UNIVERSITY OF MONTANA

February 29, 2024

Attn: Ms. Christine Weaver
Montana Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, MT 59620-0901

RE: University of Montana-Missoula MS4 2023 Annual Report

Dear Ms. Weaver,

The University of Montana-Missoula (UM) is pleased to submit our 2023 Annual Report and supporting documentation. 2023 was a transitional year, as several of UM's storm water management team (SWMT) either terminated employment, retired, or advanced to new job positions. Despite this upheaval, UM still managed to accomplish much in the storm water realm.

UM has continued progress on our storm water project to eliminate our East Outfall. Our West Outfall, has already been decommissioned. The design for the infiltration galley that will allow UM to eliminate our East Outfall is nearly completion. The project is slated to be bid this spring with construction occurring this summer. After completion of this project UM will have eliminated all of our storm water discharges in the Clark Fork River. UM was able to provide maintenance on 10 of its dry wells and catch basins. We anticipate maintaining another 10 to 15 storm water control devices this year as well.

UM and the City of Missoula have begun the process to develop a memorandum of understanding (MOU) to better define interagency responsibilities and cooperative efforts for storm water management. Jurisdictions and permit compliance can be conflicting and enforcement authority prominently resides with the City. UM has drafted a MOU that would define responsibilities between UM and the City. This MOU is currently with the City for review and comments. UM has also met with the Water Quality District (WQD) and will be drafting a MOU to start the process to define the roles and responsibilities between UM and the WQD. The SWMT hopes to complete these MOUs in 2024 as both parties further evolve their storm water programs.

UM is excited to be making good progress in storm water management and helping to keep the Clark Fork River clear and clean as it is Missoula's premiere recreational resource. Please contact Paul Trumbley at (406) 243-2127 with any questions or concerns. Thank you for your consideration.

Sincerely,

Paula Short

Paula Short
Associate Vice President
Campus Operations, Preparedness and Response
Enclosures: 2022 Annual Report

DEQ Montana Department of Environmental Quality
Water Protection Bureau
Montana Pollutant Discharge Elimination System

Agency Use
Permit No.: MTR04
Date Rec'd
Amount Rec'd
Check No.
Rec'd By

FORM **MS4-AR**

Annual Report Form
Storm Water Discharges Associated with MS4s
MTR040000

This annual report form is to be completed by each permittee authorized under the General Permit for Storm Water Discharges Associated with Small Municipal Separate Storm Water Sewer Systems (MS4s). The completed form must be electronically submitted to DEQ by March 1st of each year starting March 1st, 2023.

Reporting Year: ☒ 2023 ☐ 2024 ☐ 2025 ☐ 2026 *(reporting period is for the preceding calendar year, Jan 1st- Dec 31st)*

MS4 Information

Permit Number	M T R 0 4 0012
Small MS4 Name	University of Montana - Missoula
Contact Person, *(name, title)*	Paul Trumbley, Director Facilities Services
Mailing Address	32 Campus Drive
City, State, and Zip Code	Missoula, MT 59812
Phone Number, Email Address	406-243-2127; paul.trumbley@umontana.edu

Authorized as a Co-permittee? ☐ Yes: _____ ☒ No

(If, yes provide Co-permittee MS4 name in the blank provided. Each co-permittee must submit a separate complete annual report form.)

Is the MS4 sharing responsibility? If yes, attach written acceptance and explanation of shared obligation(s). ☐ Yes ☒ No

Attach an organizational chart identifying the primary SWMP coordinator, positions responsible for implementing requirements of the permit, and contact information for each individual. ☒ Attached ☐ Not Attached

Minimum Control Measure 1 & 2

Link to storm water website: https://www.umt.edu/facilities-services/energy-and-utilities/storm-water.php

List of four key target audiences:	Associated Pollutants:	Outreach strategy:
University Facilities Employees	Vehicle fluids (VF), trash (TR), landscape care(LC)	Stormwater Awareness Training
University Faculty and Staff	VF, TR	Community Events, social media, signage, website
Students	VF, TR	Class presentations, community events, social media website
Campus Visitors	VF, TR, animal waste (AW)	Community events, social media, website, signage

Attach documentation of participation and/or feedback of key target audiences. ☒ Attached ☐ Not Attached

Minimum Control Measure 3 *(attach the following in the order listed)*

List of potential non-storm water discharges identified as significant contributors of pollutants (i.e. illicit discharges), associated pollutants, and any local controls or conditions placed on these discharges. ☒ Attached ☐ Not Attached

Have there been updates to the MS4's storm sewer maps? ☒ Yes ☐ No, the map(s) were last updated: _____

If yes, submit the maps using one of the following options:

- ☐ Electronic GIS shapefiles emailed to DEQMPDESDataManagement@mt.gov
- ☒ Attached Hard copy
- ☐ Link to online maps: _____

Summary of investigations and corrective actions taken over the past year per the Illicit Discharge and Corrective Action Plan. ☒ Attached ☐ Not Attached

Number of outfalls inspected during dry weather: one of one *(total number of outfalls)*

Number of high priority outfalls inspected: one of one *(total number of high priority outfalls)*

Attach a summary of any resulting actions taken from screening results. ☐ Attached ☒ Not Applicable

Year 2023 only, unless updates were made:

A copy or link to the adopted ordinance, policy, procedure, and/ or regulatory mechanism prohibiting illicit discharges. ☒ Attached or ☐ Link _____

Minimum Control Measure 4 *(attach the following in the order listed)*

List of construction sites/projects inspected over the last year and any resulting actions. ☒ Attached ☐ Not Attached

Year 2023 only, unless updates were made:

A copy of the construction storm water management plan review checklist. ☒ Attached ☐ Not Attached

A copy of the construction site inspection form or checklist. ☒ Attached ☐ Not Attached

A copy or link to the adopted ordinance, policy, procedure, and/or regulatory mechanism requiring construction storm water controls. ☒ Attached or ☐ Link _____

Minimum Control Measure 5 *(attach the following in the order listed)*

Inventory of regulated projects using offsite treatment for post-construction runoff. ☐ Attached ☒ Not Applicable

Number of high priority post-construction storm water management controls inspected: 1

Attach a summary of any resulting actions taken from inspections. ☐ Attached ☒ Not Applicable

Year 2023 only, unless updates were made:

A copy of the post-construction storm water management plan review checklist. ☒ Attached ☐ Not Attached

A copy of the post-construction site inspection form or checklist. ☒ Attached ☐ Not Attached

A copy or link to the adopted ordinance, policy, procedure, and/or regulatory mechanism requiring post-construction storm water controls. ☒ Attached or ☐ Link _____

Year 2025 only: Submit a plan to modify relevant codes, ordinances, policies, and/or programs to implement LID/green infrastructure concepts. ☐ Attached ☐ Not Attached

Minimum Control Measure 6 *(attach the following in the order listed)*

Number of SOPs evaluated: zero of twenty-two *(total number of SOPs for permittee facilities/activities)*

Summary of SOP updates made in the last year. ☐ Attached ☒ Not Applicable

Records of completed trainings in conformance with section II.B. of the General Permit. ☒ Attached ☐ Not Attached

Year 2023 only, unless updates were made:

Inventory of permittee facilities/activities with potential to contribute contaminants. ■ Attached ☐ Not Attached

Summary of inspection procedures for facilities and their structural storm water controls. ■ Attached ☐ Not Attached

Storm Water Management Plan (SWMP)

In the last year, were any public comments received on the SWMP? ☐ Yes ■ No

If yes, attach a summary of comments received. ☐ Attached ■ Not Applicable

In the last year, have additional SWMP updates been made other than those listed above? ■ Yes ☐ No

If yes, attach a summary including the date and description of updates and rationale for decision making.
■ Attached ☐ Not Applicable

Monitoring and Reporting *(attach the following in the order listed)*

■ I verify all outfall monitoring has been performed and recorded in conformance with section II.C. and II.D. of the General Permit. *(If not able to dependably obtain two samples a year at each monitoring location, attach a summary of rationale. Contact DEQ regarding requests for a change in monitoring locations.)*

Attach a summary of implemented BMPs used to target and reduce discharges to impaired waterbodies and a schedule for the following year's BMP implementation. ■ Attached ☐ Not Applicable

Year 2023 only, unless updates were made: Attach an inventory of outfalls discharging to impaired waterbodies including associated pollutants. ■ Attached ☐ Not Applicable

MS4s with an approved TMDL:

Year 2023 only: Submit a TMDL-related sampling plan for DEQ review. ■ Attached ☐ Not Applicable

Years 2024, 2025, and 2026: In the last year, were any public comments received on the sampling plan? ☐ Yes ☐ No

If yes, attach a summary of comments received and any resulting actions/modifications. ☐ Attached ☐ Not Applicable

Certification*

All Permittees Must Complete the Following Certification:

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

Name (Type or Print)	
Paula Short	
Title (Type or Print) Associate Vice President Campus Operations	Phone Number 406-243-5806
Signature Paula Short	Date Signed 3/1/2024

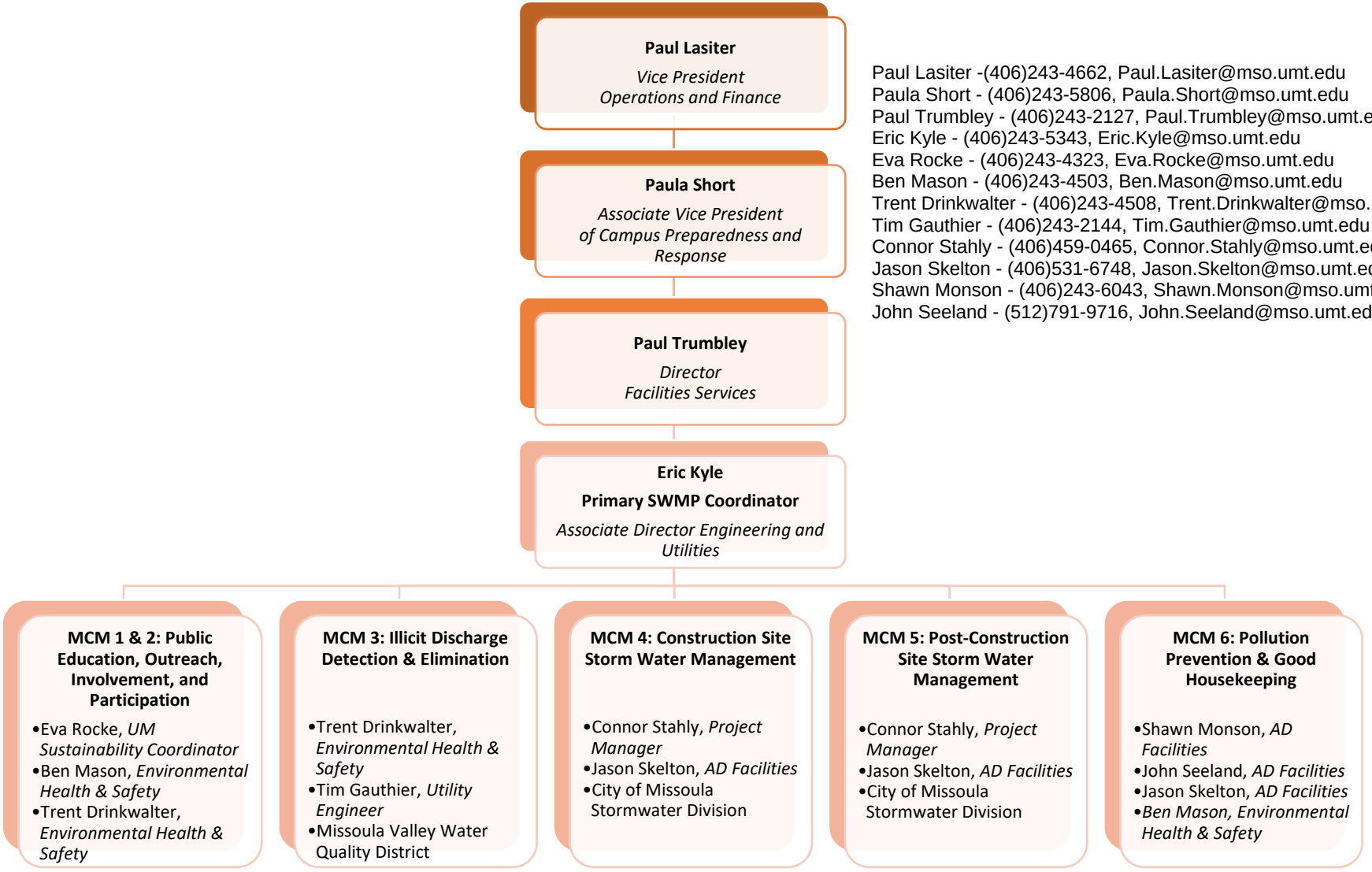
* This Annual Report Form must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

The University of Montana Small MS4 2023 Annual Report
Table of Contents

Small MS4 2023 Annual Report
Attachment 1
University of Montana - Missoula
MS4 Storm Water Management Team

UNIVERSITY OF MONTANA
Storm Water Management Program



Paul Lasiter -(406)243-4662, Paul.Lasiter@mso.umt.edu
Paula Short - (406)243-5806, Paula.Short@mso.umt.edu
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Eva Rocke - (406)243-4323, Eva.Rocke@mso.umt.edu
Ben Mason - (406)243-4503, Ben.Mason@mso.umt.edu
Trent Drinkwalter - (406)243-4508, Trent.Drinkwalter@mso.umt.edu
Tim Gauthier - (406)243-2144, Tim.Gauthier@mso.umt.edu
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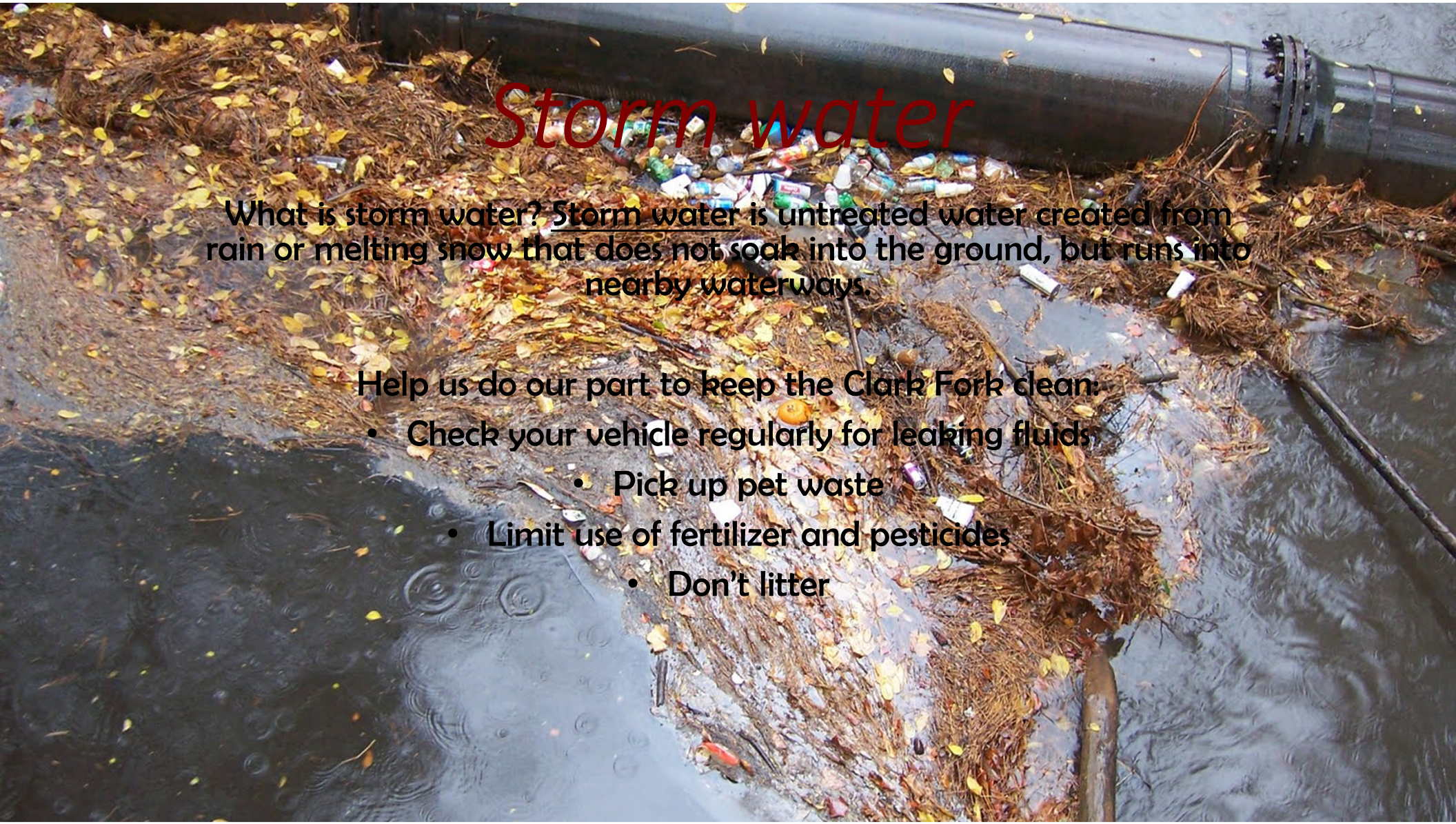
Jason Skelton - (406)531-6748, Jason.Skelton@mso.umt.edu
Shawn Monson - (406)243-6043, Shawn.Monson@mso.umt.edu
John Seeland - (512)791-9716, John.Seeland@mso.umt.edu

Small MS4 2023 Annual Report
Attachment 2
Key Target Audience Participation/Feedback

Since inception of its stormwater management, UM has endeavored to implement various strategies to communicate with our key audiences; students, facilities staff, Faculty and staff and campus visitors. Below are the strategies tackled over 2023. The UM SWMT has updated the UM SWMP for 2024 to better outline metrics for better tracking communication strategies.

- **Class Presentations**: UM Sustainability staff give presentations to classes ranging from 10-30 minutes long covering sustainability topics including storm water.
    - Key Audience(s): Students
    - Target Pollutant(s): The most likely pollutant associated with students at UM is trash and debris and vehicle fluids; however, the potential positive impacts of class presentations extend beyond UM's MS4 boundaries and targets a wide-ranging list of potential pollutants.
    - UM Sustainability staff did 2 class presentation in spring 2023 semester and 2 class presentations in fall 2023 semester. See attached slide the UM Sustainability staff incorporate into their sustainability presentations.
- **Community Events**: Storm water topics will be represented at the annual Campus Earth Day Celebration and Sustainability Fair alongside various community partners and sustainability topics. UM also hosts an annual river cleanup during Earth Week that is open to students and community members.
    - Key Audience(s): Students, faculty and staff, visitors
    - Target Pollutant(s): Trash and debris and other general storm water pollutants.
    - UM had three community events in 2023. UM held a sustainability fair, campus cleanup event and river cleanup events as part of our Earth Day 2023 celebration. See attached flyer utilized to advertise the Earth Day Sustainability Fair.
- **Pet Waste Stations and Signage**: UM maintains four pet waste stations throughout Campus with custom educational signage.
    - Key Audience(s): Visitors
    - Target Pollutant(s): Pet waste.
    - UM purchased 8000 pet waste bags in 2023. See attached photo of custom pet waste signage meant to connect pet waste to water pollution.
- **Reducing Outdoor Trash Receptacles on Campus**: UM is implementing a program to remove outdoor trash cans to encourage Campus community members and visitors to carry and dispose of trash indoors to reduce potential for trash and debris spillage.
    - Key Audience(s): Students, facilities services staff, faculty and staff, visitors
    - Target Pollutant(s): Trash and debris.
    - UM has removed 50 exterior trash cans in 2023
- **Social Media**: UM Sustainability Office Instagram posts related to storm water management and awareness.
    - Key Audience(s): Students, faculty and staff
    - Target Pollutant(s): Pet waste, trash and debris, vehicle fluids.
    - UM Sustainability staff have utilized social media to educate key audiences on potential storm water pollutants. See attached posts.

- **Storm Water Management Program Stakeholder Group**: This group meets quarterly to provide oversight, insight and critique of UM's storm water management efforts to help guide and evolve UM's storm water management process. The group is formed of Campus and community members.
    - Key Audience(s): Students, facilities services staff, faculty and staff, visitors
    - Target Pollutant(s): All storm water pollutants
    - UM held two Storm Water Management Program Stakeholder Groups in 2023. See attached meeting minutes.
- **Trainings**: Facilities services staff are trained on the implementation of storm water pollution prevention standard operating procedures (SOPs).
    - Key Audience(s): Facilities services staff
    - Target Pollutant(s): All storm water pollutants.
    - UM provided training for the SWMT as well as Facilities staff. See attachments for MCM 6 for training materials and sign in sheets.
- **Website Content**: UM's storm water website provides information on storm water pollution prevention.
    - Key Audience(s): Students, faculty and staff
    - Target Pollutant(s): Pet All storm water pollutants.
    - UM updated website in 2023 to update information as ensure it meets permit requirements.



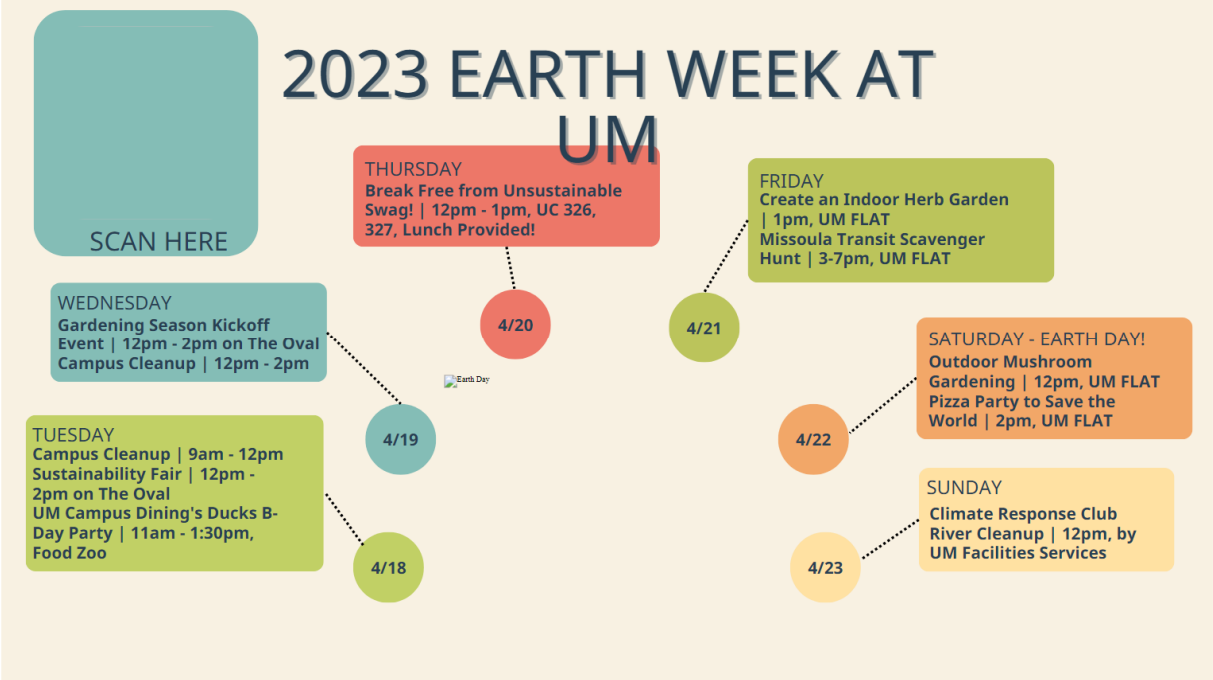
Storm water

What is storm water? Storm water is untreated water created from rain or melting snow that does not soak into the ground, but runs into nearby waterways.

Help us do our part to keep the Clark Fork clean:

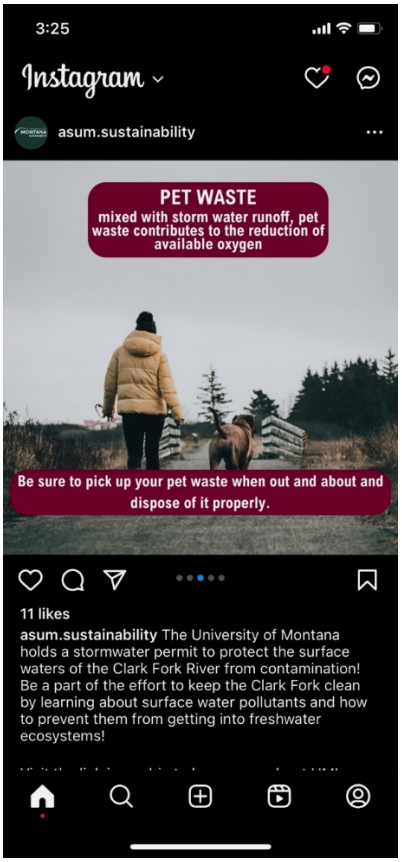
- Check your vehicle regularly for leaking fluids
- Pick up pet waste
- Limit use of fertilizer and pesticides
- Don't litter

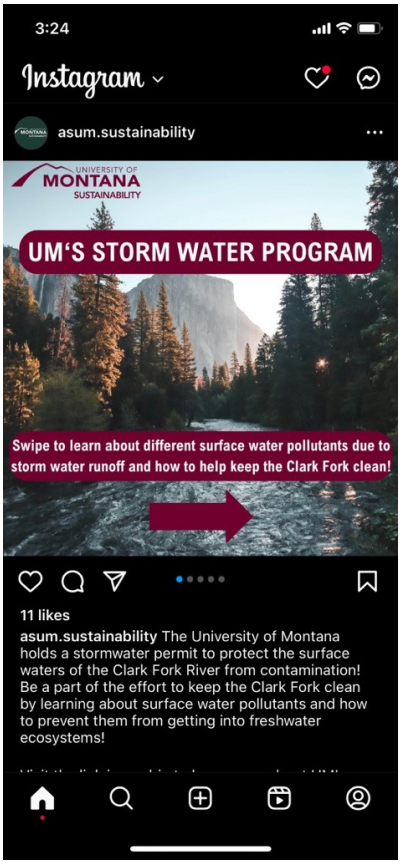
Community Event - Earth Day Event Communications

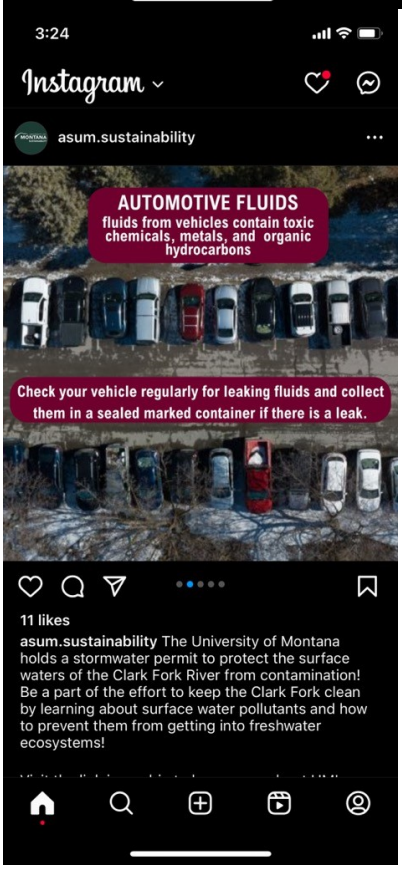


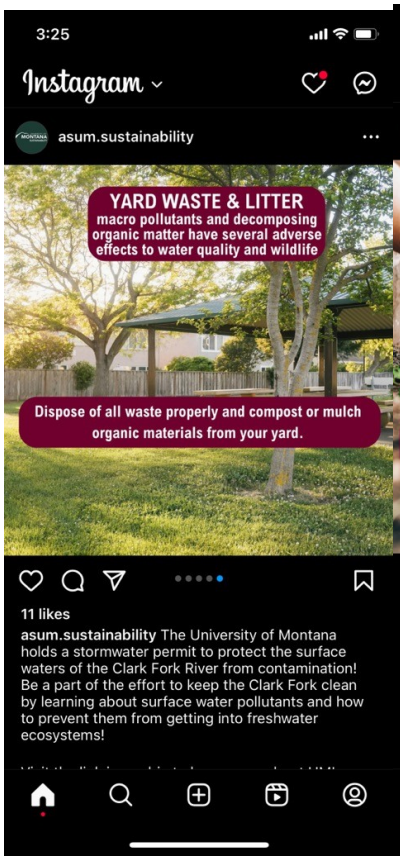
Pet Waste Station Signage

Social Media Posts









UNIVERSITY OF MONTANA

Storm Water Management Program

Municipal Separate Storm Sewer Systems (MS4) Stakeholders Group
03/30/2023 Meeting Minutes

Agenda for 03/30/2023 Meeting:

1. UM's 2022 Storm water annual report review.
2. Storm Water monitoring results.
3. Construction Updates – PaveDrain installations @
    a. Montana Museum of Art & Culture Project
    b. New Dining Hall Project
4. Low Impact Development Collaboration on intersection of Kim Williams Trail & Van Buren walking bridge
5. American Rescue Plan Act (ARPA) grant
6. Stakeholders Group Continued Participation
    a. Next Meeting - Quarterly on last Thursday of month, 2-3 PM. Next one is 6/29/2023
    b. Other stakeholders? I'd like to invite one or two citizens to the group.

Meeting was conducted via Zoom and in-person in Facilities Service's conference room. See attendee list below.

1. Kerns informed the group that UM's 2022 annual report was submitted on-time. This was the first year of the new permit.

2. Kerns reviewed the outfall water sample captured on 12/29/23. There appears to be correlation between heavy metals appearing in UM's stormwater and the gravel that UM uses for winter sanding operations. All the heavy metals that appear in the stormwater also appear in the gravel with the exception of cadmium. Watson expressed concerns that salt/brine is ending up in the Clark Fork or otherwise contaminating ground water. Campbell commented that the City does not be any stormwater sampling outside of the MS4 requirements. Seib said that the county doesn't usually test for chlorides and reminded the group that UM sits atop the aquifer protection zone.

3. Trumbley & Kerns reviewed the installation of PaveDrain permeable pavers along the Adams Center courtyard. During the winter, salt and brine were kept off the surfaces in order to protect the new concrete. Surfaces was broomed rather that plowed and ample use of gravel was used for icing. Trumbley is concerned that the gravel may be into the interstitial spaces and impede the flow of water to the subsurface.

4. Trumbley reviewed the area and that the ARPA grant had earmarked $30k in funds to address the chronic drainage problems at the intersection of the Milwaukee train and the Van Buren walking bridge. The City advised that the stormwater group would not provide any funding

but perhaps the City's Parks & Recreation department may be able to contribute to this project. Crocker is our new Clark Fork representative and advised that CFC would manage education and outreach efforts on this project.

5. Trumbley and Kerns updated the group on the recent $800k ARPA grant. A meeting with State A&E occurred earlier that day and that WGM was chosen as the engineering firm to manage the outfall removal project. Campbell mentioned that she had not seen any infiltration gallery that did not have an overflow. UM stated that it is a design goal to have sufficient storage and not have an overflow. UM wondered what an abandoned outfall should look like – just an empty pipe remaining? Cap the pipe? Remove the pipe?

6. Watson suggested contacting the University Neighborhood Association.

7. Items not on the agenda – Watson inquired as to the chemical make-up of the de-icing solution used by UM. Kerns replied that according to Bob Peterson of the motor vehicle shop, the brine is the same solution that is used by the Montana Department of Transportation.

8. Kerns ended the meeting by noting the next scheduled meeting is 6/29/23.

Attendees:
Missoula City: Tracy Campbell, Marie Noland
Missoula Valley Water Quality District: Todd Seib
Missoula County:
Clark Fork Coalition: Julia Crocker
ASUM:
UM Faculty: Vicki Watson
UM Sustainability Director:
UM Facilities Services: Paul Trumbley, Michael Huber, Connor Stahly, Shawn Monson, Brian Kerns

Submitted by:
B. P. Kerns
04/10/2023

UNIVERSITY OF MONTANA

Storm Water Management Program

Municipal Separate Storm Sewer Systems (MS4) Stakeholders Group
09/28/2023 Meeting Minutes

Agenda for 09/28/2023 Meeting:

1. Introduction of Eric Kyle, UM's new Associate Director of Engineering
2. Latest stormwater monitoring results
3. Artificial Turf discussion
4. UM's 2022 Storm water annual report review.
5. Construction Updates – PaveDrain installations @
    a. Montana Museum of Art & Culture Project
    b. New Dining Hall Project
    c. Impressions after 1 year of operation
6. Low Impact Development Collaboration on intersection of Kim Williams Trail & Van Buren walking bridge
    a. WGM concept sketch
7. American Rescue Plan Act (ARPA) grant
    a. Infiltration report
    b. Modeling efforts
8. DEQ letter critiquing UM's 2022 Report
9. Memorandum of Understanding with City
10. Stakeholders Group Continued Participation
    a. Next Meeting - Quarterly on last Thursday of month, 2-3 PM. Next one is 12/28/2023 – Keep or reschedule

Meeting was conducted via Zoom and in-person in Facilities Service's conference room. See attendee list below.

1. Round of introductions, including Eric Kyle, UM's new Associate Director of Power Plant Engineering and Utilities.

2. Stahly reviewed the outfall water sample captured on 08/21/23. A gravel sample was caught on 9/19/23 and sent in, but results have not been returned yet. Campbell commented on the high value of zinc, but units were reported in ug/L rather than mg/L that she is accustomed to seeing.

3. Stahly reported on the discussion the SWMT had with the stadium's artificial turf vendor, FieldTurf. The MDSS was beign, in Stahly's opinion. The fact that FieldTurf uses a treated interior part of a tire means the product is not contaminated.

4. Topic was skipped since NewField's won't be able to do any work updating the SWMP until November.

5. The group discussed the winter operations about the PaveDrain installation in front of the Adams Center. Winter ops used an elevated brush system to clear snow plus a lot of sand/gravel to improve traction. Some of the gravel has fallen into groove spaces and may be getting compacted. Gardner thought that even much finer material (sand) would not appreciably impact infiltration rates.

6. First priority would be to direct funding towards elimination of the East Outfall. If there are budgetary constraints addressing the trail intersection, Campbell thought that the City's Parks & Rec office would be able to come up with additional funding.

7. Reviewed the Allwest infiltration report. Gardner commented on the large rates measured. City will require ground water monitoring. Campbell thought that a series of dry wells could work. Campbell explained the infiltration gallery that was installed at Karas park.

8. Kyle explained that UM needs to update the SWMP and apply more effort at identifying target audiences.

9. Kerns is preparing MOU for UM legal review. Should get to City in about 30 days.

10. Stahly ended the meeting by noting the next scheduled meeting is 12/28/23. Discussing whether to move next meeting to earlier in December. Monson suggested 12/7, in place of the regular SWMT.

11. Other items not on the agenda – Gardner mentioned that he and his students are always interested in collaborating with Facilities or the City on hydrogeology projects if only to put a reality spin on classroom theory.

Attendees:
Missoula City: Tracy Campbell, Marie Noland
Missoula Valley Water Quality District:
Missoula County:
Clark Fork Coalition: Julia Crocker
ASUM:
UM Faculty: Vicki Watson; Payton Gardner
UM Sustainability Director: Eva Rocke
UM Facilities Services: Connor Stahly, Shawn Monson, Eric Kyle, Jason Skelton, Ben Mason, Brian Kerns

Submitted by:
B. P. Kerns
11/08/2023

Small MS4 2023 Annual Report
Attachment 3
List of Potential Significant Contributors of Pollutants

Table B-1 (Non-Storm Water Discharge Evaluation) in the Storm Water Management Plan (SWMP) was updated this year and identified 23 non-storm water discharges that were evaluated for their potential to contribute pollutants. None of the 23 non-storm water discharges were identified as possible “significant contributor of pollutants”. Attached is Table B-1 summarizing the evaluation.

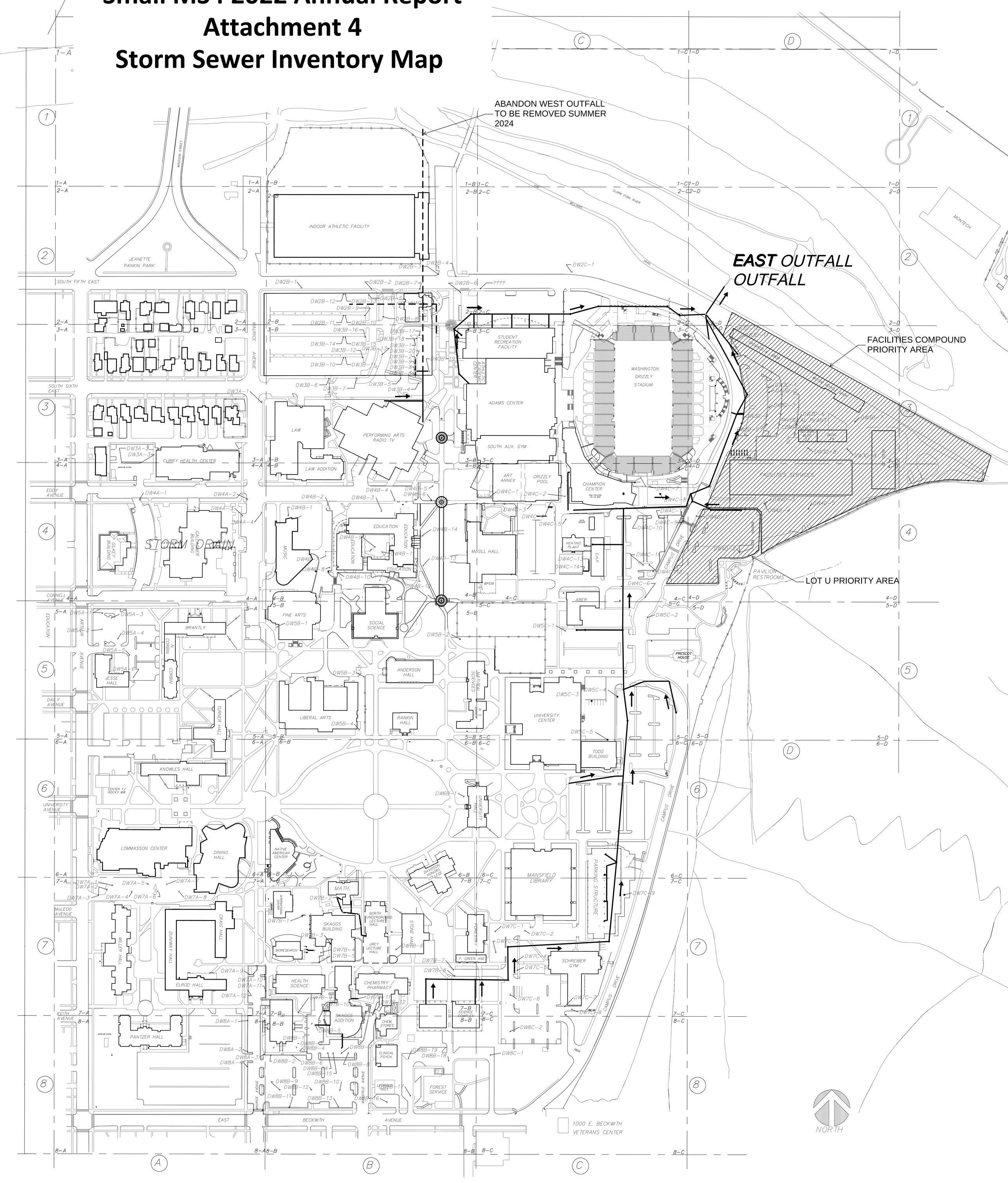
Table B-1. Non-Storm Water Discharge Evaluation

Category	Suspected Significant Contributor of Pollutants (yes/no)	Potential Associated Pollutants	Discussion	Local Controls or Conditions
Water line flushing	No	Chlorine, sediment	This is an infrequent activity. The reduced frequency combined with efforts to direct water toward pervious surfaces reduces the potential for significant discharge of pollutants.	Where control is possible, water is directed onto pervious surfaces or dry sumps; otherwise it is output onto proximate surfaces.
Landscape irrigation	No	Chlorine, sediment, nutrients	Despite almost continual maintenance throughout the irrigation season, lines and heads often break or become misaligned and water could enter stormwater system.	UM is always trying to improve its irrigation system and processes. With some exceptions, sprinkler heads are tuned to avoid spraying water on impervious surfaces.
Diverted stream flows	No	None	While the UM campus borders the Clark Fork River and an irrigation canal, these are beyond our purview.	Not applicable.
Rising ground waters	No	None	UM does not have issues with rising ground water.	Not applicable.
Uncontaminated ground water infiltration	No	None	Due to nearby spring activity, UM suspects some occasional infiltration into its storm system although there would not be any pollutants.	There are currently no local controls on this inconsequential discharge.
Uncontaminated pumped ground water	No	Sediment	Ground water is used for some building cooling systems and is returned to the aquifer via injection wells per UM's water rights requirements.	Pumped ground water is metered both on the supply well side and also on the re-injection to the aquifer. These systems are contained within campus buildings and would not enter the storm water system.
Discharges from potable water sources	No	Chlorine	The largest potential discharge of potable water occurs in landscape irrigation operations (addressed above).	There are no exterior drinking water fountains on UM's campus and garden hose bibs require special keys in order to activate.
Foundation drains	No	None	The SWMT is not aware of any foundation drains in use on UM campus.	Not applicable.

Category	Suspected Significant Contributor of Pollutants (yes/no)	Potential Associated Pollutants	Discussion	Local Controls or Conditions
Air conditioning condensation	No	None	This is no longer a concern. Air conditioning condensation was contributing flows to UM's east outfall prior to 2021. The cooling system discharge was disconnected from the storm drain and re-routed to the sanitary sewer system.	These flows are routed to the sanitary sewer system.
Irrigation water	No	Chlorine, nutrients, sediment	See response above for "Landscape irrigation."	See response above for "Landscape irrigation."
Springs	No	None	UM does not have any issues with springs on campus.	Not applicable.
Water from crawl space pumps	No	None	Campus buildings extend below grade and have sump pumps that discharge into the sanitary sewer.	Not applicable.
Footing drains	No	None	See response above for "Foundation drains".	Not applicable.
Lawn watering	No	Chlorine, nutrients, sediments	See response above for "Landscape irrigation."	See response above for "Landscape irrigation."
Individual residential car washing	No	Sediment, organics, metals, oil and grease	Vehicle washing is not permitted on campus.	Vehicle washing is not permitted on campus.
Flows from riparian habitats and wetlands	No	Sediment	While the UM campus is proximate to a river, such habitats do not exist within its MS4.	Not applicable.
Dechlorinated swimming pool discharges	No	Chlorine	UM's swimming pool drains to the sanitary sewer.	UM's swimming pool drains to the sanitary sewer.
Street wash water	No	Organics, metals, trash, sediment, nutrients	Due to high levels of metals in the gravel/sand used in winter icing operations, discharges of wash water could become contaminated with metals. The minimal use of wash water combined with the fact that the water is vacuumed up reduces the potential for discharge of pollutants.	The street washing process uses minimal water which is immediately vacuumed-up by washing equipment. This activity is conducted once annually.
Ground water well testing	No	Sediment	UM utilizes ground water for building cooling.	UM has an SOP for testing new ground water wells.

Category	Suspected Significant Contributor of Pollutants (yes/no)	Potential Associated Pollutants	Discussion	Local Controls or Conditions
Hydrant flushing	No	Chlorine, sediment, metals	Only a few hydrants cannot be channeled	UM has an SOP to flush hydrant water into a grassed area or dry sumps to avoid direct discharge to a piped storm drain.
Emergency water main breaks	No	Hydrocarbons, metals, trash, sediment, nutrients, chlorine	There is potential for potable water to convey pollutants on impervious surfaces into the MS4 system; however, water main breaks are infrequent and not anticipated to be a significant contributor of pollutants.	None.
Sculpture studio washing	No	Chlorine, sediment	Given the location of the studio, any potable wash water is received by nearby permeable surfaces.	Additional controls are not needed due to the location of the studio.
Large campus events	No	Trash	There is a potential for trash to accumulate on the ground and be conveyed into the storm sewer system or receiving waterbodies during rainfall events.	UM staff are onsite throughout events to manage trash during the event. Staff are brought in the day after event to sweep the area for any remaining trash. UM has an SOP for event facilitation and response.

Small MS4 2022 Annual Report
Attachment 4
Storm Sewer Inventory Map



Small MS4 2023 Annual Report
Attachment 5
Summary of Investigations of Illicit Discharges

In 2023, the University did not discover any illicit discharges on campus. There are always some spots of vehicle fluids in parking areas but these are always small and would be impossible to trace to the offending vehicle unless an active leak is witnessed (which has happened).

Small MS4 2023 Annual Report
Attachment 6
Illicit Discharge Procedure

The University is located within the jurisdiction of the Missoula Valley Water Quality District (WQD) and the City of Missoula. As such, the WQD and City have jurisdiction to regulate illicit discharges and implement enforcement mechanisms for noncompliance on Campus. For instance:

1. Title 13.27.200 and 13.27.210 of the Missoula Municipal Code prohibits illicit discharges, identifies non-storm water discharges that are exempt from the requirement, and prohibits illicit connections.
2. The WQD responds to illicit discharge complaints and conducts illicit discharge investigations within the WQD boundary (WQD boundary includes the University's Campus).

Considering this information, the SWMT is conducting ongoing research and coordinating with the City and WQD to better understand their respective IDDE programs. UM and WQD agreed given the overlap in jurisdiction and UM's challenges to pass ordinances or codes that it makes sense to partner in this area. UM agreed to create a first draft of a memorandum of understanding (MOU) as a starting point. UM will begin working with our consultant, Newfields, in March 2024 drafting the MOU. This MOU with the WQD will better define roles and responsibilities relating to IDDE program implementation within UM's MS4-regulated area. The SWMT's planned activities to further develop the IDDE program is provided in the SWMP Appendix J.

Currently, the University provides internet links to the WQD's website where illicit discharges may be reported and investigated by the WQD.

Small MS4 2023 Annual Report
Attachment 7
Construction Projects Inspected

1. Dining Facility – This project involved the demolition of parts of two buildings (Craig Residence Hall & Lommasson Center) as well as a reconfiguration of a pedestrian mall. This project was inspected monthly (January through June) by UM Utility Engineer. Construction storm water control measures were found to be adequate and no actions were taken.
2. Montana Museum of Art and Culture – This project's footprint is on top of part of Parking Lot P (UM's largest lot). It is in a high priority area as it is close to the Clark Fork River. One of UM's 2 storm water outfalls, the West Outfall, is also in the vicinity but this construction project literally sits on top of the storm drain system. Construction activities resulted in the decommissioning of the West Outfall. In place of the storm water system, additional dry wells were constructed to capture storm water runoff and infiltrate the water into the aquifer. UM has also incorporated the PaveDrain system of permeable pavers in pedestrian mall areas to capture and infiltrate storm water runoff. This project was inspected monthly (January through June) and construction storm water control measures were adequate. No actions. Project Completed Summer 2023.
3. Combined Heat and Power Plant – An additional, adjacent pre-fab metal building is being constructed next to the University's existing heating plant. This project falls outside of the criteria established by the City of Missoula to be permitted and monitored for storm water, therefore, inspections were not conducted.
4. Knowles Residence Hall Renovation – This project is primarily an internal renovation of an existing residence hall. This project falls outside of the criteria established by the City of Missoula to be permitted and monitored for storm water, therefore, inspections were not conducted. Project Completed Summer 2023.

Small MS4 2023 Annual Report
Attachment 8
Construction Management Plan Review Checklist

The University of Montana resides within the jurisdictional control of the City of Missoula for construction regulations. As such, the City exerts authority over construction projects that occur on the University campus. The City reviews, approves and issues construction permits. The University and the City recognizes that the University's MS4 permit presents a grey area as to the responsibility of oversight for construction and post-construction storm water activities. UM has drafted a Memorandum of Understanding to better define where responsibility resides for such storm water activities. The draft Memorandum of Understanding is in the process of being reviewed and commented on by UM and the City. The University's Storm Water Management Team reviews the Storm Water Pollution Protection Plans that the City has already reviewed and approved. A copy of the City's review checklist is attached.

PUBLIC WORKS & MOBILITY DEPARTMENT – STORMWATER

1345 W. Broadway • Missoula, Montana 59802 • (406) 552-6379

Rev. Feb. 6, 2023

Erosion Control Site Plan Checklist

Date: _____

Project Name: _____

Address: _____ **Zip Code:** _____

Project Area (square feet): _____ **Disturbance Area (square feet):** _____

Owner Name: _____ **Phone Number:** _____

Owner Address: _____

Disturbance Area is any area that is subject to clearing, excavating, grading, and/or placement/removal of earth materials.

In compliance with the Clean Water Act and the National Pollutant Discharge and Elimination System permit program—administered by the Montana Department of Environmental Quality as authorized by the U.S. Environmental Protection Agency—the City of Missoula is required to regulate runoff and the treatment of stormwater into drainage systems and water bodies, including the Missoula aquifer. The regulation of stormwater includes construction stormwater from project sites (Montana Code Annotated 75-5-401). Projects that involve 1 acre or more of land disturbance, or less than one acre but are part of a larger common plan of development, are required to demonstrate coverage under the Montana Pollutant Discharge and Elimination System General Permit for Stormwater Discharges Associated with Construction Activity.

Clearly show each item below on the Erosion Control Site Plan and fill in the corresponding check box. Best management practices (BMPs) are structural, vegetative, or managerial practices used to treat, prevent, or reduce water pollution. Help us protect our waterways and sole-source aquifer with BMPs. For guidance, please refer to the Public Works Manual Chapter 8, MDT BMP Manual, and/or MDEQ Construction Field Guide.

Project Area	
☐	All areas of construction, including but not limited to: areas to be graded as shown on a grading plan, areas to be cleared, as well as structures, retaining walls, roads, drives, utilities, trenches, scaffolds, catch basins, etc. These areas should be consolidated and located outside steep or sensitive areas.
☐	Location of all existing buildings, structures, easements, or underground utilities.
☐	Accurate contours showing the topography OR drainage arrows showing existing drainage patterns and direction of flow
☐	Surface water location(s) within 200 feet of the project boundary
☐	Inlet locations within 200 feet of the project boundary and protection measure details
☐	Perimeter controls (e.g., **vegetative buffer**, compacted berm, silt fencing, and/or fiber rolls). On slopes greater than 10%, the measures must be installed along contour lines.
☐	All areas that will be used for stockpiling earth and storing construction materials
☐	For slopes less than 3:1, provide sediment control along contour lines. For slopes greater than 3:1, slope stabilization BMPs are required.

Construction Access	
☐	Stabilized, designated access points for entrance onto the property. If using an existing paved driveway, identify it.
☐	Designated area(s) for parking of construction vehicles.
Construction Materials and Waste	
☐	Location, installation, and maintenance of a concrete mixer, washout, and pits. No concrete, mortar, or stucco washout shall be placed directly on the soil/ground. Specify the method used to contain the washout.
☐	Location(s) of portable toilets away from surface water locations and storm drain inlets.
☐	Show storage location and containment of construction materials or stockpiles during work, as well as afterhours/weekends. No materials shall be stored or stockpiled on the street.
Add these Standard Comments on the Site Plan	
☐	Locations of temporary stockpiles must be covered when not being actively worked in dry weather. Alternatively, in wet weather, or for longer storage, use seeding and mulching, soil blankets, or mats.
☐	Perform clearing and earth-moving activities only during dry weather; when necessary, use dust control measures to comply with air quality ordinances. Measures to ensure adequate erosion prevention and sediment control shall be installed prior to earth-moving activities and construction.
☐	Measures to ensure adequate erosion prevention and sediment control are required year-round. Stabilize all disturbed areas and maintain erosion prevention measures continuously between from April 30 through October 1.
☐	Maximize and protect areas to be undisturbed (including sensitive areas and buffer zones), using a vegetative buffer or 6-foot fence/barrier. Do not disturb riparian areas.
☐	Inlet protection shall be cleaned out after each rain event, or as needed, to function properly. Do not use sand bags, as these tear and can result in sand entering the storm drains.
☐	Store, handle, and dispose of construction materials and wastes properly, to prevent their contact with storm water. No materials shall be stored or stockpiled on the street.
☐	Stockpiles must be covered when left overnight; if not being worked within 14 days, they must be stabilized with seed, covered with mulch, soil blankets, or mats.
☐	Control and prevent the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water, or sediments, and non-storm water discharges to storm drains and watercourses.
☐	Avoid cleaning, fueling, or maintaining vehicles on site, except in a designated area where wash water is contained and treated. Limit and time applications of pesticides and fertilizers to prevent polluted runoff.
☐	Limit construction access routes to stabilized, designated access points.
☐	Avoid tracking dirt or other materials off site; clean off-site paved areas and sidewalks using dry sweeping methods.
☐	The areas delineated on the plans for parking, grubbing, storage, etc., shall not be enlarged or “run over.”
☐	Erosion prevention and sediment control materials shall be stored on site.
☐	Tree protection shall be in place before any demolition, grading, excavating, or grubbing is started.

Small MS4 2023 Annual Report
Attachment 9
Construction Site Inspection Checklist

The University of Montana resides within the jurisdictional control of the City of Missoula for construction regulations. As such, the City exerts authority over construction projects that occur on the University campus. The City reviews, approves and issues construction permits. The University and the City recognizes that the University's MS4 permit presents a grey area as to the responsibility of oversight for construction and post-construction storm water activities. UM has drafted a Memorandum of Understanding to better define where responsibility resides for such storm water activities. The draft Memorandum of Understanding is in the process of being reviewed and commented on by UM and the City. The University's Storm Water Management Team reviews the Storm Water Pollution Protection Plans that the City has already reviewed and approved. A copy of the City's inspection checklist is attached.

MISSOULA
PUBLIC WORKS & MOBILITY DEPARTMENT – STORMWATER
1345 W. Broadway • Missoula, Montana 59802 • (406) 552-6379

rev. 2/6/2023

Construction Site Inspection Form

☐ Pass ☐ Fail

Project Name:_____ **Permit No.**:_____

Address or Latitude/Longitude:_____

Date of Inspection:_____ **Start/End Time:**_____

Inspected by:_____ **Title:**_____

City Department/Division:_____

Describe Present Phase of Construction:_____

Type of Inspection:

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

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

Weather Information

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

If yes, provide:

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

Weather at time of this inspection:

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

❑ Other: Temperature:

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

❑Yes ❑No

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

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

Prohibited Discharges

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

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

Photos? ☐ Yes ☐ No

If yes, please attach and/or provide filepath:

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

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

Inspector's Signature

Date

Small MS4 2023 Annual Report
Attachment 10
Procedure Requiring Construction Storm Water Controls

The University of Montana resides within the jurisdictional control of the City of Missoula for construction regulations. As such, the City exerts authority over construction projects that occur on the University campus. The City reviews, approves and issues construction permits. The University and the City recognizes that the University's MS4 permit presents a grey area as to the responsibility of oversight for construction and post-construction storm water activities. UM has drafted a Memorandum of Understanding to better define where responsibility resides for such storm water activities. The draft Memorandum of Understanding is in the process of being reviewed and commented on by UM and the City. The University's Storm Water Management Team reviews the Storm Water Pollution Protection Plans that the City has already reviewed and approved. A copy of the City's permitting instruction, work flow and application are attached.

PUBLIC WORKS & MOBILITY DEPARTMENT – STORMWATER

1345 W. Broadway • Missoula, Montana 59802 • (406) 552-6379

Storm Water Permit Fact Sheet

The City of Missoula is required to comply with the conditions of our General Permit for Storm Water Discharges associated with Small Municipal Separate Storm Sewer Systems (MS4 Permit). To ensure compliance with federal and state environmental regulations, the City has implemented a Storm Water Permit. This Fact Sheet explains what is needed for your project (Table 1).

1. Does your project disturb more than 2,500 ft^2 of land or change the grade of the lot by three feet or more?
   - Yes……Storm Water Permit Application required, Go to 2
   - No……No Storm Water Permit required, other City permits may apply

2. Using the Site Evaluation Form, submit documentation per your site priority:
   - Low……..Erosion Control Site Plan;
     Erosion Control Site Plan Review Checklist; and
     Site Evaluation Form
   - Medium or High…….All of the above, in addition to:
     Post-Construction Inspection Frequency Determination
     Storm Water Management Site Plan
     Maintenance Agreement (template provided by City)*
     Operation and Maintenance Manual*
     Storm Drainage Report
     Geotechnical Report (for infiltration)

Table 1. Storm Water Permit Submittals

Site Priority per the Site Evaluation Form	
Low	Medium and High
• Erosion Control Site Plan • Erosion Control Site Plan Review Checklist • Site Evaluation Form	• Erosion Control Site Plan • Erosion Control Site Plan Review Checklist • Site Evaluation Form • Post-Construction Inspection Frequency Determination • Storm Water Management Site Plan • Maintenance Agreement* • Operation and Maintenance Manual* • Storm Drainage Report • Geotechnical Report (for infiltration)

*Projects that propose to infiltrate, evapotranspire, and/or capture for reuse all post-development storm water on-site—without the use of piped conveyance—do not require a Maintenance Agreement or O&M Manual.

MISSOULA
PUBLIC WORKS & MOBILITY DEPARTMENT – STORMWATER
1345 W. Broadway • Missoula, Montana 59802 • (406) 552-6379

rev. Feb 10, 2023

Stormwater Permit Application

Construction activities that result in a total land disturbance of 2,500 square feet or greater, or which propose to alter the grade of a lot by 3 feet or more, must apply for coverage under a City Stormwater Permit. This permit application shall be submitted to Development Services, along with the relevant fee, no greater than 180 days and no less than 60 days from the start date of construction. Submittal and approval of this application is required before initiating construction activities, pursuant to §13.27, Missoula Municipal Code (MMC). Once permanent erosion control has been established on 70% or greater of the disturbed areas, the permittee shall contact Development Services to close their permit.

Date:_____

Name of Applicant:_____

Mailing Address:_____

City:_____ State:_____ Zip Code:_____

Owner (if different than applicant):_____

Cell number:_____ Email:_____

Contractor Name (if applicable):_____ Company Name:_____

Cell number:_____ Email:_____

Project Name:_____

Total Disturbed Area (indicate units):_____

Project Address:_____

Latitude:_____ Longitude:

Project Type (e.g., subdivision, multifamily, commercial):_____

Start Date:_____ Anticipated End Date:_____

Erosion Control Site Plan

Please refer to the City's Erosion Control Site Plan Review Checklist, to ensure the plan has all the necessary information. Using the Storm Water Site Evaluation Form, if your project is a medium or high priority, please submit a Stormwater Management Site Plan.

☐Erosion Control Site Plan ☐ Stormwater Site Evaluation Form: ☐ low ☐ medium ☐ high

Stormwater Management Site Plan

Please refer to the City's *Stormwater Management Site Plan Review Checklist* to ensure the plan has all the necessary information. City staff will rely on this checklist in their review.

☐Stormwater Management Site Plan ☐ NA, no further information required; skip to page 3 and sign

Additional Required Attachments for Stormwater Management Site Plan

☐Approved plat showing utility easement for inspection, maintenance, and repair

☐Maintenance Agreement (please use the template that accompanies this permit application)

☐As-Built plan of the system, signed and sealed by a Professional Engineer licensed in Montana

For guidance on this application, please refer to most current version of the *Montana Post-Construction Storm Water BMP Design Guidance Manual* produced for Montana's MS4 Municipalities.

1. **Your project must implement post-construction stormwater management controls that are designed to infiltrate, evapotranspire, and/or capture for reuse the post-construction runoff generated from the first 0.5 inches of rainfall from a 24-hour storm preceded by 48 hours of no measurable precipitation. Does your project comply with this requirement?**
   ☐Yes ☐No (if no, stop and reassess your plans for compliance)
   Does your project capture 100% of runoff on site?
   ☐Yes ☐No
   If no, is the remainder of the runoff:
   ☐Treated onsite using post-construction stormwater management control(s) expected to remove 80% total suspended solids;
   ☐Managed offsite within the same subwatershed using post-construction stormwater management control(s) that are designed to infiltrate, evapotranspire, and/or capture for reuse; or
   ☐Treated offsite within the same subwatershed using post-construction stormwater management control(s) expected to remove 80% total suspended solids
   If offsite treatment is chosen, why is it required? Explain. Determinations may not be based solely on the difficulty and/or cost of implementation.
   ☐Technical or logistic infeasibility ☐High groundwater ☐Poorly infiltrating soils
   ☐Prohibitive costs ☐ Land use that is inconsistent with capture and reuse or infiltration of stormwater
   ☐Other:_____

2. **What low-impact development principles does your project implement?** Check all that apply.
   ☐Preserve natural site features ☐Minimize and disconnect impervious areas ☐Project phasing
   ☐Disperse small-scale integrated BMPs throughout the site ☐Create multifunctional landscapes
   ☐Control stormwater as close to the source as possible
   ☐Other:_____

3. **What types of green infrastructure have you incorporated into the site plan?** Check all that apply.
   ☐Downspout disconnection ☐Rainwater harvest ☐Rain garden(s) ☐Bioswales ☐Land conservation
   ☐Permeable pavers ☐Green roof ☐Green parking ☐Bioretention basin(s) ☐Urban tree canopy
   ☐Other:_____

4. **Describe the revegetation and weed management methods, using the *Missoula Parks and Recreation Design Manual*, as periodically updated, for guidance.** Please submit as supporting documentation with this permit application.

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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 §13.27, MMC, 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 and §13.27, MMC 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

PUBLIC WORKS & MOBILITY DEPARTMENT – STORMWATER

1345 W. Broadway • Missoula, Montana 59802 • (406) 552-6379

Stormwater Compliance Permits

Construction

STORMWATER PERMIT

Erosion Control Site Plan Review Checklist—submitted by CONTRACTOR, APPROVED by CITY

TIER 1 $209
2,500 sq ft ≤ Disturbance < 1 acre
Single Family or Duplex Residential

TIER 2 $258
2,500 sq ft ≤ Disturbance < 1 acre
Multifamily/Commercial/Industrial

TIER 3—SWPPP* $516
Disturbance ≥ 1 acre
All projects with a SWPPP
*MDEQ documentation required

Final Stabilization

Close Permit

Site Evaluation Form—Submitted by CONTRACTOR, APPROVED by CITY

Low

Medium

High

Post-Construction

Stormwater Management Site Plan Review Checklist—submitted by CONTRACTOR, APPROVED by CITY

Assignable Maintenance Agreement with O&M manual

Post-Construction Inspection Frequency Determination—submitted by CONTRACTOR , APPROVED by CITY

Low to Medium $258

Annual Self-inspection by the owner or operator—5 year inspection by City

High $387

Annual Inspection by the City

Schedule 5-Year Renewal

EXCAVATION PERMIT

DRY WELL APPROVAL $129

NEW

RECONDITIONED

CLOSED

Small MS4 2023 Annual Report
Attachment 11
Post-Construction Storm Water Plan Review Checklist

The University of Montana resides within the jurisdictional control of the City of Missoula for construction regulations. As such, the City exerts authority over construction projects that occur on the University campus. The City reviews, approves and issues construction permits. The University and the City recognizes that the University's MS4 permit presents a grey area as to the responsibility of oversight for construction and post-construction storm water activities. UM has drafted a Memorandum of Understanding to better define where responsibility resides for such storm water activities. The draft Memorandum of Understanding is in the process of being reviewed and commented on by UM and the City. The University's Storm Water Management Team reviews the Storm Water Pollution Protection Plans that the City has already reviewed and approved. A copy of the City's post-construction storm water management plan review checklist is attached.

MISSOULA
PUBLIC WORKS & MOBILITY DEPARTMENT – STORMWATER
1345 W. Broadway • Missoula, Montana 59802 • (406) 552-6379

rev. Feb. 06, 2023

DATE RECEIVED

POST-CONSTRUCTION STORMWATER MANAGEMENT SITE PLAN REVIEW CHECKLIST

PROJECT NAME	Permit Number	ADDRESS
TOTAL PROJECT AREA		TOTAL DISTURBED AREA
Latitude:		Longitude:

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

Review History

First Review

Plan Received on: _____ Approved/Denied: _____

Review Completed on: _____ Comments: _____

Reviewed by: _____ _____

Second Review

Plan Received on: _____ Approved/Denied: _____

Review Completed on: _____ Comments: _____

Reviewed by: _____ _____

Third Review

Plan Received on: _____ Approved/Denied: _____

Review Completed on: _____ Comments: _____

Reviewed by: _____ _____

TECHNICAL REVIEW

____ The Post-Construction Stormwater Management Plan **includes** the necessary post-construction components, to comply with the State and local post-construction stormwater requirements (identified in the attached checklist).

____ The Post-Construction Stormwater Management Plan **does not include** the necessary components (identified in the attached checklist), to comply with State and local post-construction stormwater requirements through failure to include the following:

Reviewed by: _____

Signature: _____ **Date:** _____

Project Name: Applicant:

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

Project Name: Applicant

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

Small MS4 2023 Annual Report
Attachment 12
Post-Construction Site Inspection Checklist

The University of Montana resides within the jurisdictional control of the City of Missoula for construction regulations. As such, the City exerts authority over construction projects that occur on the University campus. The City reviews, approves and issues construction permits. The University and the City recognizes that the University's MS4 permit presents a grey area as to the responsibility of oversight for construction and post-construction storm water activities. UM has drafted a Memorandum of Understanding to better define where responsibility resides for such storm water activities. The draft Memorandum of Understanding is in the process of being reviewed and commented on by UM and the City.

The University's Storm Water Management Team assumes responsibility for inspecting and maintaining post-construction storm water management controls. Post-Construction devices are primarily dry wells and one Pave Drain installations. The dry well and Pave Drain inspection sheets are attached.

UNIVERSITY OF MONTANA
Storm Water Management Program

Inspection Form – Dry Well and Deep Sump Catch Basin

General Information

Facility Name/Number:	Type of Best Management Practice (BMP): ☐ Dry Well ☐ Deep Sump Catch Basin
High Priority Stormwater Control? ☐ Yes ☐ No	
Depth of Basin (distance from top of grate to floor of structure)	
Design Depth:	Current Depth:
Latitude:	Longitude:
Date of Inspection:	Inspector's Name:

Type of Inspection:

☐ Routine, dry weather ☐ Routine, Wet Weather

☐ Complaint ☐ Other

Weather Information

Weather at time of this inspection:

☐ Clear ☐ Cloudy ☐ Rain ☐ Sleet ☐ Fog

☐ Snow ☐ High Winds ☐ Other: _____

Temperature: _____

Do you suspect that any physical changes or damages to the BMP may have occurred since the last inspection?

☐ Yes ☐ No

If yes, provide description of physical changes or damages:

Are there any storm water discharges at the time of inspection (i.e., discharge from an outlet)?

☐ Yes ☐ No

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

Prohibited Discharges

Are there any prohibited discharges at the time of inspection and/or any signs of prohibited discharges since the last inspection (i.e., chemicals, oils, or other illicit discharges flowing into the BMP)?

☐ Yes ☐ No

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

Inspector's Signature: _____ Date: _____

Primary Components	Inspection Item	Desired Conditions	Maintenance Needed?	Required Corrective Action/Notes
General	Accessibility	Maintenance access is not obstructed.	☐ Yes ☐ No ☐ N/A	☐ Fix, repair, or replace. ☐ Other:
	Contaminants & Pollution	Trash and debris are not accumulated within or around the facility and there is no evidence of oil, gasoline, contaminants, or other pollutants.	☐ Yes ☐ No ☐ N/A	☐ Clear and remove sediment and debris. ☐ Other:
	Erosion Control	Upstream channels show no signs of erosion.	☐ Yes ☐ No ☐ N/A	☐ Reseed and/or stabilize upstream channels. ☐ Other:
	Sedimentation	The contributing drainage area is stabilized and not contributing excessive amounts of sediment.	☐ Yes ☐ No ☐ N/A	☐ Reseed and/or stabilize drainage area. ☐ Other:
Inlet	Structural Damage	The inlet or grate is not missing, damaged, clogged, or defective.	☐ Yes ☐ No ☐ N/A	☐ Fix, repair, or replace. ☐ Other:
	Flow	There is evidence of flow into the well/basin.	☐ Yes ☐ No ☐ N/A	☐ Check whether the gutter, inlet pipe, downspout, or flow diverter is clogged. ☐ Clear and remove debris. ☐ Other:
Basin/Sump	Structural Damage	The basin/sump is not damaged or defective.	☐ Yes ☐ No ☐ N/A	☐ Fix, repair, or replace. ☐ Other:
	Drainage	Standing water is not present after the design drain time. The observed drain time is approximately ____ hours.	☐ Yes ☐ No ☐ N/A	☐ Recheck to determine if there is standing water after 72 hours. ☐ Remove any sediment buildup and replace the stone fill if necessary. ☐ Other:
	Sediment / Debris	Excessive sediment or debris are not present in the inspection port.	☐ Yes ☐ No ☐ N/A	☐ Clear and remove sediment and debris. ☐ Other:
	Odor	There is no odor present.	☐ Yes ☐ No ☐ N/A	☐ Clear and remove sediment and debris. ☐ Other:
	Overflow	There is no overflow from the top of the well/basin.	☐ Yes ☐ No ☐ N/A	☐ Clear and remove sediment and debris. ☐ Remove any sediment buildup. ☐ Other:
Outlet (Deep Sumps Only)	Structural Damage	The outlet pipe is not clogged or damaged.	☐ Yes ☐ No ☐ N/A	☐ Clear and remove debris. ☐ Fix, repair, or replace. ☐ Other:

Photo Log

Photo 1.	**Photo 2.**
Photo 3.	**Photo 4.**

UNIVERSITY OF MONTANA
Storm Water Management Program

Inspection Form – PaveDrain Permeable Interlocking Concrete Pavers

General Information

Facility Name/Number:

High Priority Stormwater Control? ☑ Yes ☐ No

Latitude:	Longitude:
Date of Inspection:	Inspector's Name:

Type of Inspection:

☐ Routine, dry weather ☐ Routine, Wet Weather

☐ Complaint ☑ Other

Weather Information

Weather at time of this inspection:

☐ Clear ☐ Cloudy ☐ Rain ☐ Sleet ☐ Fog

☐ Snow ☐ High Winds ☐ Other: _____

Temperature: _____

Do you suspect that any physical changes or damages to the BMP may have occurred since the last inspection?

☐ Yes ☐ No

If yes, provide description of physical changes or damages:

Prohibited Discharges

Are there any prohibited discharges at the time of inspection and/or any signs of prohibited discharges since the last inspection (i.e., chemicals, oils, or other illicit discharges flowing onto the BMP)?

☐ Yes ☐ No

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

Inspector's Signature: _____ Date: _____

Primary Components	Inspection Item	Desired Conditions	Maintenance Needed?	Required Corrective Action/Notes
General	Accessibility	Maintenance access to the paver surface is not obstructed in any way.	☐ Yes ☐ No ☐ N/A	☐ Fix, repair, or replace. ☐ Other:
	Contaminants & Pollution	Trash and debris are not accumulated within or around the facility and there is no evidence of oil, gasoline, contaminants, or other pollutants.	☐ Yes ☐ No ☐ N/A	☐ Clear and remove sediment and debris. ☐ Other:
	Sedimentation	The contributing drainage area is stabilized and not contributing excessive amounts of sediment.	☐ Yes ☐ No ☐ N/A	☐ Reseed and/or stabilize upstream area(s). ☐ Other:
	Structural Damage	Structural components within and around the facility are not damaged or defective.	☐ Yes ☐ No ☐ N/A	☐ Fix, repair, or replace. ☐ Other:
	Vegetation	Vegetation around the perimeter of the facility is healthy and not overrun by excessive vegetation or weeds.	☐ Yes ☐ No ☐ N/A	☐ Maintain or replace vegetation. ☐ Other:
Pavers	Drainage/ Infiltration	There is no standing water on the surface of the pavers.	☐ Yes ☐ No ☐ N/A	☐ Clear and remove sediment and debris using a PaveDrain VAC Head or other vacuum system recommended by the PaveDrain manufacturer. ☐ Other:
	Sediment	There is no evidence of excessive sediment deposition in the joints between pavers (cleaning should be conducted if joints are greater than 50% filled with sediment).	☐ Yes ☐ No ☐ N/A	☐ Clear and remove sediment and debris using a PaveDrain VAC Head or other vacuum system recommended by the PaveDrain manufacturer. ☐ Other:
	Structural Damage	The pavers are not deteriorating, cracked, settling or misaligned.	☐ Yes ☐ No ☐ N/A	☐ Replace paver(s). ☐ Other:
	Vegetation	Vegetation is not growing in between pavers.	☐ Yes ☐ No ☐ N/A	☐ Clear vegetation and remove sediment and debris using a PaveDrain VAC Head or other vacuum system recommended by the PaveDrain manufacturer. ☐ Other:

Photo Log

Photo 1.	**Photo 2.**
Photo 3.	**Photo 4.**

Small MS4 2023 Annual Report
Attachment 13
Procedure Requiring Post-Construction Storm Water Controls

The University of Montana resides within the jurisdictional control of the City of Missoula for construction regulations. As such, the City exerts authority over construction projects that occur on the University campus. The City reviews, approves and issues construction permits. The University and the City recognizes that the University's MS4 permit presents a grey area as to the responsibility of oversight for construction and post-construction storm water activities. UM has drafted a Memorandum of Understanding to better define where responsibility resides for such storm water activities.

Missoula Municipal Code Chapter 13.27, the Clean Water Act, and the National Pollutant Discharge and Elimination System all require post-construction storm water controls to be inspected. Missoula Municipal Code, chapter 13.27.470 is reproduced below:

CITY OF MISSOULA MUNICIPAL CODE

CHAPTER 13.27 STORMWATER MANAGEMENT

13.27.470 Post-Construction Stormwater Management

The permittee shall create, manage, and maintain post-construction stormwater controls in accordance with the Post-Construction BMP Design Manual and any other applicable administrative rules. The permittee shall also comply with MMC §20.50.030, when applicable.

A. Post-construction stormwater management controls shall be designed to infiltrate, evapotranspire, and/or capture for reuse the post-construction runoff generated from the first 0.5 inches of rainfall from a 24-hour storm preceded by 48 hours of no measurable precipitation.
   1. For projects that cannot meet 100% of the runoff reduction requirement, the remainder of the runoff form the first 0.5 inches of rainfall must be either:
      a. Treated onsite using post-construction stormwater management control(s) expected to remove 80% total suspended solids (TSS);
      b. Managed offsite within the same sub-watershed using post-construction stormwater management controls designed to infiltrate, evapotranspire, and/or capture for reuse; or
      c. Treated offsite within the same sub-watershed using post-construction stormwater management control(s) expected to remove 80% TSS.

B. Any new stormwater outfalls to a named waterbody, or projects that propose alterations of the existing outfall and/or its associated infrastructure, shall implement BMPs to reduce pollutant discharge to the maximum extent practicable.

C. Riparian resource buffer areas (MMC §20.50.030) shall be clearly defined in the Stormwater Management Site Plan.

D. When applicable, a recorded utility easement, covenant for maintenance, and as-built plan for any required private stormwater systems shall be provided in a form acceptable to the City.
   1. The utility easement shall provide sufficient space for vehicle or heavy machinery access for inspection and maintenance, as appropriate for the facility and determined by a Montana-licensed professional engineer.
   2. The covenant shall give the City the right to inspect the facilities and provide a guarantee to the City that the private stormwater system will be maintained by the owner or operator, such that the facility will function as designed in perpetuity. (Ord. 3716, 2023Ord. 3580, 2016; Ord. 3659, 2020)

Small MS4 2023 Annual Report
Attachment 14
Completed Trainings in 2023

- 9 newly-hired Facilities Services employees received New Hire Storm Water Awareness training for on 3/29/2023
- 58 Facilities Services employees received Field and Facility Personnel Storm Water Awareness Training for Field and Facility Personnel on 11/13/2023.
- SWMT received training from Matt Peterson from Newfields.
- SWMT member, Connor Stahly, attended SWPPP Administrator/Preparer Training in February 2024.

UNIVERSITY OF MONTANA

TRAINING DOCUMENTATION FORM

Date: 3/29/2023 **Training Topic:** New-Hire Stormwater Awareness Training

Time: 15:30 **Location:** Facilities Services Front Conference Room

#	Name (Print)	Signature
1	Bridget Pleasants	Bridget Pleasants
2	Frederick Ignacio	Frederick Ignacio
3	Fallyne Hoerner	Fallyne Hoerner
4	Brent DeMinck	Brent DeMinck
5	[illegible]	
6	Landen Chambers	Landen Chambers
7		
8		
9		
10		
11		
12		
13		
14		
15		

Instructor Signature: _____

Title: _____

UNIVERSITY OF MONTANA

TRAINING DOCUMENTATION FORM

Date: 3/29/2023 **Training Topic:** New-Hire Stormwater Awareness Training

Time: 10:30 **Location:** Facilities Services Front Conference Room

#	Name (Print)	Signature
1	JASON MORAN	
2	Aaron W. Grecne	
3	Lisa Woods	
4	Cha Mona	
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

locksmith

facilities

facilities

Instructor Signature: _____

Title: _____

UNIVERSITY OF MONTANA

TRAINING DOCUMENTATION FORM

Date: 11/13/2023 **Training Topic:** Field & Facility Personnel Stormwater Awareness Training

Time: 16:00 **Location:** Custodial Conference Room

#	Name (Print)	Signature
1	Melissa Magstadt	Melissa Magstadt
2	Jiri Pancera	Jiri Pancera
3	Allen Mittag	Allen Mittag
4	Harry Sheets	Harry Sheets
5	Landyn Chambers	Landyn Chambers
6	Brent DeMinck	Brent DeMinck
7	Phil Bartlett	Phil Bartlett
8	Fallyne Hoerner	Fallyne Hoerner
9	Justin Woldtvedt	Justin Woldtvedt
10	Cyrus Lewis	Cyrus Lewis
11	Todd Satterfield	Todd Satterfield
12	Agustin Garcia	Agustin Garcia
13	Gail Harrison	Gail Harrison
14		
15		

Instructor Signature: _____

Title: _____

UNIVERSITY OF MONTANA

TRAINING DOCUMENTATION FORM

Date: 11/13/2023 **Training Topic:** Field & Facility Personnel Stormwater Awareness Training

Time: 16:00 **Location:** Custodial Conference Room

#	Name (Print)	Signature
1	Lee Conway	
2	Steve MacStaul	
3	Reina Sherman	
4	Cheryl Krudop	Cheryl A Krudop
5	Spencer Kim	
6	Bridget Pleasants	Bridget Pleasants
7	Bryant Rau	
8	Kevin Mathison	Kevin Mathison
9	Ethan Ewart	
10	Caleb Glaser	
11	Warren Gehring	
12	Robin Weber	
13	Nick Bohn	
14	Zach Emerson	
15	Mike Hartner	
	Brad Lipnickey	

Instructor Signature: _____

Title: _____

UNIVERSITY OF MONTANA

TRAINING DOCUMENTATION FORM

Date: 11/13/2023 **Training Topic:** Field & Facility Personnel Stormwater Awareness Training

Time: 13:30 **Location:** Custodial Conference Room

#	Name (Print)	Signature
1	JAMES LYON	James Lyon
2	CHA MOUA	Cha Moua
3	Robert Forbes	
4	Andrew Williams	
5	David Counts	
6	Zachary Mosher	
7	DAVID CARLSON	
8	George Sharbono	
9	Tony Moss	
10	Frank Hemphill	
11	Ben Mannington	BEN MANNINGTON
12		
13		
14		
15		

Instructor Signature:

Title: Utility Engineer

UNIVERSITY OF MONTANA

TRAINING DOCUMENTATION FORM

Date: 11/13/2023 **Training Topic:** Field & Facility Personnel Stormwater Awareness Training

Time: 10:30 **Location:** Custodial Conference Room

#	Name (Print)	Signature
1	STEVE DRAKE	
2	Traci Bauman	
3	Amber McCall	
4	ED TOMICEK	
5	JASON MORAN	
6	Austin Jellison	
7	Larry Tanner	
8	Skip Cowboy	
9	Logan Buckingham	
10	Ryan Cooper	
11	Martin Fetter	
12		
13		
14		
15		

Instructor Signature:

Title: Utility Engineer

UNIVERSITY OF MONTANA

TRAINING DOCUMENTATION FORM

Date: 11/13/2023 **Training Topic:** Field & Facility Personnel Stormwater Awareness Training

Time: 10:30 **Location:** Custodial Conference Room

#	Name (Print)	Signature
1	Isabel Woodward	
2	David DeMinck	
3	Rudy Federici	
4	Justin O'Brien	
5	Slade Johnson	
6	Shawn Russell	
7	KEITH SALMON	
8		
9		
10		
11		
12		
13		
14		
15		

Instructor Signature:

Title: Utility Engineer

UNIVERSITY OF MONTANA
Storm Water Management Program

Training Attendance List

Subject: New Permit Training
Date: April 11, 2023
Time: 9:00 AM – 10:30 AM
Location: UM Facilities Conference Room

ATTENDEES

1. Paul Trumbley
2. Eva Rocke
3. Ben Mason
4. Connor Stahly
5. Shawn Monson

NTANA CONTRACTORS ASSN.
Quality People. Quality Projects.

The bearer of this card
completed a 12-hour cours
erosion and sediment contro
is hereby certified as a SW
Administrator/Preparer for
construction industry.

Connor Stahly #24-029

ructor: Keith Ouzts

Expires: 2/15/2027

Clean Water Starts With You

Small MS4 2023 Annual Report
Attachment 15
Inventory of Facilities/Activities with Potential to Pollute

Table 5 (Facilities Inventory) in the Storm Water Management Plan (SWMP) identifies facilities that have the potential to contribute contaminants. Table 6 (Activities and Potential Contaminants) in the Storm Water Management Plan (SWMP) identifies activities that have the potential to generate or release contaminants. Attached are Tables 5 and 6 from the Storm Water Management Plan (SWMP).

Table 5: Facilities Inventory

Facility Name/Category	Person Responsible for Pollution Prevention		Activities with Potential to Release Contaminants (SOP Category)[a]	Potential Contaminants								
	Department	Position		Trash	Sediment	Vehicle Fluids	Herbicides/Pesticides	Organics	Nutrients	Bacteria	Metals	Hazardous Waste
Primary Facilities												
Facilities Services Compound	Facilities Services	Jason Skelton	Building Maintenance	X	X			X	X	X	X	X
			Snow Storage and Disposal	X	X			X	X		X	
			Storage of Hazardous Chemicals									X
			Storage of Salt/Sand		X						X	
			Waste Handling and Disposal	X		X					X	X
Motor Vehicle Shop	Facilities Services	Bob Peterson	Building Maintenance	X	X			X	X	X	X	X
			Vehicle and Equipment Storage			X						X
			Vehicle Maintenance		X	X					X	X
Grounds Shop	Facilities Services	Franc Hemphill	Building Maintenance	X	X			X	X	X	X	X
			Ground Maintenance	X		X	X	X	X			
			Equipment Storage and Maintenance		X	X	X	X			X	
Dispersed Facilities												
Parks and Open Spaces	Facilities Services	Franc Hemphill	Ground maintenance	X	X	X	X	X	X	X	X	X
Streets and Parking Lots	Facilities Services	Skip Conroy	Street and Parking Lot Maintenance	X	X	X		X	X	X	X	X
			Winter Street and Parking Lot Maintenance	X	X	X		X	X		X	
Snow Storage Areas	Facilities Services	Skip Conroy	Snow Storage	X	X			X	X		X	

[a] Activities listed are generalized activities that occur at each facility. See Table 6 for a more complete list of activities associated with each SOP category.

Table 6: Activities and Potential Contaminants

SOP Category	Associated Activities with the Potential to Generate and/or Release Contaminants to the MS4	Potential Contaminants											
		Trash & Debris	Sediment	Vehicle Fluids	Oil & Grease	Herbicides/Pesticides	Organics	Nutrients	Bacteria	Chlorine	Metals	Hazardous Waste	Chemicals
Building Maintenance	Exterior Painting	X	X										X
	Roofing	X											
	Mechanical Maintenance of Rooftop Equipment				X								X
	Window Washing												X
	Roof Clean-up of Bird Droppings						X		X				
Vehicle & Equipment Storage & Maintenance	Storage			X									
	Maintenance			X	X								X
Event Facilitation and Response	Trash Collection and Removal	X							X				
	Portable Toilet Service	X					X	X	X				
Grounds Maintenance	Equipment Fueling				X								
	Fertilizer/Pesticide/Herbicide Application					X		X					
	Tree Trimming	X			X		X	X					
	Mowing			X			X	X					
	Planting and Mulching		X				X	X					
Fire Hydrant Testing	Hydrant Flushing		X	X			X			X			
Recycling	Collection and Transportation	X			X						X		
	Offloading and Sorting	X			X						X		
	Consolidation	X									X		
	Bulk Storage	X	X								X		
Snow Storage	Snow Storage Throughout Winter	X	X	X	X		X				X		
Storage of Hazardous Chemicals	Chemical Transfers into New Containers											X	X
	Transporting Chemicals											X	X
	Storage of Hazardous Chemicals											X	X

SOP Category	Associated Activities with the Potential to Generate and/or Release Contaminants to the MS4	Potential Contaminants											
		Trash & Debris	Sediment	Vehicle Fluids	Oil & Grease	Herbicides/Pesticides	Organics	Nutrients	Bacteria	Chlorine	Metals	Hazardous Waste	Chemicals
Storage of Bulk Materials (Salt, Sand, Gravel, Mulch, Topsoil, Concrete, etc.)	Receiving Material Deliveries		X				X	X			X		X
	Loading Materials		X				X	X			X		X
	Storage of Salt/Sand		X								X		
Street and Parking Lot Maintenance	Storm Drain Maintenance	X	X	X	X		X	X					
	Asphalt Paving, Re-surfacing and Concrete Projects	X			X								
	Striping/Painting												X
	Sweeping	X	X	X			X	X			X		
Supply and Injection Well Development	Drilling the Well Bore	X	X	X			X						
	Completing the Well	X	X										
	Testing the Well	X	X					X					
Utility Maintenance	Response to Water Main & Sanitary Main Breaks	X	X	X				X		X	X		
Vehicle and Equipment Storage	Storage and Disposal of Vehicle Fluids			X								X	X
	Vehicle and Equipment Storage	X		X	X		X						
	Vehicle Fueling			X	X								
	Vehicle Washing/Detailing	X	X	X	X		X						
	Vehicle Maintenance and Repairs			X	X						X		X
Waste Handling and Disposal	Trash Collection	X						X					
	Grounds Cleaning	X	X				X	X					
	Equipment Cleaning	X	X										X
Winter Street and Parking Lot Maintenance	De-icing												X
	Snow Removal and Storage	X	X	X	X		X	X			X		
	Sanding		X										

Small MS4 2023 Annual Report
Attachment 16
Summary of Inspection Procedure for Facilities

Facilities inspection procedures have not yet been established. The UM SWMT has identified creating facilities inspection procedures as an action to be completed as laid out in the SWMP Appendix J Anticipated Schedule of MS4 Activities for 2024.

Small MS4 2023 Annual Report
Attachment 17
SWMP Update Summary

The UM SWMT tackled a comprehensive review and update of the SWMP starting in the fall of 2023 and finishing up in February 2024. The effort included updating general information, maps and updates to ensure the SWMP aligned with the new permit. There were also updates throughout the SWMP to reflect that UM eliminated our west outfall. Below is a list of additional areas that were update:

- Organizational Chart
- Points of contact
- Maps
- Testing results
- Updated target audiences and strategies based on lessons learned over previous years of activities to that seemed most effective.
- Updated previously implemented outreach activities to include most recent events.
- Updated progress on partnerships with City of Missoula and Missoula Valley Water Quality District including details on our plans to address MCM 3, 4 and 5 permit requirements.
- Updated Appendices to include updated information.
- Updated Anticipated Schedule of MS4 Activities for 2024

Small MS4 2023 Annual Report
Attachment 18
Summary of Implemented BMPs and Schedule for Next Year's BMPs

BMP #1: UM day shift custodial collect trash from exterior trash cans across campus to ensure trash does not overflow. This activity occurs daily.

BMP #2: UM grounds staff collect trash left loose across campus daily.

BMP #3: UM Facilities brings in a team after large events to collect trash and debris. This is done on as needed basis when large scale events are planned on campus.

BMP #4: UM Facilities owns and operates a street sweeper. The street sweeper is utilized to collect sand, gravel, leaves and trash from streets and parking lots. UM Facilities does a large scale clean up of streets and parking lots each spring to collect sand and gravel applied throughout the winter. UM Facilities utilizes the street sweeper throughout the summer on an as needed basis to clean up streets and parking lots.

BMP #5: All future construction on the University's main campus will be utilize infiltration as the mechanism for dispersion.

BMP #6: The University used a vacuum-truck contractor to clean 9 storm water dry wells and catch basins.

For additional details on BMP's utilized on campus please refer to the UM SWMP Appendix F – Storm Water SOP's

Schedule of BMPs for 2024:

BMP #1: The University has received funding to eliminate all its storm water outfalls and to improve the drainage characteristics of the Kim Williams bike/pedestrian trail the borders the north side of the University's campus and it directly next to the Clark Fork river. This project will be bid in 2023 with construction to be completed in 2024. The project anticipates using an infiltration gallery to accept all the effluent from the East Outfall system. The final engineering design is still in flux, but we anticipate also using a pre-treatment device prior to the infiltration gallery.

BMP #3: Campus grounds, parking lot and street spring cleanup. Spring 2024

BMP #2: The University will continue to clean existing dry wells on campus. Anticipate addressing 10-15 dry wells in 2024.

For additional details on planned activities for 2024 please refer to UM SWMP Appendix J – Anticipated Schedule of MS4 Activities for 2024

Small MS4 2023 Annual Report
Attachment 19
Inventory of Outfalls with Pollutants

UM MS4 Outfall

Name	Location	Type	Receiving Waterbody
East Outfall	Latitude: 46.864888° N Longitude: 113.980524° W	Concrete pipe	Clark Fork River

NOTE: The West Outfall was decommissioned in fall 2021 and there is no longer any storm water discharged into the Clark Fork River from that system. See next page for comprehensive Summary of monitoring results.

Table H-1. Comprehensive Summary of Monitoring Results

Monitoring Site ID	Receiving Waterbody	Sampling Period	Sample Date	TSS[1] (mg/l)	COD[1] (mg/l)	TP[1] (mg/l)	TN[1] (mg/l)	pH[1]	Copper[1,2] (mg/l)	Lead[1,2] (mg/l)	Zinc[1,2] (mg/l)	Iron[2] (mg/l)	Arsenic[2] (mg/l)	Cadmium[2] (mg/l)	Oil & Grease[1] (mg/l)	Estimated Flow (gpm)
East Outfall	Clark Fork River	1st Half 2018	6/18/2018	12	133	0.09	0.451	7.31	0.0065	0.0012	0.0481	0.374	ND	ND	ND	577
		2nd Half 2018	8/27/2018	102	380	0.167	1.15	6.7	0.0183	0.0086	0.1690	3.16	ND	0.00019	3.29	577
		1st Half 2019	6/27/2019	362	338	0.635	11.2	6.4	0.0326	0.0140	0.2580	6.56	0.00257	0.00193	2.27	398
		2nd Half 2019	9/27/2019	42	224	0.187	1.96	6.8	0.0285	0.0025	0.0846	1.11	0.00041	ND	3.75	57
		1st Half 2020	4/23/2020	61	194	0.15	0.835	6.59	0.0333	0.0046	0.0752	2.07	ND	0.00382	ND	6.8
		2nd Half 2020	10/13/2020	17.2	59.4	0.21	1.0	6.847	0.0101	0.0016	0.0686	0.514	0.00071	ND	5	6.8
		1st Half 2021	5/20/2021	3.7	26.4	0.073	1.3	6.03	0.0201	0.0008	0.0314	0.153	0.00063	ND	ND	
		2nd Half 2021	9/20/2021	30.0	48.3	0.14	1.5	6.03	0.0295	0.0029	0.0646	0.620	0.00064	ND	ND	
		1st Half 2022	4/21/2022	8.3	20.3	ND	1.1	6.22	0.0162	ND	0.0200	0.126	0.00058	ND	ND	
		2nd Half 2022	12/27/2022	227.0	224	0.34	2.6	6.20	0.0196	0.0075	0.1990	6.210	0.00370	0.00018	ND	
		1st Half 2023	4/24/2023	69.5	29.4	0.085	0.77	6.35	0.0092	0.0025	0.0586	1.570	0.00093	ND	ND	
		2nd Half 2023	8/21/2023	105.0	37.2	0.19	1.1	7.13	0.0161	0.0049	0.0934	1.640	0.00110	0.00010	ND	
		Long-term Median Concentration[3]		*51.5*	*96.2*	*0.167*	*1.125*	*6.495*	*0.01895*	*0.00290*	*0.0719*	*1.340*	*0.00064*	*ND*	*ND*	*227.5*
West Outfall	Clark Fork River	1st Half 2018	6/18/2018	15.0	154.0	0.056	0.336	7.37	16.20	0.0006	0.0427	0.239	ND	ND	ND	0.0
		2nd Half 2018	8/27/2018	46.0	354.0	0.063	0.603	6.30	16.30	0.0054	0.0782	1.900	ND	0.00022	4	2135.0
		1st Half 2019	6/27/2019	99.0	375.0	0.283	6.380	5.70	22.30	0.0046	0.1650	1.620	0.00235	0.00039	1	6161.0
		2nd Half 2019	9/27/2019	ND	253.0	ND	0.752	7.20	2.08	0.0003	0.0301	0.099	ND	ND	ND	385.0
		1st Half 2020	4/23/2020	37.0	88.9	0.078	0.798	6.05	11.20	0.0017	0.0600	1.340	ND	0.00035	ND	3.3
		2nd Half 2020	10/13/2020	3.4	16.1	0.074	1.100	5.86	2.80	0.0010	0.0489	0.116	ND	ND	ND	3.3
		1st Half 2021	5/20/2021	19.2	17.0	0.080	1.200	6.30	51.60	0.0006	0.0482	0.140	0.00060	ND	ND	
		2nd Half 2021	9/20/2021	15.2	31.8	0.110	0.860	5.38	13.60	0.0011	0.0436	0.335	ND	ND	ND	
		Long-term Median Concentration[3]		*19.2*	*121.5*	*0.078*	*0.829*	*6.18*	*14.90*	*0.0010*	*0.0486*	*0.2870*	*ND*	*ND*	*ND*	*194.2*

West Outfall was decommissioned in Fall 2021

ND = Parameter not detected at reporting limit

[1] *Self-Monitoring Parameter*

[2] *TMDL-Related Monitoring Parameter*

[3] *Non detects are considered a "zero" value for calculation the long-term median concentration*

Table H-2. Winter Gravel Sampling Results

Year	Total Arsenic (mg/kg)	Total Cadmium (mg/kg)	Total Copper (mg/kg)	Total Iron (mg/kg)	Total Lead (mg/kg)	Todal Zinc (mg/kg)
2018	0	0	3.68	6,570	1.21	0
2019	0	0	7.40	8,340	2.50	15.10
2020	0.89	0	3.00	2,390	0.78	6.10
2021	0.49	0	6.40	5,850	5.40	8.80
2022	3.5	0	18.40	10,100	2.60	18.90
2023	2.7	0	13.40	10,100	1.60	15.70
Long-term Average Concentration	*1.26*	*0*	*8.71*	*7,225*	*2.35*	*10.77*

"0" is inserted into the table for "ND" (non-detectable) results from the laboratory

Small MS4 2023 Annual Report
Attachment 20
TMDL Sampling Plan

The University will bid a project to remove its one remaining outfall (East Outfall) in spring of 2024 with construction anticipated to be completed in summer 2024. Once that project is finished, there will no longer be any storm water discharges from campus into the Clark Fork river. Until then, the University will continue to sample outfall discharges in accordance with its Sampling Plan (attached).

Sampling Plan for TMDL-Related Monitoring

UNIVERSITY OF MONTANA
Storm Water Management Program

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1 INTRODUCTION

1.1 Background

The University of Montana-Missoula (UM) is a non-traditional Small Municipal Separate Storm Sewer System (MS4) that operates its storm water management program (SWMP) under the authorization of the Montana Pollutant Discharge Elimination System (MPDES) General Permit for Storm Water Discharges Associated with Small MS4s (General Permit) (Montana Department of Environmental Quality [DEQ], 2022).

Storm water sampling is required under Part II.C of the General Permit. Part II.C.1, Storm Event Monitoring, requires semi-annual sampling and testing of storm water discharges for specific monitoring parameters. Part II.C.2, Total Maximum Daily Load (TMDL)-Related Monitoring, requires monitoring targeted at evaluating MS4 loading and the effectiveness of best management practices (BMPs) implemented to reduce MS4 pollutant loading to impaired receiving waterbodies.

1.2 Purpose

This sampling plan describes UM's sampling program to satisfy the monitoring requirements of Part II.C of the General Permit. Specifically, this document was developed to satisfy Part II.C.2, which requires a sampling plan for TMDL-related monitoring.

2 UM MS4-RELATED TMDLS

2.1 TMDL Overview

The UM's one storm water outfall is located in the City of Missoula's (City) MS4 boundary and discharges to the Clark Fork River (Blackfoot River to Rattlesnake Creek section). This section of the Clark Fork River is impaired for seven pollutants, presented in **Table 1**.

Table 1: Impairment Information – Clark Fork River, Blackfoot River to Rattlesnake Creek

Probable Cause	Probable Sources	Associated Uses	TMDL Completed
Arsenic	Mill Tailings	Drinking Water	Yes
Cadmium	Mill Tailings	Aquatic Life	Yes
Copper	Mill Tailings	Aquatic Life	Yes
Eutrophication	Industrial Point Source Discharge, Dam or Impoundment	Aquatic Life	Yes
Iron	Mill Tailings	Aquatic Life	Yes
Lead	Mill Tailings	Aquatic Life, Drinking Water	Yes
Zinc	Mill Tailings	Aquatic Life	Yes

Source: 2020 Water Quality Assessment Summary Report (Montana Department of Environmental Quality, 2020)

Although the City's MS4 is not listed as a probable source for any of the pollutants of impairment in the DEQ's 2020 Water Quality Assessment Summary Report (**Table 1**), it has been given a waste load allocation (WLA) for arsenic, cadmium, copper, iron, lead, and zinc because DEQ estimates that the Missoula MS4 may contribute annual loads of each of these pollutants to this section of the Clark Fork River. Additionally,

DEQ believes that MS4 loadings for these pollutants have significantly reduced over time as a result of implementation of storm water BMPs and that further reductions are possible through the implementation of additional storm water BMPs (Montana Department of Environmental Quality, 2014).

The WLA assigned to the Missoula MS4 is a 55 percent reduction in metals loads, applicable to arsenic, cadmium, copper, iron, lead, and zinc; however, the TMDL report notes that the WLAs are not intended to add concentration load limits to the General Permit and that DEQ assumes the WLAs will be met by adhering to the General Permit requirements and by reducing either the metals concentrations or the discharge volumes, or both. The TMDL report also calls for continued collection and evaluation of storm water samples to assess BMP performance (Montana Department of Environmental Quality, 2014).

Because the UM MS4 is located in the boundary of the City's MS4, the WLAs for arsenic, cadmium, copper, iron, lead, and zinc are also applicable to the UM's SWMP. These six pollutants are referred to as the *pollutants of concern* throughout the remainder of this document.

2.2 UM TMDL Strategy

Part II.C.2.b of the General Permit requires UM to include a section in the SWMP describing the BMPs it plans to implement, impairment priorities, long-term strategy, and completion schedule for action items for controlling the discharge of pollutants of concern. UM's primary BMP to target pollutants of concern is replacing storm water outfalls with infiltration facilities. UM's former West Outfall was disconnected in conjunction with the recent construction of the Montana Museum of Art and Culture. Storm water runoff that previously reported to the West Outfall now reports to five newly constructed dry wells.

UM recently obtained grant funding to replace the East Outfall with an infiltration gallery. The new facility is currently being designed and construction is scheduled for 2024. The East Outfall will be removed after the infiltration gallery is constructed and connected to UM's storm drain system. TMDL-related monitoring will no longer be relevant once the East Outfall is removed.

3 MONITORING LOCATIONS AND STRATEGIES

3.1 Monitoring Locations

Monitoring will be conducted at UM's single outfall (one location), which is shown in **Appendix A** and described below.[1,2]

3.1.1 East Outfall - 001

The East Outfall is a concrete pipe that discharges to the Clark Fork River upstream of Rattlesnake Creek, northeast of Washington Grizzly Stadium (see **Appendix A**). Storm water in this outfall is expected to be representative of industrial and commercial areas. The eastern side of campus includes facilities services compound, Washington Grizzly Stadium, open space/grassed areas, the heating plant, student centers and campus buildings, parking lots and streets, and one dormitory. Anticipated potential pollutants

[1] UM's original *MS4 Sampling Plan for TMDL Related Monitoring* (May 2020) included monitoring at UM's former West Oufall. The West Outfall was disconnected in conjunction with the recent construction of the Montana Museum of Art and Culture. The concrete pipe associated with the former outfall will be removed in 2024 and sampling is no longer relevant. Additional discussion is provided in UM's SWMP.

[2] The General Permit requires a minimum of four sampling locations that discharge to impaired waterbodies. This plan specifies sampling at one location because UM has only one outfall that discharges to the Clark Fork River.

generated in the outfall's drainage area include organic materials, herbicides/pesticides, nutrients, sediment, trash, metals, oil, grease, and hydrocarbons.

3.2 Monitoring Strategies

3.2.1 TMDL-Related Monitoring

The objectives of TMDL-related monitoring are to evaluate MS4 loading to the Clark Fork River and evaluate effectiveness of BMPs selected to reduce loading of pollutants of concern to the Clark Fork River. Because the pollutants of concern are generally related to mining and milling activities, the UM believes that storm water discharges from the UM may not be contributing to loading of certain pollutants. The UM will sample for the constituents shown in **Table 2** to identify which pollutants of concern are to be prioritized for BMP implementation and identify whether certain pollutants of concern are not present in UM's storm water runoff.

Table 2: TMDL-Related Monitoring Locations and Parameters

Name	Location	Receiving Waterbody	Sample Collection Method	Frequency	Sample Parameters
East Outfall	46.864888 -113.980524	Clark Fork River, Blackfoot River to Rattlesnake Creek	Grab	Semi-annual[1]	Arsenic, Cadmium, Copper, Iron, Lead, Zinc, Temperature

[1]One sample collected between January 1st and June 30th, one collected between July 1st and December 31st.

3.2.2 Storm Event Monitoring

The purpose of storm event monitoring is to monitor and evaluate storm water discharges from the UM MS4 for the list of pollutants identified in Table 1 of the General Permit. The same monitoring location used for TMDL-related monitoring will be used for storm event monitoring (**Table 3**). UM recognizes the General Permit requires sampling at four outfalls, representative of both commercial/industrial areas and residential areas; however, UM will sample at only one location because UM has only one storm water outfall. The sampling location and parameters required for storm event monitoring are listed in **Table 3**.

Table 3: Storm Event Monitoring Locations and Parameters

Name	Location[1]	Receiving Waterbody	Sample Collection Method	Frequency	Sample Parameters
East Outfall	46.864888 -113.980524	Clark Fork River, Blackfoot River to Rattlesnake Creek	Grab	Semi-annual[2]	Total suspended solids, Chemical oxygen demand, Total phosphorus, Total nitrogen, pH, Copper, Lead, Zinc, Estimated flow, Oil and grease

[1]The General Permit requires sampling at four discharge points; however, the UM only has one outfall and will therefore only conduct sampling at this location.

[2]One sample collected between January 1st and June 30th, one collected between July 1st and December 31st.

4 MONITORING PROTOCOL AND REQUIRMENTS

This section describes the field sampling methods, sampling parameters and associated analytical methods, sampling frequency, and quality assurance and quality control (QA/QC) measures that will be used to evaluate usability and validity of monitoring results.

4.1 Sampling Methods and Parameters

UM will collect grab samples from the East Outfall at the frequency specified in Section 4.2. A standard operating procedure (SOP) for surface water sampling (SOP SP-5) is provided in **Appendix B**. Equipment decontamination will be conducted as necessary for any equipment reused between sampling locations and events. Sampling parameters, listed in **Table 4**, were compiled from the storm event monitoring parameters in Table 1 of the General Permit and from parameters with TMDLs in the Clark Fork River between the Blackfoot River and Rattlesnake Creek (see **Table 2**). UM will sample for each of these parameters at the sample location to comply with both storm event monitoring and TMDL-related sampling requirements.

Table 4: Sampling Parameters and Analytical Methods

Sample Type	Parameter	Units	Analytical Method	Sample Container	Preservative	Maximum Holding Time
S	Total Suspended Solids	mg/L	SM 2540-D	1 L plastic	Cool to ≤ 6°C	7 days
S	Chemical Oxygen Demand	mg/L	SM 5220-C	500 mL plastic	Cool to ≤ 6°C, Sulfuric acid to pH < 2	28 days
S	Total Phosphorus	mg/L	EPA 365.1	500 mL plastic	Cool to ≤ 6°C, Sulfuric acid to pH < 2	28 days
S	Total Kjeldahl Nitrogen	mg/L	SM 4500-NH3-G	500 mL plastic	Cool to ≤ 6°C, Sulfuric acid to pH < 2	28 days
T	Arsenic, Total Recoverable	mg/L	EPA 200.8	500 mL HDPE	Nitric acid to pH < 2	6 months
T	Cadmium, Total Recoverable	mg/L				
S,T	Copper, Total Recoverable	mg/L				
T	Iron, Total Recoverable	mg/L				
S,T	Lead, Total Recoverable	mg/L				
S,T	Zinc, Total Recoverable	mg/L				
S	Oil and Grease	mg/L	EPA 1664A	1 L amber glass (1)	Cool to ≤ 6°C, hydrochloric acid to pH < 2	28 days
S	Estimated Flow	gpm	On-site	--	--	--
S	pH	su	On-site *	--	--	15 minutes
T	Temperature	°C	On-site	--	--	15 minutes

Notes: S = storm event monitoring; T = TMDL-related monitoring; mg/L = milligrams per liter; gpm = gallons per minute; su = standard units; °C = degrees Celsius; On-site = parameter measured on-site, no analytical method; * procedure given in SOP SP-4; -- = not applicable.

4.2 Sample Frequency

Sampling will be conducted at least twice per calendar year, once between January 1st and June 30th, and once between July 1st and December 31st. The General Permit requires sampling to be conducted during a storm event with a measurable amount of discharge. This is interpreted as any storm event that results in sufficient volume and water depth for grab samples to be collected from UM's outfall.

Storm events and precipitation will be monitored using radar managed by the National Oceanic and Atmospheric Administration's National Weather Service. These data may also be used to determine storm characteristics, if necessary, such as storm duration, intensity, and total precipitation.

4.2.1 Substitute Sampling

If UM is unable to collect a sample within a six-month monitoring period, a substitute sample will be collected during the next six-month cycle, in addition to the required sample for that six-month period. The substitute sample and required sample will be collected from different storm events with at least 48 hours of no measurable precipitation between them. UM will also provide the reason(s) a sample could not be collected during the six-month period when reporting results in the Annual Report.

4.3 Sample Handling and Documentation

4.3.1 Sample Collection and Field Documentation

Samples will be collected using standardized procedures (SOP SP-5, **Appendix B**), and equipment decontamination will be performed as necessary for equipment that is reused for multiple samples. UM will maintain a database (spreadsheet) to document each sampling event that includes, at a minimum:

- Sampling location
- Sample collection date and time
- Total rainfall measurements/estimates of storm event
- Name of sampler

The procedure for field documentation is detailed in SOP SP-1 in **Appendix B**. Storm precipitation data will be collected from the National Oceanic and Atmospheric Administration's National Weather Service and on-site or local weather stations (e.g., Missoula Airport weather station), as available.

4.3.2 Sample Naming Scheme

Sample names will be assigned according to the sampling location and sampling date, and as required by Part IV.A.3.a of the General Permit. Sample locations will be referred to by the following standard nomenclature:

- East Outfall – 001

The sample name will consist of the above standard nomenclature followed by an underscore and the date in YYYYMMDD format, another underscore and the sample matrix code. For example, a surface water sample collected from the East Outfall on January 7, 2021 would have the sample name "001_20210107_SW". This will allow UM personnel to easily identify sample locations and differentiate between sampling events. Refer to SOP SP-2 (**Appendix B**) for further detail on sample naming.

4.3.3 Sample Handling

Sample containers, preservatives, and holding times will adhere to requirements shown in **Table 4**. Sample packaging and shipment procedures will follow SOP SP-3 (**Appendix B**) to maintain sample integrity.

Chain-of-custody (COC) procedures (SOP SP-2, **Appendix B**) will be followed to demonstrate sample integrity. The handling of all samples collected will be traceable from the time of collection, through analysis, until final disposition. A COC record will be completed and accompany every sample shipment. Each person who has custody of the samples must sign the record. The completed COC record should be put in a waterproof plastic bag and placed inside the sample cooler if the samples are to be shipped or transported to a laboratory.

4.3.4 Laboratory Sample Handling and Documentation

Laboratory personnel will assess the integrity of the custody seals upon sample arrival. They will also verify and document the following information upon sample receipt:

- Condition of shipping container;
- Condition of sample container(s);
- Condition of custody seals;
- Presence/absence of sample labels;
- Agreement/non-agreement of documents;
- Cross-reference of laboratory numbers; and,
- Temperature inside shipping container.

Laboratory personnel will document any problems or discrepancies with the samples or custody documents, contact UM, and document the resolution to the problems or discrepancies.

Laboratory reports will be delivered to UM as either hardcopy or electronic digital file (e.g., .pdf) and as an electronic data deliverable (EDD). Lab reports will include the following information, at a minimum:

- Date and time of sample analysis;
- Initials or names of laboratory personnel who performed analysis;
- References or written procedures, when available, for the analytical techniques or methods used
- Results of analysis; and,
- Case narrative describing any deviations from the analytical methods or QA/QC procedures and corrective actions taken, if any.

4.4 Quality Assurance / Quality Control

QA/QC measures will evaluate whether data are of sufficient quality to assess the effectiveness of UM's BMPs. Data quality and usability are measured by precision, accuracy, representativeness, completeness, and comparability (PARCC). These indicators will be evaluated according to the following results and procedures:

- **Precision** – laboratory duplicates will be used to evaluate precision.
- **Accuracy** – the laboratory will run control samples, matrix spike samples, calibrations, internal standards, and surrogates as required by the analytical method.
- **Representativeness** – the laboratory will use method blank samples to assess the possibility of contamination. In addition, UM personnel will follow method requirements and collect samples using decontaminated equipment in order to reduce the possibility of introducing contamination to the samples prior to analysis. Sample containers, preservation requirements, and holding times for each analytical method (refer to **Table 4**) will be adhered to in order to ensure results are representative of site conditions.

- **Completeness** – UM will collect samples as required by this sampling plan and the General Permit. UM personnel will review the COCs prior to submitting to the laboratory, and review results received by the laboratory to verify all required parameters are requested and reported.
- **Comparability** – UM will use consistent sample collection methods so results are comparable to other sampling events for storm water monitoring. The laboratory will use the analytical methods listed in **Table 4**.

Laboratory QA/QC, including QC sample frequency and control limit guidance, will be maintained through adherence to the laboratory's internal quality assurance protocol (LQAP) during analysis. Laboratory QC sample frequency and control limit guidelines are specified in the LQAP Manual.

Laboratory analysis of all samples will include prescribed QC procedures and samples according to the published analytical method and internal laboratory QC procedures. The laboratory will conduct internal QC checks for analytical methods in accordance with their SOPs and the individual method requirements.

5 ANALYSIS OF RESULTS

All storm water monitoring results are compiled into a single spreadsheet that is maintained with current data. This spreadsheet contains, at a minimum, sample locations, collection dates and times, total rainfall, sample parameters, numeric results, and any associated data quality notes. The long-term median for each parameter will be calculated and presented in the Annual Report. Monitoring results from the most recent monitoring year will be compared to the long-term median to evaluate how results compare to previous monitoring results.

As presented in the TMDL Implementation Strategy section of the SWMP, UM is pursuing outfall removal to make progress towards the Missoula MS4 WLA for the Clark Fork River (Blackfoot River to Rattlesnake Creek). Removal of the former West Outfall eliminates discharges from one outfall, which will show that the outfall removal BMP is 100 percent effective at reducing discharge of pollutants from its former drainage area. Future removal of the East Outfall will also show 100 percent effectiveness.

UM will not quantitatively evaluate reduction in MS4 loading because results from historical semi-annual grab samples do not provide enough data to accurately estimate pollutant loading associated with UM's MS4; however, the elimination of discharges will undoubtedly reduce MS4 loading to the Clark Fork River.

6 REPORTING

Results of the monitoring events will be reported in the appropriate Annual Report for each calendar year of sampling. The calculated long-term median will also be presented in the Annual Report, as well as a discussion of monitoring results including the following:

- Comparison of results to long-term medians;
- Any indication of outliers in the dataset;
- Discussion of results for samples with pH less than 6.0 or greater than 9.0;
- Discussion of trends observed in the dataset; and
- Evaluation of BMP effectiveness.

7 REFERENCES

Montana Department of Environmental Quality. (2014). *Final - Silver Bow Creek and Clark Fork River Metals TMDLs.* Helena, MT: Water Quality Planning Bureau (Watershed Management Section).

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Montana Department of Environmental Quality. (2022). *General Permit for Storm Water Discharges Associated with Small Municipal Separate Storm Sewer Systems.*

Appendix A
University of Montana Storm Water Map

University of Montana - Storm Water Management Program
Storm Sewer Inventory Map
Figure C-1

ABANDON WEST OUTFALL TO BE REMOVED SUMMER 2024

EAST OUTFALL

OUTFALL

FACILITIES COMPOUND PRIORITY AREA

LOT U PRIORITY AREA

CLARK FORK RIVER

MADISON STREET

JEANETTE RANKIN PARK

INDOOR ATHLETIC FACILITY

SOUTH FIFTH EAST

SOUTH SIXTH EAST

EDDY AVENUE

CONNELL AVENUE

DAILY AVENUE

UNIVERSITY AVENUE

McLEOD AVENUE

KEITH AVENUE

MAURICE AVENUE

ARTHUR AVENUE

EDUCATION AVENUE

N. CORBIN

MARSHFIELD AVENUE

EAST BECKWITH AVENUE

CLARK FORK RIVER TRAIL

MONTECH

STUDENT RECREATION FACILITY

ATHLETIC ACADEMIC CENTER

ADAMS CENTER

WASHINGTON GRIZZLY STADIUM

SOUTH AUX. GYM

ART ANNEX

GRIZZLY POOL

CHAMPION CENTER

New Concrete No Ice Melt

PHYSICAL PLANT COMPOUND

DIESEL FUEL STORAGE

SALT SAND STORAGE

FACILITIES SERVICES

LAW

LAW ADDITION

PERFORMING ARTS RADIO TV

CURRY HEALTH CENTER

BACKFLOW STATION

GILKEY BUILDING

GALLAGHER BUILDING

STORM DRAIN

EDUCATION

MUSIC

McGILL HALL

WPEM

HEATING PLANT

C.H.P.

DATA CENTER

ABER

FINE ARTS

SOCIAL SCIENCE

BRANTLY

JESSE HALL

LIBERAL ARTS

ANDERSON HALL

NATURAL SCIENCES

RANKIN HALL

TURNER HALL

UNIVERSITY CENTER

TODD BUILDING

KNOWLES HALL

CENTER F/ ROCKY MW

LOMMASSON CENTER

DINING HALL

NATIVE AMERICAN CENTER

UNIVERSITY HALL

DAVIDSON HONORS COLLEGE

MANSFIELD LIBRARY

PARKING STRUCTURE

MATH.

INTERNATIONAL CENTER

SKAGGS BUILDING

NORTH UNDERGROUND LECTURE HALL

UREY LECTURE HALL

STONE HALL

FORESTRY

F. GREEN HSE

SCHREIBER GYM

CRAIG HALL

DUNIWAY HALL

MILLER HALL

ELROD HALL

HEALTH SCIENCE

CHEMISTRY PHARMACY

SKAGGS ADDITION

CHEM. STORES

CLINICAL PSYCH.

LESLEY B. INST.

FOREST SERVICE

7-B SCIENCE COMPLEX

PANTZER HALL

BIORESEARCH

PRESCOT HOUSE

PAVILION RESTROOMS

1000 E. BECKWITH VETERANS CENTER

CAMPUS DRIVE

DW2B-1 DW2B-2 DW2B-7 DW2B-6 ???? DW2B-12 DW2B-13 DW2B-5 DW2B-9 DW2B-8 DW2B-11 DW2B-10 DW3B-16 DW3B-17 DW3B-14 DW3B-15 DW3B-18 DW3B-1 DW3B-12 DW3B-13 DW3B-20 DW3B-2 DW3B-19 DW3B-10 DW3B-9 DW3B-8 DW3B-6 DW3B-7 DW3B-5 DW3B-4 DW3A-1 DW3A-3 DW3A-3 DW4A-1 DW4A-2 DW4A-3 DW4A-4 DW4B-2 DW4B-3 DW4B-4 DW4B-5 DW4B-6 DW4B-1 DW4B-9 DW4B-14 DW4B-7 DW4B-8 DW4B-13 DW4B-10 DW4B-12 DW4C-1 DW4C-2 DW4C-3 DW4C-4 DW4C-5 DW4C-13 DW4C-14 DW4C-7 DW4C-8 DW4C-11 DW4C-9 DW4C-10 DW4C-12 DW4C-6 DW4D-1 DW4D-2 DW4D-3 DW4D-4 DW4D-5 DW4D-6 DW4D-7 DW4D-8 DW3D-1 DW3D-2 DW3D-3 DW3D-4 DW3D-5 DW3D-6 DW3D-7 DW3D-8 DW3C-1 DW3C-2 DW5A-1 DW5A-3 DW5A-2 DW5A-4 DW5A-5 DW5A-6 DW5B-1 DW5B-2 DW5B-3 DW5B-4 DW5C-1 DW5C-2 DW5C-3 DW5C-4 DW5C-5 DW6B-1 DW7A-1 DW7A-12 DW7A-5 DW7A-7 DW7A-3 DW7A-4 DW7A-6 DW7A-8 DW7A-9 DW7A-10 DW7A-11 DW7A-12 DW7B-2 DW7B-1 DW7B-3 DW7B-4 DW7B-5 DW7B-6 DW7B-7 DW7B-8 DW7B-9 DW7B-10 DW7B-11 DW7B-12 DW7C-1 DW7C-2 DW7C-3 DW7C-4 DW7C-5 DW7C-6 DW7C-7 DW7C-8 DW7C-9 DW8A-1 DW8A-2 DW8A-3 DW8A-4 DW8B-1 DW8B-2 DW8B-3 DW8B-4 DW8B-5 DW8B-6 DW8B-7 DW8B-8 DW8B-9 DW8B-10 DW8B-11 DW8B-12 DW8B-13 DW8B-14 DW8B-15 DW8B-16 DW8B-17 DW8B-18 DW8B-19 DW8C-1 DW8C-2

STORM DRAIN MAP

STORM DRAIN —— SD ——

STORM DRAIN MAN HOLE

5 FT. CONC. DRYWELL

ABANDONED - - - - -

NORTH

Appendix B
Standard Operating Procedures

STANDARD OPERATING PROCEDURES TABLE OF CONTENTS	
SOP	**TITLE**
SP-1	Field Log Book and Field Sampling Forms
SP-2	Sample Nomenclature, Documentation, and Chain-of-Custody Procedures
SP-3	Sample Packaging and Shipping
SP-4	Field Measurement of pH
SP-5	Surface Water Sampling

SOP SP-1

FIELD RECORDS AND FIELD SAMPLING FORMS

Field investigation and sampling information should be recorded on appropriate sampling forms to provide a continual record of actions taken each day on the site. Each employee is responsible for completing a record of the day's activities in field forms of sufficient detail such that someone can reconstruct the field activities without relying on the memory of the field crew. At a minimum, entries on the field log shall include:

- Project
- Purpose of the field effort
- Names of field crew leader and team members present on the site, and other site visitors
- Description of site conditions and any unusual circumstances, including weather conditions
- Details of actual work effort, particularly any deviations from the field work plan or standard operating procedures
- Location of sample site, including map reference, if relevant
- Field observations
- Field measurements made (e.g., pH, temperature)
- Date and time of initiation and cessation of work

Purpose

Provide guidance on how to document activities completed in the field

Goal and Objective

To provide a record of project work and decisions made in the field

Equipment Needs

Indelible Ink Pen
Field Sampling Forms
Field Tablet

Specific details for each sample collected should be recorded using standardized field forms or electronic field applications. These field forms contain blank queries to be filled in by field personnel. Items typically recorded on field sampling forms consist of the following:

- Sample name
- Time and date samples were collected
- Number and type (media; natural, duplicate, QA/QC) of samples collected
- Analysis requested
- Sample preservative (if applicable)
- Sampling method, particularly any deviations from standard operating procedures
- Signature of sampler

All entries on the field sampling forms must be made in indelible ink (if using paper), or entered into field tablets and backed up promptly when service is available. Upon completion of the field effort, original paper field forms shall be scanned and maintained in the project file. Electronic forms will be backed up in multiple locations and saved into project folder. Photocopies of original field forms can be used as working documents.

SOP SP-2

SAMPLE NOMENCLATURE, DOCUMENTATION, AND CHAIN-OF-CUSTODY PROCEDURES

When completing sampling, it is critical that the process used to label and transport samples to the laboratory for analysis is sufficient to demonstrate with confidence that the samples were collected from the location indicated, and that during transport to the laboratory, no actions were taken to potentially alter the integrity of samples. Without following strict sample labeling and chain-of-custody procedures, analytical data collected at a site have little to no value.

Purpose

Identify specific requirements for labeling and documenting sample collection

Goal and Objective

To increase confidence in sample locations and to submit samples to the laboratory without risk of integrity loss

Equipment Needs

Indelible Ink Pen

Chain-of-Custody Forms

Field Log Book

Field Sampling Forms

SAMPLE NOMENCLATURE

Samples should be labeled according to the sampling location and date. The sample location will be referred to by the standard nomenclature presented in the Sampling Plan. Additional samples will be given standard names as needed. The sample date will be in YYYYMMDD format. Samples should be labeled as follows:

Sample location_sample date_sample matrix code

For example, sample 001_20200107_SW, indicates the following: a surface water (SW) sample was collected at site 001 on January 7, 2020 (20200107). Prior to initiating sampling, field personnel should familiarize themselves with the Sampling Plan and the sample nomenclature to be used for the site. The character prefixes in the table below are recommended for sample types. This list should be updated as needed for additional sample types.

SAMPLE DOCUMENTATION

In addition to the chain-of-custody forms discussed below, field personnel must keep a list of samples collected at the field in the field log book and on appropriate field sampling forms (see SOP SP-1). This allows you to go back and verify sample locations and numbers should there be any confusion at a later time. Upon returning to the office, the field log book and forms should be scanned and maintained in the project file, and subsequent copies sent to the laboratory, or other designated parties, as needed.

Each person in the field is responsible for putting entries into the field log and sampling forms. Designating an individual from the sampling team for record keeping is fine, provided all field personnel come to an agreement as to who this will be, and the field crew leader is certain field personnel are familiar with the record keeping requirements. All entries on the log book and field sampling forms must be made in indelible ink.

Sample Matrix Code	Sample Matrix
SW	Surface Water
GW	Groundwater Sample
SS	Surface Soil Sample
SBSS	Subsurface Soil Sample

CHAIN-OF-CUSTODY PROCEDURES

A chain-of-custody form must be generated for all samples collected in the field for laboratory analysis. Samples from more than one project should not be included on the same chain-of-custody form; however, multiple samples from a specific project can be included on the same chain-of-custody form.

Copies of the chain-of-custody form should be maintained in the project file. The sampler may use a NewFields' chain-of-custody form or a form provided by the laboratory. Sample custody records must be maintained from the time of sample collection until the time of sample delivery to the analytical laboratory, and should accompany the sample through analysis and final disposition. Information to be included on the chain-of-custody form will include, but is not limited to:

- Project number/site name
- Sampler's name and signature
- Date and time of sample collection
- Unique sample identification number or name
- Number of containers
- Sample media (e.g., soil, water, vapor, etc.)
- Sample preservative (if applicable)
- Requested analysis
- Comments or special instructions to the laboratory

Each sample must be assigned a unique sample identification number as described above. The information on the chain-of-custody form, including the sample identification number, must correspond to the information recorded by the sampler on the field forms, log book, and label on the sample container.

A sample is considered under a person's control when it is in their possession. When custody of a sample is relinquished by the sampler, the sampler will sign and date the chain-of-custody form and note the time that custody was relinquished. The person receiving custody of the sample will also sign and date the form and note the time that the sample was accepted into custody. The goal is to provide a complete record of control of the samples. Should the chain be broken (signed by the relinquisher, but not receiver, or vice versa), the integrity of the sample is lost and the resulting analytical data are suspect. Samples must be packaged and shipped to the laboratory following the procedures described in SOP SP-3. If an overnight shipping service is used to transport the samples to the laboratory, custody of the samples must be relinquished to the shipping service. If possible, have the shipping service sign the chain-of-custody form prior to placing the chain-of-custody form in the sample cooler. If this is not possible (i.e., form placed in

sealed cooler), a note should be included on the chain-of-custody that the shipping company will receive the samples with the chain-of-custody form inside the sample container.

SOP SP-3

SAMPLE PACKAGING AND SHIPPING

SAMPLE PACKAGING

Samples must be packaged to preclude breakage or damage to sample containers, and shipped to comply with shipper, U.S. EPA, and U.S. DOT regulations. When packaging samples:

- Use sample labels from the laboratory whenever possible. Place the sample label on the sample container prior to collecting the sample, and use indelible ink when completing the label.
- Place labeled sample bottles in a high quality cooler. Place the samples in an upright position inside the cooler and wrap the samples with cushioning material for protection during transport. The cooler should be able to withstand tough handling during shipment without sample breakage.
- Make sure the cooler has an adequate amount of ice (secured inside sealed Ziploc® bags) to maintain a temperature of 4°C or less inside the cooler from the time the samples are placed in the cooler until they are received by the laboratory. Excess ice should be used when sampling in warm weather. Ensure the cooler drain plug is taped shut.
- Fill out the appropriate chain-of-custody forms and place them in a Ziploc bag and tape it to the inside lid of the shipping container. If more than one cooler is used per chain-of-custody form, put a photocopy of the form in the other coolers and mark them as a copy.
- Close and seal the cooler using strapping shipping tape.
- Place signed and dated sample custody seals on the outside of the cooler such that the seals will be broken when the cooler is opened. Secure the custody seals on the cooler with clear strapping tape.
- Secure a shipping label with address, phone number, and return address on the outside of the cooler where it is clearly visible.

Purpose

Ensure samples are properly packaged for shipment to the analytical laboratory

Goal and Objective

To have samples received by the analytical laboratory in good condition and within EPA temperature thresholds

Equipment Needs

Indelible Ink Pen
Chain-of-Custody Forms
Custody Seals
Sample Labels from Lab
Coolers and Ice
Strapping Tape
Field Sampling Forms
Ziploc Bags

SHIPPING HAZARDOUS MATERIALS/WASTE

Transportation regulations for shipping of hazardous substances and dangerous goods are defined by the U.S. DOT in 49 CFR, Subchapter C, Part 171 (October 1, 1988); IATA and ICAO. These regulations are accepted by Federal Express and other ground and air carriers.

According to U.S. DOT regulations, environmental samples are classified as Other Regulated Substances (ORS). ORS are articles, samples, or materials that are suspected or known to contain contaminants and/or are capable of posing a risk to health, safety, or property when transported by ground or air. Samples, substances, or materials from sources other than material drums, leachate streams, and sludges should be considered as ORS or environmental samples. Materials shipped under the classification of ORS must not meet any of the following definitions:

> Class 1: explosives; Class 2: gases-compressed, liquefied, dissolved under pressure, or deeply refrigerated; Class 3: flammable liquids; Class 4: substances susceptible to spontaneous combustion; Class 5: oxidizing substances; Class 6: poisonous (toxic and infectious); Class 7: radioactive materials; and/or Class 8: corrosives.

If your samples might meet any of the above definitions, contact the project manager to obtain instructions on sample shipment.

SOP SP-4

FIELD MEASUREMENT OF pH

Purpose

Provide guidelines for pH measurements in water samples

Goal and Objective

To obtain accurate pH measurements in the field

Equipment Needs

pH Meter

Calibration Standards (within expiration date)

Glass Container or Flow-through Cell

Extra Set of Batteries

Indelible Ink Pen

Field Sampling Form

Deionized/Distilled Water

INSTRUMENT CALIBRATION

The pH meter must be calibrated prior to each field event and after every 10 samples during a sampling event, or more frequently if required by the project/client. Follow the manufacturer's recommendations to calibrate the meter. This typically involves the following sequence of steps:

1. Verify sensor is clean and filled with solution, then turn on meter.
2. Place in pH 7 solution, press "cal", and wait until calibration is complete.
3. Rinse sensor in deionized or distilled water.
4. Place in pH 10 (or pH 4) buffer solution, press "cal" a second time, and wait until endpoint is reached.
5. Rinse in distilled water.

Three-point calibration is the standard procedure. If the instrument is a multi-parameter meter, follow instructions for measurement of pH from the manual.

Periodically throughout the field day, place the probe in 7.0 pH buffer solution. If the measured value differs from the expected value by more than 0.1 pH units, recalibrate the meter according to the manufacturer's instructions.

FIELD MEASUREMENT PROCEDURE

- Rinse a decontaminated glass beaker or plastic flow-through cell with sample water three times.
- Rinse the pH probe with deionized or distilled water.
- Fill the container with sample water.
- Immerse the probe in the sample and agitate it to provide thorough mixing. Continue to agitate until the reading has stabilized. Read the pH value from the meter to the nearest 0.1 standard unit (s.u.) and record on the field sampling form. If the reading is being taken in-situ or using a flow-through cell, wait until the reading stabilizes and record the final pH value.
- Note any problems such as erratic readings. If previous readings are available, compare the current measurement to previous reading to check that the current reading is within reasonable limits.
- Rinse probe with deionized or distilled water and store according to the manufacturer's instructions.

SOP SP-5

SURFACE WATER SAMPLING

Samples of surface water (e.g., streams, rivers, springs, ponds, and lakes) can be collected using a variety of methods, with the grab sampling method being the most common. This method is described below, along with a method of sampling free product floating on a surface water body.

Purpose

Provide field sampling methodologies for surface water

Goal and Objective

To ensure surface water samples are collected correctly and consistently in the field

Equipment Needs

Decontamination Supplies

Latex or Nitrile gloves

Water Quality Meter for pH, conductivity, temperature

Coolers and Ice

Sample Bottles & Preservatives

Indelible Marking Pen

Field Sampling Form

Chain-of-Custody

GRAB SAMPLING

- When collecting a grab sample of surface water, the sample bottles commonly are placed directly in the water body, and the container(s) are allowed to fill with the water source. Optionally, a single container, such as a clean bucket, can be filled with the water source and then the composited water used to fill the individual sample bottles (see additional description below).
- When collecting water samples from a stream or river, attempt to collect the sample at the interval in the stream which exhibits the largest volume of flow and/or highest velocity. If safely wadable, the samples can be collected away from the bank. If not, the samples should be collected from or near the bank where flow is evident. More than one depth interval may be sampled in the water body.
- When collecting water samples from a pond or lake, the water samples typically are collected from or near the bank where water depths are greater than a few inches.
- Latex or nitrile gloves should be worn when sampling surface water. Decontamination procedures typically are not required for collection of surface water samples, with the exception of meter probes used for measurement of field water quality parameters (see bullet below).
- Field parameters (pH, temperature, conductivity) should be measured in accordance with applicable SOPs prior to sample collection for laboratory analysis. Take care to collect measurements from the sample locations in the water body similar to the grab sample. Try to limit the disturbance of fine sediment on the bed of the water body while collecting samples. The intent is to prevent increasing the turbidity prior to and during sample collection. If, during sampling, fine sediment on the bed is disturbed, wait until the water clears before collecting a sample.
- Prior to collecting the water samples, the sample bottle labels should be adhered to the bottles and the sample information completed on each label with indelible ink.

- To collect a sample, submerge a sample bottle such that mouth of bottle is submerged below the water surface at least 2 to 3 inches, if possible. Initially, allow each bottle to fill partially, then rinse bottle by shaking and discharge this water away from sample site. Repeat this procedure three times. Do not rinse sample bottles if the laboratory has previously added a preservative to the container.
- Once the sample container is filled, add preservative (if necessary), and cap the container. If water is too shallow to fill directly to sample bottles, use a decontaminated container to collect sample water. Transfer water from compositing container into the individual sample bottles.
- If the water is too shallow to sample with a bottle, a peristaltic pump can be used to collect a sample. New tubing should be used to pump the shallow surface water directly into sample bottles. A peristaltic pump is also the preferred method of collecting a filtered surface water sample for dissolved constituents because the filter can be placed in-line for ease of sample collection.
- Place sample containers in a cooler with sufficient ice; sample packaging and shipping procedures are included in SOP SP-3. Sample documentation and chain-on-custody procedures are described in SOP SP-2.
- Fill out appropriate field form(s) documenting sample location, time, and other pertinent information prior to leaving sampling site (see SOP SP-1).

SAMPLING FREE PRODUCT ON SURFACE WATER

The procedure described below is to be used when sampling for free phase organic constituents floating on top of a surface water body (e.g., sheen):

- Latex or nitrile gloves should be worn when conducting the sampling procedure.
- Using a wide-mouth jar, submerge the container in such a manner that leaves the mouth of the container half-way out of the water; allow the container to fill.
- Transfer sample from wide-mouth jar directly into sample bottles for lab analysis.
- Refer to SOP SP-2 and SOP SP-3 for information about procedures for sample documentation, chain-of-custody, and sample packaging and shipping.