Location

Bozeman Creek Drainage					
Location	**Type**	**Acres**	**Tons**	**Tons/Acre**	**Comment**
Main and N. 3rd	Mech. Sep.	93	6.22	0.07	50% treated
Main and N. Grand	Mech. Sep.	58	3.17	0.05	50% treated
Main and N. Tracy	Mech. Sep.	32	9.29	0.29	50% treated
City Shops 1	Mech. Sep.	1	1.27	1.27	50% treated
N. Wallace and E. Tamarack	Mech. Sep.	81	5.57	0.07	50% treated
S. Rouse and E. Lincoln	Mech. Sep.	32	5.02	0.16	50% treated
S. Rouse and E. Olive	Mech. Sep.	9	6.04	0.67	50% treated
Perkins and E. Peach	Mech. Sep.	23	3.29	0.14	50% treated
Main and N. Bozeman	Mech. Sep.	25	7.60	0.30	50% treated
Main and N. Black	Mech. Sep.	28	4.80	0.17	50% treated
Main and S. Church	Mech. Sep.	26	4.56	0.18	50% treated
Mason and Tracy	Infiltration	2	0.63	0.31	100% treated
N. Rouse and E. Mendenhall	Mech. Sep.	3	1.37	0.46	50% treated
N. Rouse and E. Lamme (E)	Mech. Sep.	3	0.32	0.11	50% treated
N. Rouse and E. Lamme (W)	Mech. Sep.	6	0.14	0.02	50% treated
N. Rouse and E. Peach	Mech. Sep.	3	2.15	0.72	50% treated
N. Rouse and E. Tamarack	Mech. Sep.	9	0.11	0.01	50% treated
N. Rouse and E. Birch	Mech. Sep.	9	1.82	0.20	50% treated
Westridge	Mech. Sep.	23	3.63	0.16	50% treated
City Shops 2	Infiltration	1	2.53	2.53	100% treated
Parking Garage Alley	Mech. Sep.	1	0.47	0.47	50% treated
Total:		**468 acres**	**69.99 tons**	**0.15 tons/ac**	

Table 2.6.2: 2024 Treatment Unit Totals by Location					
Mandeville Creek Drainage					
Location	**Type**	**Acres**	**Tons**	**Tons/Acre**	**Comment**
N. 11th and W. Lamme	Mech. Sep.	7	0.86	0.123	50% treated
University Field House	Mech. Sep.	6	0.84	0.141	50% treated
College and 11th	Mech. Sep.	58	3.66	0.063	50% treated
Total:		**71 acres**	**5.36 tons**	**0.08 tons/ac**	
East Gallatin River Drainage					
Location	**Type**	**Acres**	**Tons**	**Tons/Acre**	**Comment**
Bridger Center Dr (MDT)	Mech. Sep.	12	1.04	0.09	50% treated
Griffin Dr at Rouse (MDT)	Mech. Sep.	14	3.12	0.22	50% treated
Manley and Gallatin Park	Mech. Sep.	3	0.32	0.11	50% treated
Plum and Avocado	Infiltration	14	1.93	0.14	100% treated
Griffin 7th	Mech. Sep.	12	0.36	0.03	50% treated
Total:		**43 acres**	**6.76**	**0.12**	

- Storm Sewer Maintenance: The MS4 determines tonnage totals by calculating the depth of debris vacuumed out of manholes and inlets before cleaning. The MS4 multiplies the area of each asset's sump by an assumed 1/2 full depth measurement, multiplies the volume by the total assets maintained for that year, and converts the volume to tons by using an assumed sand weight ratio of .056 tons = 1 cubic foot. MSU assets are cleaned more frequently, so they accumulate less debris. Calculated totals are compared to Logan Landfill weight scale tickets. Beginning in 2025, staff will fine-tune calculations by separating treatment unit debris and implementing a more defined and consistent debris hauling schedule.

Table 2.6.3: Storm Sewer Maintenance Pollution Reduction Totals (tons)					
Entity	**2022**	**2023**	**2024**	**2025**	**2026**
City of Bozeman	118	139	147	-	-
Montana State University	57	22	17	-	-
Total:	**175**	**161**	**164**	-	-

- Street Sweeping: The Streets Division tracks actual tons of sweepings, leaves, branches, and other debris removed from the public right-of-way. Focused campaigns that impact and benefit water quality such as fall clean-up are included in these totals. The tonnage of debris is calculated by summing the net weight of debris hauling tickets issued by the Logan Landfill.

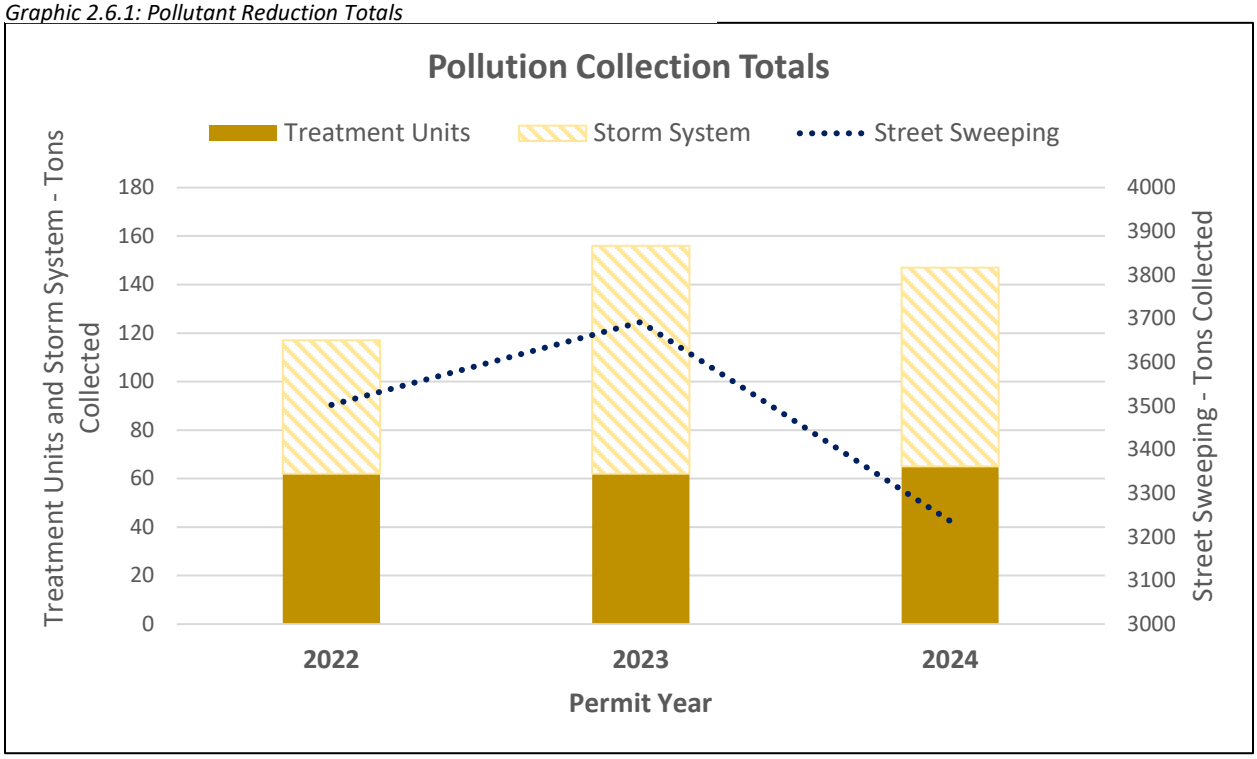
Table 2.6.4: Street Debris Reduction Totals (tons)					
Entity	**2022**	**2023**	**2024**	**2025**	**2026**
City of Bozeman	2,672	3,119	3,109	-	-
Montana State University	205	234	127	-	-
Total:	**2,877**	**3,353**	**3236**	-	-

Currently, the Stormwater Division tracks tons of debris removed yearly. Numerous factors affect variations in removal rates and yearly totals. The efficacy of treatment units (mechanical separators)

varies depending on precipitation patterns, amount of traction sand application, timing of street sweeping, and other factors.

Years in the CIP without water quality treatment projects allow the city to invest in updated pneumatic vacuums and sewer monitoring equipment. These off years also allow time to determine the effectiveness of recently installed BMPs and determine the location and design of new mechanical separators in the Bozeman Creek watershed.

Graphic 2.6.1: Pollutant Reduction Totals



2.7 Performance Measures

The MS4 utilizes performance measures to evaluate programmatic strategies with the goal of optimizing limited resources, increasing efficiencies, and balancing annual workloads.

1. Stormwater Report Card. See Section 8.0
2. Community Safety and Urban Flood Risk: Tracking mechanism utilized by the MS4 that provides a consistent and communicable method for tracking community safety and urban flood risk. The MS4's target level of service is to have zero insurance claims filed annually as a result of public storm sewer deficiencies. There have been no flood-related claims between 2018 and 2024.

The MS4 maintains the following performance metrics to track Capital Project Program progress and identify future needs:

1. Pollutant Reduction Program: Comply with the MS4's stormwater permit and improve water quality by preventing the discharge of 81 tons per year of TSS.
    - Benefit: Reduced permit noncompliance risk, improved public safety, and a healthier environment.
    - Driving Policy: Bronze Level of Service
    - Risk: Permit requirements subject to change

Table 2.7.1: Bozeman Creek Sediment Reduction					
Type	**2022**	**2023**	**2024**	**2025**	**2026**
TSS removed (% of 81 tons)	43 Tons 53%	73 Tons 90%	70 Tons 86%	-	-

2. Pipe Rehabilitation Program: Replace 13.9 miles of structurally deficient and undersized historical storm sewer infrastructure throughout the downtown core.

    - Benefit: Reduced urban flooding and improved public safety
    - Driving Policy: Bronze Level of Service
    - Risk: Increasing construction costs

Table 2.7.2: Pipe Rehabilitation Program Performance					
Type	**2022**	**2023**	**2024**	**2025**	**2026**
Miles completed (total)	5.2	5.3	5.5	-	-

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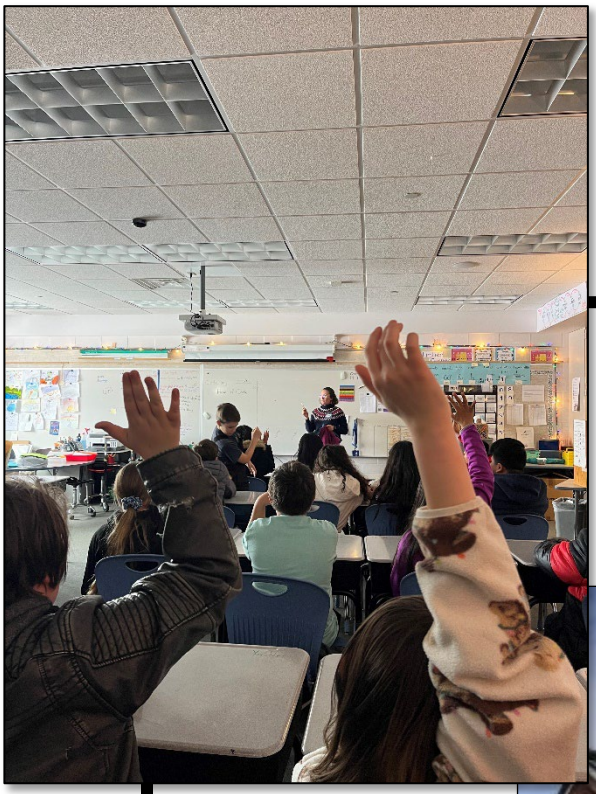
Section 3.0

Public Education Program



Graphic 3.0.1: Water Wise Bozeman

Graphic 3.0.2: Dog waste station with educational signage

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3.1 Introduction

The MS4 strives to improve waterway health, protect public safety, and comply with its MS4 Permit through the education and involvement of the public by;

- Determining key target audiences for stormwater education and outreach,
- Identifying and developing outreach formats, messages, and distribution channels for each key target audience, and
- Implementing and tracking performance of public education and involvement efforts.

SWMP Section 3.0 details the following components necessary to administer the MS4's Public Education Program, including:

- Key Target Audiences (3.2)
- Passive and Active Engagement Strategies (3.3)
- Current/Ongoing Initiatives (3.4)
- Future Initiatives (3.5)
- Completed Initiatives (3.6)

3.2 Key Target Audiences

The MS4 identifies the following key targets audiences since they are common sources of pollution, illicit discharges, spills, dumping, or are owners of stormwater infrastructure requiring regular maintenance.

- Residents
- HOAs/Property Management Firms
- Pet Owners
- Students
- Restaurants & Food Trucks
- Construction Industry Professionals

3.3 Passive and Active Engagement Strategies

The MS4 educates key target audiences on stormwater-related issues to reduce their contribution of pollutants to waterbodies using both passive and active engagement strategies. Passive engagement includes creation and distribution of educational messages targeting pollutant-generating activities and behaviors distributed via the following platforms:

- Stormwater Division website
- Brochures / flyers
- Educational signage
- Vehicle wraps

Active engagement includes customized interpersonal interactions targeting pollutant-generating activities and behaviors distributed via the following activities:

- Community meetings/presentations
- Industry specific trainings
- Clean-up events
- Pet waste stations
- Participation in community events
- Adopt a Drain program
- Student outreach

Table 3.3.1: Key Target Audiences				
Key Target Audience	**Pollutant(s)**	**Polluting Behavior(s)**	**Engagement Type**	**Engagement Strategy**
Residents	Nutrients, E. coli, TSS, Trash, Oils & Greases	Yard Maintenance & General Awareness	Passive/Active	SWMP Sec. 3.4 & Sec. 3.6
Construction Industry	TSS, Oils & Greases	Construction	Passive/Active	SWMP Sec. 3.6
Students	Nutrients, E. coli, TSS	Education and class projects	Active	SWMP Sec. 3.4
Home Owner Associations (HOAs) / Property Mgt. Firms	Nutrients, E. coli, TSS	Post-Construction Facility Maintenance	Passive/Active	SWMP Sec. 3.4
Restaurants/Food Trucks	Oils & Greases	Waste Oil Disposal	Active	SWMP Sec. 3.5
Pet Owners	E. coli	Dog waste	Active/Passive	SWMP Sec. 3.4

3.4 Current/Ongoing Engagement

The MS4 completes initiatives to engage, educate, and promote sustainable behavior of its key target audiences. Ongoing initiatives include:

1. Adopt-a-Drain: A program that actively engages watershed champions, and provides a tool to make a measurable difference in their neighborhoods by periodically cleaning debris from adopted storm sewer inlets. The program also passively engages residents by creating an environment where stormwater-related issues can be discussed and acted upon at a neighborhood level, rather than the City acting as the sole information provider.

- Key Target Audience: Residents
- Engagement Type: Active
- Performance Measure: Total Event Participants

Table 3.4.1: Adopt a Storm Drain Program Summary				
Year	**Task**	**Task Outcome**	**Performance Measure**	**Notes**
2019	Implement pilot program	Complete	11	Time intensive but effective program, 11 Residents cared for 21 inlets.
2020	Implement program, retain majority of the recruited residents, explore expansion	Complete	12	Covid-19 affected ability to engage residents, many participants started strong but tapered in their efforts mid-year, 12 residents cared for 30 inlets.
2021	Maintain online portal, retain majority of the recruited residents, develop expansion plan	Complete	12	Online registration and debris collection portal resulted in a decrease of debris being reported. Increase staff engagement with participants in 2022.

Table 3.4.1: Adopt a Storm Drain Program Summary				
Year	**Task**	**Task Outcome**	**Performance Measure**	**Notes**
2022	Maintain online portal, retain majority of the recruited residents, develop expansion plan	Complete	15	Residents are not reporting debris totals on the online portal. Increase advertising and switch to in-person pick-up in 2023.
2023	Maintain online portal, retain and recruit new members, implement in-person debris pick-ups.	Complete	23	Incorporate Adopt a Drain program into Water Wise Bozeman project in 2024.
2024	Maintain online portal, retain and recruit new members.	Complete	44	Partner with outside group(s) to promote and implement program.

2. Educational Stormwater Video: Seven-minute video that describes the MS4's Program, the context for why stormwater is important, and ways residents/property owners can make a difference. Residents view the video on the City's website.

- Key Target Audience: Residents
- Engagement Type: Passive
- Performance Measure: Maintain video on website and use in Staff awareness training.

Table 3.4.2: Educational Stormwater Video Summary				
Year	**Task**	**Task Outcome**	**Performance Measure**	**Notes**
2017	Maintain video	Complete	179 Views	12 hours watch time, 4:02 average duration
2018	Maintain video	Complete	502 Views	31 hours watch time, 3:42 average view duration
2019	Maintain video, add to City Channel	Not Complete	214 Views	14.1 hours watch time, 3:57 average view duration. Video not added to City channel.
2020	Maintain video, add to City Channel, promote using Facebook	Not Complete	167 Views	Moved video to different viewing service in September, shifted training platform that no longer uses YouTube and results in views. Video not added to City channel.
2021	Maintain video, add to City Channel	Not Complete	Not Met	Video has not been added to City Channel.
2022	Maintain video on website	Complete	Met	Video is maintained on website and used for Staff awareness trainings.
2023	Maintain video on website. Use video for Staff awareness training.	Complete	Met	Video is maintained on website.
2024	Maintain video on website. Use video for Staff awareness training.	Complete	Met	Video is maintained on website.

3. Dog Waste Campaign: Campaign devoted to educating pet owners about the importance of dog waste collection and disposal. The campaign includes the deployment and maintenance of educational signage and dog waste stations in numerous parks and trail corridors.

- Key Target Audience: Pet Owners
- Engagement Type: Passive and Active
- Performance Measure: Maintain current number of dog waste collection stations in City owned parks, and include additional stations when a new park is added.

Table 3.4.3: Dog Waste Campaign Summary

Year	Task	Task Outcome	Performance Measure	Notes
2017	Maintain stations	Complete	178 Stations	n/a
2018	Maintain stations	Complete	178 Stations	n/a
2019	Maintain stations, add urban specific signs in 4 locations	Complete	183 Station	n/a
2020	Maintain stations	Complete	190 Stations	n/a
2021	Maintain stations	Complete	191 Stations	n/a
2022	Maintain stations	Complete	195 Stations	n/a
2023	Maintain stations	Complete	197 Stations	n/a
2024	Maintain stations	Complete	198 Stations	n/a

4. Vehicle Decal Wraps: Educational signage installed on the MS4's Vactor truck and street sweeper that visually displays the connection between urban areas and waterways.

- Key Target Audience: Residents
- Engagement Type: Passive
- Performance Measure: Stormwater operator hours

Table 3.4.4: Vehicle Decal Wrap Summary

Year	Task	Task Outcome	Performance Measure	Notes
2017	Maintain decals	Complete	4,300 hours	-
2018	Maintain decals	Complete	5,400 hours	-
2019	Maintain decals	Complete	4,100 hours	Staffing shortages prevalent through 2019.
2020	Maintain decals	Complete	3,400 hours	Staffing shortages prevalent through 2020.
2021	Maintain decals	Complete	3,600 hours	Staffing shortages prevalent through 2021.
2022	Maintain decals	Complete	3,900 hours	
2023	Maintain decals	Complete	3,800 hours	
2024	Maintain decals	Complete	3,900 hours	

5. Website: Website that includes a variety of information, spanning from what stormwater is, how to report a pollution event, construction stormwater permits, rate model information, post-construction design standards, and more. Address: www.bozeman.net/departments/utilities/stormwater

- Key Target Audience: Residents, Construction Industry, and HOAs/Property Management Firms
- Engagement Type: Passive

- Performance Measure: Website Analytics

Table 3.4.5: Website Summary

Year	Task	Task Outcome	Performance Measure	Notes
2017	Maintain website	Complete	677 Views	
2018	Maintain website	Complete	1,225 Views	
2019	Maintain website	Complete	2,408 Views	Most Visitations: Homepage, Construction, and Contact Us
2020	Maintain website, update periodically	Complete	4,700 Views	Most Visitations: Homepage, Construction, and Contact Us
2021	Maintain website, update periodically	Complete	5,603 Views	Most Visitations: Homepage, Construction, and Contact Us
2022	Maintain website, update periodically	Complete	5,157 Views	Most Visitations: Homepage, Construction, and Contact Us
2023	Maintain an update website with 2022 Annual Summary	Complete	8,542 Views	Most Visitations: Homepage, Construction, and Contact Us
2024	Maintain website, update periodically	Complete	8,700 Views	3,700 total users. 3,100 new users. 648 return users. Include low impact development education and promote future LID projects.

6. Gallatin Valley Earth Day: Information developed by the MS4 and applied in various settings focused on providing general stormwater information and soliciting public participation.

- Key Target Audience: Residents
- Engagement Type: Active
- Performance Measure: Total Event Participants

Table 3.4.6: Gallatin Valley Earth Day Summary

Year	Task	Task Outcome	Performance Measure	Notes
2022	Host table	Complete	250	Hosted table with Water Conservation
2023	Host table	Complete	370	Implemented Adopt a Drain promotional program to 26 residents.
2024	Host table	Complete	1600 (Total Attendance)	18 residents signed up for Adopt a Drain program.

7. Water Wise Kids: Class exercises taught by 5th-grade teachers in Bozeman School District (BSD) classrooms, educating students on stormwater-related issues, utilizing customized, and location-specific lesson plans and activities. The City's Park's Division also uses the lesson plans for their summer camps.

- Key Target Audience: Students
- Engagement Type: Active
- Performance Measure: Total Event Participants

Table 3.4.7: Water Wise Kids Summary				
Year	**Task**	**Task Outcome**	**Performance Measure**	**Notes**
2018	Coordinate Classroom Use	Complete	526 Students	-
2019	Coordinate Classroom and Camp Use	Not Complete	0	Spent year incorporating into the BSD curriculum.
2020	Coordinate Classroom and Camp Use	Not Complete	0	Program discontinued until Covid-19 regulations lift.
2021	Contract with Montana Outdoor Science School (MOSS) for program implementation	Not Complete	0	Plan to implement in 2022. Scope is on agenda for City Commission approval on 1/25/2022.
2022	Contract with MOSS for program implementation	Complete	173 Students	10 classrooms at three schools participated resulting in 173 students educated.
2023	Continue program with MOSS	Complete	500 students	Tentatively scheduled all BSD 5th grade classes in 2023. 2024 goal: Incorporate Adopt a Drain program into each 5th grade class.
2024	Contract with Mountain Goat Instructional Design for program implementation	Complete	319 students	Mountain Goat Instructional Design is under contract for program implementation for 2024 – 2025. Six out of nine schools visited.

8. Post-Construction Facility Maintenance : Tailored outreach that educates HOA Boards and management representatives on the proper function and maintenance of stormwater basins. The MS4 maintains a Post-Construction Program that includes processes and materials tailored to this group described in SWMP Section 6.0.

- Key Target Audience: Home Owner Associations (HOAs) / Property Mgt. Firms
- Engagement Type: Active and Passive
- Performance Measure: Number of HOAs educated and inspected and the Annual post-construction audit score (see SWMP Section 6.5).

Table 3.4.8: Post-Construction Stormwater Program Summary				
Year	**Task**	**Task Outcome**	**Performance Measure**	**Notes**
2022	Educate Post-Construction Facility Owners	Complete	4 HOAs 3 Private	34 Total Facilities Inspected
2023	Educate Post-Construction Facility Owners	Complete	3 HOAs	52 Total Facilities Inspected

Table 3.4.8: Post-Construction Stormwater Program Summary				
Year	**Task**	**Task Outcome**	**Performance Measure**	**Notes**
2024	Educate Post-Construction Facility Owners	Complete	3 HOAs	Held two community engagement events for HOAs / property management companies to educate and gather input for the Stormwater Facilities Plan Update

9. MSU Classes and Events: Classes, Capstone Projects, and Sustainability Summit Event, reach the targeted student body with numerous stormwater topics and also involve a significant amount of staff.

- Key Target Audience: MSU Students
- Engagement Type: Active and Passive
- Performance Measure: Total Event Participants

Table 3.4.9: MSU Classes and Events				
Year	**Task**	**Task Outcome**	**Performance Measure**	**Notes**
2022	Capstone	Complete	1	Map existing surface stormwater features - 1 faculty/staff
2023	Stormwater tour at Sustainability Summit	Complete	30	Participate in AdvoCat class - 1 faculty/staff 2 tours - public event - 15 participants
2023	Civil Engineering Capstone	Complete	23	Stormwater design for 'M' improvements - 8 faculty/staff/public
2023	Campus Clean Up	Complete	100	MSU event - 100 faculty/staff
2023	Landscape design	Complete	9	Landscape design including stormwater design - 2 faculty/staff
2023	ENV340	Complete	24	Review MS4 program and tour storm water feature - 1 faculty/staff
2023	Sustainability class	Complete	21	Review MS4 program and tour storm water feature - 1 faculty/staff
2023	Turf grass	Complete	17	Review turf selection and maintenance practices impacting stormwater - 1 faculty/staff
2023	Woody plants	Complete	27	Review plant selection and maintenance practices impacting stormwater - 1 faculty/staff
2023	Landscape design	Complete	14	Review MS4 program and tour storm water feature - 2 faculty/staff
2024	Human Impacts on Soil, Plants, and Water in the Western U.S.	Complete	7	Field trip to water quality treatment BMPs and LID throughout town. Discussed Lower Gallatin TMDL, stream impairments, MS4 Permit regulations, and common stormwater pollutants.
2024	Sustainability Summit - Tours (2)	Complete	23	Tour of the stormwater system and review of its role in preserving water quality.
2024	HONR494	Complete	38	water bottle, College St redesign, Mandeville Creek restoration
2024	Advocat Tour	Complete	53	tour stormwater system and its role in preserving water quality

2024	Campus clean up	Complete	108	460 pounds of litter collected
2024	Sewer tour	Complete	37	Tour and contrast sewer and storm systems
2024	LARC 202	Complete	17	Wally Byam design review
2024	Turf Class	Complete	21	turf maintenance practices and impacts on stormwater
2024	EGR class - storm water tour	Complete	23	Tour Stormwater infrastructure
2024	Landscape – Prof. Woody's Class	Complete	20	Plant choice and maintenance effects on stormwater management
2024	Sustainability Class	Complete	18	Stormwater and its role in preserving water quality
2024	LARC 331 - Landscape Design	Complete	11	Hannon Courtyard design
2024	Honors 494	Complete	21	Projects included M redesign, powwow event improvements, 11th Street design, composting

10. Stormwater Facility Plan Update – Community Engagement: Host community meetings that engage, update, and solicit feedback from identified stakeholders in development of the Stormwater Facilities Plan Update as required by the Montana Land Use Planning Act.

- Key Target Audience: Bozeman residents, Homeowner Associations (HOAs) / Property Management Firms, Community Development Board, Sustainability Board, and Gallatin Water Collaborative.
- Engagement Type: Active
- Performance Measure: Total Events

Table 3.4.10: 2025 Stormwater Facilities Plan Update Community Engagement

Year	Task	Task Outcome	Performance Measure	Notes
2024	Hold community engagement events	Complete	5	Additional events to gather additional community input are planned for 2025.

11. Storm Drain Marking: Installing "No Dumping Drains to Creek" educational signage on select storm drain inlets.

- Key Target Audience: Residents
- Engagement Type: Passive
- Performance Measure: Total Distribution

Table 3.4.11: Storm Drain Marking

Year	Task	Task Outcome	Performance Measure	Notes
2024	Install storm drain markers	Complete	8	Most storm drains in the Bozeman Creek watershed are marked. Install additional markers as opportunity arises.

12. Used Cooking Oil Storage & Disposal: Coordinate with Water/Sewer Departments Fats, Oils, and Greases (FOG) program to develop and distribute a business specific correspondence about proper storage and disposal methods of used food cooking oil.

- Key Target Audience: Restaurants & Food Trucks

- Engagement Type: Passive
- Performance Measure: Total Distribution

Table 3.4.12: Used Cooking Oil Storage & Disposal				
Year	**Task**	**Task Outcome**	**Performance Measure**	**Notes**
2024	Develop and distribute FOG flyer	Complete	56	n/a

3.5 Future Engagement Strategies

The MS4 will continue to implement all 12 current and on-going engagement strategies in 2025. No additional community engagement strategies are planned.

3.6 Completed Engagement Strategies

1. Carpet Cleaning Targeted Outreach: Educate local carpet cleaning and restoration companies on proper disposal methods and potential enforcement penalties for illicit discharges to the storm sewer system.

- Key Target Audience: Carpet Cleaning and Restoration Companies
- Engagement Type: Active
- Performance Measure: Illicit discharge reports related to targeted activities

Table 3.6.1: Carpet Cleaning Targeted Outreach Summary				
Year	**Task**	**Task Outcome**	**Performance Measure**	**Notes**
2018	n/a	n/a	1	1 carpet cleaning company discharge.
2019	Distribute a letter to owners	Complete	0	Increased engagement yielded a good result.
2020	N/A	Complete	0	-
2021	N/A	Complete	0	Successful. No discharges documented since 2019. Outreach will not continue unless a discharge is documented.

2. Adopt a Rain Garden: A program that actively engages watershed champions, and provides a tool to make a measurable difference in their neighborhoods by periodically cleaning debris and maintaining vegetation in adopted rain gardens. The program also passively engages residents by creating an environment where stormwater-related issues can be discussed and acted upon at a neighborhood level, rather than the City acting as the sole information provider.

- Key Target Audience: Residents and businesses
- Engagement Type: Active and Passive
- Performance Measure: Adopt all rain gardens

Table 3.6.2: Adopt a Rain Garden Targeted Outreach Summary				
Year	**Task**	**Task Outcome**	**Performance Measure**	**Notes**
2021	Clean and dispose debris from adopted rain garden	Complete	1 Rain Garden Adopted	WGM Group employees adopted and cleaned the Mason and Tracy infiltration boulevard.
2022	Clean and dispose debris from adopted rain garden	Not Complete	1 Rain Garden Adopted	Rain garden is adopted but not maintained in 2022.

3. Lawn Care Targeted Outreach: Educate residents on best practices related to lawn mowing.

- Key Target Audience: Residents
- Engagement Type: Passive
- Performance Measure: Total Distribution

Table 3.6.3: Lawn Care Targeted Outreach Summary				
Year	**Task**	**Task Outcome**	**Performance Measure**	**Notes**
2020	Distribute a mailer to residents	Complete	Sent Fall 2020	First year tracking this metric.
2021	Distribute a Mailer	Not Complete	Not Met	Mailers planned for distribution in 2022
2022	Distribute Mailer	Complete	16,000 Mailers	Partnered with Water Conservation Division and mailers were delivered to 16,000 utility accounts as a bill insert.
2023	Distribute Mailer	Complete	16,000 Mailers	Partnered with Water Conservation Division and mailers were delivered to 16,000 utility accounts as a bill insert.

4. Construction Training: Trainings that educate contractors on proper selection and use of best management practices (BMPs) and permit preparation. The MS4 holds training tailored to various education levels, construction activities, and inspection procedures. Further, the MS4 maintains a Construction Program that includes permits and materials for this group (SWMP Section 5.0).

- Key Target Audience: Contractors Industry
- Engagement Type: Active and Passive
- Performance Measure: Number of industry professionals trained and annual construction-site audit earned score (see SWMP Section 5.4)

Table 3.6.4: Construction Training				
Year	**Task**	**Task Outcome**	**Performance Measure**	**Notes**
2018	Hold trainings	Complete	84 Trained 33% Audit Score	Five construction training held.
2019	Hold trainings	Complete	70 Trained 28% Audit Score	Three construction training held.

2020	Hold trainings	Not Complete	N/A	Scheduled classes cancelled due to Covid-19 meeting regulations.
2021	Hold trainings	Not Complete	N/A	No trainings held due to Covid-19 meeting regulations.
2022	Hold training	Complete	26 Trained 69% Audit Score	Three online construction trainings held.
2023	Hold training	Complete	70 Trained 64% Audit Score	One online and two in-person trainings held.
2024	Hold training	Complete	18 Trained 64% Audit Score	Presentation at a SWPPP Administrator & Preparer Certification.

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Section 4.0

Illicit Discharge Detection and Elimination Program

Graphic 4.0.1: Bentonite slurry spill

Graphic 4.0.2: Illicit connection confirmation

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4.1 Introduction

The MS4 strives to improve waterway health, protect public safety, and comply with its MS4 Permit through the identification and elimination of pollutant sources by:

- Completing dry weather screening of outfalls;
- Inspecting the storm sewer for illegal connections;
- Responding to and resolving pollution events; and
- Enforcing municipal ordinances prohibiting illegal dumping.

SWMP Section 4.0 details the following components necessary to administer the MS4's Illicit Discharge Detection and Elimination Program, including:

- Regulatory Framework (4.2)
- Illicit Discharge Detection and Corrective Action Plan (4.3)
- Enforcement Response Plan (4.4)
- Event Tracking (4.5)
- Urban Camping Illicit Discharge Response (4.6)
- Non-Stormwater Discharge Evaluation (4.7)
- Outfall Reconnaissance Inventory (4.8)
- Storm Sewer Infrastructure Viewer (4.9)

4.2 Regulatory Framework

Pursuant to §40.04.200 Bozeman Municipal Code (BMC), it shall be unlawful to discharge or cause to be discharged into the MS4 any materials, including, but not limited to, pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards or that could cause the city to be in violation of its MPDES. It shall be unlawful to store, handle, or apply any pollutant in a manner that will cause exposure to rainfall or runoff and discharge to the MS4 and to state waters or waters of the United States.

An interlocal agreement covers emergency response between MSU and the City. Hazardous materials response services are provided to MSU by the City from Fire Station No. 2.

4.3 Illicit Discharge Detection and Corrective Action Plan

The MS4 uses the following Corrective Action Plan (CAP) to determine event priority, formulate a response, and, if necessary, pursue enforcement:

1. Assign an Event Coordinator (EC).
2. Investigate to determine pollutant type and severity (site visit and correspondence). Methods for investigation include:
    - Field observation (in person, CCTV, ORI).
    - Sampling and analysis (grab sample, turbidimeter, multi-parameter probe (pH and temperature), and ammonia test strips).
    - Infrastructure analysis (GIS, plats, and record drawings).
    - Dye testing.
    - Correspondence with property owners.
3. Determine an event tier and response based on the following thresholds:

- Tier 1 Event: Minimal impact to public safety, infrastructure, and environment. Spills with a major dimension less than six feet and non-continuous. Outfalls and illicit connections deemed potential sources of pollution. Response includes:
  - Team: MS4 Staff and Code Compliance Officer
  - Timeline: Initiate response within five days
  - Resolution: MS4 Operations and/or contracted restoration firm.
  - Pollutant Disposal: Public, Sediment/Pollutant Disposal Facility. Private, Contracted Hauler.
  - Report: Internal
  - Examples: Leaking vehicles and dripping dumpsters.
- Tier 2 Event: Moderate impact to public safety, infrastructure, and environment. Spills with a major dimension greater than six feet and non-continuous, or spills with a major dimension greater than six feet, continuous, and contained. Outfalls and illicit connections deemed suspect and obvious sources of pollution. Response includes:
  - Team: MS4 Staff, Code Compliance Officer, and Neighborhood Services Staff
  - Timeline: Initiate response within 24 hours
  - Resolution: MS4 Operations and/or contracted restoration firm.
  - Pollutant Disposal: Public, Sediment/Pollutant Disposal Facility. Private, Contracted Hauler.
  - Report: Internal
  - Examples: Carpet cleaning process water discharge, sanitary overflow, camper waste disposal, homeless camp cleanup, floor drain, illicit sanitary connections, and non-hazardous chemical spills.
- Tier 3 Event: Immediate threat to human health, infrastructure, and environment. Spills with a major dimension greater than 6', continuous, and not contained.
  - Team: MS4 Staff, Code Compliance Office, and Emergency Services
  - Timeline: Immediate
  - Resolution: Fire, MS4 Operations, and/or contracted restoration firm.
  - Pollutant Disposal: Public, Sediment/Pollutant Disposal Facility. Private, Contracted Hauler.
  - Reporting: Internal and MDEQ Notification
  - Example: Hazardous spills

4. Eliminate discharge through various mitigation measures depending on event severity. Options include:
   - Absorbent
   - Vaccum and disposal
   - Pipe plugs or seals
   - Decontamination
   - Enforcement
   - Infrastructure retrofit
5. If applicable, notify appropriate state and federal agencies.
6. Complete an Event Report

4.4 Enforcement Response Plan

Pursuant to §40.04.860 and §40.04.890 BMC, the MS4 has the authority to implement the following Enforcement Response Plan (ERP) and use the following enforcement protocols for violations of BMC, including:

1. Informal Response: Warning issued via email notification or verbal notice used for cases when the responsible party unknowingly commits a violation of BMC. If not dealt with in an agreed upon timeframe, or an agreement does not occur, the MS4 escalates to a Formal Response. The MS4 handles most Tier 1 events under this category.
2. Formal Response: Notice of Violation and Cease and Desist Order using a set compliance timeline and monetary penalties and/or remediation costs. The MS4 uses this approach in cases when the responsible party knowingly violates BMC or has a record of non-compliance. The MS4 handles most Tier 2 and 3 events under this category.
3. Judicial Response: Civil penalties, injunctive relief, or criminal penalties using the Bozeman Police Department, City Attorney, and Municipal Court. The MS4 uses this approach in cases where the responsible party repeatedly and knowingly commits violations of BMC and fails to remedy issues under a Formal Response.

City staff with enforcement authority: Stormwater Program Technician, Stormwater Program Specialist, Stormwater Program Manager, Stormwater Project Coordinator have the authority to investigate events as an EC; however, the the Stormwater Program Manager is the authorized Enforcement Agent and determines the appropriate level of response. Neighborhood Services staff have enforcement authorty to issue both civil and criminal penalties.

MSU Staff with enforcement authority: Project Managers specific to the project, Stormwater Leads, have the authority to investigate events as an EC; however, the Primary Stormwater Lead (Director, Facilities Services) is the authorized Enforcement Agent and makes determinations regarding penalties.

4.5 Event Tracking

2022 Events: 6

Tier 1 Event: Oliver St. Diesel Spill

- Event ID: 202201
- Location: See map 4.5.2
- Pollutant: Diesel fuel
- Significant: No, implementation of operational controls and rapid response by staff and resident prevented the spill from entering the storm sewer.

Tier 2 Event: Yellowstone Pavement Solution

- Event ID: 202202
- Location: See map 4.5.2
- Pollutant: Diesel fuel
- Significant: Yes, undetermined amount of diesel fuel discharged to Mathew Bird Creek. Oil sheen documented in Mathew Bird Creek. MDEQ notified.

Tier 1 Event: Tom's Alignment Center

- Event ID: 202203
- Location: See map 4.5.2
- Pollutant: Soaps, oils, greases, metals
- Significant: No, implementation of operational controls and rapid response by staff prevented a discharge to Bozeman Creek.

Tier 2 Event: Whistle Pig Korean

- Event ID: 202204
- Location: See map 4.5.2
- Pollutant: Used cooking oil
- Significant: No, implementation of operational controls and rapid response by staff prevented a discharge to Bozeman Creek.

Tier 1 Event: Barnard Hall Temporary Chiller Glycol Spill (MSU)

- Event ID: 202205
- Location: See map 4.5.2
- Pollutant: Glycol, less than 5 gallons
- Significant: No, implementation of operational controls and rapid response by staff prevented a discharge.

Tier 2 Event: Plant Bioscience Building Flood (MSU)

- Event ID: 202206
- Location: See map 4.5.2
- Pollutant: Sediment, grease, hydraulic fluid
- Significant: Yes, flow was significant enough to all bypass of downstream mechanical separator. Undetermined amount of pollutants discharged into City of Bozeman storm sewer via inlets located at College St. and 11th Ave.

<u>2023 Events: 9</u>

Tier 1 Event: Haggerty Lane Motor Oil

- Event ID: 202301
- Location: See map 4.5.2
- Pollutant: Used motor oil
- Significant: No, rapid response by staff and resident did not document impacts to storm sewer or receiving waters.

Tier 1 Event: N. 5th Ave. Motor Oil

- Event ID: 202302
- Location: See map 4.5.2
- Pollutant: Used motor oil
- Significant: No, rapid response by staff prevented discharge to storm sewer.

Tier 2 Event: Barrett Concrete Cutting Hydraulic Oil

- Event ID: 202303
- Location: See map 4.5.2
- Pollutant: Hydraulic oil and sediment
- Significant: No, rapid response by staff and abatement by Barrett Concrete cutting prevented discharge to the storm sewer.

Tier 1 Event: Sanders Oil Leak

- Event ID: 202304
- Location: See map 4.5.2
- Pollutant: Used motor oil

- Significant: No, rapid response by staff prevented discharge to storm sewer.

Tier 1 Event: Alderson St. Oil Spill

- Event ID: 202305
- Location: See map 4.5.2
- Pollutant: Used motor oil
- Significant: No, rapid response by staff prevented discharge to storm sewer.

Tier 1 Event: Darlington Dodge Transmission Fluid

- Event ID: 202306
- Location: See map 4.5.2
- Pollutant: Transmission fluid
- Significant: No, rapid response by staff prevented discharge to storm sewer.

Tier 2 Event: Five Guys Grease Trap Overflow

- Event ID: 202307
- Location: See map 4.5.2
- Pollutant: Used cooking oil
- Significant: No, rapid response by staff prevented discharge to storm sewer.

Tier 1 Event: MDT Chip Seal

- Event ID: 202308
- Location: See map 4.5.2
- Pollutant: Gravel
- Significant: No, response from contractor mitigated impacts to storm sewer. Minor amount of gravel discharged to storm sewer.

Tier 2 Event: Willson CWO

- Event ID: 202309
- Location: See map 4.5.2
- Pollutant: Concrete washout water
- Significant: No, rapid response by staff and contractor/owner removed pollutant from curbline and storm sewer inlet.

<u>2024 Events: 13</u>

Tier 2 Event: Galloway St. Sewage Dumping

- Event ID: 202401
- Location: See map 4.5.2
- Pollutant: Sewage
- Significant: Yes, undetermined amount of sewage discharged to storm sewer and unnamed drainage ditch. Discharge ceased immediately upon discovery. Storm sewer flushed and vacuumed on 2/23/2024. MDEQ notified. Misdemeanor citation issued.

Tier 2 Event: Wallace Hydraulic Line

- Event ID: 202402
- Location: See map 4.5.2

- Pollutant: Hydraulic Fluid
- Significant: Yes, 30 gallons of hydraulic fluid spread on 3 blocks of Wallace Ave. from Main St. to Curtiss St. Rapid response by staff prevented discharge.

Tier 2 Event: N. 8th Ave. Sewage Discharge

- Event ID: 202403
- Location: See map 4.5.2
- Pollutant: Sanitary Sewage
- Significant: Yes, sanitary sewage discharged to storm sewer. Contractor cleaned all impacted storm sewer components impacted by discharge.

Tier 2 Event: Cultivar St. Camper

- Event ID: 202404
- Location: See map 4.5.2
- Pollutant: Sanitary Sewage
- Significant: Yes, sanitary sewage discharged onto street. City staff cleaned street and impacted storm sewer inlet.

Tier 2 Event: Max Ave. Camper

- Event ID: 202405
- Location: See map 4.5.2
- Pollutant: Sanitary Sewage
- Significant: Yes, sanitary sewage discharged onto street. Camper occupant cleaned spill from street. No discharge to storm sewer.

Tier 2 Event: Rawhide Ridge Camper

- Event ID: 202406
- Location: See map 4.5.2
- Pollutant: Sanitary Sewage
- Significant: Yes, sanitary sewage discharged onto street. Camper occupant and city staff cleaned spill from street. No discharge to storm sewer.

Tier 1 Event: 1104 S. Montana Ave. Roof Insultation

- Event ID: 202407
- Location: See map 4.5.2
- Pollutant: Insulation
- Significant: No, contractor cleaned up insulation. No discharge to storm sewer.

Tier 2 Event: 1104 S. Veronica Way Camper

- Event ID: 202408
- Location: See map 4.5.2
- Pollutant: Sanitary Sewage
- Significant: Yes, sanitary sewage discharged onto street. City staff cleaned spill from street and storm sewer.

Tier 2 Event: Equestrian Ln. Camper Oil Spill

- Event ID: 202409
- Location: See map 4.5.2
- Pollutant: Oil
- Significant: Yes, oil spill onto city street. City staff cleaned spill from street. No discharge to storm sewer.

Tier 1 Event: Bohart Ln. Trash

- Event ID: 202410
- Location: See map 4.5.2
- Pollutant: Oil
- Significant: Yes, trash scattered along and in Rocky Creek. City staff conducted an area clean up on 11/13/2024.

Tier 2 Event: Tschache Ln. Camper

- Event ID: 202411
- Location: See map 4.5.2
- Pollutant: Sanitary Sewage and Trash
- Significant: Yes, sanitary sewage discharged onto street. City staff cleaned spill from street and storm sewer.

Tier 2 Event: Rawhide Ridge and Max Ave. Camper

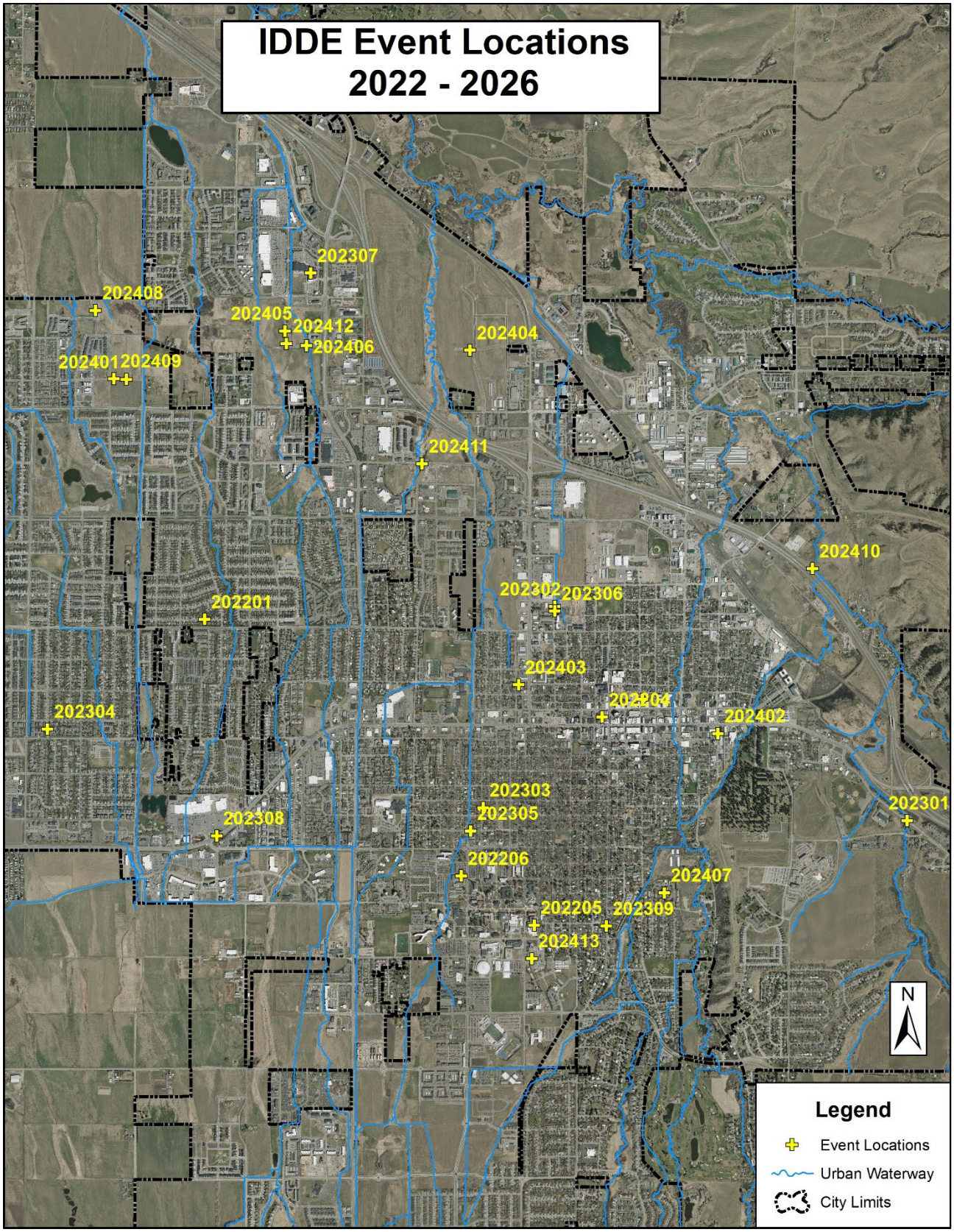
- Event ID: 202412
- Location: See map 4.5.2
- Pollutant: Sanitary Sewage
- Significant: Yes, sanitary sewage discharged onto street and curbline.

Tier 1 Event: MSU Facilities Yard – Temporary Fuel Tanks

- Event ID: 202413 (MSU)
- Location: See map 4.5.2
- Pollutant: Diesel fuel
- Significant: No, rapid response by staff prevented discharge to storm sewer.

Table 4.5.1: Illicit Discharge Events

Event Tier	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Tier 1	4	6	2	3	8	3	6	3	-	-
Tier 2	1	1	2	0	1	3	3	10	-	-
Tier 3	0	0	0	0	0	0	0	0	-	-
Total:	5	7	4	3	9	6	9	13	-	-



Graphic 4.5.2: IDDE Event Locations Map.

4.6 Urban Camping Illicit Discharge Response

The City experienced a significant increase in Type 2 illicit discharges in 2024. This increase is attributed to the City allocating more staff resources to mitigate impacts from urban encampments located in public rights-of-ways. Stormwater staff coordinates with Neighborhood Services Division to implement the IDDE enforcement response plan by conducting investigations, completing Event Reports, issuing Notices of Violations, and pollution abatement. Neighborhood Services is responsible for issuing civil and judicial penalties, and enforcement of the newly adopted Ordinance 2172.

4.7 2024 Non-Stormwater Discharge Evaluation

The MS4 evaluates the following non-stormwater discharges to identify if they are significant contributors of pollution to waterways:

1. Water Line Flushing
    - Description: Hyper-chlorinated water resulting from Bac-T testing and disinfecting of new water lines, containing around 100 times the concentration of chlorine in drinking water
    - Associated Pollutant(s): Chlorine
    - Local Control(s): Construction specifications requiring contractors to contain flush water
    - Risk: Medium, managed as Tier 2 illicit discharge
    - Illicit Discharges Reported: 0
2. Landscape Irrigation, Irrigation, Lawn Watering, and Potable Water
    - Description: Intermittent over-watering or faulty sprinklers
    - Associated Pollutant(s): Varied depending on the source (well, surface water, or potable supply)
    - Local Control(s): Water Conservation irrigation system audits, design standards, and outreach initiatives
    - Risk: Low, not managed as an illicit discharge
    - Illicit Discharges Reported: 0
3. Rising Groundwater, Springs, and Flows from Riparian Habitats
    - Description: Flows that enter the storm sewer system when ground and surface water levels rise above the bottom elevation of the storm drain or conveyance.
    - Associated Pollutant(s): None
    - Local Control(s): Prohibition of new sump drains that discharge to a street or other public right-of-way, a sanitary sewer line, or onto neighboring properties
    - Risk: Low, not managed as an illicit discharge
    - Illicit Discharges Reported: 0
4. Uncontaminated Groundwater Infiltration
    - Description: Water other than wastewater that enters a storm sewer system from the ground through such means as defective pipes, pipe joints, connections, or utility holes
    - Associated Pollutant(s): None
    - Local Control(s): Inspection of storm sewer pipe annually, and defective pipe repair
    - Risk: Low, not managed as an illicit discharge
    - Illicit Discharges Reported: 0
5. Uncontaminated Pumped Groundwater

- Description: Groundwater pumped into the storm sewer system for lowering subsurface levels, particularly for construction
- Associated Pollutant(s): None
- Local Control(s): Discharge must originate from a well located in an undisturbed area, initial turbid first flush contained on site, routed to avoid picking up pollutants before being discharged. Other forms of groundwater dewatering must follow the MDEQ Construction Dewatering Permit.
- Risk: Low, not managed as an illicit discharge
- Illicit Discharges Reported: 0

6. Foundation Drains, Crawl Space Pumps, and Footing Drains

   - Description: Groundwater pumped or diverted from building foundations to the MS4.
   - Associated Pollutant(s): None
   - Local Control(s): Prohibition of new sump drains that discharge to a street or other public right-of-way, a sanitary sewer line, or onto neighboring properties
   - Risk: Low, not managed as an illicit discharge
   - Illicit Discharges Reported: 0

7. Air Conditioning Condensation

   - Description: HVAC and refrigeration condensation discharged to the MS4
   - Associated Pollutant(s): None
   - Local Control(s): Allowed
   - Risk: Low, not managed as an illicit discharge
   - Illicit Discharges Reported: 0

8. Swimming Pool and Hot Tub Drain Water

   - Description: Dumping of swimming pool and hot tub drain water into the MS4
   - Associated Pollutant(s): Chlorine
   - Local Control(s): Infiltration, discharge to sanitary sewer, or dechlorination
   - Risk: Medium, managed as Tier 2 illicit discharge
   - Illicit Discharges Reported: 1

9. Fire Hydrant Flushing

   - Description: Discharges resulting from regular fire hydrant flushing by MS4 operators. The discharge is potable water.
   - Associated Pollutant(s): Chlorine
   - Local Control(s): Water and Sewer Division fire hydrant flushing process and/or dechlorination
   - Risk: Low, not managed as an illicit discharge
   - Illicit Discharges Reported: 0

10. Non-Commercial, Individual Residential, and Charity Carwashes

    - Description: Wash-waters resulting from vehicle washing
    - Associated Pollutant(s): Soaps, oils, greases, metals, and sediment
    - Local Control(s): The City requires a public assembly permit for non-commercial and charity car washes on public property. If deemed appropriate, the MS4 can utilize this process to require specific controls.
    - Risk: Low, not managed as an illicit discharge

- Illicit Discharges Reported: 0

11. Street Wash Waters

- Description: Water used to wash sidewalks, ADA pedestrian ramps, and streets
- Associated Pollutant(s): Sediment, oils, greases, and metals
- Local Control(s): Allowed, coordinated with vacuum truck if excessive pollutants are found
- Risk: Low, not managed as an illicit discharge
- Illicit Discharges Reported: 0

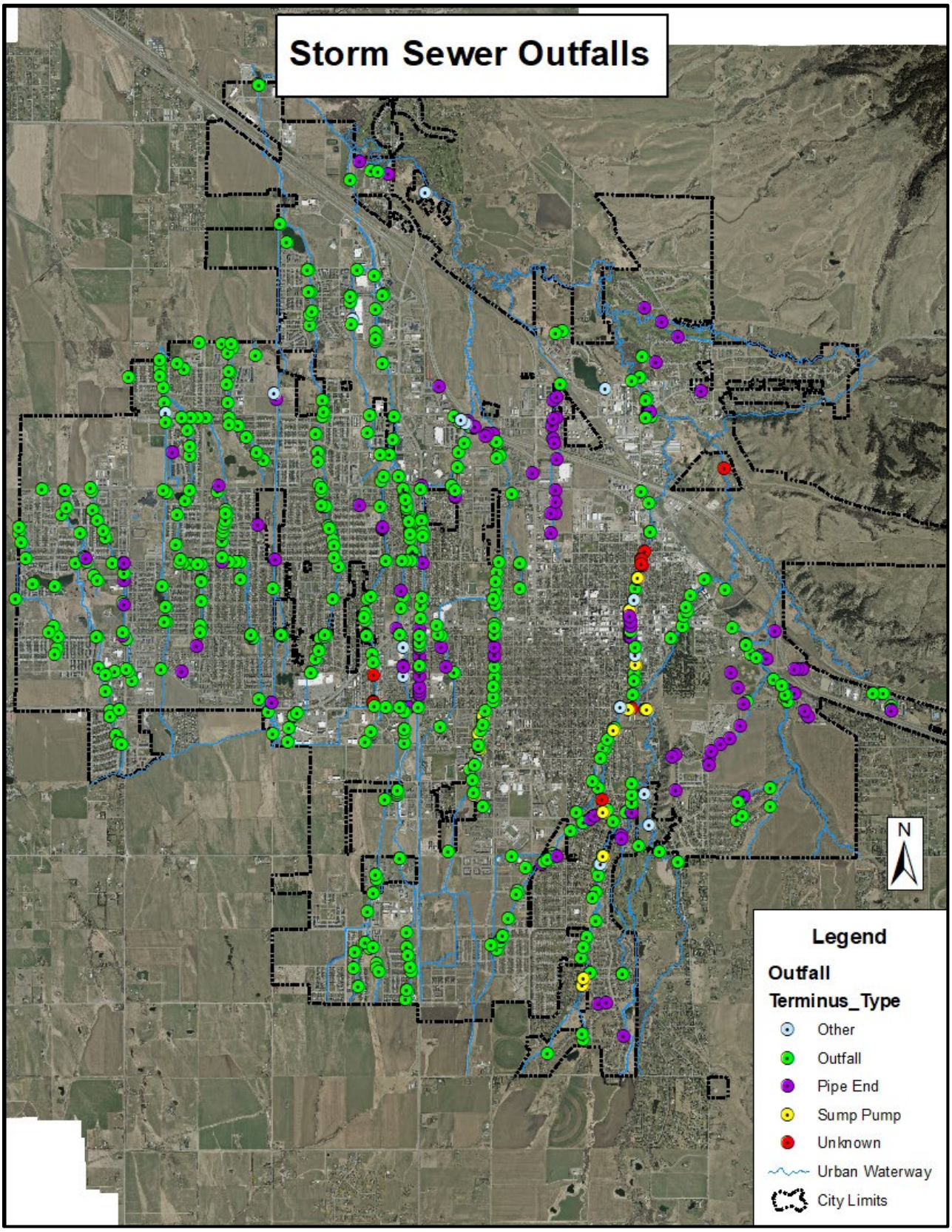
4.8 Outfall Reconnaissance Inventory (ORI)

Table 4.8.1: Receiving Waterways

#	Waterway Name	2021 Outfalls	2022 Outfalls	2023 Outfalls	2024 Outfalls	TMDL	Impairments	MS4 Waste Load Allocation
1	Aajker Creek	5	5	5	5	No	None	None
2	Baxter Creek	17	17	19	19	No	None	None
3	Bozeman Creek	19	17	20	20	Yes	E. Coli, Nitrogen, Sediment, Chlorophyll-a, alteration in streamside cover	Sediment: 81 tons/year
4	Bridger Creek	0	0	0	0	Yes	Chlorophyll-a and Nitrate/Nitrite (Nitrite + Nitrate as N)	None
5	Catron Creek	67	70	70	71	No	None	None
6	Cattail Creek	43	44	45	45	No	None	None
7	East Gallatin River	12	12	12	12	Yes	Total Nitrogen, Total Phosphorous	None
8	Farmers Canal	22	24	24	26	No	None	None
9	Figgins Creek	19	20	20	20	No	None	None
10	Flat Creek	5	7	7	7	No	None	None
11	Mandeville Creek	33	34	36	36	Yes	Total Nitrogen, Total Phosphorous	None
12	Matthew Bird Creek	19	19	19	19	No	None	None
13	Maynard-Border Ditch	13	13	13	13	No	None	None
14	Middle Creek Ditch	20	22	22	23	No	None	None
15	Mill Ditch	0	0	0	0	No	None	None
16	Nash Spring Creek	0	0	0	0	No	None	None
17	Rocky Creek	0	0	0	0	Yes	Alteration in Streamside Cover, Anthropogenic Substrate Alterations, Physical Substrate Alterations, Sediment	None
18	Story Ditch	10	10	10	10	No	None	None

19	W. Gallatin Canal	39	26	28	27	No	None	None
20	Unnamed	111	131	132		No	None	None
Totals		454	437	449	**481**	-	-	-

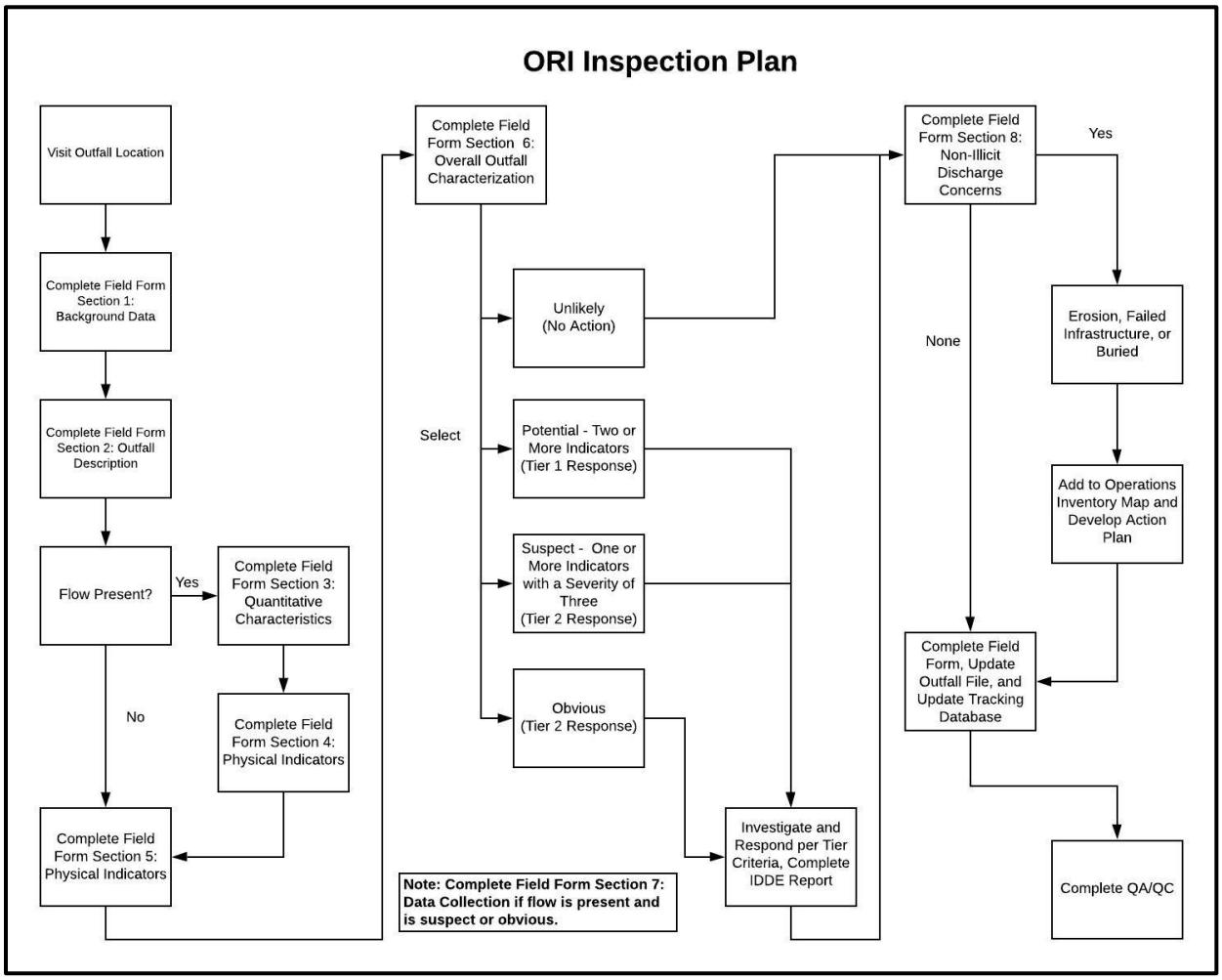
The City's GIS inventory contains 704 total outfall features. However, many of these do not meet the regulatory defination of "outfall". The GIS outfall database contains an attribute field classifying each feature's terminus type as outfall, pipe end, sump pump, other, and unknown. Each feature is inspected using the ORI Inspection Plan detailed in Graphic 4.8.2, and terminus type is confirmed and updated as needed.



Graphic 4.8.1: Storm sewer outfall map.

The MS4 prioritizes and inspect outfalls once during each MS4 Permit term using the Center for Watershed Protection protocol, including:

- Outfall Inventory: Desktop analysis to update existing and add new outfalls to the MS4's databases. The downhill end of each pipe that discharges to the surface is mapped as and "outfall" even if it does not meet CWP outfall inspection criteria. The terminus type is determined at the office. All are inspected regardless of terminus type, but tables in this section only report efforts related to "outfall" terminus types.
- Field Preparation: Staff utilizes waders, high visibility vest, measuring tape, multi-parameter sensor (temp and pH), ammonia test strips, turbidimeter, sample bottles, field forms, clipboard, camera, flashlight, legal pad, marker, pen, outfall maps, and nitrile gloves.
- Develop Inspection Plan: The MS4 inspects pipe ends of all terminus types with a goal of 25% completed per year. Planning includes using GIS software to identify clusters of outfalls along a watercourse, property ownership, safety concerns, and accessibility to plan inspection routes.
- ORI Inspection: The MS4 visits individual outfalls and completes the following workflow:



Graphic 4.8.2: ORI Inspection Plan

- If applicable, implement Corrective Action Plan: The MS4 initiates a response as defined in SWMP Section 4.3 for any outfall classified as potential, suspect, or obvious pollution source.

- Outfall Attribute Update: Staff collects and updates the following outfall spatial attribute information:
  - Ownership: City of Bozeman, MSU, MDT, Private, or Bozeman School District
  - Pipe Diameter
  - Pipe Material
  - Flow: No, Trickle, Moderate, or Substantial
  - Discharge Type: Direct or Indirect
  - Inspection Date
  - Terminus Type: Outfall, Pipe End, Sump Pump, Unknown, or Other
  - Outfall Characterization/Determination: Unlikely, Potential, Suspect, or Obvious

The MS4 inspects outfalls deemed a high-priority annually. The MS4 considers an outfall to be high-priority if it meets the following criteria:

- 18" or more in diameter.
- Drains an urban watershed area of 25 acres or more.
- Dumps stormwater directly into an impaired receiving water (i.e., no stormwater basin).
- Obvious or suspect outfalls classified through previous years' ORI.

High-priority outfalls include:

1. Outfall ID: OF.G08.00035

- Discharge Location: Overbrook Dr. and Langhor Ave.
- Receiving Waterway: Figgins Creek
- Size and Material: 30" RCP

Table 4.8.3: OF.G08.00035

Inspection Year	Date	Flow	Characterization
2019	February 1, 2019	Yes, Trickle	Unlikely, No Indicators
2020	October 7, 2020	Yes, Trickle	Unlikely, No Indicators
2021	October 6, 2021	Yes, Trickle	Unlikely, No Indicators
2022	August 13, 2022	Yes, Trickle	Unlikely, One Indicator
2023	June 28, 2023	Yes, Moderate	Unlikely, No Indicators
2024	July 5, 2024	Yes, Moderate	Unlikely, No Indicators

2. Outfall ID: OF.F06.00090

- Discharge Location: S. Bozeman Ave. and E. Cleveland St.
- Receiving Waterway: Matthew Bird Creek
- Size and Material: 20" Steel

Table 4.8.4: OF.F06.00090

Inspection Year	Date	Flow	Characterization
2019	July 19, 2019	No	Unlikely, No Indicators
2020	July 7, 2020	No	Unlikely, No Indicators
2021	September 2, 2021	No	Unlikely, No Indicators
2022	July 20, 2022	No	Unlikely, No Indicators
2023	July 25, 2023	No	Unlikely, No Indicators
2024	July 5, 2024	No	Unlikely, No Indicators

3. Outfall ID: OF.F06.00089

- Discharge Location: S. Black Ave. and W. Cleveland St.
- Receiving Waterway: Matthew Bird Creek
- Size and Material: 18" RCP

Table 4.8.5: OF.F06.00089

Inspection Year	Date	Flow	Characterization
2019	July 19, 2019	No	Unlikely, No Indicators
2020	July 7, 2020	No	Unlikely, No Indicators
2021	September 2, 2021	No	Unlikely, No Indicators
2022	July 20, 2022	No	Unlikely, No Indicators
2023	August 25, 2023	No	Unlikely, No Indicators
2024	July 5, 2024	No	Unlikely, No Indicators

4. Outfall ID: OF.H05.00370

- Discharge Location: N. 11th Ave. and W. College St.
- Receiving Waterway: Mandeville Creek
- Size and Material: 18" RCP

Table 4.8.6: OF.H05.00370

Inspection Year	Date	Flow	Characterization
2019	July 19, 2019	Yes, Moderate	Unlikely, No Indicators
2020	July 7, 2020	No	Unlikely, No Indicators
2021	September 8, 2021	Yes, Substantial	Unlikely, No Indicators
2022	November 21, 2022	Yes, Substantial	Unlikely, No Indicators
2023	July 26, 2023	Yes, Substantial	Unlikely, No Indicators
2024	July 5, 2024	Yes, Substantial	Unlikely, No Indicators

5. Outfall ID: OF.H05.00384

- Discharge Location: N. 11th Ave. and W. Koch St.
- Receiving Waterway: Mandeville Creek
- Size and Material: 12" RCP

Table 4.8.7: OF.H05.00384

Inspection Year	Date	Flow	Characterization
2019	January 31, 2019	No	Unlikely, No Indicators
2020	July 8, 2020	No	Unlikely, No Indicators
2021	September 8, 2021	No	Unlikely, No Indicators
2022	November 21, 2022	No	Unlikely, No Indicators
2023	July 26, 2023	No	Unlikely, No Indicators
2024	July 5, 2024	No	Unlikely, No Indicators

6. Outfall ID: OF.F04.00441

- Discharge Location: N. Rouse Ave. and E. Villard St.
- Receiving Waterway: Bozeman Creek
- Size and Material: 42" RCP (42" CMP replaced during Rouse Reconstruction in 2020)

Table 4.8.8: OF.F04.00441			
Inspection Year	**Date**	**Flow**	**Characterization**
2019	August 8, 2019	No	Unlikely, No Indicators
2020	July 7, 2020	No	Unlikely, No Indicators
2021	September 2, 2021	No	Unlikely, No Indicators
2022	June 24, 2022	No	Unlikely, No Indicators
2023	August 25, 2023	No	Unlikely, No Indicators
2024	July 5, 2024	No	Unlikely, No Indicators

7. Outfall ID: OF.G04.00398

- Discharge Location: N. 9th Ave. and W. Villard St.
- Receiving Waterway: Tributary SWWW_00053
- Size and Material: 24" RCP

Table 4.8.9: OF.G04.00398			
Inspection Year	**Date**	**Flow**	**Characterization**
2019	January 19, 2019	No	Unlikely, No Indicators
2020	July 8, 2020	No	Unlikely, One Indicator
2021	September 2, 2021	No	Unlikely, No Indicators
2022	August 3, 2022	No	Unlikely, No Indicators
2023	July 19, 2023	No	Unlikely, No Indicators
2024	July 13, 2024	No	Unlikely, No Indicators

8. Outfall ID: OF.F03.00446

- Discharge Location: N. Rouse Ave. and E. Peach St.
- Receiving Waterway: Bozeman Creek
- Size and Material: 43" RCP (Pipe upgraded from 27" RCP during Rouse Reconstruction)

Table 4.8.10: OF.F03.00446			
Inspection Year	**Date**	**Flow**	**Characterization**
2019	January 31, 2019	No	Unlikely, No Indicators
2020	July 7, 2020	No	Unlikely, No Indicators
2021	September 2, 2021	Yes, Moderate	Unlikely, No Indicators
2022	August 3, 2022	Yes, Moderate	Unlikely, No Indicators
2023	July 14, 2023	No	Unlikely, No Indicators
2024	July 5, 2024	No	Unlikely, No Indicators

9. Outfall ID: OF.E03.00450

- Discharge Location: N. Rouse Ave. and E. Tamarack St.
- Receiving Waterway: Bozeman Creek
- Size and Material: 36" RCP

Table 4.8.11: OF.G03.00450			
Inspection Year	**Date**	**Flow**	**Characterization**
2019	January 31, 2019	No	Unlikely, No Indicators
2020	July 7, 2020	No	Unlikely, One Indicator
2021	September 2, 2021	No	Unlikely, One Indicator
2022	August 3, 2022	No	Unlikely, One Indicator
2023	August 25, 2023	No	Unlikely, No Indicators

2024	July 5, 2024	No	Unlikely, No Indicators

10. Outfall ID: OF.E03.00454

- Discharge Location: N. Rouse Ave. and E. Tamarack St.
- Receiving Waterway: Bozeman Creek
- Size and Material: 30" RCP

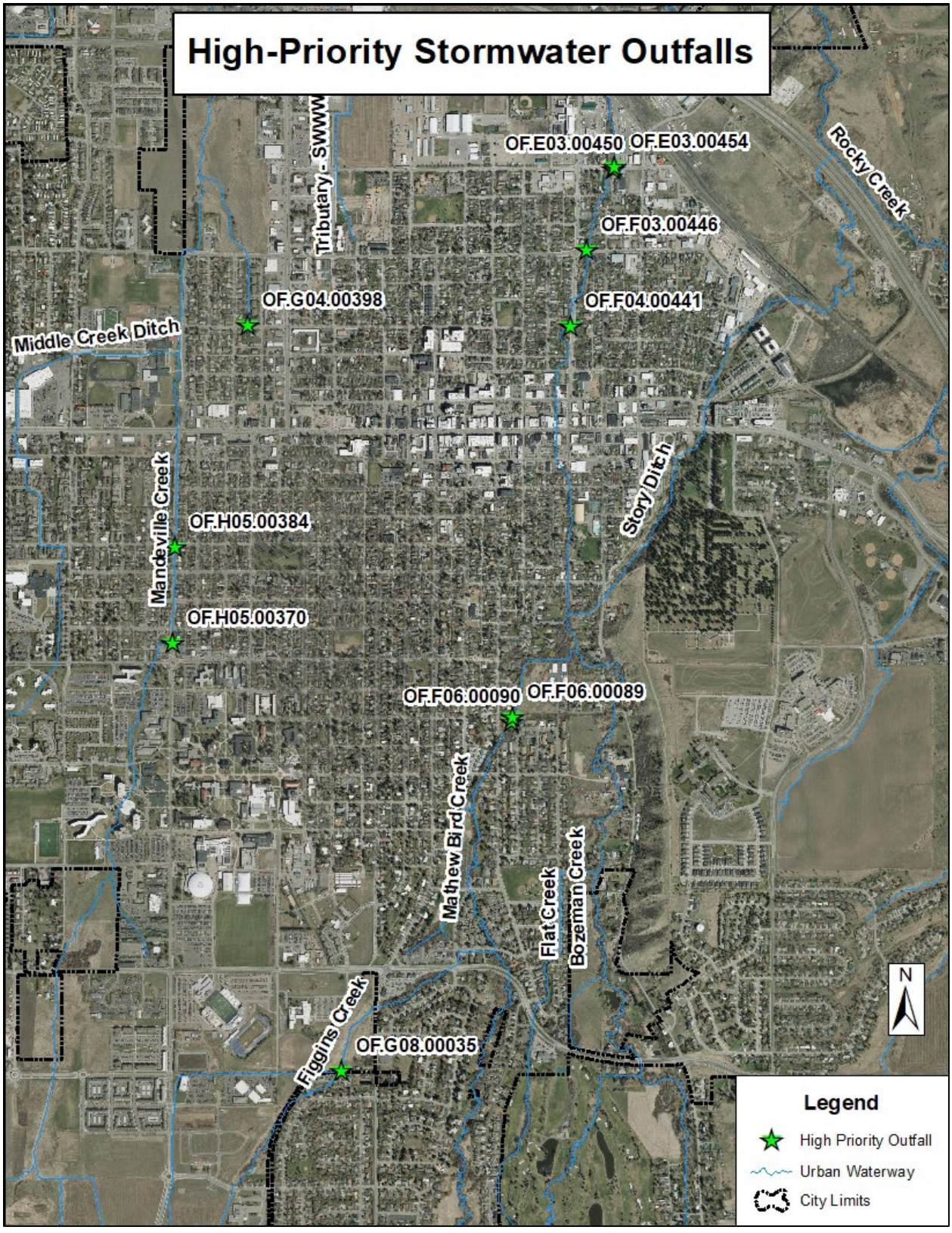
Table 4.8.12: OF.E03.00454

Inspection Year	Date	Flow	Characterization
2019	January 31, 2019	No	Unlikely, No Indicators
2020	July 7, 2020	No	Unlikely, No Indicators
2021	September 2, 2021	No	Unlikely, No Indicators
2022	August 3, 2022	No	Unlikely, No Indicators
2023	August 25, 2023	No	Unlikely, No Indicators
2024	July 5, 2024	No	Unlikely, No Indicators

The MS4 completed the following outfall inspections:

Table 4.8.13: Outfall Inspection Summary

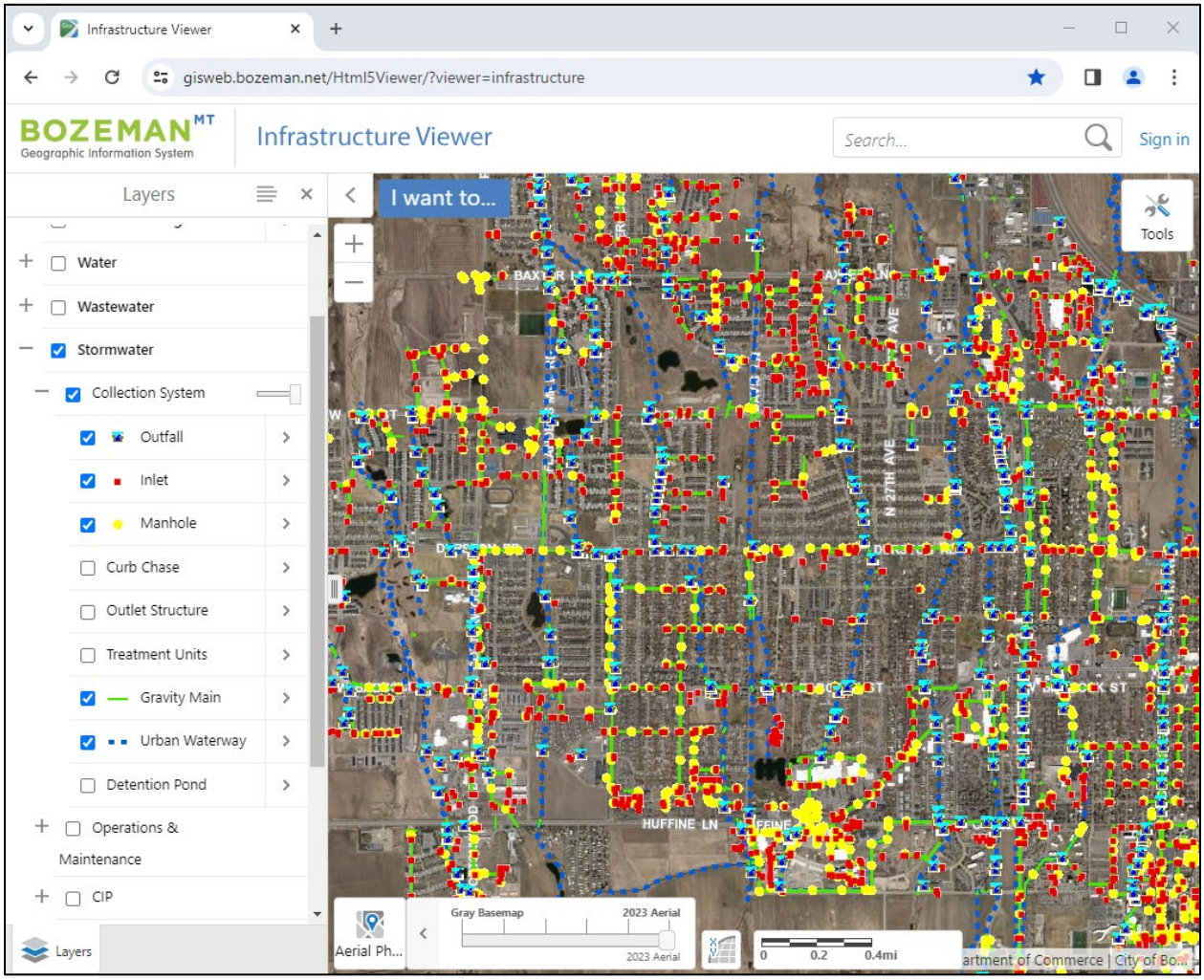
ORI Year	Outfalls	Outfalls Inspected	High-Priority Outfalls	High-Priority Outfalls Inspected
2022	437	180 Flow: 167 No, 8 Trickle, 4 Moderate, 1 Substantial. Pollution Characterization: 180 Unlikely.	10	10 Flow: 7 No, 1 Trickle, 1 Moderate, 1 Substantial Pollution Characterization: 10 Unlikely
2023	449	206 Flow: 201 No, 2 Trickle, 2 Moderate, 1 Substantial. Pollution Characterization: 206 Unlikely.	10	10 Flow: 8 No, 1 Moderate, 1 Substantial Pollution Characterization: 10 Unlikely
2024	481	200 Flow: 190 No, 0 Trickle, 6 Moderate, 4 Substantial. Pollution Characterization: 200 Unlikely.	10	10 Flow: 8 No, 1 Moderate, 1 Substantial Pollution Characterization: 10 Unlikely



Graphic 4.8.14: High Priority Outfalls

4.9 Storm Sewer Infrastructure Viewer

The MS4 collects and continually updates its storm sewer infrastructure map. When inaccuracies are found on the MS4's Infrastructure Viewer or observed in the field, Staff documents, field verifies, and then sends to the GIS Department for correction. The public can view the MS4's storm sewer system at: https://gisweb.bozeman.net/Html5Viewer/?viewer=infrastructure.



Graphic 4.9.1: Bozeman Storm Sewer System Map

Section 5.0

Construction Site Management Program

Graphic 5.0.1: Recently constructed and stabilized stormwater pond

Graphic 5.0.2: Inlet sump clogged with construction debris

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5.1 Introduction

The MS4 strives to improve waterway health, protect public safety, and comply with its MS4 Permit through the regulation of construction sites by:

1. Providing educational opportunities;
2. Administering a permitting program;
3. Conducting site inspections; and
4. Enforcing municipal and state regulations.

SWMP Section 5.0 details the following components necessary to administer the MS4's Construction Site Management Program, including:

- Regulatory Framework (5.2)
- Construction Site Permitting Program (5.3)
- Enforcement Response Plan (5.4)
- SWPPP Site Prioritization and Inspection Frequency Protocol (5.5)
- Construction Site Inventory (5.6)
- Performance Tracking (5.7)
- Program Documents (5.8)

5.2 Regulatory Framework

Pursuant to §40.04.350 Bozeman Municipal Code (BMC), the MS4 requires owners/operators of construction sites to comply with the following regulations:

1. Article 4 Chapter 40 Bozeman Municipal Code (BMC);
2. 75-5-101 Montana Code Annotated (MCA); and
3. 17.30.1101, 17.30.1301 et seq., and 17.30.601 et seq. Administrative Rules of Montana (ARM).

5.3 Construction Site Permitting Program

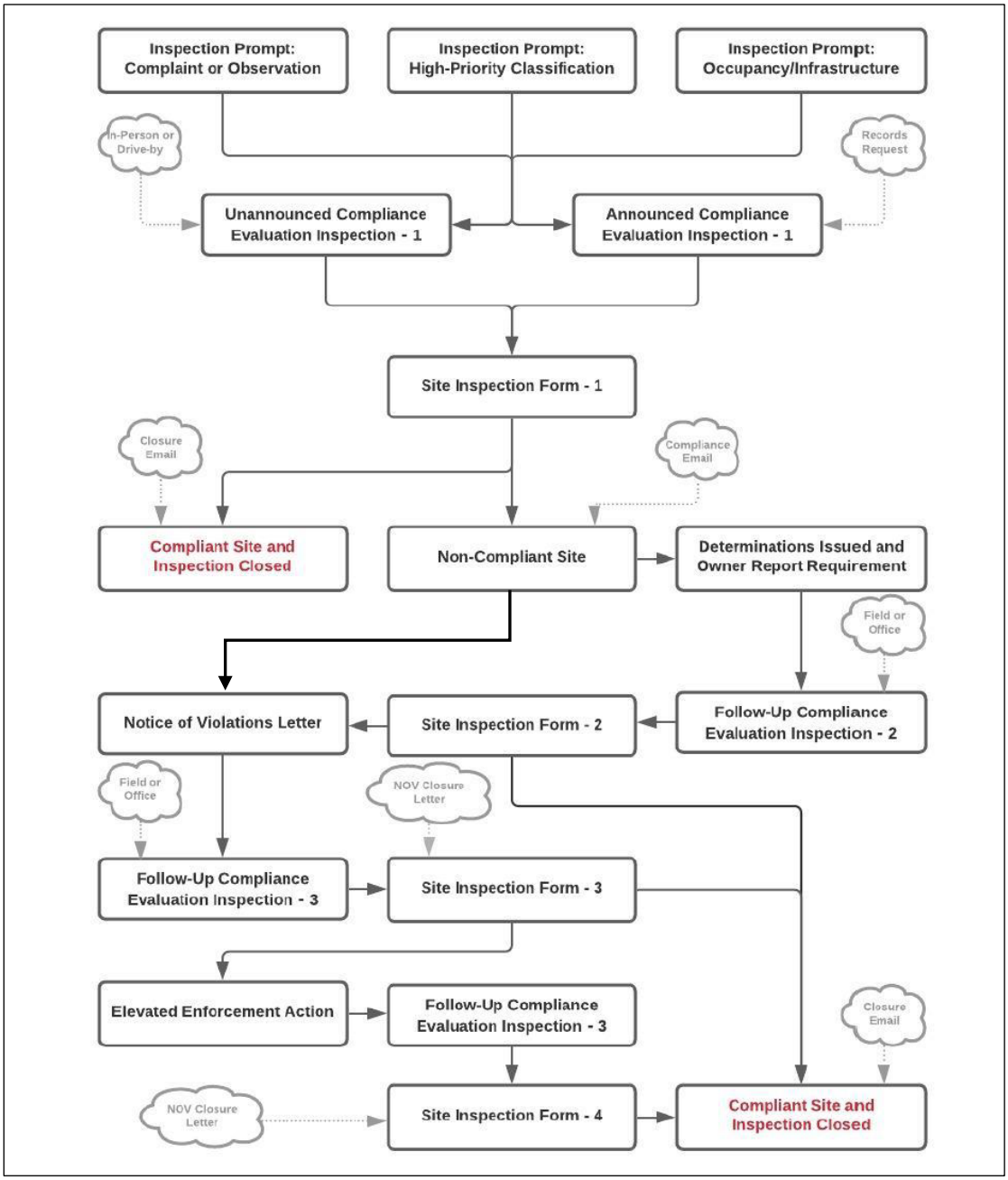
Pursuant to §40.04.350 BMC, the MS4 requires owners/operators of construction sites to submit a construction stormwater permit before receiving a Building Permit or Infrastructure Project Notice to Proceed. Three permit types exist, including:

1. MDEQ General Permit for Stormwater Discharges Associated with Construction Activity (Construction General Permit): The MS4 requires owners/operators to submit a MDEQ Notice of Intent (NOI), Stormwater Pollution Prevention Plan (SWPPP), Authorization Letter, and site maps for construction sites that meet the Eligibility Requirements of the most current Construction General Permit. The MS4 completes one permit review for compliance with the most current Construction General Permit. The MS4 provides the owner/operator a Permit Review Checklist and Review Confirmation Letter. The MS4 does not confirm the owner/operator has corrected deficiencies through multiple reviews. Instead, the MS4 reviews for compliance onsite during Compliance Evaluation Inspections (CEI).
2. Construction Stormwater Permit: Sites Less than One (1) Acre: The MS4 requires owners/operators to submit for construction sites with land disturbance greater than 10,000 square feet but less than one acre. The MS4 completes numerous completeness and adequacy reviews of the owner/operator's application and map and provides a Review Confirmation Letter once deemed compliant with BMC.
3. Construction Stormwater Permit: Single-Family Residential Projects: The MS4 requires this permit for individual single-family and multi-family construction sites which disturb less than

10,000 square feet. The MS4 completes numerous completeness and adequacy reviews of the owner/operator's application and provides a Review Confirmation Letter once deemed compliant with BMC.

5.4 Enforcement Response Plan

The MS4 implements the following Construction Site Enforcement Response Plan (ERP) to ensure compliant construction sites within its jurisdiction:



Graphic 5.4.1: ERP workflow

1. Inspection Type: Pursuant to §40.04.850.D BMC, the MS4 has the authority to complete CEIs at construction sites to ensure compliance with BMC and the Construction General Permit. Inspections may include: (1) Document review, including the site's NOI, SWPPP, Authorization Letter, BMP specifications, site maps, self-inspection records, and (2) Site tour identifying pollutant sources, inspection of implemented and maintained BMPs, and compliance determinations with the BMC and Construction General Permit. Inspection types include:

    - Unannounced: CEI resulting from a complaint or field observation. See SWMP Section 5.4.2.
    - Announced: CEI resulting from reoccurring inspection efforts, which the MS4 prioritizes based on site prioritization and complaints. See SWMP Section 5.4.2.
    - High priority / Wet weather inspections.
    - Occupancy / Infrastructure Approval.

2. Compliance Determination: Pursuant to §40.04.860 BMC, the MS4 has the authority to make BMC and Construction General Permit compliance determinations, including:

    - Permit and/or Site is Complaint: No permit nor site non-compliance determinations issued. Inspection closed.
    - Permit and/or Site is Not Complaint: Permit and/or site non-compliance determinations issued. See SWMP Section 5.4.3.

3. Enforcement Response: The MS4's enforcement response options, including:

    - Verbal Warning: An informal response used when the MS4 determines the BMC and Construction General Permit non-compliance determinations are low-risk, and there are reasonable grounds that the owner/operator will correct the issues. Verbal warnings take the form of phone calls, emails, or in-person meetings. Inspection closed.
    - Site Inspection Form: An informal response by the MS4 to document BMC and Construction General Permit non-compliance determinations. The MS4 emails or delivers the Site Inspection Form to the site owner/operator. See SWMP Section 5.4.4.

4. Enforcement Action: Pursuant to §40.04.860 and §40.04.890 BMC, the MS4 has the authority to require the owner/operator to comply with BMC and/or the Construction General Permit using the following actions:

    - Follow-Up CEI: An informal action completed to ensure the site owner/operator corrects the non-compliance determinations issued in the Site Inspection Form. A Follow-Up CEI can take the form of a site visit, a conversation, or a review of submitted information. If so, inspection closed. If not, See SWMP Section 5.4.4 – Notice of Violations.
    - Notice of Violations (NOV): A formal enforcement action taken when the site owner/operator does not resolve the non-compliance determinations. A NOV includes written violations of the BMC and the Construction General Permit, a Cease and Desist Order/ Stop Work Order. Both Orders apply to the site activities resulting in the issued violations and associated non-compliance determinations. NOVs require the site owner/operator to submit a written response within a set timeframe, documenting that they have resolved the violations and associated non-compliance determinations. Upon the MS4's review and approval of the written response, the inspection is closed. If existing non-compliance determinations remain or additional areas of non-compliance are identified, see SWMP Section 5.4.4 - Enforcement. In severe cases, the MS4 bypasses the Follow-Up CEI and immediately issues an NOV.
    - Enforcement: A variety of formal penalties used by the MS4 when the site owner/operator does not comply with the NOV's requirements, including:

- Building Permit Stop Work Order: Pursuant to §10.02.010.D, BMC, a Building Official may issue an order requiring any site owner/operator to immediately stop all work of any kind related to site's Building Permit. Any person who continues work after having been served with a Stop Work Order, except such work as that person is directed by the City to perform to remove a violation or unsafe condition, shall be subject to the misdemeanor penalty provision of §10.02.100 BMC. The issuance of a Stop Work Order cancels any pending inspections.
- Withholding Issuance of a Certificate of Occupancy: Pursuant to §10.02.010.C, BMC, a Building Official of the City may withhold the issuance of a certificate of occupancy when the available evidence shows the structure and associated development does not conform with the standards of Chapter 40 BMC, a permit issued pursuant to Chapter 40 BMC, or has failed to pay costs of the abatement of stormwater violations as may be ordered by the City.
- Misdemeanor Criminal Charge and Prosecution (Judicial): Pursuant to §40.04.910 BMC, any person, firm or corporation, their agents or servants who violate any provision or requirement of Chapter 40 BMC or of a permit issued shall be guilty of a misdemeanor and, upon conviction thereof, shall be punished by a fine not exceeding $500.00 and in addition shall pay all costs and expenses of the case. A separate offense shall be deemed committed upon each day during or on which a violation occurs or continues.

5. Additional ERP Information:

- Elimination and Abatement of Illegal Construction Discharges: The MS4 uses the ERP to identify and resolve violations of BMC and/or the Construction General Permit.
- Staff with Enforcement Authority: Stormwater Program Technician, Stormwater Program Specialist, Stormwater Program Project Coordinator, Stormwater Program Manager have the authority to issue non-compliance determinations. The Stormwater Manager is the authorized Enforcement Agent and makes determinations regarding enforcement penalties.
- Enforcement Action Available, Escalation Process, and Schedule: The MS4's ERP is flexible and includes escalation protocols based on a owner/operator's response, while also providing options for immediate action when the Enforcement Agent identifies severe violations of BMC and/or the Construction General Permit. The MS4's ERP schedule is based on the Enforcement Agent's determination of risk (weather, capacity, waterway proximity, site size, pollutant source scale and severity, owner/operator compliance history, etc.). ERP implementation ranges from immediate action to a timeframe extending a week or more. A typical Follow-Up CEI occurs within five days. An NOV standard response timeframe is 10 days.
- Abate Damages and Prevent Recurrence: Upon the conclusion of the NOV via the Closure Letter issuance, the MS4 maintains the authority to enact immediate enforcement action, as detailed in SWMP Section 5.4.4 - Enforcement upon the identification of any repeat violations.

5.5 SWPPP Site Prioritization and Inspection Frequency Protocol:

The MS4 uses the following Construction Site Scoring Matrix to determine a site's priority level.

Table 5.5.1: Construction Site Scoring Matrix			
Criteria	**3-Points**	**2-Points**	**1-Point**
Site Size (Acres)	> 10-Acres	5 - 10 Acres	< 5-Acre
Proximity to Waterbody	< 1,000 ft	> 1,000 or < 2,000 ft	> 2,000 ft
Site Steepness per SWPPP	Yes	-	No
Bozeman Creek Watershed	Yes	-	No
Permit Review Checklist Score	> 50	25 - 50	< 25

Once priority is determined, the MS4 completes inspections per the frequencies outlined below.

- High-Priority Construction Sites (Over 10 Points):
  - Once at construction commencement.
  - After every .25" rain event. The MS4 interprets this standard to mean any continuous rain event that occurs within a 24-hour timeframe and uses the Bozeman International Airport NOAA Rain Gage.
  - After every snow melt event resulting in visible erosion.
  - Once at the conclusion of the project.
- Medium-Priority Construction Sites (5 - 10 Points):
  - As needed basis per complaints and field observations.
- Low-Priority Construction Sites (Below 5 Points):
  - As needed basis per complaints and field observations.
  - Less than One Acre Construction Sites.
  - Single-Family Residential Construction Sites.

Routine Inspection Frequency Protocol – The City develops an annual inspection plan to prioritize CEIs for all active construction sites, not deemed high-priority, regardless of permit coverage type. The inspection plan prioritizes CEIs based on complaints, field observations, and compliance history.

5.6 Construction Site Inventory

The MS4 maintains a construction site inventory which includes the following:

- Single Family Residential Permits and Inspection,
- Less than One Acre Permits and Inspections, and
- Greater than One Acre Permits and Inspections.

MSU Construction Site Inventory Summary

In 2024, MSU managed nine (9) one acre or larger construction projects and five (5) projects less than one acre, which have the potential to influence stormwater quantity and quality. Those projects include:

- Applied Research Lab: Active, planned completion 2025 (Over One Acre)
- Indoor Athletic Facility: Active, planned completion 2025 (Over One Acre)
- College of Nursing / Jones Hall: Active, planned completion 2026 (Over One Acre)
- Gianforte Hall: Active, planned completion 2026 (Over One Acre)
- Grant Street Phase 1: Completed 2024 (Over One Acre)
- Fire Station #2: Completed summer 2024 (Over One Acre)
- 7th Avenue Utility Tunnel: Completed summer 2024 (Over One Acre)
- Wellness Center: Completed fall 2024 (Over One Acre)

- Football Stadium Parking Lots: Completed 2024 (Over One Acre)
- VIM Hotel / NWEnergy: Completed 2024 (Under One Acre)
- Indoor Athletic Facility: Completed 2024 (Under One Acre)
- Grant Street Phase 1: Completed 2024 (Under One Acre)
- Grant Street Phase 2: Active, planned completion 2025 (Under One Acre)
- Fire Hydrant Replacement: Active, planned completion 2025 (Under One Acre)

The following tables contain an inventory of construction site permits and inspections for the current permit cycle:

Table 5.6.1: Permit Type Inventory

Permit Type	2022	2023	2024	2025	2026
City Single-Family Residential Received	161	143	110		
City Less than One Acre Received	29	30	25		
City Greater than One Acre Received	35	28	15		
MSU Greater than One Acre Total	4	4	9		

Table 5.6.2: Inpsection Count * Totals represent new permits/year and does not include return visits or final occupancy inspections. High-priority inspections count as one inspection.

Inspection Type	2022	2023	2024	2025	2026
City Single Family Residential Inspections	10	9	5		
City Single Family Residential Percentage (%)	6%	6%	5%		
City Less than One Acre Inspections	3	16	2		
City Less than One Acre Percentage (%)	10%	53%	8%		

Table 5.6.3: Inpsection Type Inventory * Totals represent new permits/year and do not include return visits or final occupancy inspections. High-priority inspections count as one inspection.

Inspection Type	2022	2023	2024	2025	2026
City Greater than One Acre Inspections	27	49	31		
City Greater than One Acre Percentage (%)	77%	175%	207%		
MSU Greater than One Acre Total	6	7	5		
MSU Greater than One Acre Percentage (%)	>100%	>100%	>100%	>100%	-

City Greater than One Acre Percentage (%) totals are over 100% due to active construction projects spanning multiple years and subject to inspection in multiple years. The City Greater than One Acre percentage is calculated by dividing the number of current year inspections by current year permits received.

Ex: 2024 Greater than One Acre inspections completed = 31. 2024 Greater than One Acre permits received = 15.

$$(31 \div 15) \times 100 = 207\%$$

Return visits, sites inspected multiple times per year, and occupancy inspections are not included in the City of Bozeman totals. Permit type inventory totals only count projects the year they begin. MSU inspection percentage above 100 is due to inspecting each project more than one time.

Current High-Priority Construction Sites:

1. OAC20-042 Allision Subdivision: Forty-eight acre site within the Bozeman Creek watershed. The site includes the installation of a subdivision, including utilities, roads, and structures.
    - Points: 12

- Permit Confirmation: December 17, 2020
- Initial Inspection: January 12, 2021
- Precipitation Triggered Inspections:
  - 2021: Nine (9) Inspections
  - 2022: Six (6) Inspections
  - 2023: Ten (10) Inspections
  - 2024: Eight (8) Inspections
- Final Inspection: TBD

2. OAC21-021 Blackwood Groves: Twenty seven acre site within the Bozeman Creek watershed. The site includes the installation of a subdivision, including utilities, roads, and structures.
   - Points: 12
   - Permit Confirmation: July 20, 2021
   - Initial Inspection: August 9, 2021
   - Precipitation Triggered Inspections:
     - 2021: Three (3) Inspections
     - 2022: Five (5) Inspections
     - 2023: Five (5) Inspections
     - 2024: Six (6) Inspections
   - Final Inspection: TBD
3. OAC21-035 North Park Development: Fifteen-acre site within the Mandeville Creek watershed. The site includes the installation of a subdivision, including utilities, roads, and structures.
   - Points: 11
   - Permit Confirmation: December 20, 2021
   - Initial Inspection: May 19, 2021
   - Precipitation Triggered Inspections:
     - 2022: Six (6) Inspections
     - 2023: Eight (8) Inspections
     - 2024: Eight (8) Inspections
   - Final Inspection: October 17, 2024
4. OAC22-015 North Park – MRL Right of Way: Thirty-six-acre site within the Mandeville Creek watershed. The site includes the installation of a new railroad track infrastructure.
   - Points: 11
   - Permit Confirmation: May 18, 2022
   - Initial Inspection: June 23, 2022
   - Precipitation Triggered Inspections:
     - 2022: Five (5) Inspections
     - 2023: Eight (8) Inspections
     - 2024: Seven (7) Inspections
   - Final Inspection: TBD

Completed High-Priority Construction Sites:

1. OAC19-0001 16 Willson Residential Development: One acre site within the Bozeman Creek watershed. The site includes the demolition of existing structures and construction of numerous row houses.
    - Project Inspection Timeframe: May 2019 – June 2022
    - Total Inspections: 21
2. OAC19-0026 Bozeman Public Safety Center: Eight-acre site within the Bozeman Creek watershed. The site includes the demolition of existing structures and construction of commercial building.
    - Project Inspection Timeframe: August 2019 – August 2022
    - Total Inspections: 24

5.7 Performance Tracking

The MS4 completes a Construction Site Compliance Audit in the fall, evaluating 50 random construction sites to determine their compliance with the BMC and Construction General Permit. The MS4 evaluates each construction site and then assigns points using the following criteria:

1. 0-Points: No BMPs. Not compliant with permit, high risk to infrastructure, public, and environment
2. 1-Point: Some BMPS installed or BMPs installed but not maintained. Partially compliant with permit, moderate risk to infrastructure, public, and environment
3. 2-Points: BMP installed and maintained. Compliant with permit, low risk to infrastructure, public, and environment

The MS4 compiles the collected data and updates the following:

Table 5.7.1: Construction Site Compliance Audit Scores

Audit Year	Audit Dates	Compliance Trend	Total Points	Earned Score	OAC Average	UAC Average	SFR Average
2018	October 24 - 26	n/a	33/100	33%	33%	37%	31%
2019	October 14 - 16	Decreasing	28/100	28%	28%	29%	28%
2020	November 6 - 13	Increasing	34/100	34%	67%	21%	27%
2021	November 19 – 22	Increasing	37/100	38%	65%	50%	24%
2022	October 4, 5, 13, 12	Increasing	69/100	69%	60%	73%	71%
2023	October 16 - 24	No Change	64/100	64%	64%	77%	60%
2024	October 15 & 16	No Change	64/100	64%	75%	75%	55%

1. 2018 Discussion:
    - Increased BMP use but many not adequately maintained.
    - Noncompliance was mostly contained within private sites.
    - Increased inspection frequency is effective at increasing compliance rates.
2. 2019 Discussion:
    - Compliance degrades back to pre-inspection levels after inspections.
    - Permit applicant does not always communicate the requirements to onsite workers.
    - 64% of commercial and infrastructure sites yielded a score with moderate or low risk.
    - 44% of residential sites yielded a score with moderate or low risk.
    - Only three sites fully complied with regulations.
    - Increase inspection frequency to ensure compliance throughout project life.

- Inspect sites proportional to ratios (i.e. residential/commercial/infrastructure).
- Apply more emphasis on installation, maintenance, and records during inspections.

3. 2020 Discussion:

   - Multiple SWPPP reviews for a respective project do not result in elevated onsite compliance.
   - Inspection time and constant presence equates to improved compliance onsite.
   - The City's consulting engineer should create SWPPPs for public projects, not the contractor.
   - More emphasis required on installation, maintenance, and records during inspections.

4. 2021 Discussion:

   - Single review for a respective OAC permit did not result in a decrease of onsite compliance.
   - Recently inspected sites had higher instances of onsite compliance.
   - OAC site inspection emphasis resulted in a similar compliance score from the previous year.
   - Low SFR inspection rate resulted in similar compliance score from previous year.

5. 2022 Discussion:

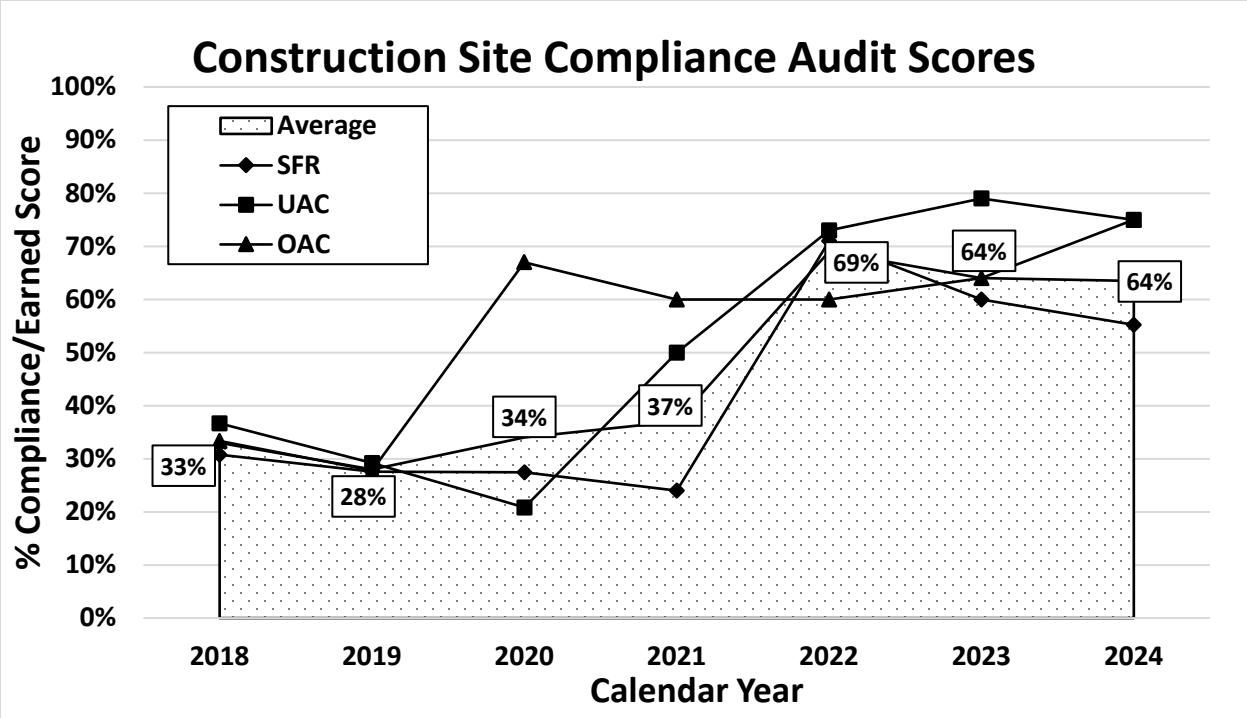
   - All three permit types showed similar compliance scores in 2022.
   - OAC site inspection emphasis resulted in a higher compliance score from the previous year.

6. 2023 Discussion:

   - All three permit types showed similar compliance scores.
   - Grading criteria described more objectively.
   - Increased inspections due to being fully staffed leads to increased compliance rates in the long run.
   - Construction audit completed after rain event potentially decreasing overall site scores.

7. 2024 Discussion

   - A decrease in the amount of Single-Family Residential inspections occurred in 2024. This decrease was a result of a high percentage of SFR sites located within projects with existing MDEQ Construction General Permit coverage. Individual SFR inspections were evaluated as part of the larger common plan of development.
   - Shifting the inspection priority to target more problematic sites instead of broad sweeping random inspections allowed Technicians to focus on sites that were not in compliance.
   - Return visits to problematic sites accounted for more inspections, which lowered the amount of total sites visited while maintaining the highest compliance.



Graphic 5.7.2: Construction Compliance Audit Scores

5.8 Program Documents

1. Single-Family Residential Sites:
    - Construction Stormwater Permit: Single-Family Residential Projects
    - SFR Permit Review Checklist
    - Construction Stormwater Permit Confirmation
    - SFR and UAC Site Inspection Form
    - Notice of Violations/Cease and Desist Order
    - Stop Work Order
2. Less than One Acre Sites:
    - Construction Stormwater Permit: Sites Less than One Acre
    - UAC Permit Review Checklist
    - Construction Stormwater Permit Confirmation
    - SFR and UAC Site Inspection Form
    - Notice of Violations/Cease and Desist Order
    - Stop Work Order
3. Greater than One Acre Sites:
    - MDEQ Construction General Permit
    - MDEQ Construction General Permit Authorization Letter
    - MDEQ Construction General Permit Notice of Intent (NOI)
    - MDEQ Construction Stormwater Pollution Prevention Plan (SWPPP)
    - MDEQ Construction Stormwater Permit Notice of Termination
    - MDEQ Construction Stormwater Permit Transfer Notification
    - OAC Permit Review Checklist

- OAC Site Inspection Form
- Notice of Violations/Cease and Desist Order
- Stop Work Order

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Section 6.0

Post-Construction Program

Graphic 6.0.1: Sediment filled stormwater basin during maintenance.

Graphic 6.0.2: Restored stormwater basin.

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6.1 Introduction

The City of Bozeman (MS4) Post-Construction Program strives to improve waterway health, protect public safety, and comply with the MS4 Permit by the regulation and oversight of existing and new structural Best Management Practices (BMPs) in the following ways:

1. Enforcement of water quality and flood control standards on new and redevelopment projects
2. Inspections of structural BMPs, namely post-construction stormwater detention and retention facilities

SWMP Section 6.0 details the components necessary to administer the MS4's Post-Construction Management Program, including:

- Regulatory Framework and Applicable Documents (6.2)
- Development Review (6.3)
- Structural BMP Inventory (6.4)
- Inspection Program (6.5)
- High-Priority Structural BMPs (6.6)
- Enforcement Response Plan (6.7)
- Performance Tracking (6.8)
- Ongoing and Future Initiatives (6.9)

6.2 Regulatory Framework and Applicable Documents

The MS4 requires new and redevelopment projects over one acre to submit a site plan showing post-construction facilities designed to infiltrate, evapotranspire, and/or capture for reuse the runoff generated from the first 0.5 inches of rainfall from a 24-hour storm preceded by 48 hours of no measurable precipitation. Additionally, the MS4 requires new and redevelopment projects under one acre to meet this standard when practicable. This reduces peak runoff and helps protect waterways, property, and human health.

The MS4 also requires developers to abide by administrative BMPs, including zoning and land planning, wetland regulations, watercourse setbacks, and open space standards. Various governing documents contain standards, policies, and regulations related to structural and administrative BMPs for new and redevelopment, including:

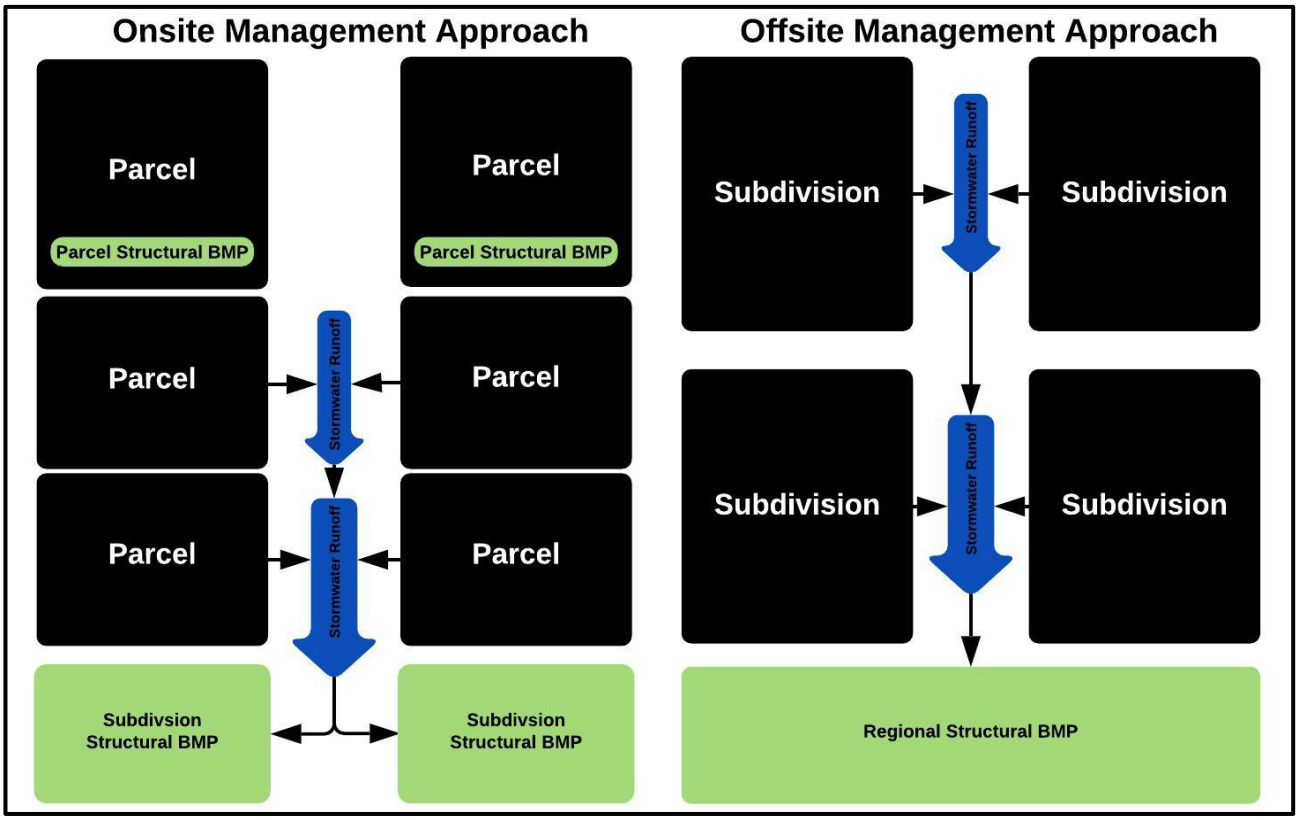
- City of Bozeman Design Standards and Specification Policy – 2020
- City of Bozeman Modifications to Montana Public Works Standard Specifications - 6th Edition
- Montana Public Works Standard Specifications - 6th Edition
- Bozeman Municipal Code (BMC)
- Parks, Recreation & Active Transportation Plan – 2023
- Gallatin Valley Sensitive Lands Protection Plan – 2023
- Montana Post-Construction Storm Water BMP Design Guidance Manual – 2017
- City of Bozeman Stormwater Facilities Plan – 2008 (2025 update pending)

6.3 Development Review

The MS4 completes development reviews related to structural and administrative BMPs as project applicants submit proposals. Projects triggering the regulatory threshold include commercial, multi-family, subdivision developments, transportation, and infrastructure improvement projects. In most

cases, developers utilize structural BMPs through an onsite management approach, which the MS4 defines at the parcel or subdivision scale.

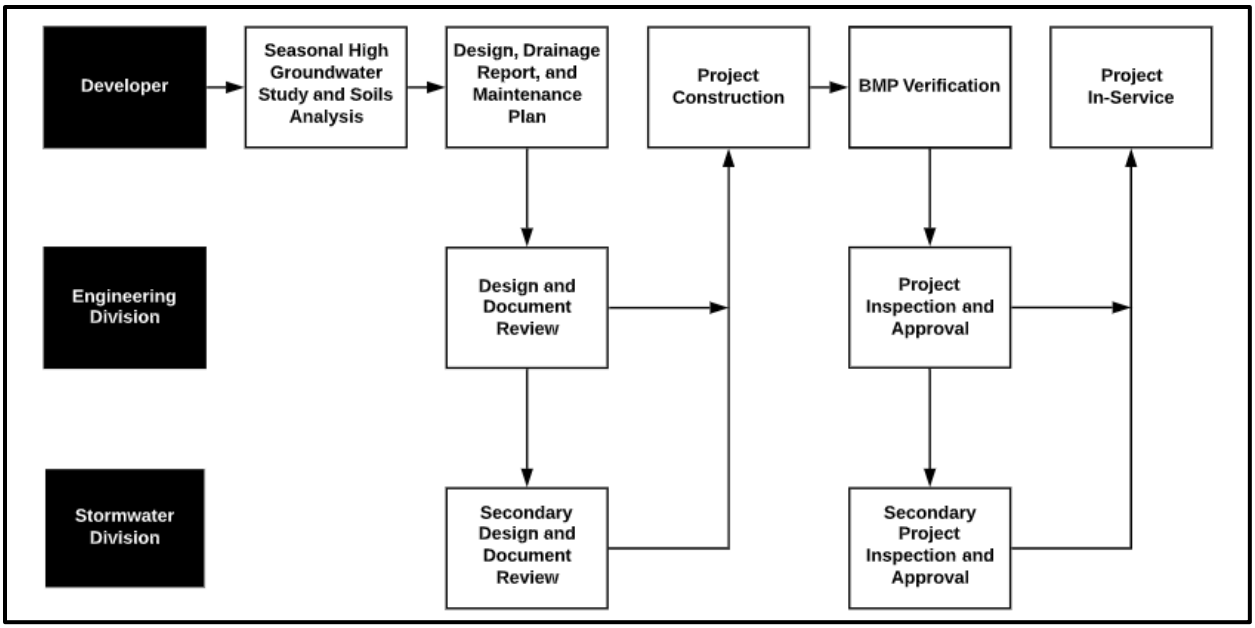
An alternative is an offsite approach, such as regional treatment facilities, which results in structural BMPs at the lower end of watersheds containing numerous subdivisions. Graphic 6.3.1 provides a conceptual view of the varying management approaches.



Graphic 6.3.1: Onsite and Offsite Management Approach Comparison

The following information and Graphic 6.3.2 describe the MS4's typical review process:

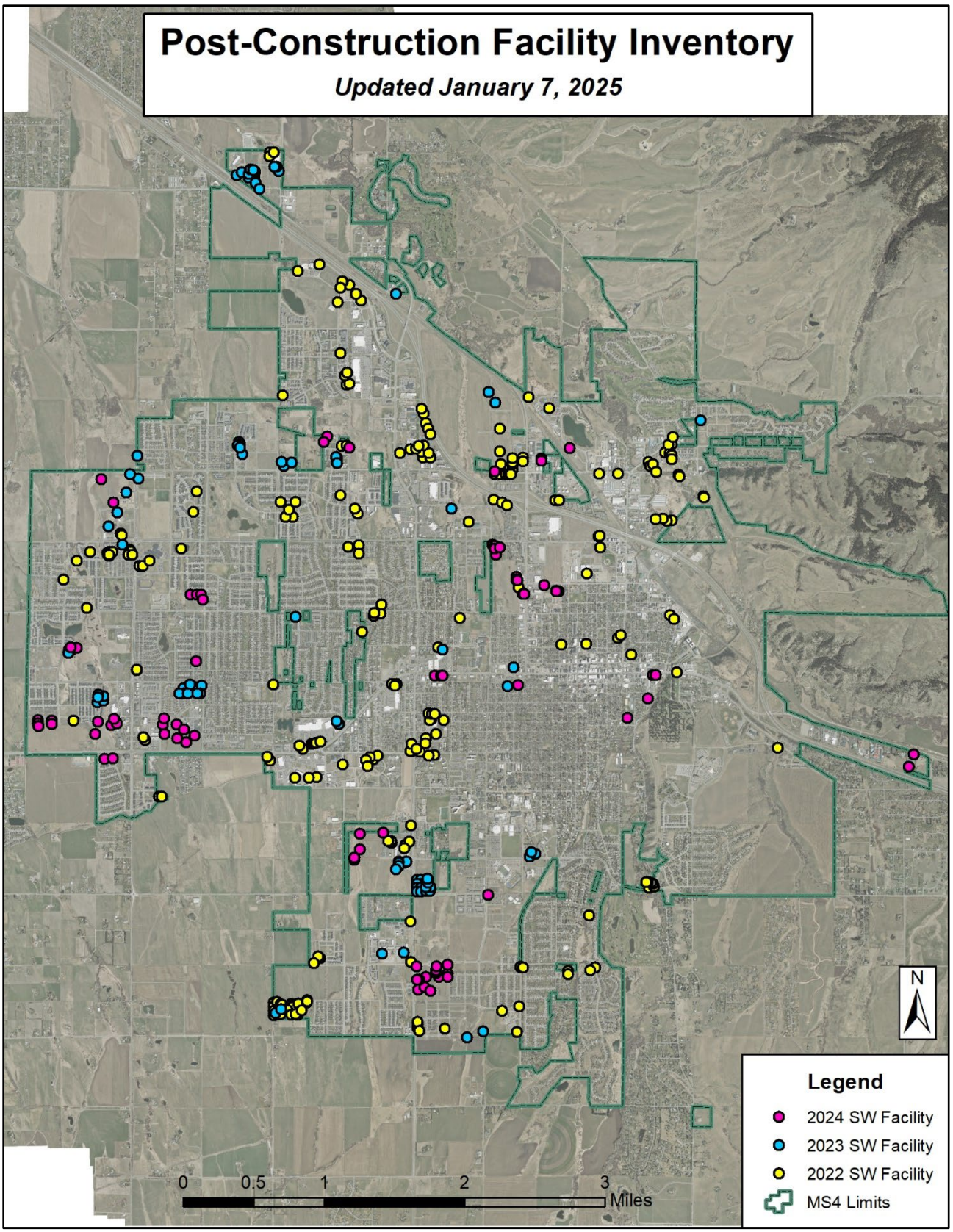
1. The developer selects a structural BMP based on site conditions, completes a design, and submits documents including drawings, drainage reports, and a maintenance plan.
2. The MS4s Engineering and Stormwater Divisions review the submittals, ensure compliance with standards, policies, and plans, and provide written comments to the developer. This step repeats as necessary until the proposed design fully complies with local requirements.
3. The developer constructs the project and associated BMPs after receiving City approval.
4. Once complete, the Engineering and Stormwater Divisions conduct inspections to verify that the approved BMPs are installed according to the approved design. The Stormwater Division confirms that the geographic information system (GIS) database contains the structural BMP.
5. The BMP goes into service and is indefinitely managed and maintained by the owner.



Graphic 6.3.2: Development Review Flow Chart

6.4 Structural BMP Inventory

The MS4 maintains an updated inventory of structural BMPs as development progresses and legacy (pre-MS4) facilities are discovered and categorized. The process typically includes a combination of GIS map digitization and field verification. Graphic 6.4.1 maps all post-construction facilities added by year for the current permit term.



Graphic 6.4.1: Post-Construction Facility Inventory 2022-2024

The MS4 categorizes and tracks the following types of structural BMPs:

1. Surface Detention Facility: Regulated discharge to the receiving waterway via an outlet structure
2. Underground Detention Facility: Regulated discharge to waterway via an outlet structure
3. Surface Retention Facility: No discharge to a waterway (includes permeable paver systems)
4. Underground Retention Facility: No discharge to a waterway

The MS4 updates the inventory annually as new facilities come online and as ownership updates of existing facilities arise. Tables 6.4.1 – 6.4.5 categorize structural stormwater BMPs based on four ownership types:

1. Public: Permittee-owned structural BMPs, usually on public land (City or Montana State University) and/or facilities operated on dedicated easements
2. Private: Structural BMPs on private property owned and operated by a private entity
3. Home/Property Owners Association: Structural BMPs located, owned, and operated by a homeowner association (HOA) on open space or parkland
4. Unknown: Structural BMPs with unknown ownership or maintenance responsibility

Table 6.4.1 Public

Type	2022	2023	2024	2025
Surface Detention Facility	45	56	58	-
Underground Detention Facility	3	3	3	-
Surface Retention Facility	39	41	42	-
Underground Retention Facility	10	18	20	-
Total:	97	118	123	-

Table 6.4.2 Private

Type	2022	2023	2024	2025
Surface Detention Facility	190	192	190	-
Underground Detention Facility	26	41	52	-
Surface Retention Facility	304	338	357	-
Underground Retention Facility	91	127	139	-
Total:	611	698	738	-

Table 6.4.3 Home/Property Owners

Type	2022	2023	2024	2025
Surface Detention Facility	251	257	279	-
Underground Detention Facility	32	32	35	-
Surface Retention Facility	129	127	141	-
Underground Retention Facility	11	11	18	-
Total:	423	427	473	-

Table 6.4.4 Unknown

Type	2022	2023	2024	2025
Surface Detention Facility	8	8	6	-
Underground Detention Facility	-	-	-	-
Surface Retention Facility	5	5	3	-
Underground Retention Facility	-	-	-	-
Total:	13	13	9	-

Table 6.4.5 Summary				
Owner Classification	**2022**	**2023**	**2024**	2025
Public	97	118	123	-
Private	611	698	738	-
HOA	423	427	473	-
Unknown	13	13	9	-
Total:	1,144	1,256	1,343	-

6.5 Inspection Program

The MS4 has completed the following inspections of structural BMPs (including high-priority) in the permit period:

Table 6.5.1 Post-Construction Facility Inspections – Current Permit Period								
Ownership	**2022**		**2023**		**2024**		2025	
	# Inspected	**% of Total**	# Inspected	**% of Total**	# Inspected	**% of Total**	# Inspected	% of Total
Public	12	**12.4**	97	**82.2**	86	**7.0**		
Private	4	**0.6**	0	**0.0**	11	**1.5**		
HOA	18	**4.3**	52	**12.2**	6	**1.3**		
Unknown	0	**0.0**	0	**0.0**	0	**0**		
Total	34	**3.0**	149	**11.9**	103	**7.7**		

The MS4 completes inspections of typical and high-priority structural BMPs using qualitative and quantitative data collection practices. Inspection frequencies for the two types include:

- Typical: Compliance-based, field observation, or as staff time and opportunity allow. MS4-owned facilities are inspected yearly.
- High-Priority: Annual inspection per requirements detailed in the MS4 Permit.

The MS4 receives permission from the underlying property owner to access privately owned and maintained structural BMPs. Once granted, a typical inspection characterizes physical conditions, flow path, facility geometry, and maintenance needs. The MS4 uses two methodologies depending on inspection goals, objectives, and staffing levels.

- Rapid Assessment Method for Basin Optimization (RAMBO): A method developed to quickly inspect surface detention and retention facilities, whereby increasing the total number of inspections that the MS4 completes annually. Critical facility components are scored based on qualitative observations and objective inference.

  The following four (4) facility components are assigned a score of 0 – 5 points then weighted by qualitative importance to stormwater facility function.

  1. Conveyance (*C*): Ability to capture and convey stormwater. Sediment accumulation and obstructed discharge points are assessed. Weight = 0.4
  2. Stabilization (*S*): Presence/absence of vegetation, erosion, or instability of side slopes are assessed. Weight = 0.15
  3. Drainage (*D*): Infiltration efficacy is assessed via the presence/absence of standing water in facilities engineered to be dry. Weight = 0.25

4. Overall Maintenance Rating (*M*): General assessment of maintenance needs. Weight = 0.2

The sum of the weighted scores is then multiplied by a conversion factor (*CF*) of 20 to obtain a total point score between 0 – 100 points. The total point score is used to determine the facility's Maintenance Priority.

- Low Priority (81-100 pts): Structural BMP functions as designed.
- Moderate Priority (51-80 pts): Structural BMP requires minor to moderate sediment management and vegetation maintenance to mitigate the risk of flooding, waterway pollution, and infrastructure failure.
- Immediate Priority (0-50 pts): Structural BMP requires significant sediment dredging, vegetation removal, and infrastructure repairs. All facilities with a conveyance score of 0.

RAMBO Maintenance Priority Assessment Formula =

$$\{(C)0.4 + (S)0.15 + (D)0.25 + (M)0.2\}\, CF$$

Example RAMBO Scoring Scenario:

Assessment Scores:	Conveyance *(C)* = 2 Stability *(S)* = 5 Drainage *(D)* = 5 Overall Maintenance Rating *(M)* = 3 Conversion Factor *(CF)* = 20
Calculation:	$\{(2)0.4 + (5)0.15 + (5)0.25 + (3)0.2\}\, 20$

Maintenance Priority Score = **68 Moderate**: Structural BMP requires minor to moderate sediment management and vegetation maintenance to mitigate the risk of flooding, waterway pollution, and infrastructure failure.

- Detailed Stormwater Facility Inspection Method: A thorough inspection method based on qualitative observations and quantitative measurements. Typically associated with facilities without baseline condition data or record drawings, or facilities in the most degraded condition. Qualitative observations are made on the following components:

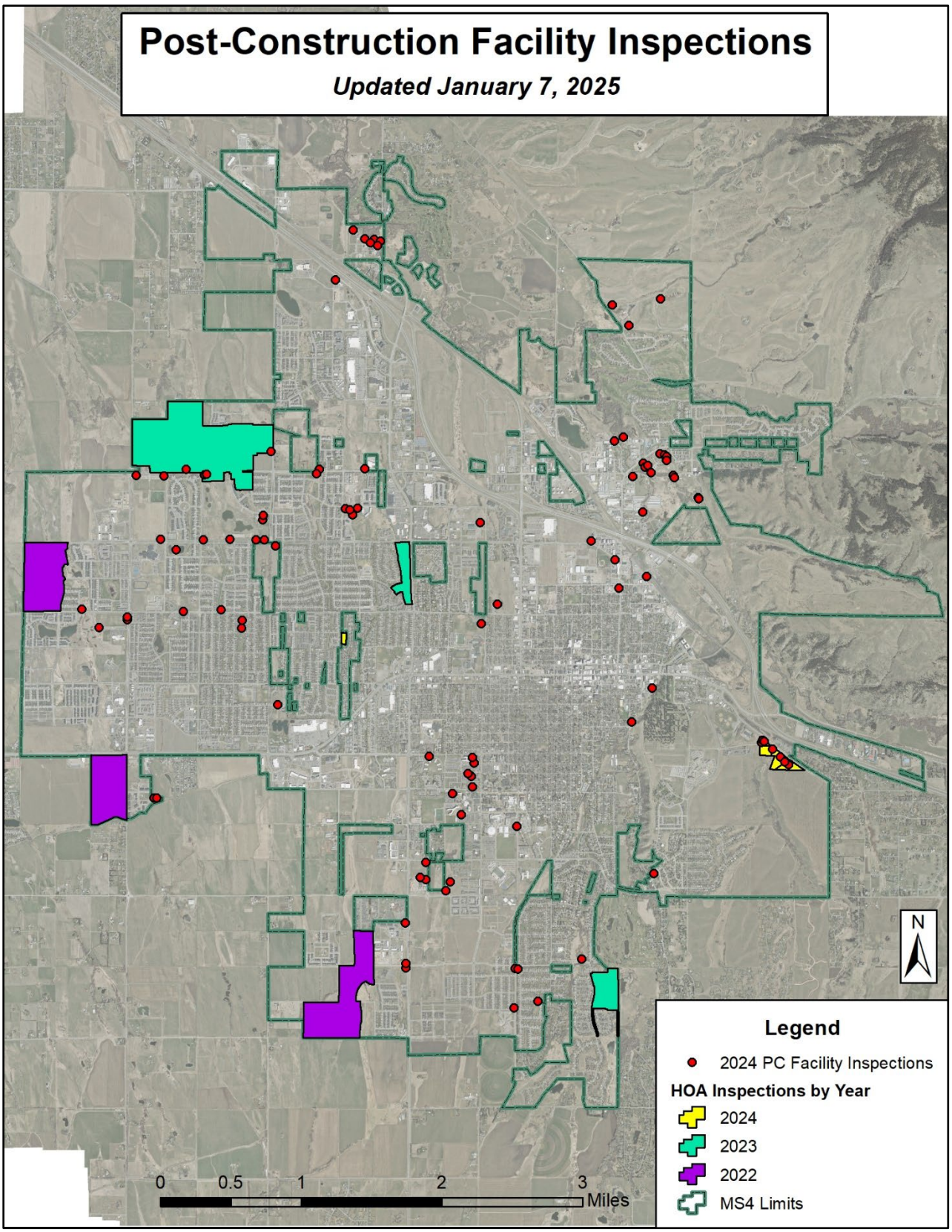
1. General: Maintenance accessibility, debris accumulation, vegetation, and infrastructure condition.
2. Facility Condition: Pretreatment forebay condition, storage capacity, groundwater / standing water, flow path, and side slopes.
3. Maintenance: Maintain plan / agreement and implementation.
4. Facility Sketch: Drawing of general layout of facility.
5. Images Report: Multiple photos of qualitative components.

Quantitative Components include:

1. Vegetation: Cover type and % cover.

2. Elevation Analysis: Survey to determine capacity and comparison to original design.

The inspection results assign each facility a low, moderate, or immediate maintenance need level.



Graphic 6.5.1: Permittee-owned and HOA facilities inspected in 2023 and

6.6 High-Priority Structural BMPs

The MS4 completes a GIS analysis to identify high-priority structural BMPs based on the following criteria:

- Size: Structural BMPs larger than 1,076 ft^2 (100m^2)
- Proximity: Within 500 ft. of an impaired waterbody (Bozeman Creek, Mandeville Creek, E. Gallatin River)
- Type: Surface detention or underground detention facility

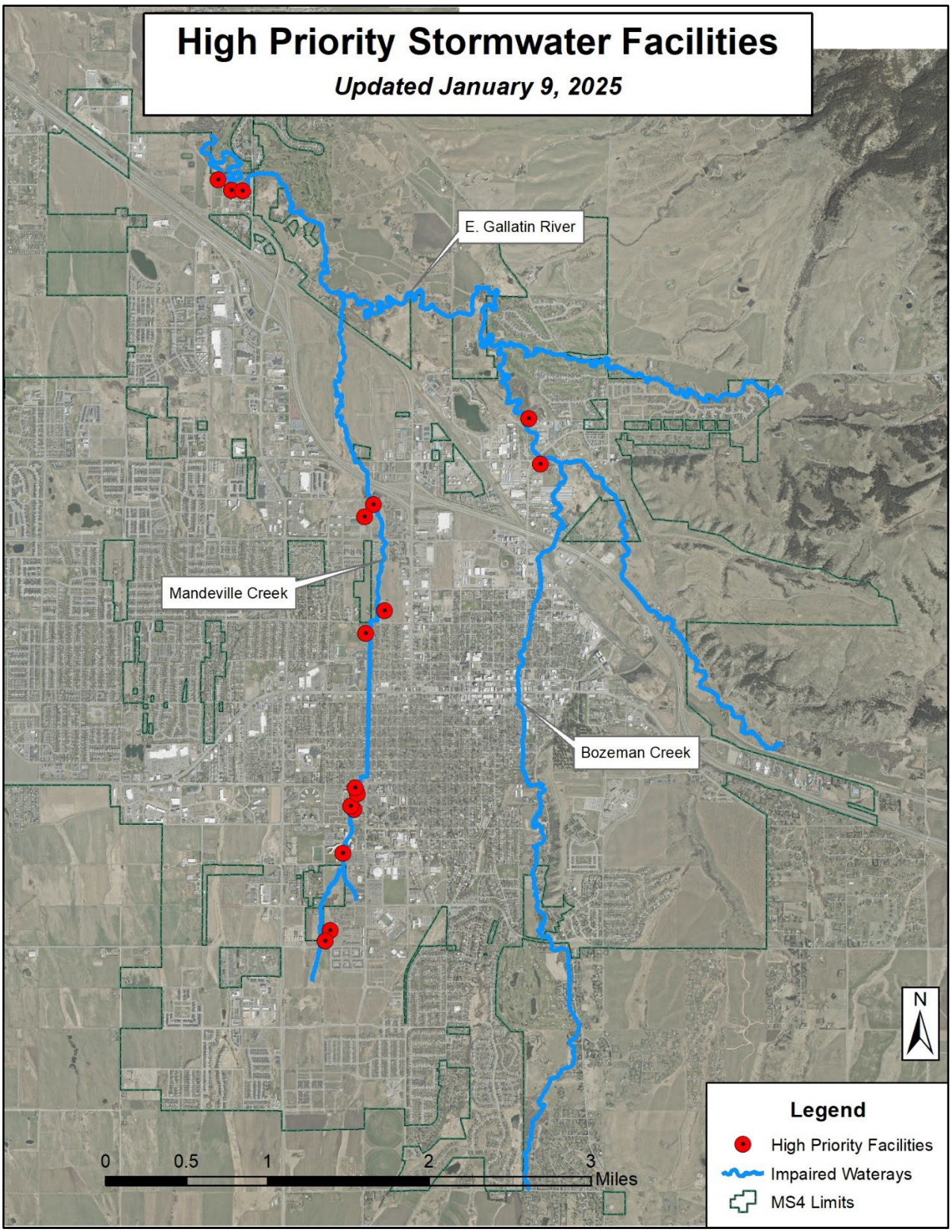
Table 6.6.1 outlines the number of high-priority facilities by ownership. Table 6.6.2 has specific structural BMP information and a Maintenance Priority Rating for the current MS4 Permit term.

Table 6.6.1 High-Priority Structural BMP Ownership – Current Permit Period

Ownership	2022	2023	2024	2025
Public	12	14	14	-
Private	2	4	4	-
HOA	1	0	0	-
Unknown	0	0	0	-
Total:	15	18	18	-

Table 6.6.2 High-Priority Structural BMPs – Current Permit Period

#	Facility ID	Owner	Area (ft^2)	Receiving Waterbody	2022 Maint. Rating	2023 Maint. Rating	2024 Maint. Rating
1	DP.H07.00023	Public - City S. Univ Dist	26,987	Mandeville Creek	Low	Low	Low
2	DP.H07.00022	Public - City S. Univ Dist	14,775	Mandeville Creek	Low	Low	Low
3	DP.H06.00024	Public - MSU Facility 3	11,829	Mandeville Creek	Low	Low	Low
4	DP.I51.00073	Public - City WRF 1	10,744	East Gallatin River	Low	Low	Low
5	DP.I51.00074	Public - City WRF 3	10,314	East Gallatin River	Low	Low	Low
6	DP.H06.00400	Public - MSU Facility 2	7,591	Mandeville Creek	Low	Low	Low
7	DP.F01.00026	Public - City SID 674	7,354	East Gallatin River	Moderate	Moderate	Moderate
8	DP.H06.00025	Public - MSU Facility 6	7,231	Mandeville Creek	Low	Low	Low
9	DP.H04.00006	Private - BSD 1	7,188	Mandeville Creek	Low	Low	Low
10	DP.H02.00001	Private - Kenyon Noble	5,450	Mandeville Creek	*na*	Moderate	Moderate
11	DP.E02.00006	Public - City Vehicle Main.	5,577	East Gallatin River	Low	Low	Moderate
12	DP.H06.00023	Public - MSU Facility 4	4,667	Mandeville Creek	Low	Low	Low
13	DP.H06.00026	Public - MSU Facility 1	3,185	Mandeville Creek	Low	Low	Low
14	DP.G02.00017	Private - Tange's Addition	2,245	Mandeville Creek	Immediate	Immediate	*n/a*
15	DP.G03.00050	Private - Headwaters	1,959	Mandeville Creek	Low	Low	Low
16	DP.I51.00076	Public - City WRF 4	1,731	East Gallatin River	*na*	Low	Moderate
17	DP.I51.00075	Public - City WRF 2	1,355	East Gallatin River	Low	Low	Moderate
18	DP.H06.00028	Public - MSU Facility 5	1,294	Mandeville Creek	Low	Low	Low



Graphic 6.6.1: High-Priority Facilities

6.7 Enforcement Response Plan

The MS4's Enforcement Response Plan (ERP) provides strategies and authority to ensure owners install, operate, and maintain structural BMPs.

- Design: SWMP Section 6.2 references regulations and legal requirements for structural BMP design. If a developer does not fully comply with regulations, the MS4's formal response is to deny the Site Plan application, making it impossible to acquire a building permit. If a developer begins construction without a building permit, the City issues a Stop Work Order per BMC Sec. 38.200.040.

- Installation: SWMP Section 6.3 details the MS4's structural BMP review process. During this stage, the MS4 uses the following enforcement protocols to ensure performance:

    - Informal, Formal, and Judicial: When a pollutant control issue is identified, the MS4 submits a written notification to the owner and uses the protocol in SWMP Section 5.3. The Construction ERP is the regulatory authority until the site reaches final site stabilization. BMC Section 40.04.350 outlines the permission protocols to enter the property for inspection.
    - Formal: If an engineering-related design or implementation issue arises (e.g., shallow groundwater, site plan deviation, utility conflict), the owner must coordinate with the Engineering Division to find a solution. The MS4 will withhold occupancy on the project and not accept the infrastructure until the owner resolves the identified issues.

- Operation and Maintenance: SWMP Section 6.5 outlines the MS4's structural BMP inspection program. Upon sending the inspection report and supporting documents, the MS4 uses the following enforcement protocol:

    - Informal: The MS4 communicates with the owner and shares the facility inspection results. A six-month timeline is set, which requires the owner to submit a response and maintenance plan to the MS4 describing how the identified issues will be resolved.
    - Formal: The Stormwater Division relies on adherence to The City of Bozeman Municipal Code (BMC) Section 40.04.720 states:

    A. Stormwater facilities shall be maintained by the owner or other responsible party in a condition so that the facilities will function as designed.

    B. Waste shall be disposed of from maintenance of facilities in accordance with applicable federal, state, and local laws and regulations.

    C. The owner or other responsible party shall create and maintain records of installation, maintenance, and repair for the life of the development and shall be made available to the engineering department upon request.

    D. Any failure to maintain facilities or to correct deficiencies at facilities within a reasonable time after receiving written notice from the enforcement agent may result in

criminal or civil penalties. The city may perform corrective or maintenance work the owner or responsible person fails or refuses to complete within a reasonable time at the owner's expense.

- Formal and Judicial: BMC 40.04.860 through 40.04.980 detail the administrative and legal remedies for enforcing the code, from Noticing through Civil Action, including Administrative Enforcement Powers.

The MS4 Stormwater Facilities Plan Update will further support the administrative and enforcement tools outlined in BMC by reviewing the strategies used by comparable MS4 cities and formulating policy recommendations for implementation in Bozeman. BMC contains the framework for a complete ERP, which will be supplemented by the recommendations in the Facilities Plan Update, including an escalation process and action schedule.

6.8 Performance Tracking

The MS4 completes a Structural BMP Compliance Audit annually, evaluating 50 randomly chosen structural BMPs to determine their condition based on a simplified condition estimate using the following criteria:

- 1 Point – The stormwater facility is not maintained, and there is a high risk to infrastructure, the public, and the environment
- 2 Points – The stormwater facility is partially maintained, and there is a moderate risk to infrastructure, the public, and the environment
- 3 Points – The stormwater facility is maintained, and there is low risk to infrastructure, the public, and the environment

The MS4 compiles the collected audit data for the current permit period:

Table 6.8.1 Stormwater Structural BMP Audit Scores

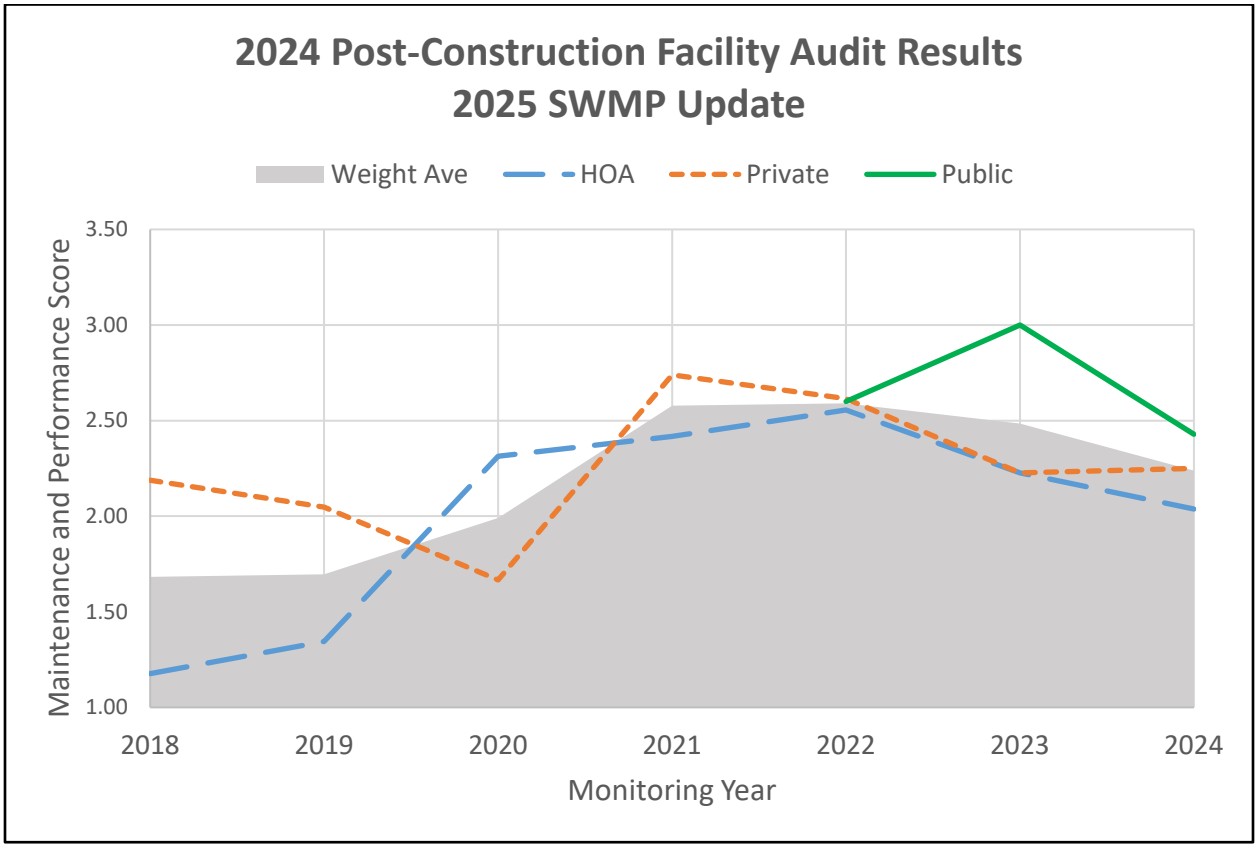
Audit Year	HOA	Private	Public	Average
2022	2.56	2.62	2.60	2.59
2023	2.23	2.23	3.30	2.48
2024	2.04	2.25	2.43	2.24

1. 2022 Summary and Trend Interpolation:
   - HOA scores improved from prior years as a result of new developments in the MS4
   - Randomized selection resulted in a lower number of private sites compared to prior reporting periods.
   - Older structural BMPs in HOAs have become a focal point for maintenance inspections and association communications.
2. 2023 Summary and Trend Interpolation:
   - Refined ownership records for permittee-owned facilities and improved inspection methodology were used to update and convert numeric scores for the first year of the permit term (2022). Scoring and mathematical inconsistencies in previous permitting years have been rectified. The RAMBO Inspection method will be employed in subsequent years as outlined in sub-section 6.5.
   - HOA and Private facility scores were lower from the first year of the permit period

- Randomized selection resulted in an equal number of HOA and privately owned ponds (22) versus only six publicly owned facilities.
  - Older structural BMPs in HOAs have continually become a focal point for maintenance inspections and association communications.
  - Less than half of public facilities were randomly chosen in 2023 compared to 2022; nevertheless, City-owned facilities received an increased maintenance focus.

3. 2024 Summary and Trend Interpretation

- Seven publicly owned sites were randomly selected vs. 27 HOA and 16 Private, which are reflected in Graphic 6.8.1.
  - Maintenance of all facility types continues to be challenging. Although City staff tends to monitor and maintain City-owned facilities at a higher frequency (audit score = 2.43), the average of all facilities is trending downward.
  - City staff must focus on increasing inspection and maintenance enforcement of privately owned stormwater infrastructure.



Graphic 6.8.1 Facility Inspection Compliance Scores 2018-2024

6.9 Ongoing and Future Initiatives

The following initiatives are planned or ongoing to facilitate improved plans, policies, and ordinances related to the MS4's Post-Construction Program:

- Stormwater Facility Plan Update: Scheduled for completion in 2025, the updated Stormwater Facility Plan includes a review of the City's Post-Consturction Program and recommendations for improvements.
- Engineering Design Standards Update: A project to review and update MS4's Engineering Standards is underway. This includes improving the incorporation of the MS4 Permit's water quality requirements and the Montana Post-Construction BMP Guidance Manual and standardizing drainage reports and maintenance agreements.
- The Stormwater Division continues refining inspection protocols to rapidly assess and improve the maintenance intervals of all structural BMPs in the MS4. It is the goal to inspect and all permittee-owned facilities on an annual basis, as practicable. Prior to the current permit period, inspection of permitte-owned facilities was less than 10% per year and now averages over 90% in the last two years. In addition, MSU has budgeted for mapping updates for all University stormwater facilities.
- Fully deploy and consistently utilize tools found within the existing and developing Enforcement Response Plan to improve post-construction structural BMP performance and maintenance.
- In 2024 the City developed and tested a permeable paver infiltration testing program to determine efficacy and maintenance needs. Preliminary results show that grout-less systems perform far better and underline the need for continual maintenance and monitoring of both grouted and grout-less designs.
- Underground Facility Inspection Method: A qualitative inspection method proposed for Underground retention/detention facility inspection, parameters include:
    1. Pre-treatment Facility
    2. Inlet Condition
    3. Flow Path
    4. Infrastructure Condition
    5. Sediment in Facility
    6. Groundwater Condition
    7. Accessibility: Maintenance access
    8. Maintenance & Implementation
    9. Video Documentation & Sediment Depth Measurement
- Permeable Paver Facility Inspection Method: Facility inspection parameters and measurement methods include:
    1. Facility description,
    2. Location, and
    3. Infiltration testing.

Infiltration testing includes the use of an infiltrometer (bottomless bucket), a known water volume, and controlled application rate of a known volume of water over a measured time. The infiltration rate is calculated using the formula:

$$I = \frac{K \; x \; M}{D^2 \; x \; \Delta t}$$

Where:

I = Infiltration Rate (in/hr)

K = Conversion Factor from cubic inches per second to pounds per hour

$$\frac{in^3 \cdot s}{lb \cdot h} \quad = \quad 126{,}870$$

M = Mass (lb) of water

D = Inside diameter (in) of containment ring

Δt = Time (sec) elapsed for complete infiltration

Section 7.0

Good Housekeeping Program

Graphic 7.0.1: Street sweeping debris pile

Graphic 7.0.2: Sediment management facility

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7.1 Introduction

The MS4 strives to improve waterway health, protect public safety, and comply with its MS4 Permit by implementing an operations and maintenance program with the goal of preventing/reducing stormwater pollution from City and MSU owned facilities and field activities/operations.

SWMP Section 7.0 details the following components necessary to administer the MS4's Good Housekeeping Program, including:

- Infrastructure Operations and Maintenance (7.2)
- Facility Stormwater Pollution Prevention Program (FSWPPP) (7.3)
- Activity Stormwater Pollution Program (ASWPPP) (7.4)
- Activity and Facility Stormwater Pollution Prevention Plan Training (7.5)
- Stormwater Training Program (7.6)

7.2 Infrastructure Operations and Maintenance

The City inspects, maintains, and repairs its storm sewer system on a continual basis. MSU maintains infrastructure within its boundary. The following Divisions are responsible for conducting infrastructure operations:

Table 7.2.1: Infrastructure Operations

Operation	Goal	Season	Operational Area
Stormwater Division Operations			
Storm Sewer Inspection (CCTV)	20% per year	Year-round	Citywide
Storm Sewer Cleaning	20% per year	Above freezing	Citywide
Storm Sewer Repair	As Required	Spring, Summer, Fall	Citywide
Treatment Unit Maintenance	Annually	Fall	Individual Locations
Infiltration Facility Maintenance	As needed	Fall	Individual Locations
Debris Hauling	Annually	Varies	Sediment Facility
Streets Division Operations			
Spring Cleanup	Annually	Spring	Citywide
Fall Cleanup	Annually	Fall	Citywide
Street Sweeping	Annually	Year-round	Citywide
Sweepings Hauling	Annually	Varies	East Gallatin Area

The MS4 uses the following metrics to track performance. The performance data comes from Workorder tracking in Cityworks and GIS totals. The metrics include:

1. Inlets and Manholes Cleaned: Storm sewer inlets and manholes serve two purposes: (1) mitigate flood risk by collecting runoff from streets, parking lots, alleyways, and other hard surfaces, and (2) treat stormwater by capturing sediment, trash, and other pollutants in their sumps.
    - Performance Goal: Clean 20% of public inlets and manholes annually
    - Calculation Type: Assets maintained divided by total assets City/MDT total. This includes duplicate effort only once. 2023 shows a lower total due to better recordkeeping, removing proposed and abandoned features. MDT is in the process of mapping their assets, which will affect future totals. MSU maintains approx. one third of its manholes and inlets each year, focusing on those that receive the most sediment.

Table 7.2.2: Inlet and Manholes Totals						
Year	City/MDT Maintained	City/MDT Total	% Complete	MSU Maintained	MSU Total	% Complete
2021	894	4,098	22%	244	365	67%
2022	405	4,311	11%	304	365	83%
2023	415	3,988	10%	100	365	27%
2024	604	4288	14%	96	363	26%

2. Storm Sewer Pipes Cleaned: Storm sewers serve two purposes: (1) convey stormwater collected by inlets to their point of discharge, and (2) capture sediment, trash, and other pollutants that fall out of suspension, requiring reoccurring maintenance to remain functional.

   - Performance Measure: Clean 20% of pipes annually
   - Calculation Type: Assets maintained divided by total assets City/MDT total (mains and laterals, includes duplicate effort only once, 2023 shows a lower total due to better recordkeeping, removing proposed and abandoned features from the set. The vac truck was out of service 2 months during this period).

Table 7.2.3: Storm Sewer Pipe Totals						
Year	City/MDT Maintained	City/MDT Total	% Complete	MSU Maintained	MSU Total	% Complete
2021	17 miles	76 miles	21%	.2 miles	8 miles	2.5%
2022	8.5 miles	82 miles	10%	0	8 miles	0
2023	7.4 miles	77 miles	9%	0	8 miles	0
2024	11.2 miles	82 miles	14%	0	8 miles	0

3. Infrastructure Repairs: Infrastructure repairs or “spot repairs” serve two purposes: (1) fix known pipe failures and restrictions to ensure the adequate flow of stormwater, and (2) repair sections of pipe where scouring of subgrade soils occur, mitigating the chance of a road failure and sediment load contribution. 2024 saw an increased focus on pipe repairs. One repair was reactive, a sinkhole formed in the street where soil was able to ingress into the storm pipe. The others were scheduled, long term repairs to damaged or underperforming stormwater features. This increased effort should not be cause for alarm, the logistics rather than the criticality made it worth schedule all of these digs in 2024. Next year is anticipated to return to normal.

   - Performance Measure: Pipe integrity indicator
   - Calculation Type: Total repairs

Table 7.2.4: Infrastructure Repair Totals		
Year	City Total	MSU Total
2021	5 Repairs	1 Repair
2022	2 Repairs	2 Repairs
2023	5 Repairs	2 Repairs
2024	11 Repairs	2 Repairs

4. Television Inspections (CCTV): Storm sewer inspections serve two purposes: (1) identification and prioritization of structural and maintenance needs for underground infrastructure and (2) identifies illicit discharges, cross-connections, or illegal pipe connections.

   - Performance Measure: Inspect 20% of storm sewer mains annually
   - Calculation Type: Total assets including mains and laterals, includes duplicate effort only once, likely underreported due to inspecting pipes before they are accepted into City

infrastructure. Assets, length, and work orders can't be aligned until all infrastructure is accepted. 2023 shows a lower total miles due to better recordkeeping, removing proposed and abandoned features from the set, and removing small laterals which can't be inspected using the TV van.

Table 7.2.5: Television Inspection Totals

Year	City/MDT Maintained	City/MDT Total	% Complete	MSU Maintained	MSU Total	% Complete
2021	10 miles	76 miles	13%	.6 miles	8 miles	7.5%
2022	9 miles	82 miles	11%	0	8 miles	0
2023	8.8 miles	71 miles	12%	0	8 miles	0
2024	4.7 miles	71 miles	7%	0	8 miles	0

7.3 Facility Stormwater Pollution Prevention Program

The purpose of the MS4's Facility Stormwater Pollution Prevention Program (FSWPPP) is to mitigate stormwater pollutants generated on municipal facilities. The MS4 works to ensure all municipal facilities meet or exceed the following Facility Minimum Standards (FMS):

- Connect interior wash bays and interior floor drains to the sanitary sewer.
- Store chemicals under cover and/or within secondary containment.
- Prevent tracking at facility entrances, exits, and within parking areas.
- Stock spill kits with instructions, disposable bags, PPE, and absorbent products.
- Perform preventative maintenance on vehicles and equipment.
- Wash vehicles and equipment in designated locations.
- Contain fuel tanks with secondary containment.
- Implement BMPs for identified pollutants.
- Maintain stormwater facilities per the following frequencies: (1) Stormwater basins, annual vegetation and debris clearing, 10-15 year dredging; (2) Mechanical separators, annual vacuuming; (3) Infiltration facilities, annual flushing; (4) Parking and drive surfaces, as required; and (5) Inlets, manholes, and pipes, five-year flushing, vacuuming, and inspection cycle.
- Stabilize disturbed areas within 14 days.

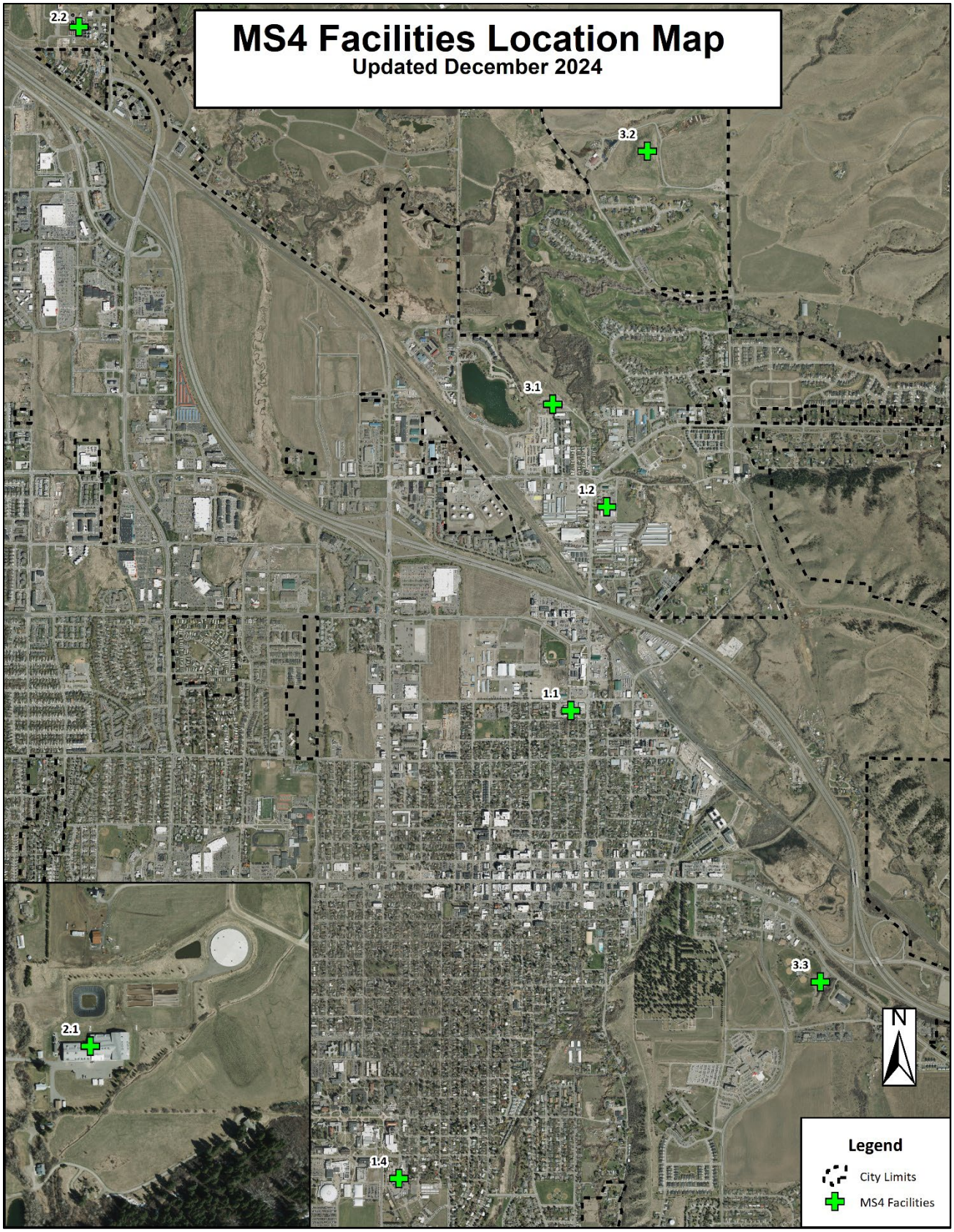
The MS4 uses the following FSWPPP inspection protocol:

1. If applicable, collect stormwater runoff sample to characterize facility pollutant concentrations.
2. Inspect facility for compliance with FMSs.
3. Review existing documents, such as existing Standard Operating Guides (SOGs), safety data sheets, spill documentation, and stormwater facility record drawings.
4. Coordinate with applicable leadership and develop FSWPPP that includes:
    - Overview
    - Stormwater Team
    - Site Description
    - Impaired Waterbodies
    - Sampling
    - Pollution Identification
    - Site Assessment
    - Spill Response Plan
    - Training
    - Inspections
    - Infrastructure Improvements
    - Record Keeping and Reporting
    - Site Map
5. Implement FSWPPP.
6. Train applicable field staff.
7. Re-inspect and, if necessary, update the FSWPPP annually.

The following facilities are subject to the FSWPPP protocol:

Table 7.3.1: 2024 MS4 Facilities Inventory

Facility ID	Facility Name	Facility Category	Pollutants	Responsible Department(s) & Position(s)
1.1	City Shops Complex	Operations and Storage Area	TSS, Oil/Grease, Nitrogen, Phosphorus, Zinc, Lead Copper, COD	1. Water, Sewer, Storm Dept. Superintendent 2. Streets Dept. Superintendent 3. Parks Dept. Superintendent
1.2	Vehicle Maintenance Facility	Operations and Storage Area	TSS, Oil/Grease, Nitrogen, Phosphorus, Zinc, Lead, Copper, COD, Mag. Chloride, Anti-Freeze, E. coli	1. Fleet Assistant Superintendent 2. Forestry Dept. Superintendent 3. Water, Sewer, Storm Dept. Superintendent
2.1	Water Treatment Plant	Treatment Works	TSS, Oil/Grease, Nitrogen, Phosphorus, Zinc, Lead, Copper, COD. Treatment Chemicals, Floatables.	1. Water Treatment Plant Superintendent
2.2	Water Reclamation Facility	Treatment Works	TSS, Oil/Grease, Nitrogen, Phosphorus, Zinc, Lead, Copper, COD, Treatment Chemicals	1. Water Reclamation Facility Superintendent 2. Water Reclamation Facility Assistant Superintendent
3.1	East Gallatin Storage Area	Material Storage Area	TSS, Oil/Grease, Nitrogen, Phosphorus, Zinc, Lead, Copper, COD, Concrete Washout	1. Streets Dept. Superintendent 2. Forestry Dept. Superintendent
3.2	Solid Waste Landfill	Waste Handling and Disposal Area	TSS, Oil/Grease, Nitrogen, Phosphorus, Zinc, Lead, Copper, COD, Floatables, Leachate Condensate	1. Solid Waste Dept. Superintendent 2. Solid Waste Dept. Assistant Superintendent
3.3	Snow Storage Area	Snow Disposal Area	TSS, Oil/Grease, Nitrogen, Phosphorus, Zinc, Lead, Copper, COD, Floatables	1. Streets Dept. Superintendent



Graphic 7.3.1: MS4 facilities

Table 7.3.2: 2024 MSU Facilities Inventory				
Facility ID	Facility Name	Facility Category	Pollutants	Responsible Department(s) & Position(s)
1.4	University Shops Facility	Operations and Storage Area	TSS, Oil/Grease, Nitrogen, Phosphorus, Zinc, Lead Copper, COD	Facilities Services Director
~~3.4~~	~~MSU Material Storage Area~~	~~Operations and Storage Area~~	~~TSS, Oil/Grease, Nitrogen, Phosphorus, Zinc, Lead, Copper, COD~~	Facilities Services Director This Facility has been displaced by construction. Operations have been temporarily moved southeast of the existing University Shops Facility within the Facility Yard project SWPPP boundary.

7.4 Activity Stormwater Pollution Prevention Program

The purpose of the MS4's Activity Stormwater Pollution Prevention Program (ASWPPP) is to mitigate stormwater pollutants generated from municipal operations. The MS4 works to ensure all operations meet or exceed the following Activity Minimum Standards (AMS):

- Protect street surfaces and inlets by deploying controls that capture, contain, and allow for the collection and disposal of generated pollutants.
- Manage material stockpiles and control run-on.
- Stabilize disturbed areas.
- Prevent tracking and the off-site migration of debris.
- Capture and dispose concrete waste.
- Manage dewatering flows to remove sediment to the maximum extent practicable before entering the storm sewer system or waterways.

The MS4 uses the following protocol to develop ASWPPPs:

1. Review activity and establish baseline compliance with AMSs.
2. Coordinate with applicable leadership and develop ASWPPP that includes:
    - Overview
    - Stormwater Team
    - Activity Description
    - Pollutant Identification
    - Standards Assessment and SOGs
    - Training
    - Record Keeping
3. Implement ASWPPP.
4. Train applicable field staff.

The following activities are subject to the ASWPPP protocol:

Table 7.4.1: 2023 MS4 Activity Inventory			
Activity Name	**Activity Category**	**Pollutant(s)**	**Responsible Department(s) & Position(s)**
Trenching and Excavation	System Maintenance	TSS	1. Water, Sewer, Storm Dept. Superintendent
Storm Sewer System Maintenance	System Maintenance	TSS & Oil/Grease	1. Water, Sewer, Storm Dept. Superintendent
Emergency Water Main Break	System Maintenance	TSS	1. Water, Sewer, Storm Dept. Superintendent
Sanitary Sewer Overflows	System Maintenance	E. coli, Floatables, Nutrients	1. Water, Sewer, Storm Dept. Superintendent
Sidewalk and Curb Construction	Road Maintenance	TSS & Concrete Washout (pH)	1. Water, Sewer, Storm Dept. Superintendent 2. Streets Dept. Superintendent
Roadway Traction Sand Application	Road Maintenance	TSS, Magnesium and Sodium Chlorides	1. Streets Dept. Superintendent
Concrete Cutting	Road Maintenance	Concrete Slurry (pH) & TSS	1. Water, Sewer, Storm Dept. Superintendent 2. Streets Dept. Superintendent
Curb Painting	Road Maintenance	Paint	1. Water, Sewer, Storm Dept. Superintendent 2. Streets Dept. Superintendent
Asphalt Patching	Road Maintenance	Hydrocarbons (Asphalt Mix) & Release Agent	1. Streets Dept. Superintendent 2. Streets Dept. Assistant Superintendent
Solid Waste Collection	Waste Handling	Floatables, oil/grease, household/commercial chemicals	1. Solid Waste Dept. Superintendent
Parks Mowing	Parks Maintenance	Nitrogen, Phosphorous, TSS	1. Parks Dept. Superintendent
Tree Planting, Pruning, Removal	Parks Maintenance	Nitrogen, Phosphorous, Potassium, Oil/Grease, Floatables, & TSS	1. Forestry Dept. Superintendent
Parking Lot & Garage Maintenance	Parking Lot Maintenance	TSS & Oil/Grease	1. Streets Dept. Superintendent

Table 7.4.2: 2024 MSU Activity Inventory			
Activity Name	**Activity Category**	**Pollutant(s)**	**Responsible Department(s) & Position(s)**
Emergency Water Main Breaks	System Maintenance	TSS	1. Water, Sewer, Storm Dept. Superintendent
Storm Sewer System Maintenance	System Maintenance	TSS & Oil/Grease	1. Facility Services Director
Sanitary Sewer Overflows	System Maintenance	E. coli, Floatables, Nutrients	1. Water, Sewer, Storm Dept. Superintendent
Arena Construction	Open Space Maintenance	TSS	1. Facility Services Director
Parking Lot & Garage Maintenance	Parking Lot Maintenance	TSS & Oil/Grease	1. Facility Services Director

7.5 Activity and Facility SWPPP Training

Upon completion of FSWPPPs and ASWPPs, the MS4 trains applicable field Staff to increase awareness and reduce and mitigate stormwater pollutants generated from specific activities and facilities. Employees receive training during the 1st and 4th year of the permit term, 2022 and 2025 respectively. Training content includes:

- General stormwater awareness,
- Overview of the contents of the most current MS4 Permit,
- Contents of applicable FSWPPPs/ASWPPPs, and
- Standard Operating Guidelines and BMPs implemented to minimize generated pollutants.

Table 7.5.1: Awareness Training Content											
Division	**Stormwater In Bozeman Video**	**Rain Check Chapter 1: Intro**	**Rain Check Chapter 2: Housekeeping**	**Rain Check Chapter 3: Spill control**	**Rain Check Chapter 4: Fueling**	**Rain Check Chapter 5: Vehicle Maintenance**	**Rain Check Chapter 6: Vehicle Washing**	**Rain Check Chapter 7: Materials Management**	**Rain Check Chapter 8: Waste Management**	**Rain Check Chapter 9: Facility Maintenance**	**Rain Check Chapter 12: Landscaping**
Water/Sewer/Storm	X	X	X	X	X	X	X	X	X	-	X
Forestry	X	X	X	X	X	X	X	X	X	-	X
Parks and Cemetery	X	X	X	X	X	X	X	X	X	-	X
Streets	X	X	X	X	X	X	X	X	X	-	X
Solid Waste	X	X	X	X	X	X	X	X	X	X	-
Water Treatment Plant	X	X	X	X	X	X	X	X	X	X	-
Water Rec. Facility	X	X	X	X	X	X	X	X	X	X	-
MSU Operations	X	X	X	X	X	X	X	X	X	X	X

Table 7.5.2: ASWPPP Training Content													
Division	**Water Main Breaks**	**Storm Sewer System Maintenance**	**Sanitary Sewer Overflows**	**Trenching and Excavation**	**Sidewalk and Curb Construction**	**Curb Cutting**	**Curb Painting**	**Traction Sand Application**	**Solid Waste Collection**	**Arena Construction**	**Parks Mowing**	**Tree Planting**	**Parking Garage and Lot Maintenance**
Water/Sewer/Storm	X	X	X	X	X	X	X	-	-	-	-	-	-
Forestry	-	-	-	-	-	-	-	-	-	-	-	X	-
Parks	-	-	-	-	-	-	-	-	-	-	X	X	-
Streets	-	-	-	-	X	X	X	X	-	-	-	-	X
Solid Waste	-	-	-	-	-	-	-	-	X	-	-	-	-
MSU Operations	X	-	X	-	-	-	-	X	X	X	X	X	X

Table 7.5.3: FSWPPP Training Content									
Division	**MSU Shops Facility**	**City Shops Complex**	**Vehicle Maintenance Facility**	**East Gallatin Storage Area**	**Solid Waste Landfill**	**Snow Storage Area**	**MSU Material Storage Area**	**Water Treatment Plant**	**Water Reclamation Facility**
Water/Sewer/Storm	-	X	X	-	-	-	-	-	-
Forestry	-	-	X	X	-	-	-	-	-
Parks	-	X	-	X	-	-	-	-	-
Streets	-	X	X	X	-	X	-	-	-
Solid Waste	-	-	-	-	X	-	-	-	-
Water Treatment Plant	-	-	-	-	-	-	-	X	-
Water Rec. Facility	-	-	-	-	-	-	-	-	X
MSU Operations	X	-	-	-	-	-	X	-	-

Table 7.5.4: Training Program Summary				
Division	2022		2025	
	Awareness	FSWPPP & ASWPPP	Awareness	FSWPPP & ASWPPP
Water/Sewer/Storm	21	21	-	-
Forestry	24	24	-	-
Parks and Cemetery	19	19	-	-
Streets	14	14	-	-
Solid Waste	23	23	-	-
Water Treatment Plant	21	21	-	-
Water Rec. Facility	14	14	-	-

7.6 Stormwater Training Program

The MS4 completes trainings per MS4 Permit II.B.1-4 as identified in the sections below. Training materials and certifications are stored electronically on the MS4's server and updated annually to address new MS4 Permit requirements, stay up-to-date on SWMP changes, and the implementation of new BMPs.

1. Stormwater Management Team (SWMT)
    - Stormwater Program Manager, Program Specialist, Project Coordinator, and Technicians complete a comprehensive training of MS4 Permit requirements and implementation responsibilities. An annual work plan is developed outlining BMPs, implementation responsibility, and estimated work load. Additionally, permit responsibilities are regularly assigned via a weekly work task meeting involving all SWMT members. New SWMT members receive awareness training within 90 days of employment.
2. Construction Site Personnel
    - Stormwater Program Specialist, Project Coordinator, and Technicians receive numerous Construction Site Stormwater Pollution Prevention Plan (SWPPP) trainings, including Stormwater Management and Erosion Control During Construction, SWPPP Preparer/Administrator, and Compliance Evaluation Inspector. Specifically, Staff are trained how to review SWPPPs and conduct compliance evaluation inspections - using the MS4's plan review and site inspection checklists - for compliance with requirements contained in the Technology Based Effulent Limitations of the most current Construction General Permit. Additional trainings include Dewatering Operations During Construction and a BMP Field Academy.
3. Post-Construction Personnel
    - Stormwater Program Manager, Project Coordinator, and Development Review Engineers receive plan review training. Development Review Engineers utilize a plan review checklist to ensure consistent review and document compliance with with state and local post-construction requirements. Project Coordinator conducts stormwater facility inspection trainings with Technicians as outlined in SWMP Sections 6.5, 6.6, and 6.7.

4. Field and Facility Personnel

    - Field and Facility personnel whose work activities have the potential to impact stormwater quality receive training during the 1st and 4th years of the MS4 Permit term, 2022 and 2025 respectively. Applicable Facilities and Activities in which Staff reveive training are outlined in SWMP Sections 7.3, 7.4, and 7.5. Trainings include an overview of requirements contained in the most current MS4 Permit and applicable FSWPPPs and/or ASWPPPs, including SOG's, required BMP's to mitigate stormwater pollutants generated from municipal facilities and activities, and spill response procedures.

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Section 8.0

Sampling and Evaluation Program

Graphic: 8.0.1: In-stream sampling equipment

Graphic 8.0.2: Installing in-stream sampling equipment

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8.1 Introduction

The MS4 strives to improve waterway health, protect public safety, and comply with its MS4 Permit by preforming sampling, testing, and reporting of stormwater discharges by completing the following:

- Identifying Impaired Waterbodies,
- Storm Event Monitoring,
- Impaired Waterbody Body Monitoring, and
- BMP Effectiveness Monitoring.

This SWMP contains a complete record of the MS4's water quality data collected since 2017. However, evaluations are completed on data for only the 2022 – 2027 MS4 Permit term. Data gathered and evaluated from sampling protocols is used to advise policy, capital, and operational decisions, and provides a data-driven performance metric communicated to the public.

8.2 Impaired Waterbodies Identification

There are four named impaired waterbodies which receive stormwater discharges from the MS4; Bozeman Creek, a.k.a. Sourdough Creek, Mandeville Creek, Bridger Creek and the East Gallatin River. The most recent impairment information is obtained from Montana DEQ's Clean Water Act Information Center (http://cwaic.mt.gov/). Table 8.2.1 provides a summary of impairments for each waterbody. SWMP Section 4.8 contains an inventory of outfalls discharging to imparied waterbodies.

Table 8.2.1: MS4 Waterbody TMDL Impairments

	Total Suspended Solids (TSS)	Total Nitrogen (TN)	Total Phosphorus (TP)	E. coli	Chlorophyll-a	Alteration in stream-side or littoral vegetative cover
Bozeman Creek	X	X		X	X	X
Mandeville Creek		X	X			
Bridger Creek		X			X	
East Gallatin River		X	X			

Montana DEQ completed TMDL assessments on the above waterbodies to determine pollutant impairments and MS4 Waste Load Allocations (WLA). Bozeman Creek is the only identified waterbody with an WLA assigned to the MS4, that being for TSS. The MS4 is not assigned a WLA for total nitrogen, total phosphorus, E. coli, cholorphyll-a, or alterations in stream-side or littoral vegetative cover. As a result the MS4 prioritizes sediment reduction BMPs which are describe in SWMP Sections 2.0, 3.0, 4.0, 5.0, 6.0, and 7.0.

8.3 Regulatory Requirements

The MS4 General Permit requires the MS4 to perform sampling, testing, and reporting of stormwater discharges, semi-annually, during storm events resulting in a measurable amount of discharge. The MS4 implements sampling protocols that document stormwater discharge quality, quantify impacts to impaired waterbodies, evaluate BMP effectiveness, and track long-term trends in aquatic life. Sampling protocols include:

1. Monitor stormwater discharges based on residential and commercial/industrial land-use types
   - See SWMP Section 8.4 Storm Event Monitoring
2. Impaired Waterbody/TMDL Related Monitoring: Bozeman and Mandeville Creeks

- See SWMP Section 8.5 In-Stream Wet-Weather Monitoring, SWMP Section 2.3 TMDL Action Plan, and SWMP Section 2.6 Pollution Reduction Totals.

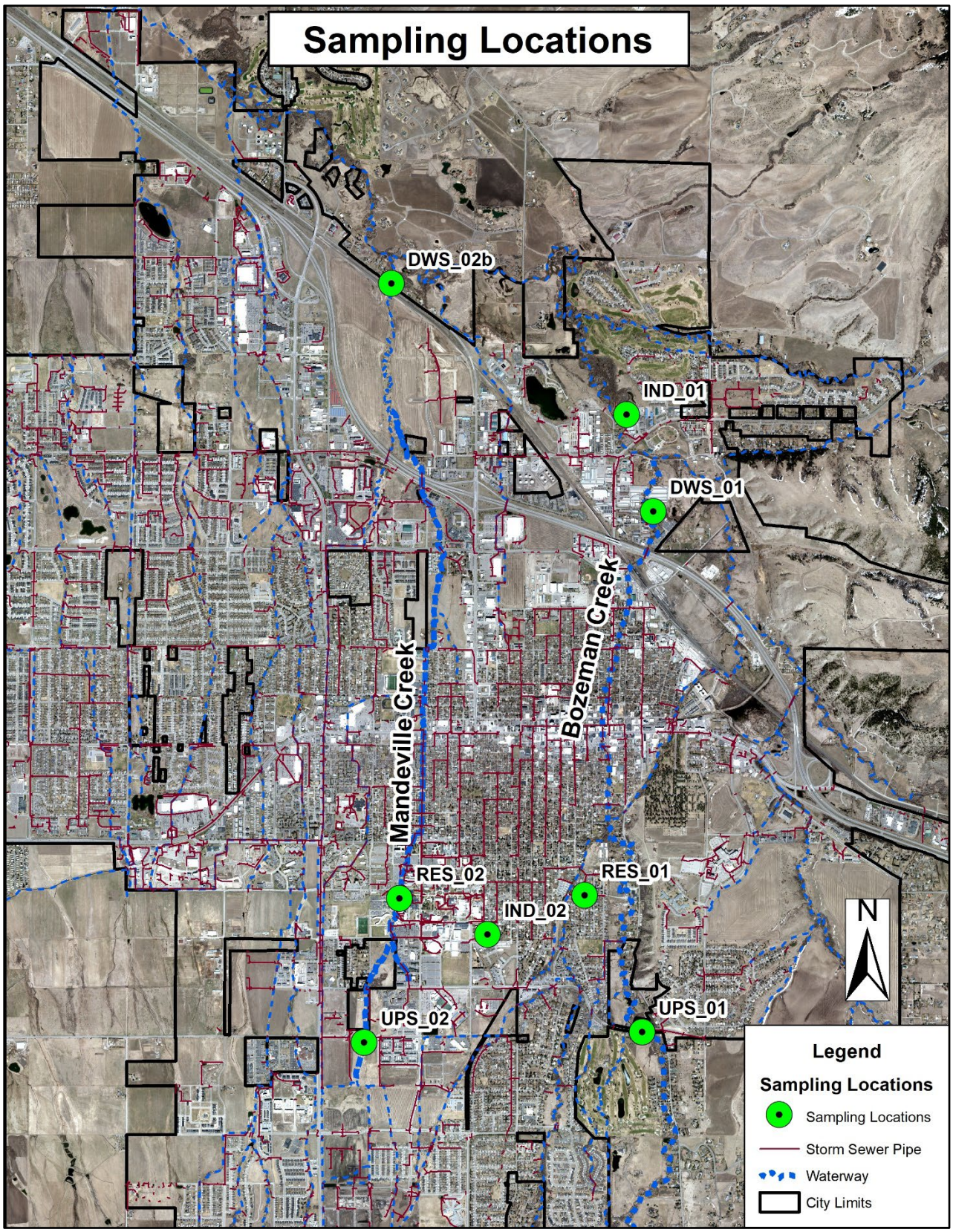
3. BMP Effectiveness Monitoring for BMPs implemented to reduce pollutant loading from the MS4 to impaired waters.
    - See SWMP Section 8.6 Sediment Reduction Monitoring and SWMP Section 2.6 Pollution Reduction Totals.
4. Impaired Waterbody Monitoring
    - See SWMP Section 8.7 Long-Term Trend Monitoring

For Storm Event and In-Stream Wet-Weather monitoring, the MS4 conducts sampling, testing, and reporting of the following parameters:

1. Total Suspended Solids (TSS), mg/L
2. Chemical Oxygen Demand (COD), mg/L
3. Total Nitrogen (TN), mg/L
4. Total Phosphorus (TP), mg/L
5. Copper (Cu), mg/L
6. Lead (Pb), mg/L
7. Zinc (Zn), mg/L
8. Oils and Greases, mg/L
9. pH, standard units
10. Estimated Flow, gpm
11. E. coli

E. coli samples are obtained only from Bozeman Creek sampling locations UPS_01 and DWS_01.

SWMP Sections 8.6 and 8.7 describe parameters measured and data collected for Sediment Reduction and Long-Term Trend Monitoring.



Graphic 8.3.1: Stormwater Sampling Locations

8.4 Storm Event Monitoring

Introduction: The MS4 collects semi-annual Storm Event samples from representative watersheds to characterize pollutant loading occurring from both residential and commercial/industrial land-use types before system treatment, such as stormwater basins, sumps, infiltration galleries, and mechanical separation.

Locations: The MS4 has a network of four Storm Event monitoring locations: two within residential drainage basins and two within commercial/industrial drainage basins, including:

1. Site: RES_01
   - Location: Near the intersection of S. Bozeman Ave. and E. Garfield St.
   - Land-use: Residential
   - Drainage Basin: Seven acres
   - Inlet ID: I.F06.00082
     - Latitude, Longitude: 45.667143, -111.034725
   - Inlet ID: I.F06.00083
     - Latitude, Longitude: 45.667143, -111.034724
2. Site: IND_01
   - Location: Near Commercial Dr. cul-de-sac (west)
   - Land-use: Commercial and Industrial
   - Drainage Basin: 10 acres
   - Inlet ID: I.E01.00184
     - Latitude, Longitude: 45.703061, -111.030112
   - Inlet ID: I.E01.00185
     - Latitude, Longitude: 45.703164, -111.030428
3. Site: RES_02
   - Location: MSU Campus near the intersection of S. 12th Ave. and W. Garfield St.
   - Land-use: Residential
   - Drainage Basin: Four acres
   - Inlet ID: I.H06.00329
     - Latitude, Longitude: 45.666911, -111.054301
   - Inlet ID: I.H06.00259
     - Latitude, Longitude: 45.666970, -111.054226
4. Site: IND_02
   - Location: MSU Campus near the intersection of S. 6th Ave. and W. Garfield St.
   - Land-use: Industrial
   - Drainage Basin: Two acres
   - Inlet ID: I.G06.00603
     - Latitude, Longitude: 45.664409, -111.044957
   - Inlet ID: I.G06.00630
     - Latitude, Longitude: 45.664409, -111.044942

Methods: The MS4 collects Storm Event samples from storm sewer inlets at each site using Thermo-Scientific Nalgene Samplers (Samplers). Before runoff events, Staff installs each Sampler at the selected inlet grate and positions it to collect the first flush of urban runoff. Once full, the Sampler closes itself prohibiting additional collection or dilution of the original sample.

Analysis: The MS4 collects, composites, and delivers samples to a certified laboratory, which analyzes the parameters identified in SWMP Section 8.3.

The MS4 estimates flow, in gallons per minute (gpm), using the Rational Formula where:

$$Q = CiA$$

1. Q: Peak runoff rate (cfs converted to gpm)
2. C: Runoff coefficient (C-Factor, Bozeman Engineering Standards)
3. i: Rainfall intensity (in./hr.)
4. A : Drainage area (acres)

Table 8.4.1: Sampling Location Runoff Coefficients (C-Factors)

Location Name	Primary Land Use	Runoff Coefficient (C-Factor)
RES_01	Low to Medium Density Residential	0.35
RES_02	Dense Residential	0.50
IND_01	Industrial	0.80
IND_02	Industrial	0.80

Table 8.4.2: Storm Event Monitoring Results * Reporting Limit (RL)

Site	TSS mg/L	Oil & Grease mg/L	Total Nitro. mg/L	Phosp. mg/L	Zinc mg/L	Lead mg/L	Cu mg/L	COD mg/L	pH	Flow gpm
RES_01: 2017 (1)	203	2.00	6.20	0.908	0.1160	0.0052	0.0220	251.00	6.7	77.0
RES_01: 2017 (2)	368	5.10 RL	12.00	1.230	0.1790	0.0073	0.0300	175.00	7.0	44.0
RES_01: 2018 (1)	460	4.00	14.00	1.920	0.2720	0.0092	0.0290	708.00	6.4	55.0
RES_01: 2018 (2)	113	1.00 RL	2.30	0.544	0.1220	0.0033	0.0130	129.00	6.5	22.0
RES_01: 2019 (1)	5890	6.00	28.80	8.400	2.0200	0.1750	0.3380	3330.00	7.4	49.5
RES_01: 2019 (2)	206	1.00 RL	5.50	0.680	0.2100	0.0060	0.0240	258.00	6.9	14.3
RES_01: 2020 (1)	2300	3.00	21.50	4.400	0.6200	0.0530	0.0760	1340.00	6.7	110.0
RES_01: 2020 (2)	109	1.00 RL	3.40	0.6400	0.1400	0.0040	0.0200	363.00	6.3	49.5
RES_01: 2021 (1)	419	3.00	13.40	1.5100	0.2100	0.0100	0.0410	559.00	6.9	66.0
RES_01: 2021 (2)	154	1.00 RL	13.10	1.3800	0.3500	0.0100	0.0460	729.00	6.2	23.5
RES_01: 2022 (1)	300	2.00	7.10	1.2600	0.2200	0.0110	0.0400	287	6.8	48.8
RES_01: 2022 (2)	963	1.00	14.20	3.5100	1.0700	0.0460	0.1200	1140	6.6	121.0
RES_01: 2023 (1)	880	2.00	14.20	3.1400	1.5000	0.0820	0.1950	978	7.2	27.5
RES_01: 2023 (2)	304	4.80 RL	6.70	1.3300	0.1160	0.0054	0.0188	596	6.9	10.0
RES_01: 2024 (1)	1650	4.70 RL	8.36	2.6300	0.1320	0.0184	0.0215	1080	7.2	55.0
RES_01: 2024 (2)	250.0	4.60 RL	5.18	0.5900	0.1330	0.0057	0.0132	335	7.8	219.0
RES_01: 2025 (1)	-	-	-	-	-	-	-	-	-	-
RES_01: 2025 (2)	-	-	-	-	-	-	-	-	-	-
RES_01: 2026 (1)	-	-	-	-	-	-	-	-	-	-
RES_01: 2026 (2)	-	-	-	-	-	-	-	-	-	-
RES_01 Median	336.0	2.50	10.18	1.3550	0.2100	0.0096	0.0295	577.50	6.9	60.5
RES_02: 2017 (1)	-	-	-	-	-	-	-	-	-	-
RES_02: 2017 (2)	-	-	-	-	-	-	-	-	-	-
RES_02: 2018 (1)	1430	15.00	8.40	2.030	0.6520	0.0367	0.0840	605.00	7.0	18.0
RES_02: 2018 (2)	199	3.00	3.40	0.457	0.2610	0.0081	0.0220	234.00	6.8	18.0
RES_02: 2019 (1)	806	9.00	8.60	1.930	0.5000	0.0410	0.0820	579.00	7.5	40.39

Table 8.4.2: Storm Event Monitoring Results * Reporting Limit (RL)										
Site	TSS mg/L	Oil & Grease mg/L	Total Nitro. mg/L	Phosp. mg/L	Zinc mg/L	Lead mg/L	Cu mg/L	COD mg/L	pH	Flow gpm
RES_02: 2019 (2)	568	8.00	17.50	2.060	0.7500	0.0220	0.0810	1100.00	6.8	11.7
RES_02: 2020 (1)	1490	3.00	9.80	2.220	0.5100	0.0300	0.0490	487.00	6.8	89.76
RES_02: 2020 (2)	176	3.00	7.40	0.800	0.2900	0.0070	0.0260	382.00	6.4	40.4
RES_02: 2021 (1)	701	2.00	11.20	1.52	0.4200	0.0180	0.0490	601.00	6.8	62.84
RES_02: 2021 (2)	334	4.00	13.90	1.360	0.9200	0.0230	0.0710	835.00	6.3	19.21
RES_02: 2022 (1)	613	3.00	7.40	1.420	0.4000	0.0200	0.0480	613.00	7.9	39.6
RES_02: 2022 (2)	1780	5.00	6.90	2.520	1.2400	0.0840	0.1130	379.00	6.8	98.75
RES_02: 2023 (1)	2830	3.00	20.70	7.8000	1.6800	0.1600	0.2000	1640	7.1	22.44
RES_02: 2023 (2)	298.0	7.60	2.68	0.961	0.0928	0.0056	0.0091	121.00	7.5	17.95
RES_02: 2024 (1)	1550	4.70 RL	7.06	2.610	0.0183	0.0342	0.0268	440.00	7.0	44.88
RES_02: 2024 (2)	403.0	4.70 RL	7.47	0.203	0.1980	0.0122	0.0212	360.00	7.4	215.4
RES_02: 2025 (1)	-	-	-	-	-	-	-	-	-	-
RES_02: 2025 (2)	-	-	-	-	-	-	-	-	-	-
RES_02: 2026 (1)	-	-	-	-	-	-	-	-	-	-
RES_02: 2026 (2)	-	-	-	-	-	-	-	-	-	-
RES_02 Median	657.0	4.35	7.94	1.725	0.4600	0.0225	0.0490	533.00	6.9	62.8
IND_01: 2017 (1)	149	4.00	17.30	1.380	0.5780	0.0160	0.0440	292.00	7.0	251.4
IND_01: 2017 (2)	1820	5.10 RL	11.68	1.320	33.3500	0.0371	0.0867	151.00	6.9	143.6
IND_01: 2018 (1)	602	15.00	8.50	1.890	4.7100	0.0371	0.0620	606.00	7.3	179.5
IND_01: 2018 (2)	293	4.00	3.40	0.588	0.1910	0.0081	0.0270	195.00	7.0	71.8
IND_01: 2019 (1)	1470	4.00	4.90	1.960	1.5600	0.1020	0.1620	647.00	7.6	161.6
IND_01: 2019 (2)	333	2.00	10.70	0.940	0.8800	0.0250	0.0700	651.00	7.2	46.7
IND_01: 2020 (1)	2880	2.00	17.10	6.800	2.7200	0.1070	0.2450	1240.00	6.7	359.1
IND_01: 2020 (2)	347	2.00	4.80	0.880	1.7600	0.0280	0.0540	347.00	7.2	161.6
IND_01: 2021 (1)	655	2.000	9.20	2.380	2.4100	0.0350	0.080	602.00	7.1	251.0
IND_01: 2021 (2)	438.0	9.00	12.30	1.470	0.7700	0.0200	0.0830	806.00	6.3	15.4
IND_01: 2022 (1)	170.0	2.00	4.70	0.580	0.6800	0.0570	0.1240	289.00	8.0	158.4
IND_01: 2022 (2)	657.0	2.00	8.50	1.840	3.3800	0.0440	0.1180	399.00	7.2	395.0
IND_01: 2023 (1)	730.0	3.00	7.00	2.360	1.8600	0.0460	0.0970	421.00	7.2	89.0
IND_01: 2023 (2)	288.0	4.70	4.71	0.586	1.8000	0.0158	0.0228	260.00	7.6	71.0
IND_01: 2024 (1)	670.0	4.60 RL	4.54	1.520	0.2710	0.0249	0.0333	280.00	7.3	0.06
IND_01: 2024 (2)	283.0	4.60 RL	3.92	0.651	1.2800	0.0125	0.0298	140.00	7.5	0.16
IND_01: 2025 (1)	-	-	-	-	-	-	-	-	-	-
IND_01: 2025 (2)	-	-	-	-	-	-	-	-	-	-
IND_01: 2026 (1)	-	-	-	-	-	-	-	-	-	-
IND_01: 2026 (2)	-	-	-	-	-	-	-	-	-	-
IND_01 Median	522.0	3.50	7.75	1.450	1.7800	0.0361	0.0844	373.00	7.2	215.3
IND_02: 2017 (1)	-	-	-	-	-	-	-	-	-	-
IND_02: 2017 (2)	-	-	-	-	-	-	-	-	-	-
IND_02: 2018 (1)	899	4.00	8.80	1.600	0.5600	0.0158	0.0570	592.00	6.7	14.4
IND_02: 2018 (2)	380	5.00	4.40	0.737	0.2450	0.0099	0.0320	271.00	3.4	14.4
IND_02: 2019 (1)	2570	10.00	2.00	4.440	1.3500	0.0780	0.1760	1420.00	7.6	32.3
IND_02: 2019 (2)	301	3.00	10.20	1.440	0.8200	0.0260	0.1000	634.00	6.8	9.3
IND_02: 2020 (1)	1040	3.00	5.20	1.410	0.6200	0.0230	0.0590	730.00	7.0	71.8
IND_02: 2020 (2)	225	2.00	4.00	0.810	0.3000	0.0080	0.0300	248.00	6.2	32.3
IND_02: 2021 (1)	508	4.00	9.90	1.230	0.4000	0.0170	0.0560	713.00	6.6	50.3

Table 8.4.2: Storm Event Monitoring Results * Reporting Limit (RL)										
Site	**TSS mg/L**	**Oil & Grease mg/L**	**Total Nitro. mg/L**	**Phosp. mg/L**	**Zinc mg/L**	**Lead mg/L**	**Cu mg/L**	**COD mg/L**	**pH**	**Flow gpm**
IND_02: 2021 (2)	438	9.00	12.30	1.470	0.7700	0.0200	0.0830	806.00	6.3	15.4
IND_02: 2022 (1)	270	1.00	3.70	0.630	0.1900	0.0060	0.0280	320.00	7.1	31.7
IND_02: 2022 (2)	1650	9.00	7.40	3.250	1.3100	0.0610	0.1290	539.00	6.6	79.0
IND_02: 2023 (1)	1930	2.00	8.50	2.720	0.7800	0.0520	0.1260	829.00	6.8	18.0
IND_02: 2023 (2)	712.0	14.40	6.78	1.220	0.2460	0.0359	0.0483	532.00	7.5	79.0
IND_02: 2024 (1)	1050	4.70	5.73	2.220	0.2630	0.0285	0.0310	460.00	7.3	35.9
IND_02: 2024 (2)	2260	4.70	15.60	0.479	0.7780	0.0510	0.0936	775.00	7.4	172.4
IND_02: 2025 (1)	-	-	-	-	-	-	-	-	-	-
IND_02: 2025 (2)	-	-	-	-	-	-	-	-	-	-
IND_02: 2026 (1)	-	-	-	-	-	-	-	-	-	-
IND_02: 2026 (2)	-	-	-	-	-	-	-	-	-	-
IND_02 Median	805.5	4.35	7.09	1.425	0.5900	0.0245	0.0580	613.00	6.8	32.3

Evaluation: The MS4 evaluates the data using the following Scoring Matrix (Matrix) and protocol to interpret and communicate the results. An annual median pollutant concertation is determined from the two annual sampling events. The Matrix assigns points for each parameter ranging from 0 to 4, representing the percent difference between each parameter's annual median and its long-term median.

Table 8.4.3: Storm Event Monitoring: Scoring Matrix				
4-Points	**3-Points**	**2-Points**	**1-Point**	**0-Points**
< 0 – 40%	40.1 – 80 %	80.1 – 120%	120.1 –160%	> 160%

Example: The annual median between both semi-annual 2023 RES_01 TSS samples is 592.0 mg/L with a long-term median of 336.0 mg/l, representing a 76.2% difference between the 2023 results and the long-term median. The MS4 assigns one (1) point. The same approach applies to all sites and parameters.

Percent change is determined using the following formula:

$$\% \triangle = ((Y_2 - Y_1) / Y_1) * 100$$

Table 8.4.4: Storm Event Monitoring: RES_01					
Parameter	**Year**				
	2022	**2023**	**2024**	**2025**	**2026**
TSS	2	3	1		
Oil and Grease	4	3	2		
Total Nitrogen	4	4	4		
Phosphorus	2	3	4		
Zinc	0	0	4		
Lead	0	0	4		
Copper	1	0	4		
COD	2	4	4		
pH	4	4	4		
Annual Points:	19	21	31		

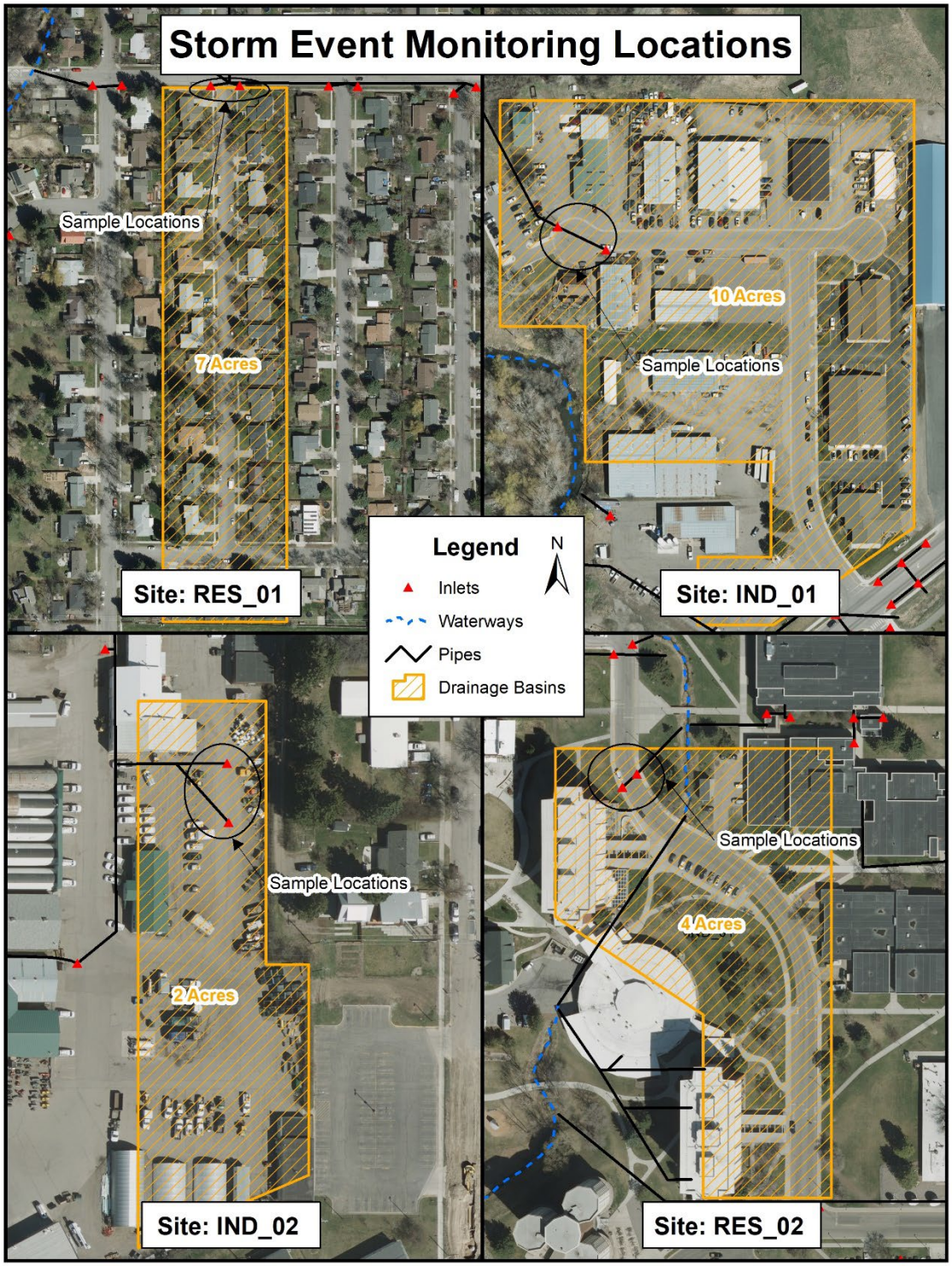
Table 8.4.5: Storm Event Monitoring: IND_01					
Parameter	**Year**				
	2022	**2023**	**2024**	**2025**	**2026**
TSS	4	4	4		
Oil and Grease	4	4	3		
Total Nitrogen	4	4	4		
Phosphorus	4	4	4		
Zinc	4	4	4		
Lead	4	4	4		
Copper	3	4	4		
COD	4	4	4		
pH	4	4	4		
Annual Points:	35	36	35		

Table 8.4.6: Storm Event Monitoring: RES_02					
Parameter	**Year**				
	2022	**2023**	**2024**	**2025**	**2026**
TSS	2	1	3		
Oil and Grease	4	3	4		
Total Nitrogen	4	4	4		
Phosphorus	4	1	4		
Zinc	2	2	4		
Lead	1	0	4		
Copper	4	2	4		
COD	4	3	4		
pH	4	4	4		
Annual Points:	29	20	35		

Table 8.4.7: Storm Event Monitoring: IND_02					
Parameter	Year				
	2022	2023	2024	2025	2026
TSS	2	2	2		
Oil and Grease	4	2	4		
Total Nitrogen	4	4	3		
Phosphorus	4	4	4		
Zinc	4	4	4		
Lead	2	2	3		
Copper	4	3	4		
COD	4	4	4		
pH	4	4	4		
Annual Points:	32	29	32		

The MS4 sums the individual scores to obtain an Annual Point Total and calculates a Final Score by each summing the Annual Point Totals from each site. Finally, Total Points are divided by the Possible Points to calculate the Final Score and the Final Score is transferred to SWMP Section 8.8.

Table 8.4.8: Storm Event Monitoring: Results					
Sites	2022	2023	2024	2025	2026
RES_01 Annual Points	19	21	31		
IND_01 Annual Points	35	36	35		
RES_02 Annual Points	29	20	35		
IND_02 Annual Points	32	29	32		
Total Points:	115	106	133		
Possible Points:	144	144	144	144	144
Final Score (decimal):	.80	.74	0.92		



Graphic 8.4.1: Storm Event Monitoring Location Map

8.5 In-Stream Wet-Weather Monitoring

Introduction: The MS4 conducts semi-annual in-stream wet-weather monitoring on impaired waterbodies to document impacts of urban runoff to Bozeman and Mandeville Creeks. Combined, the Creeks receive urban runoff from over 1,700 acres of dense development at over 100 individual discharge points/outfalls. Non-point source pollution sources exist upstream of the MS4 as identified in the Lower Gallatin Planning Area TMDL.

Sites: The MS4 monitors two (2) locations on Bozeman Creek and two (2) locations on Mandeville Creek. Each creek has one (1) sampling site upstream and one (1) downstream of the MS4 boundary. Sample sites include:

1. Site: UPS_01
   - Location: Bozeman Creek upstream of MS4, south of Kagy Blvd.
   - Latitude, Longitude: 45.657248, -111.028584
2. Site: DWS_01
   - Location: Bozeman Creek downstream of MS4, near Gold Ave.
   - Latitude, Longitude: 45.699668, -111.027347
3. Site: UPS_02
   - Location: Mandeville Creek upstream of MS4, near Campus Blvd.
   - Latitude, Longitude: 45.656506, -111.058038
4. Site: DWS_02b
   - Location: Mandeville Creek downstream of MS4, near Frontage Rd.
   - Latitude, Longitude: 45.712845, -111.055229
   - Added in 2022 as a replacement for original site DWS_02. Replacement needed due to development.

Methods: The MS4 collects in-stream samples using Thermo-Scientific Nalgene Samplers (Sampler). Before rain events, Staff mounts each Sampler to a metal post driven into the creek bed and positions it to collect a sample as soon as the water levels rise from the first flush. The Sampler closes itself and does not allow additional collection or dilution of the original sample once full.

Analysis: The MS4 collects, composites, and delivers samples to a certified laboratory, which analyzes the parameters identified in SWMP Sec 8.3.

Bozeman Creek's stream flow is gathered from real time data at the Bozeman Creek gaging station.

Table 8.5.1: In-Stream Wet-Weather Monitoring Results Reporting Limit (RL)									
Site	TSS mg/L	Oil & Grease mg/L	Total Nitro. mg/L	Phosp. mg/L	Zinc mg/L	Lead mg/L	Copper mg/L	COD mg/L	pH
UPS_01: 2017 (1)	7	5.80 RL	0.41	0.085	0.0054	0.0005	0.0036	11.6	8.2
UPS_01: 2017 (2)	14	1.00 RL	0.50 RL	0.022	0.0100 RL	0.0010 RL	0.0050 RL	15.0	8.1
UPS_01: 2018 (1)	14	1.00 RL	0.50 RL	0.052	0.0100 RL	0.0010 RL	0.0050 RL	10.0	8.1
UPS_01: 2018 (2)	10 RL	1.00 RL	0.60	0.028	0.0090	0.003 RL	0.0020 RL	5.0 RL	8.3
UPS_01: 2019 (1)	30	7.60 RL	2.79	0.147	0.0505	0.0010 RL	0.0017	9.0	7.7
UPS_01: 2019 (2)	72	1.00 RL	1.60	0.160	0.0300	0.0010 RL	0.0050 RL	5.0 RL	8.2
UPS_01: 2020 (1)	74	1.00 RL	0.50 RL	0.260	0.0200	0.0010 RL	0.0050 RL	26.0	8.1
UPS_01: 2020 (2)*	22	1.00 RL	0.50 RL	0.035	0.0100 RL	0.0010 RL	0.0050 RL	5.0 RL	8.3
UPS_01: 2021 (1)	10 RL	1.00 RL	0.70	0.063	0.0100 RL	0.0010 RL	0.0050 RL	9.0	8.4
UPS_01: 2021 (2)	10 RL	1.00 RL	1.10	0.042	0.0100 RL	0.0010 RL	0.0050 RL	62.0	8.0
UPS_01: 2022 (1)	21.0	1.00 RL	0.50 RL	0.094	0.0100 RL	0.0010 RL	0.0050 RL	25.0	8.0
UPS_01: 2022 (2)	10.0	1.00 RL	1.60	0.026	0.0100 RL	0.0010 RL	0.0050 RL	6.00	8.2
UPS_01: 2023 (1)	26.0	1.00 RL	0.50 RL	0.067	0.0100 RL	0.0010 RL	0.0050 RL	15.0	7.9
UPS_01: 2023 (2)	26.0	1.00	0.50	0.067	0.0100 RL	0.0010	0.0050	15.0	7.9
UPS_01: 2024 (1)	48.0	4.60	0.22	0.0531	0.0074	0.0007	0.0014	19.00	8.0
UPS_01: 2024 (2)	6.0	4.90 RL	1.05	0.0200 RL	0.0089	0.0005 RL	0.0008	15.0	8.2
UPS_01: 2025 (1)	-	-	-	-	-	-	-	-	-
UPS_01: 2025 (2)	-	-	-	-	-	-	-	-	-
UPS_01: 2026 (1)	-	-	-	-	-	-	-	-	-
UPS_01: 2026 (2)	-	-	-	-	-	-	-	-	-
UPS_01 Median	14.0	1.00	0.55	0.053	0.0100	0.0010	0.0050	10.8	8.2
UPS_02: 2017 (1)	-	-	-	-	-	-	-	-	-
UPS_02: 2017 (2)	-	-	-	-	-	-	-	-	-
UPS_02: 2018 (1)	185	1.00 RL	3.10	0.430	0.0330	0.0027	0.0060	49.0	8.2
UPS_02: 2018 (2)	53	1.00 RL	0.50 RL	0.081	0.0180	0.0004	0.0020	16.0	8.1
UPS_02: 2019 (1)	10	6.8 RL	0.74	0.153	0.0422	0.0010 RL	0.0034	6.0	7.9
UPS_02: 2019 (2)	30	1.00 RL	0.80	0.144	0.0300	0.0010 RL	0.0050 RL	5.0	8.1
UPS_02: 2020 (1)	16	1.00 RL	0.80	0.080	0.0100 RL	0.0010 RL	0.0050 RL	11.0	8.3
UPS_02: 2020 (2)	10 RL	1.00 RL	0.60	0.066	0.0200	0.0010 RL	0.0050 RL	5.0	8.4
UPS_02: 2021 (1)	10 RL	1.00 RL	0.80	0.078	0.0100 RL	0.0010 RL	0.0050 RL	23.00	7.8
UPS_02: 2021 (2)	20.0	1.00 RL	1.30	0.224	0.0100 RL	0.0010 RL	0.0050 RL	34.00	7.9
UPS_02: 2022 (1)	11.0	1.00 RL	4.60	0.079	0.0100 RL	0.0010 RL	0.0050 RL	22.00	8.1
UPS_02: 2022 (2)**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UPS_02: 2023 (1)	2.0	4.70	1.01	0.081	0.0019	0.0005	0.0013	26.00	7.7
UPS_02: 2023 (2)	6.0	4.90	0.10 RL	0.066	0.0136	0.0005	0.0011	10.00	7.8
UPS_02: 2024 (1)	48.0	4.70 RL	1.16	0.062	0.0114	0.0009	0.0014	22.00	7.9
UPS_02: 2024 (2)	12.0	4.90 RL	0.10 RL	0.072	0.0041	0.0006	0.0008	13.00	8.0
UPS_02: 2025 (1)	-	-	-	-	-	-	-	-	-
UPS_02: 2025 (2)	-	-	-	-	-	-	-	-	-
UPS_02: 2026 (1)	-	-	-	-	-	-	-	-	-
UPS_02: 2026 (2)	-	-	-	-	-	-	-	-	-
UPS_02: Median	12.0	1.00	0.80	0.080	0.0114	0.0010	0.0050	16.00	8.0
DWS_01: 2017 (1)	10 RL	5.40 RL	0.55	0.088	0.0070	0.0006	0.0036	15.3	8.2
DWS_01: 2017 (2)	134	1.00 RL	1.80	0.264	0.0300	0.0060	0.0060	42.0	8.1
DWS_01: 2018 (1)	34	1.00 RL	0.50 RL	0.082	0.0100 RL	0.0010 RL	0.0005 RL	18.0	8.1

**: Replacement sample collected on 4/8/21, per MS4 Permit Pat IV.6.b.*

***: UPS_02: 2022 (2) sample was not collected. The upstream reach of Mandeville Creek was dry during the July 1 – Dec. 31 sampling event timeframe. Adjacent long-term construction dewatering possibly affected flows.*

Table 8.5.1: In-Stream Wet-Weather Monitoring Results Reporting Limit (RL)									
Site	TSS mg/L	Oil & Grease mg/L	Total Nitro. mg/L	Phosp. mg/L	Zinc mg/L	Lead mg/L	Copper mg/L	COD mg/L	pH
DWS_01: 2018 (2)	17	1.00 RL	0.70	0.057	0.0220	0.0007	0.0002 RL	14.0	8.3
DWS_01: 2019 (1)	100	7.00	3.00	0.238	0.1100	0.0021	0.0045	13.0	7.9
DWS_01: 2019 (2)	350	1.00 RL	3.40	0.645	0.1400	0.0140	0.0210	94.0	8.2
DWS_01: 2020 (1)	58	1.00 RL	0.50 RL	0.141	0.0300	0.0030	0.0050	28.0	8.2
DWS_01: 2020 (2)*	10 RL	1.00 RL	0.05 RL	0.039	0.0100 RL	0.0010 RL	0.0050 RL	9.0	8.5
DWS_01: 2021 (1)	10 RL	1.00 RL	0.70	0.063	0.0100 RL	0.0010 RL	0.0050 RL	9.0	8.4
DWS_01: 2021 (2)	55	1.00 RL	3.20	0.306	0.0400	0.0200	0.0080	100.0	8.0
DWS_01: 2022 (1)	37.0	1.00 RL	1.10	0.168	0.0200	0.0020	0.0070	31.0	7.8
DWS_01: 2022 (2)	10 RL	1.00 RL	1.60	0.026	0.0100 RL	0.0010 RL	0.0050 RL	6.0	8.2
DWS_01: 2023 (1)	85.0	2.00	1.40	0.220	0.0600	0.0040	0.0070	60.00	7.9
DWS_01: 2023 (2)	958.0	4.90	0.0033	0.0089	0.0526	0.0115	0.0132	180.0	8.1
DWS_01: 2024 (1)	98.0	4.70 RL	1.01	0.137	0.0146	0.0017	0.0028	23.00	8.0
DWS_01: 2024 (2)	6.0	4.80 RL	1.05	0.062	0.0021	0.0005 RL	0.0006	12.00	8.2
DWS_01: 2025 (1)	-	-	-	-	-	-	-	-	-
DWS_01: 2025 (2)	-	-	-	-	-	-	-	-	-
DWS_01: 2026 (1)	-	-	-	-	-	-	-	-	-
DWS_01: 2026 (2)	-	-	-	-	-	-	-	-	-
DWS_01: Median	38.0	1.00	1.08	0.119	0.0173	0.0013	0.0050	17.00	8.2
DWS_02: 2017 (1)	-	-	-	-	-	-	-	-	-
DWS_02: 2017 (2)	-	-	-	-	-	-	-	-	-
DWS_02: 2018 (1)	297	1.00 RL	2.80	0.368	0.0700	0.0168	0.0150	53.0	8.2
DWS_02: 2018 (2)	43	1.00 RL	0.80	0.102	0.0280	0.0026	0.0030	18.0	8.2
DWS_02: 2019 (1)	1180	6.80	3.38	1.340	0.1240	0.0222	0.0173	123.0	8.0
DWS_02: 2019 (2)	84	1.00 RL	2.00	0.235	0.0500	0.0040	0.0050 RL	7.0	8.3
DWS_02: 2020 (1)	190	1.00 RL	2.40	0.365	0.0700	0.0100 RL	0.0130	63.0	8.1
DWS_02: 2020 (2)	68	1.00 RL	2.10	0.191	0.0400	0.0030	0.0080	63.0	8.1
DWS_02: 2021 (1)	19.0	1.00 RL	1.10	0.080	0.0100 RL	0.0010 RL	0.0050 RL	12.0	8.3
DWS_02: 2021 (2)	200	1.00 RL	3.30	0.464	0.0900	0.0100	0.0110	95.0	8.1
DWS_02b: 2022 (1)	29	1.00 RL	1.00	0.103	0.0100 RL	0.0010 RL	0.0050 RL	36.0	8.1
DWS_02b: 2022 (2)	2000	1.00 RL	30.50	2.930	0.4900	0.0740	0.0880	770.0	8.4
DWS_02b: 2023 (1)	10.0	4.70	0.0100	0.104	0.0019	0.0005 RL	0.0013	11.00	7.7
DWS_02b: 2023 (2)	958.0	4.90	0.0033	0.0089	0.0526	0.0115	0.0132	180.0	8.1
DWS_02b: 2024 (1)	632.0	4.70 RL	2.66	0.707	0.0351	0.0082	0.0082	45.0	8.1
DWS_02b: 2024 (2)	199.0	4.90 RL	2.24	0.365	0.0316	0.0047	0.0051	49.0	8.4
DWS_02b: 2025 (1)	-	-	-	-	-	-	-	-	-
DWS_02b: 2025 (2)	-	-	-	-	-	-	-	-	-
DWS_02b: 2026 (1)	-	-	-	-	-	-	-	-	-
DWS_02b: 2026 (2)	-	-	-	-	-	-	-	-	-
DWS_02b Median	194.5	1.00	2.17	0.300	0.0450	0.0065	0.0081	47.0	8.2

**: Replacement sample collected on 4/8/21, per MS4 Permit Pat IV.6.b.*

Evaluation: The MS4 evaluates the data using the following Scoring Matrix (Matrix) and protocol to interpret and communicate the results. Annual median pollutant concentrations are determined for downstream sites (DWS_01 and DWS_02b) from the two sampling events. The Matrix assigns points for each parameter ranging from 0 to 4, representing the percent difference between each parameter's

annual median and the long-term median. E. coli is evaluated separately, and not included in the final point totals, due to limited data.

Percent change is determined using the following formula:

$$\% \triangle = ((Y_2 - Y_1) / Y_1) * 100$$

For example, 2023 DWS_01 TSS Annual Median is 62.0 mg/l, and the long-term median is 38.0 mg/l. ((62.0 – 38.0)/38.0) x 100 = 63.2% increase, resulting in a score of 1-point.

Table 8.5.2: In-Stream Wet-Weather Monitoring: Scoring Matrix

4-Points	3-Points	2-Points	1-Point	0-Points
< 0 – 40%	40.1 – 80 %	80.1 – 120%	120.1 –160%	> 160%

The MS4 relates results to the Matrix and then populates the appropriate In-Stream Wet-Weather Monitoring charts with the corresponding scores.

Table 8.5.3: In-Stream Wet-Weather Monitoring: Bozeman Creek DWS_01

Parameter	Year				
	2022	2023	2024	2025	2026
TSS	4	3	4		
Oil and Grease	4	0	0		
Total Nitrogen	3	4	4		
Phosphorus	4	4	4		
Zinc	4	3	4		
Lead	4	3	4		
Copper	4	4	4		
COD	4	2	4		
pH	4	4	4		
Annual Points:	35	27	32		

Table 8.5.4: In-Stream Wet-Weather Monitoring: Mandeville Creek DWS_02b

Parameter	Year				
	2022	2023	2024	2025	2026
TSS	0	0	2		
Oil and Grease	4	0	0		
Total Nitrogen	0	4	4		
Phosphorus	0	4	1		
Zinc	0	4	4		
Lead	0	4	4		
Copper	0	4	4		
COD	0	2	4		
pH	4	4	4		
Annual Points:	8	26	27		

The MS4 sums points for each parameter to obtain an Annual Points total for Mandeville and Bozeman Creeks. The Annual Point totals are then summed to obtain a Total Points. A Final Score is obtained by dividing the Total Points by Possible Points. The MS4 transfers the Final Score to SWMP Section 8.8.

Table 8.5.5: In-Stream Wet-Weather Monitoring: Results

Parameter	2022	2023	2024	2025	2026
Bozeman Creek Annual Points	35	27	32		
Mandeville Creek Annual Points	8	26	27		
Total Points:	43	53	59		
Possible Points:	72	72	72		
Final Score (decimal):	.60	.74	.82		

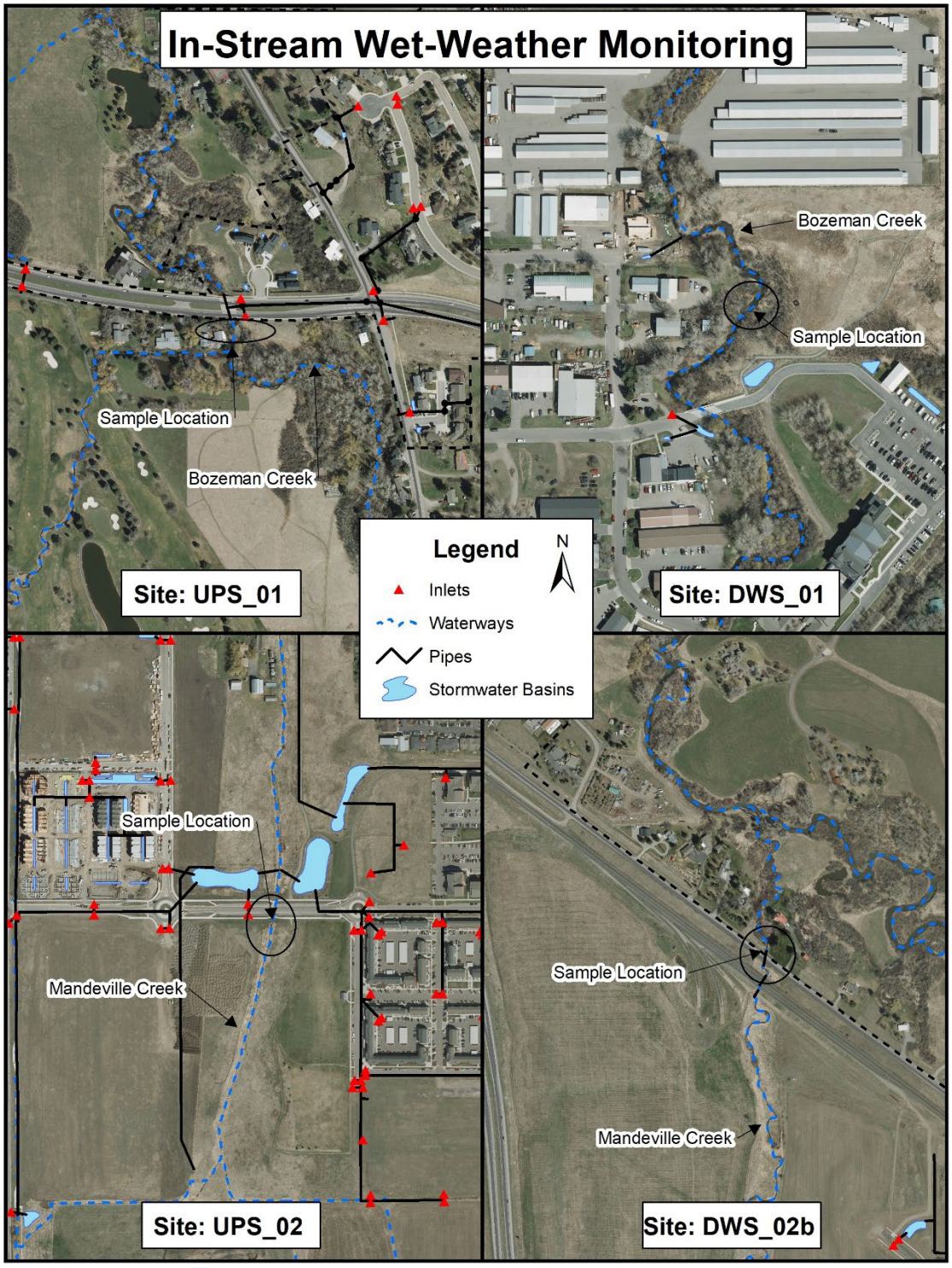
Table 8.5.6: E. Coli Monitoring Results

Site	E. Coli (MPN/100ml)
UPS_01: 2023 (1)	218.7
UPS_01: 2023 (2)	165.8
UPS_01: 2024 (1)	48.7
UPS_01: 2024 (2)	129.6
UPS_01: 2025 (1)	
UPS_01: 2025 (2)	
UPS_01: 2026 (1)	
UPS_01: 2026 (2)	
UPS_01: 2027 (1)	
UPS_01: 2027 (2)	
UPS_01 Median	147.7

Table 8.5.7: E. Coli Monitoring Results

Site	E. Coli (MPN/100ml)
DWS_01: 2023 (1)	118.7
DWS _01: 2023 (2)	579.4
DWS _01: 2024 (1)	105.0
DWS _01: 2024 (2)	261.3
DWS _01: 2025 (1)	
DWS _01: 2025 (2)	
DWS _01: 2026 (1)	
DWS _01: 2026 (2)	
DWS _01: 2027 (1)	
DWS _01: 2027 (2)	
DWS_01 Median	190.0

Evaluation: The MS4 will evaluate the data once five years of data is collected.



Graphic 8.5.1: In-Stream Wet-Weather Monitoring Map

8.6 Sediment Reduction Monitoring

Introduction: The MS4 conducts Sediment Reduction Monitoring to comply with the Montana DEQ's sediment load reduction requirements detailed in the 2013 Lower Gallatin Planning Area TMDL and to evaluate BMP effectiveness at reducing sediment loads to Bozeman and Mandeville Creeks and the East Gallatin River. The MS4 tracks tons captured in BMPs detailed in the TMDL Action Plan (SWMP Sections 2.3 and 2.6).

Table: 8.6.1: Bozeman Creek Sediment Waste Load Reduction

Sediment Source	Estimated Load	Waste Load Allocation	Required Load Reduction	Load Reduction
MS4	218 tons/year	137 tons/year	37%	81 tons/year **DEQ Imposed**

Table 8.6.2: Mandeville Creek Sediment Waste Load Reduction

Sediment Source	Estimated Load	Waste Load Allocation	Required Load Reduction	Load Reduction
MS4	None	None	None	10 tons/year **Self Imposed**

Table 8.6.3: East Gallatin River Sediment Waste Load Reduction

Sediment Source	Estimated Load	Waste Load Allocation	Required Load Reduction	Load Reduction
MS4	None	None	None	10 tons/year **Self Imposed**

Sites: Stormwater treatment units described in SWMP Sections 2.6.

Method:

1. Measure distance from top of treatment unit manhole (TOM) to top of sediment (TOS) captured in the treatment unit sump.
2. Subtract the TOM/TOS measurement from the known total treatment unit depth to obtain total sediment depth.
3. Calculate sediment volume using the formula: $\mathbf{V = (\pi r^2)h}$, where:
    - *V = volume of a cylinder*
    - *Π = 3.14*
    - *r = ½ of treatment unit sump diameter*
    - *h = total sediment depth*
4. Convert volume to tons by using an assumed sand weight ratio of .056 tons = 1 cubic foot of sand.

Analysis: The MS4 analyzes the following parameter:

- TSS (tons)

Evaluation: The MS4 enters data into a local spreadsheet for safe record upon receipt. Further, the MS4 incorporates the data into the following Scoring Matrix (Matrix) to interpret, evaluate, and communicate the results. The Matrix includes scores ranging from 0 to 4-points, which relate to total annual sediment capture. For example, a load reduction for Bozeman Creek of ≥ 81 tons equals 4-points, 60 – 80 tons equals 3-points, 40 – 59 tons equals 2-points, 20 – 39 tons equals 1-point, and 0 – 19 equals 0-points.

Table 8.6.4: Sediment Reduction Monitoring: Scoring Matrix (Bozeman Creek)					
Parameter	**4-Points**	**3-Points**	**2-Points**	**1-Point**	**0-Points**
Sediment Captured (tons)	≥81	60 – 80	40 – 59	20 – 39	0 – 19

Table 8.6.5: Sediment Reduction Monitoring: Scoring Matrix (Mandeville Creek and East Gallatin River)					
Parameter	**4-Points**	**3-Points**	**2-Points**	**1-Point**	**0-Points**
Sediment Captured (tons)	≥10	7.5 – 9.9	5.0 – 7.4	2.5 – 4.9	0 – 2.4

Results: The MS4 relates results to the Matrix and then populate the Sediment Reduction Monitoring: Results chart with the corresponding scores. The MS4 weighs Bozeman Creek more heavily than Mandeville Creek and the East Gallatin River because of DEQ's imposed reduction requirements.

Table 8.6.6 Sediment Reduction Totals					
Waterbody	**2022**	**2023**	**2024**	**2025**	**2026**
Bozeman Creek	43 Tons	73 Tons	70 Tons		
Mandeville Creek	6 Tons	6 Tons	5 Tons		
East Gallatin River	6 Tons	15 Tons	7 Tons		
Total:	55 Tons	94 Tons	82 Tons		

The MS4 calculates a Final Score by summing the weighted Annual Points in the Sediment Reduction Monitoring Results chart and dividing by the Possible Points to calculate the Final Score. Finally, the MS4 transfers the Final Score to SWMP Section 8.8.

Table 8.6.7: Sediment Reduction Monitoring: Results					
Waterway	**2022**	**2023**	**2024**	**2025**	**2026**
Bozeman Creek Annual Points	(2) x (1.5) = 3	(3) x (1.5) = 4.5	(3) x (1.5) = 4.5		
Mandeville Creek Annual Points	(2) x (.5) = 1	(2) x (.5) = 1	(2) x (.5) = 1		
East Gallatin River Annual Points	(2) x (.5) = 1	(4) x (.5) = 2	(4) x (.5) = 2		
Total Points:	5	7.5	7.5		
Possible Points:	10	10	10		
Final Score (decimal):	0.50	0.75	0.75		

8.7 Long-Term Trend Monitoring

Introduction: Aquatic macroinvertebrate assemblages respond predictably to sedimentation by shifting from sediment-intolerant to sediment-tolerant taxa. Changes in macroinvertebrate assemblages are quantified using the Observed: Expected (O:E) ratio biological index model, which compares the observed taxa at a site with the expected taxa that would be present at a site under a variety of environmental conditions. Using the percent difference in O:E ratios between upstream and downstream sites the MS4 is able to assess stormwater discharge impacts to macroinvertebrate assemblages. A positive percent difference in O:E ratios indicate that stormwater discharges are not negatively impacting macroinvertebrate community assemblages. Conversely, negative percent differences in O:E ratios indicate that stormwater discharges are negatively impacting

macroinvertebrate community assemblies. Sedimentation affects macroinvertebrates community assemblages by:

- Filling interstitial voids in gravel substrate
- Reducing gravel attachment sites
- Altering stream morphology
- Increasing stream temperature

Site: The MS4 monitors benthic macroinvertebrates in Bozeman at the In-Stream Wet-Weather Monitoring Sites (SWMP Section 8.5) UPS_01 an DWS_01. The MS4 ceased macroinvertebrate monitoring at the Mandeville Creek upstream and downstream locations due to observed dry conditions at UPS_02 and site constraints at the new DWS_02b site.

Methods: The MS4 derives macroinvertebrate biological index monitoring protocols from MDEQ Sample Collection, Sorting, and Taxonomic Identification of Benthic Macroinvertebrate Communities Standard Operating Procedures (*one sample taken per location per year*).

Analysis: The MS4 collects and preserves macroinvertebrate samples and then delivers to an accredited lab, which completes the analysis of the following parameters:

- Taxonomic Sorting and Identification
- Species Abundance
- Species Diversity
- Observed / Expected Ratios
- Percentage of Sediment Tolerant Species

Upon receiving macroinvertebrate analysis results, the MS4 enters the calculated O:E ratios in the table below and then calculates the percent change between upstream and downstream sites.

Graphic 8.7.1: Monitoring Results: UPS_01 & DWS_01

Year	O:E Ratio: UPS_01	O:E Ratio: DWS_01	O:E Ratio (% △)
2018	0.20	0.37	+85%
2019	0.33	0.20	-39%
2020	0.29	0.33	+14%
2021	0.84	0.76	-10%
2022	0.71	0.51	-28%
2023	0.61	0.58	5%
2024	0.76	0.63	-17%

Evaluation: The MS4 enters data into a local spreadsheet and stores analysis reports for a safe record upon receipt. Further, the MS4 analyzes the data using the following Scoring Matrix and protocol to interpret, evaluate, and communicate the results. The Scoring Matrix includes scores from 0 to 4-points, which relate to percent change in O:E ratios between the upstream and downstream sites for Bozeman creek.

Example: An O:E ratio percent change of 0-(-20%) equals 4-points,- 21-(-40%) equals 3-points,- 41-(-60%) equals 2- points, -61-(-80%) equals 1-point, and >-80% equals 0-points.

Percent change is determined using *Equation 2* found in SWMP Section 8.4.

Example: An upstream Bozeman Creek sample has an O:E ratio of 1.1, and the downstream sample has an O:E ratio of 0.8. The MS4 finds the difference and divides by the original to arrive at a percentage ((0.8 - 1.1)/1.1) x 100 = -30%, resulting in a score of 3-points.

Table 8.7.3: Long-Term Trend Monitoring: Scoring Matrix

O:E Ratio	4-Points	3-Points	2-Points	1-Point	0-Points
O:E Ratio (% △)	>0 – (-20)	-21 – (-40)	-41 – (-60)	-61 – (-80)	-81 – (-100)

The MS4 relates results to the Matrix and then populates the Long-Term Trend Monitoring: Results chart with the corresponding scores and calculates a Final Score by summing the Event Points in the Long-Term Trend Monitoring: Results chart and dividing by the Possible Points. Finally, the MS4 transfers the Final Score to SWMP Section 8.8.

Table 8.7.4: Long-Term Trend Monitoring: Results

Waterway	2022	2023	2024	2025	2026
Bozeman Creek Event Points	3	4	4		
Total Points:	3	4	4		
Possible Points:	4	4	4		
Final Score (decimal):	0.75	1.0	1.0		

8.8 Evaluation

The MS4 calculates a Final Grade to determine the overall effectiveness of its programs and initiatives detailed in SWMP Section 1.0 to 7.0 by transferring scores from each protocol (SWMP Sections 8.4 - 8.7) to the Programmatic Evaluation: Final Points chart, and utilizes a weighted sum calculation to make the four scores comparable.

Table 8.8.1: Programmatic Evaluation: Final Points (2018)

Evaluation Type	Final Scores	Weight	Weighted Total	Weighted Total (%)
Storm Event Monitoring	.62	.25	.15	15.5%
In-Stream Wet-Weather Monitoring	.63	.25	.16	16.0%
Sediment Reduction Monitoring	.38	.25	.10	10.0%
Stream Health Monitoring	.75	.25	.19	19.0%
			Final Weighted Total (%):	60.5%

Table 8.8.2: Programmatic Evaluation: Final Points (2019)

Evaluation Type	Final Scores	Weight	Weighted Total	Weighted Total (%)
Storm Event Monitoring	0.47	.25	0.1175	11.75%
In-Stream Wet-Weather Monitoring	0.31	.25	0.0775	7.75%
Sediment Reduction Monitoring	0.50	.25	0.1250	12.50%
Stream Health Monitoring	0.88	.25	0.2200	22.00%
			Final Weighted Total (%):	54.0%

Table 8.8.3: Programmatic Evaluation: Final Points (2020)				
Evaluation Type	**Final Scores**	**Weight**	**Weighted Total**	**Weighted Total (%)**
Storm Event Monitoring	0.59	.25	0.1475	14.75%
In-Stream Wet-Weather Monitoring	0.56	.25	0.1406	14.06%
Sediment Reduction Monitoring	0.56	.25	0.1400	14.00%
Stream Health Monitoring	1.0	.25	0.2500	25.00%
			Final Weighted Total (%):	67.8%

Table 8.8.4: Programmatic Evaluation: Final Points (2021)				
Evaluation Type	**Final Scores**	**Weight**	**Weighted Total**	**Weighted Total (%)**
Storm Event Monitoring	0.49	.25	0.1225	12.25
In-Stream Wet-Weather Monitoring	0.59	.25	0.1475	14.75
Sediment Reduction Monitoring	0.50	.25	0.1250	12.50
Stream Health Monitoring	0.88	.25	0.2200	22.00
			Final Weighted Total (%):	61.5

Table 8.8.5: Programmatic Evaluation: Final Points (2022)				
Evaluation Type	**Final Scores**	**Weight**	**Weighted Total**	**Weighted Total (%)**
Storm Event Monitoring	0.80	.25	0.1250	12.50
In-Stream Wet-Weather Monitoring	0.60	.25	0.1500	15.00
Sediment Reduction Monitoring	0.50	.25	0.1250	12.50
Stream Health Monitoring	0.75	.25	0.1875	18.75
			Final Weighted Total (%):	58.50%

Table 8.8.6: Programmatic Evaluation: Final Points (2023)				
Evaluation Type	**Final Scores**	**Weight**	**Weighted Total**	**Weighted Total (%)**
Storm Event Monitoring	.74	.25	0.1850	18.50
In-Stream Wet-Weather Monitoring	.74	.25	0.1850	18.50
Sediment Reduction Monitoring	.75	.25	0.1875	18.75
Stream Health Monitoring*	1.0	.25	0.25	25.00
			Final Weighted Total (%):	80.75%

Table 8.8.7: Programmatic Evaluation: Final Points (2024)				
Evaluation Type	**Final Scores**	**Weight**	**Weighted Total**	**Weighted Total (%)**
Storm Event Monitoring	.92	.25	0.2300	23.00
In-Stream Wet-Weather Monitoring	.82	.25	0.1850	18.50
Sediment Reduction Monitoring	0.75	.25	0.1875	18.75
Stream Health Monitoring	1.0	.25	0.25	25.00
			Final Weighted Total (%):	85.25%

The MS4 relates the Final Weighted Total (%) to the following equally distributed ranges (100-percent scale) and their associated Final Grades and populates the Stormwater Report Card with a Final Grade for the corresponding year.

Table 8.8.8: Grading Matrix					
Grade	**A**	**B**	**C**	**D**	**F**
Score (%)	90 - 100%	80 - 89%	70 - 79%	60 - 69%	0 - 59%

Table 8.8.9: Stormwater Report Card				
2022 Final Grade	**2023 Final Grade**	**2024 Final Grade**	**2025 Final Grade**	**2026 Final Grade**
F **58%**	**B** **81%**	**B** **85%**		

The MS4 utilizes its empirical knowledge, performance measures, and data to continually evaluate and optimize its programmatic workloads detailed in this SWMP. Also, the MS4 compares its Final Grades to the criteria below and, as necessary, works to implement the following improvement strategies:

1. Grade = A: No stormwater impact on receiving waters, allowing for a continuation of administrative programs and reduction of TMDL Action Plan investment to maintain grade.
2. Grade = B: Low stormwater impact to receiving waters, requiring continuation of administrative programs and TMDL Action Plan investment to increase grade.
3. Grade = C: Moderate stormwater impact on receiving waters, requiring an expansion of administrative programs and continuation of TMDL Action Plan investment to increase grade.
4. Grade = D: Significant stormwater impact on receiving waters, requiring an expansion of administrative programs and TMDL Action Plan investment to increase grade.
5. Grade = F: Major stormwater impact on receiving waters, reassessment of administrative programs and TMDL Action Plan investment strategy required.

Section 9.0

Stormwater Management Plan Updates

Graphic: 9.0.1: Permeable Paver Walkway

Graphic 9.0.2: Boulevard Infiltration Gallery

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9.0 Introduction

The MS4 updates the information in this SWMP annually, (updated for the permit period beginning 2022) and tracks changes specific to each section. This SWMP requires changes to meet operation and policy adjustments that occur in local government.

9.1 Program Administration

January/February 2023:

- Throughout: Removed the oldest years of data. Where appropriate, older data is provided as an average of the removed years in the first column in a table.
- Section 1.3: Updated impervious area, site plans, staffing and budget summaries for the past year.
- 1.5: Updated titles in the COB org chart

January 2024:

- 1.6 Updated approximate budget allocation. Depends on execution of capital projects, lots got carried forward with COVID, inflation, difficult to get bidders on certain projects etc.

February 2024:

- Updated Section 1.9 Additional Regulatory Responsibilities to include WRF No Exposure Certification.
- Updated Section 1.10 Public Notice, changing the noticing days from the 2nd and 3rd Sundays in March to the 2ns and 3rd Saturdays in March. Chronicle is not published on Sundays.

January 2025:

- Updated Section 1.3 with current rate model workflow, impervious area additions, and budgets.
- Updated Section 1.4 with 2024 MSU Framework. Moved MSU construction summary to Section 5.0.
- Updated MSU Organizational Chart.
- Added 2024 SWMP public comments to Table 1.10.1.

9.2 Capital Project Program

January/February 2023

- Sections 2.1-2.6: Update tables to include 2021 data, including the CIP budget in an easier-to-read table format.

January 2024:

- All Sections: Removed previous permit period tabular data, streamlined sections, removed excess language, reformatted duplicate information into charts, and corrected grammatical errors.
- Rearranged sections 2.1 – 2.6.
- Updated CIP identification and development strategy in Sec. 2.2

- Reworded Sec. 2.3 TMDL Action Plan
- Updated graphics and tabular data for 2023 totals
- Treatment unit table includes Griffin/7th mechanical separator

January 2025:

- Section 2.2, updated Graphic 2.2.1 CIP Budget FY24 – FY29
- Section 2.6, added 2024 treatment unit totals, storm sewer maintenance totals, and street debris reduction totals.
- Section 2.7: added 2024 Bozeman Creek sediment reduction totals.

9.3 Public Education Program

January/February 2023:

- Removed "Goals" and "Goal Outcome" and replaced with Performance Measure for all tables.
- Updated all tables with 2022 results.

January 2024:

- Updated Sections 3.2-3.6 to be more consistent with MS4 permit. Updated KTAs, passive and active engagement strategies, Sec. 3.4, included Sec. 3.5 Future Engagement Strategies, and added Sec. 3.6.1. Added Sec. 3.6 Completed Engagement strategies.
- Updated Section 3.2 Key Target Audiences
- Updated Section 3.3 Passive and Active Engagement Strategies
- Updated Table 3.3.1 to better align with MS4 permit language
- Added MSU 2023 info to Section 3.4
- Updated all Section 3.4 tables with 2023 information

January 2025:

- Section 3.4: updated all tables with 2024 current and ongoing engagement results.

9.4 Illicit Discharge Detection and Elimination Program

January 2023:

- Section 4.5: Updated 2022 IDDE events
- Section 4.5, 4.7: Updated maps
- Section 4.7: Updated Table 4.7.1: Receiving Waterways
- Section 4.7: Added Outfall Attribute update information
- Section 4.7: Updated High-Priority Outfalls tables and Outfall Inspection Summary table.
- Section 4.8: Removed table 4.8.5

January 2024:

- Updated Section 4.5 with 2023 Events and IDDE location map.

- Section 4.7.1, table 4.7.1 Receiving waters table and ORI inspection process to differentiate between terminus types. Update inspection process – inspections grouped by watercourse and proximity rather than maintenance district.
- Updated High-Priority Outfall tables
- Updated table 4.7.15 with 2023 data

February 2024:

- Removed outfall OF.G03.00399 from high-priority outfall inventory. Outfall was piped in 2020 and no longer required inspection. The inventory listed 11 outfalls, with only 10 existing. Inventory was updated in 2024.

April 2024:

- Updated 2024 events with Wallace Ave. and Galloway St.

December 2024:

- Updated Section 4.4 to include Neighborhood Services as part of the ERP.
- Removed 2019 – 2021 IDDE Events from Section 4.5.
- Updated Section 4.5 with 2024 Events.
- Added Section 4.6 – Urban Camping Illicit Discharge Response.
- Update Table 4.7.1 with 2024 data.
- Updated Section 4.8 with 2024 outfall reconnaissance data.

January 2025:

- Updated Section 4.5 with MSU 2024 Events.

9.5 Construction Site Management Program

January 2023:

- Section 5.5: Updated construction site inventory
- Section 5.6: Updated performance measures with 2022 audit scores and discussion

January 2024:

- Added Section 5.5 to include SWPPP Site Prioritization and Inspection Frequency Protocol.
- Section 5.3: Added Authorization Letter to required submittals in Construction Site Permitting Program.
- Section 5.4.1: Added Occupancy/Infrastructure Approval to types of inspections. And flow chart with the option to go directly to NOV.
- Section 5.5: Added Routine Inspection Frequency Protocol.
- Section 5.6: Updated Permit Tables 5.6.1 and 5.6.2 to show a 4-year running total including 2023 data.
- Section 5.6: Added justification for average over 100%.
- Section 5.6: Updated High-Priority inventory list to include 2023 inspection totals and consolidate terminated projects.

- Section 5.7: Updated the Construction Audit point scoring system to be more concise and objective.
- Section 5.7: Added 2023 Discussion.

December 2024:

- Section 5.4: Added High priority/ Wet weather to inspection types.
- Section 5.5: Modified language to better describe routine inspection protocol.
- Section 5.6: Removed previous permit term years from permit type and inspection type inventories and updated inventories with 2024 data.
- Section 5.6: Condensed High-Priority precipitation triggered inspection summary.
- Section 5.6: Updated High-Priority inventory list to include 2024 inspection totals.
- Section 5.7: Added 2024 Construction Site Compliance Audit Scores.
- Section 5.7: Added 2024 Discussion.

January 2025:

- Section 5.6: Added summary of MSU over one acre projects.

9.6 Post-Construction Program

January/February 2023:

- Section 6.4: Updated structural BMP inventory tables
- Section 6.6: Updated High-priority list and noted sites that were evaluated to meet the criteria
- Section 6.8: Included 2022 audit data in performance evaluation

January 2024

- All Sections: Removed previous permit period tabular data, streamlined sections, removed excess language, reformatted duplicate information into charts, and corrected grammatical errors.
- Section 6.4: Updated structural BMP inventory tables and maps
- Section 6.5: Included explanation of new inspection methodology and deployment strategies.
- Section 6.5: Updated facility inspection tables and maps and summary of findings
- Section 6.6: Updated High Priority Structural BMP tables and maps
- Section 6.7: Updated Enforcement Response Plan explanation; expanded upon existing code and justified maintenance responsibility. Updated status of Phase I & II of Stormwater Facilities Master Plan and Engineering Design Standards for permit year.
- Section 6.8: Included additional trends and interpolation of data, graphs.
- Section 6.9: Updated ongoing and future initiatives.

January 2025

- Section 6.0: Updated project post-construction facility photo
- All Sections: Edited for grammar and punctuation
- Section 6.4: Updated tabular data for post-construction facility type and ownership

- Section 6.5: Updated tabular data for post-construction facility inspection by ownership
- Section 6.5: Included permeable paver inspection program

9.7 Good Housekeeping Program

January 2023:

- Section 7.3: Condensed SWMT Training into one section.
- Section 7.3: Condensed Construction Site Personnel Training into one section.
- Section 7.3: Condensed Post-Construction Personnel Training into one section.
- Section 7.3: Condensed Field and Facility Personnel Training into one section.
- Section 7.3: Added Conferences and Miscellaneous Trainings section.
- Section 7.5: Added 2021 training. Consolidated some bullets based on staffing changes.
- Section 7.4: Removed Laurel Glen, Cemetery Shops, Bozeman Public Safety Center, City Hall, and Fire Stations 1 – 3 from MS4 Facilities. Added justification for removal.
- Section 7.4: Updated FSWPPP Map.
- Section 7.6: Condensed ASWPPP Training section.

January 2024:

- Moved Sec 7.3 Stormwater Management Team Training to Sec. 7.6.
- Deleted section of Facilities removed from inventory, including justification for removal.
- Modified tabled 7.3.1 to include Pollutants and Responsible Department/Position. Removed Initial Inspection, FSWPPP Development, and FSWPPP Update columns.
- Modified tabled 7.4.1 to include Pollutants and Responsible Department/Position. Removed Initial Inspection, FSWPPP Development, and FSWPPP Update columns.
- Updated tables 7.5.2, 7.5.3, and 7.5.4 to show current activities and facilities.
- Updated table 7.5.4 to show current training totals.

January 2025:

- Section 7.2: Updated infrastructure maintenance totals.
- Table 7.3.2: Updated MSU facilities inventory by removing MSU Materials Storage Area.
- Graphic 7.3.1: Updated map with facilities locations.

9.8 Sampling and Evaluation Program

January 2023:

- Sections 8.1-8.9: Updated tables and discussion with all available quantitative data collected in 2022.
- Section 8.5: Updated site descriptions and added new DWS_02b site description and In-stream monitoring map.

November/December 2023:

- Sections 8.1-8.9: Updated tables and discussion with all available quantitative data collected in 2023.
- Sections 8.4 & 8.5: Updated data evaluation methodology to current process of using the percent difference between annual median and long-term median to derive point score.

January 2024:

- Updated Table 8.4.3 Storm Event Monitoring: Scoring Matrix with new percentage range for each point category. New percentage range allows for capture of smaller changes in percent differences.
- Updated all tables in Sec. 8.4 to reflect changes in scoring matrix.
- Updated Table 8.5.5 In-Stream Wet-Weather Monitoring: Scoring Matrix with new percentage range for each point category. New percentage range allows for capture of smaller changes in percent differences.
- Updated all tables in Sec. 8.4 to reflect changes in scoring matrix.
- Updated all evaluation tables to only show 2022 – 2026 permit term data.
- Added East Gallatin River to Sediment Reduction Totals Evaluation, and added in all Sec. 8.6 tables.
- Removed Mandeville Creek from long-term trend monitoring evaluation tables. Mandeville Creek is no longer sampled for macroinvertebrates.
- Updated 2022 – 2023 Final Scores with new scoring matrix criteria.
- Added Sediment Reduction Monitoring methods to Sec. 8.6

February 2024:

- Added Sampling Locations map

December 2024:

- Updated Sections 8.4, 8.5, 8.6, 8.7, and 8.8 with 2024 sampling data.
- Update Section 8.8 with 2024 program evaluation scores.
- Update Section 8.8 with 2024 Stormwater Report Card Score.

Attachment #1

City of Bozeman – Montana State University

Memorandum of Understanding

Attachment #2

Montana State University

Education and Outreach Class, Event and Tour Summary

Attachment #3

Montana State University

SWPPP Inspection Summary

Attachment #4

Montana State University

Permit Review and Inspection Forms

Attachment #5

Done by City of Bozeman for MSU per MOU

High Priority Stormwater Facility Inspection

Facility Inspection MSU Shops

Attachment #1 MS4 Information

- City of Bozeman-MSU Memorandum of Agreement and Appendix

MEMORANDUM OF UNDERSTANDING

between

The City of Bozeman

and

Montana State University

for

General Permit for Stormwater Discharges Associated with Small Municipal Separate Storm Sewer Systems (MS4) Compliance and Storm Sewer Operation

This Memorandum of Understanding (MOU) made this ____ day of _____, 2022, between the City of Bozeman (COB) and Montana State University (MSU), collectively referred to as the "Parties", addresses areas of shared responsibility regarding the Montana Department of Environmental Quality (MDEQ) General Permit for Stormwater Discharges Associated with Small Municipal Separate Storm Sewer Systems (MS4 Permit) and storm sewer operation.

WHEREAS, the MDEQ requires the Parties to mitigate pollutants entering their storm sewers by implementing respective Stormwater Management Programs (SWMP) that include best management practices designed, installed, and maintained per sound engineering, hydrologic, and pollution control practices.

WHEREAS, the Parties are co-permittees, as authorized under Montana ARM 17.30.111(3) and ARM 17.30.111(7), and share select responsibility for the completion of defined SWMP activities.

WHEREAS, the MDEQ requires co-permittees to document shared activities and specifically requires them to have an MOU and organizational charts in order to be compliant with the MS4 Permit.

WHEREAS, MSU owns and operates storm sewers located on its property, which contains drainage basins and conveyances connected to COB infrastructure.

WHEREAS, MSU is a utility customer of the COB and pays monthly stormwater service fees.

NOW THEREFORE, in consideration of the mutual understandings contained herein, the Parties agree as follows:

1. The COB shall:
    a. Provide a single contact point, unless otherwise designated.
    b. Request permission 24 hours before completing any task on MSU property.
    c. Facilitate and document regular coordination meetings.

d. Carry out the roles associated with each Minimum Control Measure, listed in Appendix A.
e. Update MSU's stormwater service fees each fiscal year.
f. Provide SWMP technical assistance and compliance support upon request.
g. Deliver an updated copy of the Management Plan to MSU annually.

2. MSU shall:

a. Provide a single contact point, unless otherwise designated.
b. Participate in regular coordination meetings.
c. Carry out the roles associated with each Minimum Control Measure, listed in Appendix A.
d. Deliver information, review, and approve the Management Plan annually.
e. Provide parking and access for COB vehicles and equipment.

3. EFFECTIVE DATE AND DURATION:

The Parties agree that this MOU shall be effective on the date of its execution and shall continue for a period of five (5) years. The Parties may terminate this MOU at any time upon mutual written agreement. The Parties may extend the MOU for such additional period of time and under such terms as agreed upon in writing.

4. FEES FOR SERVICES:

The Parties agree that no fees for services performed under this MOU shall be applied, other than the COB's stormwater service charge applied to MSU.

5. INDEMNIFICATION:

The Parties agree to indemnify, defend, and hold harmless the other, their officers, agents and employees from and against any and all claims, losses, liabilities or damages and costs of its officers, agents, employees, and subcontractors.

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their authorized representatives, on the day and year first written above.

CITY OF BOZEMAN

DocuSigned by:
Jeff Mihelich
251607-D8A024A5...
(Signature)

City Manager
(Title)

Jeff Mihelich
(Printed Name)

MONTANA STATE UNIVERSITY

DocuSigned by:
[signature]
(Signature)

AVP University Services
(Title)

John How
(Printed Name)

Appendix A

Roles in the MS4 Permit

Administrative – SWMP Sec. 1.0

COB and MSU points of contact will establish meetings quarterly. On an annual basis, both Parties will update the GIS records and corresponding ratepayer records. This data review will also tie into the mapping required by MCM's 3 and 5.

MCM's 1 and 2: Public Education, Outreach, Involvement, and Participation

a. Each Party will maintain a website, on the internet, separately and individually.
b. The Parties will separately identify Key Target Audiences for stormwater outreach and education.
c. The Parties will separately select the outreach formats per the MS4 permit.
d. Perform outreach and public involvement separately, while looking for areas of overlap.

MCM 3: Illicit Discharge Detection and Elimination

a. Each Party will review categories of non-stormwater discharges, and identify which are significant contributors of pollutants.
b. Each Party will create, update, and store an inventory of their infrastructure. They will meet annually to review this information.
c. COB will make infrastructure information publicly available on the internet.
d. Each Party will develop and update a Corrective Action Plan to address illicit discharges. Initial response will be the responsibility of each Party in their respective area. Minor spills will be dealt with by the respective SWMP Coordinator, while major spills will be routed through 911 and then to the appropriate agency. The Parties have an existing emergency services contract, allowing City of Bozeman emergency services to respond to major spills in both jurisdictions.
e. COB staff will perform dry weather screening field inspection of all outfalls as outlined in the MS4 permit, including those on MSU property. COB will provide relevant field forms to MSU in a timely fashion. Record keeping, reporting, prioritization, and illicit discharge resolution will be the responsibility of each Party separately.

MCM 4: Construction Site Storm Water Management

a. Each Party will separately require construction site stormwater management plans and controls on regulated projects.
b. Each Party will separately review stormwater management plans, using a checklist, for compliance with technology based effluent limitations contained within the most recent Construction General Permit.
c. Each Party will separately inspect regulated projects using a site inspection checklist.
d. Because of the status of COB as a traditional MS4 and MSU as a non-traditional MS4, ordinances and policies will be addressed separately.

MCM 5: Post-Construction Site Storm Water Management

a. Each Party will separately require post-construction stormwater management controls on regulated projects.
b. Each Party will separately develop and implement a plan review checklist.
c. Each Party will separately maintain and update an inventory of post-construction controls annually. See MCM 3 b and c above.
d. City of Bozeman and MSU will jointly complete a high-priority post-construction control analysis.
e. COB will conduct field inspections on MSU owned high-priority post-construction controls annually.
f. COB will provide field reports and maintenance recommendations for MSU high-priority post-construction controls.
g. Maintenance and record keeping will be the responsibility of MSU for their post-construction facilities.

MCM 6: Pollution Prevention and Good Housekeeping

a. The Parties will work together to identify facilities and activities per the most current MS4 Permit.
b. COB staff will conduct field inspections of activities and facilities.
c. COB will provide field inspection reports to MSU for identified facilities and activities.
d. The Parties will be separately responsible for final documentation, SOG development, and SOG training.
e. COB will maintain a map of identified COB and MSU facilities.
f. MSU will provide COB good housekeeping information found in SWMP Section 7 about source load reduction.

Monitoring

Bozeman has a specialist who focuses on this requirement. It will be most efficient for COB staff to continue to set up and monitor sites as required by the MS4 permit and submitted sampling plan. COB will provide monitoring results.

Program Effectiveness Assessment

Each Party will perform this assessment based on required BMPs in each minimum control measure that have been adjusted or modified throughout the permit cycle. Outcomes, such as reducing pollutant loads, will be addressed together where possible.

Attachment #2

Montana State University

Education and Outreach Class, Event and Tour Summary

MSU Education and Outreach Class, Event and Tour Summary

Date	Event	Total	Student	Faculty/Staff	Public	
3/26/2024	Sustainability Summit - Stormwater Tours (2)	23	14	7	2	tour stormwater system and review its role in preserving water quality
multiple	HONR 494	38	27	4	7	Projects included water bottle, College St redesign, Mandeville Creek restoration
4/24/2024	Advocat Tour	53	49	4		tour stormwater system and its role in preserving water quality
4/24/2024	Campus clean up	108	14	94		460 pounds of litter collected
4/25/2024	Sewer/stormwater infrastructure tour	37	35	2		tour and contrast sewer and stormwater systems
5/9/2024	LARC 202 Landscape Design	17	13	4		Wally Byam design review
9/4/2024	Turf Class	21	19	2		turf maintenance practices and impacts on stormwater
9/11/2024	Civil Engineering class - storm water tour	23	22	1		tour stormwater system
11/4/2024	Landscape woodys class	20	19	1		Plant choice and maintenance effects on stormwater management
11/21/2024	Sustainability class	18	17	1		Stormwater and its role in preserving water quality
12/10/2024	LARC 331 Landscape design	11	8	3		Hannon Court yard design
12/11/2024	Honors 494	21	16	5		Projects included M redesign, powwow event improvements, 11th Street design, composting

Attachment #3

Montana State University

SWPP Inspection Summary

MSU Stormwater Inspections and Correspondence

Combined Lab

SWPPP Documents


Permit app - APP_MTR110406_17


Letter of intent.PDF

Inspections


SWPPP Inspection Form 8.12.24_08_12_


SWPPP Inspection Form 7.29.24_07_29_


SWPPP Inspection Form 7.11.24_07_11_


SWPPP Inspection Form 7.2.24_07_02_2


SWPPP Inspection Form 6.27.24_06_27_


SWPPP Inspection Form 6.26.24_06_26_


SWPPP Inspection Form 6.10.24_06_10_


SWPPP Inspection Form_12_05_2024_14


SWPPP Inspection Form_11_18_2024_18


SWPPP Inspection Form_10_31_2024_16


SWPPP Inspection Form_10_17_2024_14


SWPPP Inspection Form_10_02_2024_16


SWPPP Inspection Form_09_18_2024_15


SWPPP Inspection Form_09_04_2024_14


SWPPP Inspection Form_08_28_2024_17


SWPPP Inspection Form 8.16.24_08_16_

Correspondence


RE Garfield at 19th.msg


RE StormwaterSWPPP p

Jones Hall College of Nursing

SWPPP Documents


NOI.PDF


AUTH_MTR110813.PDF

SWPPP Review Documents


RE SWPPP Review Comments.msg


FW Nursing storm 10-1 24.msg


RE Nursing storm 10-1 24.msg


Re MSU school of Nursing 10172024.m

Inspections


Martel MSU School of Nursing 1001202‹


Martel MSU School of Nursing 0924202‹


Martel MSU School of Nursing 0917202‹


Martel MSU School of Nursing 0910202‹


Martel MSU School of Nursing 0903202‹


Martel MSU School of Nursing 0827202‹


Martel MSU School of Nursing 0820202‹


Martel MSU School of Nursing 0813202‹


Martel MSU School of Nursing 0805202‹


Martel MSU School of Nursing 0729202‹


Martel MSU School of Nursing 0723202‹


Martel MSU School of Nursing 0716202‹


Martel MSU School of Nursing 0709202‹


Martel MSU School of Nursing 0702202‹


Martel MSU School of Nursing 0625202‹


Martel MSU School of Nursing 0618202‹


Martel MSU School of Nursing 1126202‹


Martel MSU School of Nursing 1119202‹


Martel MSU School of Nursing 1112202‹


Martel MSU School of Nursing 1105202‹


Martel MSU School of Nursing 1029202‹


Martel MSU School of Nursing 1022202‹


Martel MSU School of Nursing 1015202‹


Martel MSU School of Nursing 1008202‹

Correspondence


FW Nursing storm 10-1 24.msg


RE Nursing storm 10-1 24.msg


Re MSU school of Nursing 10172024.m

Facilities Yard

SWPPP Documents

Over one acre


NOI.pdf


NOI conf ltr.pdf

Under one acre


Less than 1 Acre Permit - BP #03 - RE\


4-29-24 ECP Facilities Phase 2-4 ‹

SWPPP Review documents


SWPPP Review Checklist 5-10-24.do


5-20-24 Reply to MSU MS-4.pdf

Inspections

Correspondence

City of Bozeman Fire Station #2

SWPPP documents

Over one acre

Gianforte Hall

SWPPP documents

Over one acre


AUTH_MTR110772_18523.pdf


APP_MTR110772_18523.pdf

Under one acre


VIM PRIMARY ELECTRIC SERVICE -

SWPPP review documents


Gianforte Hall NOI and SWPPP review


5-20-24 Gianforte 5Hall - SWPPP Review

Inspections


Gianforte-Inspection-08-21-24.pdf


Gianforte-Inspection-08-14-24.pdf


Gianforte-Inspection-08-07-24.pdf


Gianforte-Inspection-07-31-24.pdf


Gianforte-Inspection-07-24-24.pdf


Gianforte-Inspection-07-17-24.pdf


Gianforte-Inspection-07-10-24.pdf


Gianforte-Inspection-07-03-24.pdf


Gianforte-Inspection-06-26-24.pdf


Gianforte-Inspection-06-19-24.pdf


Gianforte-Inspection-06-12-24.pdf


Gianforte-Inspection-06-05-24.pdf


Gianforte-Inspection-05-29-24.pdf


Gianforte-Inspection-05-22-24.pdf


Gianforte-Inspection-12-04-24.pdf


Gianforte-Inspection-11-27-24.pdf


Gianforte-Inspection-11-20-24.pdf


Gianforte-Inspection-11-13-24.pdf


Gianforte-Inspection-11-06-24.pdf


Gianforte-Inspection-10-30-24.pdf


Gianforte-Inspection-10-23-24.pdf


Gianforte-Inspection-10-16-24.pdf


Gianforte-Inspection-10-09-24.pdf


Gianforte-Inspection-10-02-24.pdf


Gianforte-Inspection-09-25-24.pdf


Gianforte-Inspection-09-18-24.pdf


Gianforte-Inspection-09-11-24.pdf


Gianforte-Inspection-09-04-24.pdf


Gianforte-Inspection-08-28-24.pdf

Correspondence


FW_ GH storm.msg


FW_ GH storm 6-27-24.msg


FW MSU ACTIVITY FIELD CONSTRUCTIC


FW Gianforte storm. 8-12-24msg.n


FW GH storm 10-21-24.msg


RE_ GH storm.msg


RE MSU ACTIVITY FIELD CONSTRUCTIC


RE Gianforte SWPPP.msg


RE GH storm.msg


Re GH storm 6-27-24.msg


Re GH storm 6-27-24 (2).msg

Grant Street

SWPPP documents

Over one acre


APP_MTR110822_18613.PDF


RFT_MTR110822_18613.PDF


NOT_MTR110822_18613.PDF


AUTH_MTR110822_18613.PDF

Under one acre


6-4-24 MSUGSP_Submittal (


SWPPP site plan.pdf


Less than 1 Acre Permit v4 (corrected)


11-15-24Less than One acre complete p

SWPPP Review documents


Grant St Less then One Acre Constructi


6-4-24 MSUGSP_Submittal (


SWPPP site plan (corrected).pdf


Less than 1 Acre Permit v4.pdf


Grant St Less then One Acre Constructi


Grant St Less then One Acre Constructi

Inspections


MSU Grant sw_swppp_inspectic


MSU Grant St sw_swppp_inspectic


MSU Grant swppp_inspection_fs


MSU Grant wppp_inspection_fsw_swppp_inspectic


MSU Grant sw_swppp_inspectic


MSU Grant sw_swppp_inspectic

Indoor Practice Facility

SWPPP documents

Over one acre


AUTH_MTR110737_18473.pdf


1. MSU Indoor Training Facility SW

Under one acre

SWPPP-C300.pdf

Less than 1 Acre Permit v4.pdf

SWPPP review documents

IPF - Less then One Acre Construction S

IPF - Less then One Acre Construction S

Inspections

MSU IAC SWPPP Inspection Reports.

SWPPP Inspection Form 8.16.24_08_16_

SWPPP Inspection Form 8.12.24_08_12_

SWPPP Inspection Form 7.29.24_07_29_

SWPPP Inspection Form 7.11.24_07_11_

SWPPP Inspection Form 7.2.24_07_02_2

SWPPP Inspection Form 6.27.24_06_27_

SWPPP Inspection Form 6.26.24_06_26_

SWPPP Inspection Form 6.10.24_06_10_

SWPPP Inspection Form_12_05_2024_14

SWPPP Inspection Form_11_18_2024_18

SWPPP Inspection Form_10_31_2024_16

SWPPP Inspection Form_10_17_2024_14

SWPPP Inspection Form_10_02_2024_16

SWPPP Inspection Form_09_18_2024_15

SWPPP Inspection Form_09_04_2024_14

SWPPP Inspection Form_08_28_2024_17

Correspondence

RE MSU Irrigation Pond Modifications

3-28-24 RE MSU Irrigation Pond Moc

Stadium Parking

SWPPP documents

Confirmation Letter.pdf

RFT_MTR110764_18512.pdf

NOT_MTR110764_18512.pdf

NOI SWPPP.pdf

Inspections


24-528 SWPPP Inspection 072424.p


24-528 SWPPP Inspection 071724.p


24-528 SWPPP Inspection 071024.p


24-528 SWPPP Inspection 070324.p


24-528 SWPPP Inspection 062724.p


24-528 SWPPP Inspection 062024.p


24-528 SWPPP Inspection 061424.p


24-528 SWPPP Inspection 060724.p


24-528 SWPPP Inspection 053124.p


24-528 SWPPP Inspection 052424.p


24-528 SWPPP Inspection 092524.p


24-528 SWPPP Inspection 082124.p


24-528 SWPPP Inspection 081424.p


24-528 SWPPP Inspection 080724.p


24-528 SWPPP Inspection 073124.p

Under One acre

Fire Hydrant replacement


Less than 1 Acre Permit v438460.pdf

VIM Hotel

SWPPP documents


SITE MAP - NORTHWESTERN PR


8-21-24 VIM Hotel - NWE primary - APPR

SWPPP Review documents


8-12-24 VIM Hotel - NWE primary - Less t

Attachment #4

Montana State University

Permit Review and Inspection Forms

MSU Permit Review Checklists and Inspection Form

Project No.	**Date Received**	**Date Reviewed**

Permit Review Checklist
Construction Sites Greater than One (1) Acre

Section 1 - Project Information

Project Name	**Project Location**

Total Project Area	**Total Disturbed Area**	**Receiving Water**
Estimated Start Date	**Estimated Completion Date**	**Estimated Final Stabilization Date**

Applicant	**Address**	**Email**	**Phone Number**
SWPPP Administrator	**Address**	**Email**	**Phone Number**

Section 2 - Review History

First Review			
Permit Received Date:		**Approved/Denied:**	
Review Completed Date:		**Comments:**	
Reviewed By:			
Second Review			
Permit Received Date:		**Approved/Denied:**	
Review Completed Date:		**Comments:**	
Reviewed By:			
Third Review			
Permit Received Date:		**Approved/Denied:**	
Review Completed Date:		**Comments:**	
Reviewed By:			

Section 3 - Review Conclusion

☐ **The Stormwater Pollution Prevention Permit for the project above adequately meets the necessary components identified within the attached checklist.**

☐ **The Stormwater Pollution Prevention Permit for the project above does not adequately meet the required components identified within the attached checklist and must be resubmitted with changes before approval.**

Notes:

Reviewed By:_____ **Date**: _____

Section 4: Notice of Intent and Stormwater Pollution Prevention Plan Review			
Requirements		**Comment**	
1	Are NOI Sec. A – K accurate and complete? Specifically, are SWPPP Administrator, receiving surface waters, description of construction activities, BMP summary, area of construction related disturbance, and certifications accurate and complete?	☐ Yes ☐ No	
2	Are SWPPP Sections A – E accurate, complete, and consistent with the NOI?	☐ Yes ☐ No	
3	Have major construction activities and associated BMPs been broken into an adequate number of construction phases? Have legible site maps been submitted for each phase of construction?	☐ Yes ☐ No	
4	Are inlets receiving surface runoff protected with BMPs that filter stormwater before flowing into underground infrastructure?	☐ Yes ☐ No	
5	Are disturbed areas contained with perimeter protection BMP(s) that contain stormwater flowing off of disturbed areas?	☐ Yes ☐ No	

Section 4: Notice of Intent and Stormwater Pollution Prevention Plan Review			
Requirements		**Comment**	
6	Is vehicle and equipment tracking being mitigated by limiting site access to approved stabilized construction site entrances / exits?	☐ Yes ☐ No	
7	Are concrete washout water, concrete cutting slurry, and other masonry wash-waters contained in a lined washout facility BMP(s)?	☐ Yes ☐ No	
8	Are materials and soil stockpiles, not already contained within an existing perimeter protection BMP, covered or contained with perimeter control BMP(s)?	☐ Yes ☐ No	
9	Are dewatering discharges being managed with filters, wells, or land application? Are dewatering wells (if applicable), discharge locations, and receiving surface water shown on site maps?	☐ Yes ☐ No	
10	Are post-construction stormwater features (ponds, infiltration basins, etc.) protected with an approved permanent or temporary stabilization BMP?	☐ Yes ☐ No	

Section 4: Notice of Intent and Stormwater Pollution Prevention Plan Review			
Requirements		**Comment**	
11	Are all disturbed areas not under active construction identified on site maps and temporarily stabilized with an approved temporary soil stabilization BMP?	☐ Yes ☐ No	
12	Are natural resource areas (e.g., streams, wetlands, etc.) protected by natural buffers, barriers, or structural BMPs?	☐ Yes ☐ No	
13	Has a spill prevention and response plan be formulated and has the spill kit location been identified on all site maps?	☐ Yes ☐ No	
14	Are good housekeeping BMP(s), including covered / contained chemical storage location, dumpster location, and sanitary facility location identified on all site maps?	☐ Yes ☐ No	
15	Are vehicle and equipment fueling, cleaning, storage, and maintenance staging areas identified on site maps?	☐ Yes ☐ No	

Section 4: Notice of Intent and Stormwater Pollution Prevention Plan Review			
Requirements		**Comment**	
16	Does the SWPPP include the preservation of existing vegetation, and are preservation areas shown on all site maps?	☐ Yes ☐ No	
18	Are there locations where additional BMPs appear to be necessary?	☐ Yes ☐ No	
19	Is SWPPP Sec. O – Certification signed and dated?	☐ Yes ☐ No	

Permit Review Checklist

Sites Less than One (1) Acre

January 13, 2023

The City requires all multi-family, commercial, utility, demolition, and paving projects less than one acre to submit this application and receive an approval letter before initiating construction activities pursuant to Chapter 40 Article 4 of the Bozeman Municipal Code. The City's Stormwater Division reviews, inspects, and enforces all provided information. This Permit is active once approved by the City and terminated upon the receipt of a Certificate of Occupancy.

Section 1 – Applicant Information (All Fields Must Be Completed)			
PREPARER:	Company:		
Phone:	Email:		
Address:	City:	State:	Zip code:
OWNER:	Company:		
Phone:	Email:		
Address:	City:	State:	Zip code:
CONTRACTOR:	Company:		
Phone:	Email:		
Address:	City:	State:	Zip code:

Section 2 – Project Information (All Fields Must Be Completed)	
Project Name:	Total Land Disturbance (square feet):
Project Address:	Project Type:
Section 3 – Project Schedule (All Fields Must Be Completed)	
Start Date (MM/YYYY):	Final Stabilization Date (MM/YYYY):

Section 4 – Site Map

1. Applicant must provide a sitemap(s) that includes the following: **INITIAL HERE:**_____
   - Project boundary
   - Direction(s) of stormwater run-on and runoff
   - Public and private stormwater infrastructure on or adjacent to site
   - Material storage and equipment staging area(s)
   - BMPs selected in Section 5

Section 5 – Required Stormwater Controls

****Refer to the City of Bozeman's Best Management Practice (BMP) Manual to select controls.****

1. **Protect on-site inlets**: On-site inlets receiving site runoff require BMPs that filter stormwater before flowing into underground infrastructure pursuant to §40.04.360.C. BMC. Approved options:
   - ☐ Pre-Manufactured Drop Inlet Protection
   - ☐ Other:_____
2. **Control disturbed areas**: Project boundaries adjacent to streets require BMPs that control stormwater flowing from disturbed areas pursuant to §40.04.360.B. BMC. Approved options:
   - ☐ Silt Fence
   - ☐ Foam or Straw Wattle
   - ☐ Other:_____
3. **Control concrete waste, slurry and other masonry wash waters:** Concrete activities require BMPs that allow for the capture and disposal of wastes, slurries, and wash-waters, pursuant to §40.04.360.F. BMC. Approved options:
   - ☐ Reusable or Disposable Product
   - ☐ Prefabricated Roll-Off
   - ☐ Below or Above Ground Lined Containment
   - ☐ Other:_____
4. **Mitigate tracking:** Exit points require BMPs that prevent the tracking of debris off-site onto the right-of-way pursuant to §40.04.360.C. BMC. Approved options:
   - ☐ Cobble/Cattle Guard Hybrid Track Pad
   - ☐ Angular Rock Track Pad
   - ☐ Proprietary Tracking Control Product
   - ☐ Other:_____

5. **Contain material stockpiles:** Material stockpiles, not already contained within an existing perimeter control, require BMPs that prevent erosion and displacement of material pursuant to §40.04.360.A. BMC. Approved options:
   - ☐ Silt Fence
   - ☐ Foam or Straw Wattle
   - ☐ Cover/Tarp
   - ☐ Within Existing Perimeter Control BMP
   - ☐ Other:_____

6. **Manage dewatering flows:** Accumulated groundwater or stormwater discharges pumped into infrastructure or waterways are MDEQ permitted activities and are required to meet the effluent limitations in the MDEQ General Permit for Construction Dewatering pursuant to 40.04.360.B. BMC, Montana Clean Water Act, and Federal Clean Water Act. Approved options:
   - ☐ Land Application
   - ☐ Well Point
   - ☐ Flocculent or Filter Treatment System
   - ☐ MDEQ Construction Dewatering General Permit Coverage
   - ☐ Other:_____

7. **Protect post-construction stormwater features:** Post-construction stormwater features, such as retention and detention ponds, require BMPs that protect and their side slopes and bases during and after construction activities pursuant to §40.04.360.A. BMC. Approved options:
   - ☐ Rolled Erosion Control Products
   - ☐ Other:_____

8. **Stabilize disturbed areas:** Disturbed areas require BMPs that prevent erosion of barren ground once construction is complete pursuant to §40.04.360.A. BMC. Approved options:
   - ☐ Crimped Straw Mulch or Wood Mulch
   - ☐ Hydroseed
   - ☐ Sod
   - ☐ Other:_____

Section 6 – Administrative and Operational Controls

1. **Contractor/Owner agrees to implement the following required administrative controls:**
   - Street Sweeping: Frequency: _____
   - On-site Spill Kit
   - Control of Construction Waste
   - Removal of Temporary BMPs Upon Project Completion

Section 7 – Acknowledgment Certificate

I certify that I am the contractor/owner or an authorized agent. If acting as an authorized agent, I certify that I am authorized to act as the contractor/owner agent regarding the property at the above-referenced address for the purpose of filing applications for decisions, plans, or review under Chapter 40 Article 4 of the BMC and Ordinances #1763 and #2002, and have full power and authority to perform on behalf of the contractor/owner all acts required to enable the City to process and review such applications. I certify that the information on this application is true, will be implemented, and maintained throughout the life of the project.

☐ By checking this box, I acknowledge that non-compliance with this Permit, aforementioned BMC, and City Ordinances may result in a stop work order, city withholding a certificate of occupancy, or a lien filed against the project for unpaid costs of abatement of violations.

Signature of Legally Responsible Person	Date
Printed Name	Title

Site Inspection Form

All size sites

Section 1: General Information			
Project Name:			
Location:			
Date of Inspection:	Click or tap to enter a date.	**Start/End Time:**	
Inspector's Name(s) & Title(s):	Choose an item.		
Inspector's Contact Info:	Choose an item.		
SWPPP Administrator's Name:			
SWPPP Administrator's Contact Info:			
SWPPP Applicant's Name:			
SWPPP Applicant's Contact Info:			
Describe Present Phase of Construction:			

Is this a High Priority Site? ☐ **YES** ☐ **NO**

Type of Inspection:

☐ **Unannounced** ☐ **Announced** ☐ **Complaint Driven** ☐ **Audit** ☐ **Post Snowmelt / Thawing Event**
☐ **Post Rain Event** ☐ **Occupancy Request**

Was the inspection within 48 hours post rain / snowmelt event? ☐ **Yes** ☐ **No** ☐ **N/A**

Section 2: Weather Information

☐ **Clear** ☐ **Cloudy** ☐ **Rain** ☐ **Sleet** ☐ **Fog** ☐ **Snowing** ☐ **High Winds**

☐ **Other:** **Temperature:** **°F**

Section 3: Prohibited Discharges

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

☐ **Yes** ☐ **No** ☐ **N/A:**

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

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

NTU:

Section 4: Erosion, Sediment, and Pollutant Controls				
#	**BMP/Activity**	**Installed?**	**Adequate?**	**Findings**
1	Are inlets receiving surface runoff protected with BMPs that filter stormwater before flowing into underground infrastructure?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
2	Are disturbed areas contained with BMP(s) that contain stormwater flowing off of disturbed areas?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
3	Are vehicle and equipment tracking mitigated by limiting site access to stabilized areas?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
4	Are concrete washout water, concrete cutting slurry, and other masonry wash-waters contained in a lined washout facility BMP(s)?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
5	Are materials and soil stockpiles, not already contained within an existing perimeter control, covered or contained with a perimeter control BMP(s)?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
6	Are dewatering discharges being managed with filters, wells, or land application?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
7	Are post-construction stormwater features (ponds, infiltration basins, etc.) protected with BMP(s) which stabilize side slopes?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	

Section 4: Erosion, Sediment, and Pollutant Controls				
#	**BMP/Activity**	**Installed?**	**Adequate?**	**Findings**
8	Are all disturbed areas, not under active construction, temporarily stabilized?	☐ 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 discharge points and receiving waters free of sediment deposits? If no, provide locations.	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
11	Are materials that are potential stormwater contaminants stored inside or under cover?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
12	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	
13	Is a spill kit on site?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
14	Is trash/litter from work areas collected and placed in covered dumpsters?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	

Section 4: Erosion, Sediment, and Pollutant Controls				
#	**BMP/Activity**	**Installed?**	**Adequate?**	**Findings**
15	Are there locations where additional BMPs are required?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	

Attachment #5

Done by City for MSU per MOU

Inspection Reports

2024 High Priority Inspections & Maintenance Status									
Facility ID	**Owner Name**	**Impaired Waterway**	**Easting**	**Northing**	**Comment**	**Area m^2**	**Date**	**Maintenance Need**	**Maintenance Status**
DP.H07.00023	Public - City of Bozeman	Mandeville Creek	495535.0765	5055953.655	Surface Detention Facility	2,507.2	8/24/2024	LOW	Complete
DP.H07.00022	Public - City of Bozeman	Mandeville Creek	495586.1862	5056051.616	Surface Detention Facility	1,372.6	8/24/2024	LOW	Complete
DP.H06.00024	Public - MSU	Mandeville Creek	495791.6114	5057290.248	Surface Detention Facility	1,099.0	7/1/2024	LOW	Complete
DP.I51.00073	Public - City of Bozeman	East Gallatin River	494471.9058	5063514.928	Surface Detention Facility	998.1	8/24/2024	LOW	Complete
DP.I51.00074	Public - City of Bozeman	East Gallatin River	494607.7986	5063409.191	Surface Detention Facility	958.2	8/24/2024	LOW	Complete
DP.H06.00400	Public - MSU	Mandeville Creek	495838.7691	5057141.129	Surface Detention Facility	705.2	7/1/2024	LOW	Complete
DP.F01.00026	Public - City of Bozeman	East Gallatin River	497563.8833	5061140.296	Surface Detention Facility	683.2	8/24/2024	MODERATE	Overdue
DP.H06.00025	Public - MSU	Mandeville Creek	495838.2458	5057473.804	Surface Detention Facility	671.8	7/1/2024	LOW	Complete
DP.E02.00006	Public - City of Bozeman	East Gallatin River	497676.3811	5060690.346	Surface Detention Facility	518.1	8/24/2024	LOW	Complete
DP.H02.00001	Private - Kenyon Noble	Mandeville Creek	495930.7248	5060163.601	Surface Detention Facility	506.3	8/24/2024	MODERATE	Overdue
DP.H04.00006	Private - BSD	Mandeville Creek	495942.3091	5059010.127	Surface Detention Facility	488.0	8/24/2024	MODERATE	Pending
DP.H06.00023	Public - MSU	Mandeville Creek	495824.8023	5057258.588	Surface Detention Facility	433.6	7/1/2024	LOW	Complete
DP.H06.00026	Public - MSU	Mandeville Creek	495711.716	5056822.529	Surface Detention Facility	295.9	7/1/2024	LOW	Complete
DP.G02.00017	Private - HOA	Mandeville Creek	496017.9481	5060289.912	Surface Detention Facility	208.6	*Not*	*Inspected*	Overdue
DP.G03.00050	Private	Mandeville Creek	496127.1196	5059230.612	Surface Detention Facility	182.4	8/24/2024	LOW	Complete
DP.I51.00076	Public - City of Bozeman	East Gallatin River	494785.005	5063383.206	Surface Detention Facility	160.8	8/24/2024	MODERATE	Complete
DP.I51.00075	Public - City of Bozeman	East Gallatin River	494713.3235	5063402.001	Surface Detention Facility	125.9	8/24/2024	MODERATE	Complete
DP.H06.00028	Public - MSU	Mandeville Creek	495857.6732	5057412.412	Surface Detention Facility	120.2	7/1/2024	LOW	Complete

Rapid Assessment Method for Basin Optimization

Note: This is a master copy; please save a working document in a new file location.

HOA/Property Name: **Date:** **Time:** **Weather:** **Temp °F:**

#	Facility ID	Type	Conveyance	Stability	Drainage	Maintenance	Weighted Score	Maintenance Priority
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								

			Weight
Conveyance: Discharge, Blockage & Sediment			**0.4**
1	=	Stormwater cannot access detention/retention facility	
2	=	Stormwater flow is impeded >75% via restriction and/or sediment accumulation	
3	=	Stormwater flow is impeded >50% via restriction and/or sediment accumulation	
4	=	Stormwater flow is impeded <25% via restriction and/or sediment accumulation	
5	=	Stormwater is not impeded to detention/retention facility	
Stability: Vegetation, Erosion & Instability			**0.15**
1	=	Facility is completely eroding, instable and/or unvegetated	
2	=	Facility is >75% eroding, instable and/or unvegetated	
3	=	Facility is >50% eroding, instable and/or unvegetated	
4	=	Facility is <25% eroding, instable and/or unvegetated	
5	=	Facility is completely stable and/or vegetated	
Drainage: Standing Water & Infiltration			**0.25**
1	=	Detention/Retention pond; water depth >1' permanent	
2	=	Detention/Retention pond; water depth >1' more than 48 hours	
3	=	Detention/Retention pond; water depth <1' more than 48 hours	
4	=	Detention/Retention pond; water depth <1' at 48 hours	
5	=	Wet pond; Detention/Retention pond no water after 48 hours	
Overall Maintenance Rating			**0.2**
1	=	Poor - Significant performance issues, needs substantial retrofit	
2	=	Fair - Meets minimum standards but requires immediate maintenance	
3	=	Good - Meets necessary requirments and may need some regular maintenance	
4	=	Very Good - Consistently performing as designed	
5	=	Excellent - Meets highest level of performance and no maintenance is needed	
			1

BOZEMAN MT
Stormwater Division

Stormwater Facility Inspection Form

Section 1: General Information	
Facility ID:	**Facility Type:** Choose an item.
Date: Click or tap to enter a date. **Time (24hr):**	
Owner:	**Contact:**
Inspector's Name, Contact Info: Choose an item.	
Location/Access Info: **Latitude / Longitude:**	**Map Link:**
Type of Inspection: ☐ Routine, Dry Weather ☐ Routine, Wet Weather ☐ Complaint Driven ☐ Other: _____	

Section 2: Discharge & Outfall Information	
Most recent precipitation or melt: Choose an item. **If precipitation event < 48 hrs, amount:** "	**Outfall Waterbody:** **High-Priority Waterbody:** Choose an item.
Is a stormwater discharge occurring? ☐ Yes ☐ No **If yes, what is the source and quality of discharge?**	

Section 3: Facility Maintenance Needs Ranking

☐ **Low Need: The stormwater facility appears to be functioning as designed. Continue scheduled maintenance.**

☐ **Moderate Need: Stormwater facility requires minor to moderate debris, sediment and/or vegetation maintenance to mitigate the risk of flooding, waterway pollution, and infrastructure failure.**

☐ **Immediate Need: To restore function, the stormwater facility requires significant sediment dredging, vegetation removal, and/or infrastructure repairs.**

SUMMARY COMMENTS:

Inspector's Signature: Signature **Date:** Click or tap to enter a date.

Section 4: Qualitative Analysis					
Components	**#**	**Items**	**Conditions**	**Results**	**Notes and Required Actions**
General	1.1	Accessibility	Degraded, missing, or inadequate maintenance access?	☐ Yes ☐ No	
	1.2	Debris	Trash, sediment, and waste within and around the facility?	☐ Yes ☐ No	
	1.3	Vegetation	Overgrown or dead cattails, woody shrubs, weeds, grass, and trees?	☐ Yes ☐ No	
	1.4	Infrastructure Condition	Damaged inlet pipe, outlet pipe, outfall structure, or fencing?	☐ Yes ☐ No	
Facility Condition	2.1	Pretreatment Bay or Facility	Clogged, obstructed, or filled pretreatment forebay or facility?	☐ Yes ☐ No	
	2.2	Storage Bay	Clogged or filled storage bay?	☐ Yes ☐ No	
	2.3	Groundwater or Standing Water	Stagnant water with a drain downtime greater than 48 hours post-rain event?	☐ Yes ☐ No	
	2.4	Flow Path	Clogged or obstructed flow path?	☐ Yes ☐ No	
	2.5	Side Slopes	Barren or exposed surfaces on facility's side slopes and bottom?	☐ Yes ☐ No	
Maintenance	3.1	Maintenance Plan or Agreement	Is there a written plan?	☐ Yes ☐ No	
	3.2	Implementation	Is there evidence of maintenance?	☐ Yes ☐ No	

Section 5: Quantitative Analysis			
	Cover Type	**% Cover**	**Notes**
Vegetation	Bare Ground / Open Water		
	Aquatic Plants		
	Grass/Herbs		
	Shrubs		
	Trees >3" (dia. breast height)		
	Total	100	

Section 6: Elevation Analysis					
STATION	**BACKSIGHT**	**FORESIGHT**	**ELEVATION**	**INSTRUMENT**	**COMMENT**
	-		100.00	100.00	
		-	#VALUE!		
		-	#VALUE!		
		-	#VALUE!		
		-	#VALUE!		
		-	#VALUE!		
		-	#VALUE!		
		-	#VALUE!		
		-	#VALUE!		
		-	#VALUE!		
		-	#VALUE!		
		-	#VALUE!		
		-	#VALUE!		
		-	#VALUE!		
		-	#VALUE!		

Section 7. Facility Sketch

Section 8. Images	
Facility ID:	**Location:**
Facility Owner:	**Weather:** Choose an item. **Temp:** °F
Inspector Initials:	**Photo Page:** 1

Image 1	Image 2
Description:	**Description:**
Image 3	**Image 4**
Description:	**Description:**