

MS₄ Permit

City of Missoula
Storm Water Management Program

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Storm Water Utility

What is the MS₄ Permit?

- General Permit for Storm Water Discharges Associated with Municipal Separate Storm Sewer Systems (MS₄s)
- Administered by Montana Department of Environmental Quality, under the authority of the U.S. Environmental Protection Agency



Why do we need it?



Cuyahoga River fire - 1969

- Clean Water Act of 1972
- National Pollutant Discharge Elimination System (NPDES)
regulates point sources that discharge pollutants

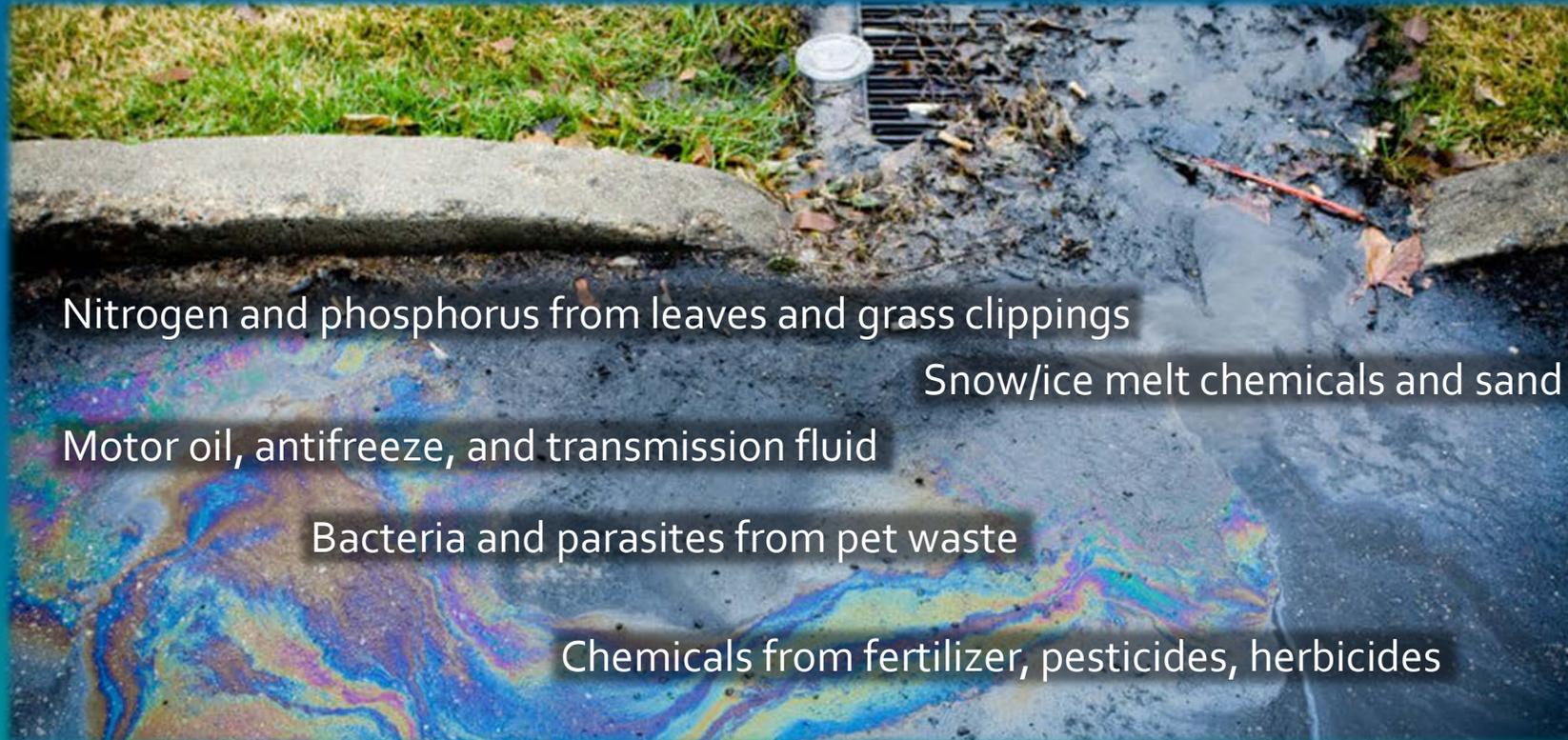
Why do we need it?



- Clean Water Act of 1972
- National Pollutant Discharge Elimination System (NPDES)
 - regulates point sources that discharge pollutants
- Phase 2 Small MS4s – 1999
 - urbanized areas > 50,000

Why do we need it?

Storm water runoff is the #1 source of water pollution in Montana and across the U.S.



Nitrogen and phosphorus from leaves and grass clippings

Snow/ice melt chemicals and sand

Motor oil, antifreeze, and transmission fluid

Bacteria and parasites from pet waste

Chemicals from fertilizer, pesticides, herbicides

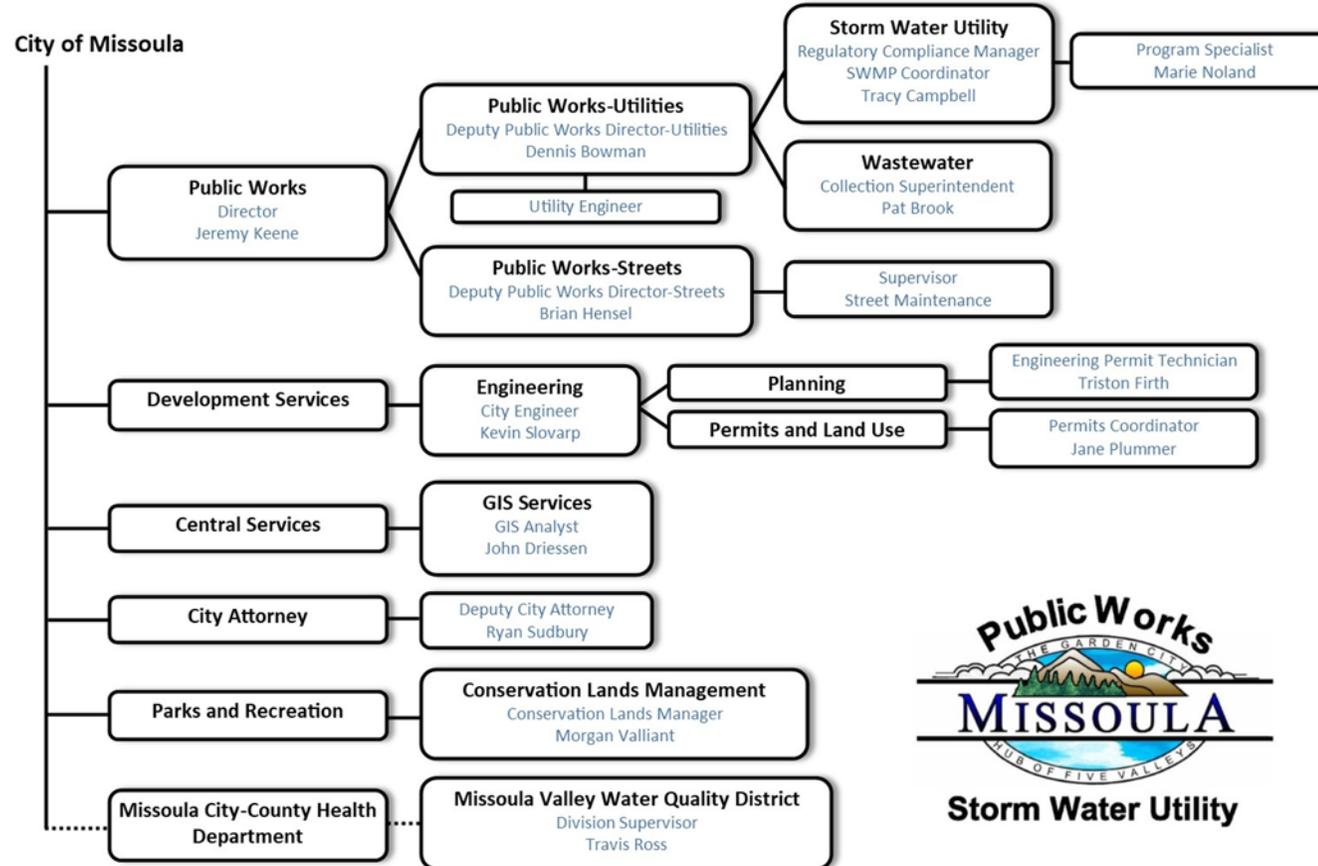
MS₄ Permit Conditions

- Develop a Storm Water Management Program Team
- Minimum Control Measures (MCMs)
 - Public Education and Outreach
 - Public Participation
 - Illicit Discharge Detection and Elimination
 - Construction Site Storm Water Management
 - Post-Construction Storm Water Management
 - Pollution Prevention/Good Housekeeping for Municipal Operations
- Training
- Sampling and Monitoring



Storm Water Management Program Team

Storm Water Management Team Organizational Chart

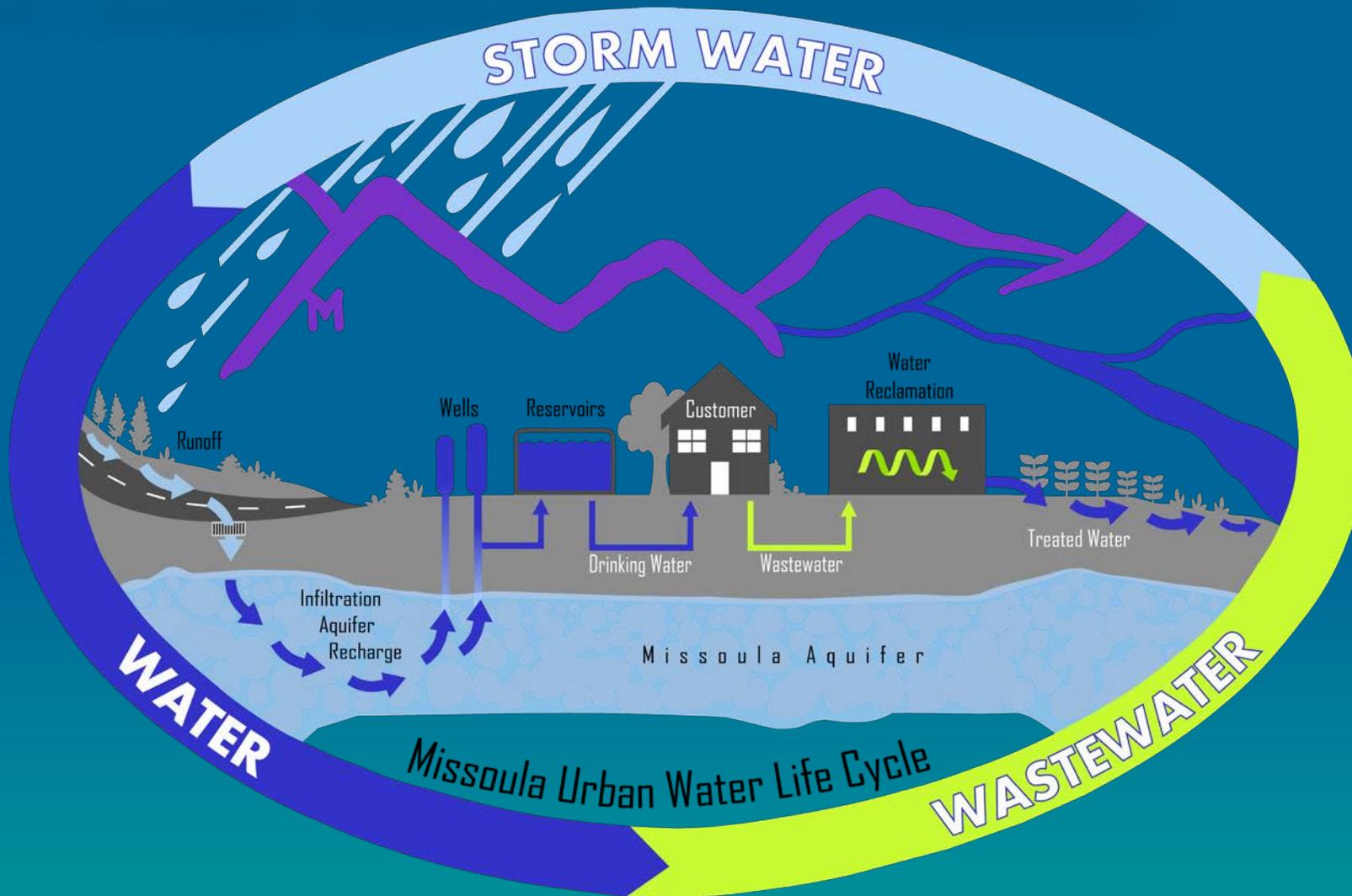


MCM 1 – Public Education and Outreach

The permittee shall implement a storm water public education program to develop or adapt, distribute, and evaluate educational materials and outreach activities to key target audiences in the MS4 that raise awareness about the impacts of storm water discharges on waterbodies, educate audiences about the behaviors and activities that have the potential to pollute storm water discharges, and motivate action to change behaviors to reduce pollutants in storm water runoff.



MCM₁ – Public Education and Outreach



MCM 2 – Public Involvement and Participation

The permittee shall develop a strategy to involve key target audiences in the development and implementation of the SWMP that complies with state and local public notice requirements.



Trail improvements at Bancroft Ponds

MCM₃ – Illicit Discharge Detection and Elimination

The permittee shall develop, implement, and enforce a program to detect and eliminate illicit discharges (as defined in ARM 17.30.1102(7)) into the permitted Small MS₄.



MCM₄ – Construction Site Storm Water Management



The permittee shall develop, implement, and enforce a program to reduce pollutants in storm water runoff to the permitted Small MS₄ from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of storm water discharges from construction activity disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more.

MCM 5 – Post-Construction Storm Water Management

The permittee shall develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre. Including projects less than one acre that are part of a larger common plan of development of sale that discharge into the permitted Small MS₄. This program must ensure that controls are in place that would prevent or minimize water quality impacts.



Pattee Creek Grit Chamber – storm water detention pond

MCM 6– Pollution Prevention/Good Housekeeping



The permittee shall develop and implement an operation and maintenance program which includes a training component, and has the ultimate goal of preventing or reducing pollutant runoff from permittee operations.

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Training

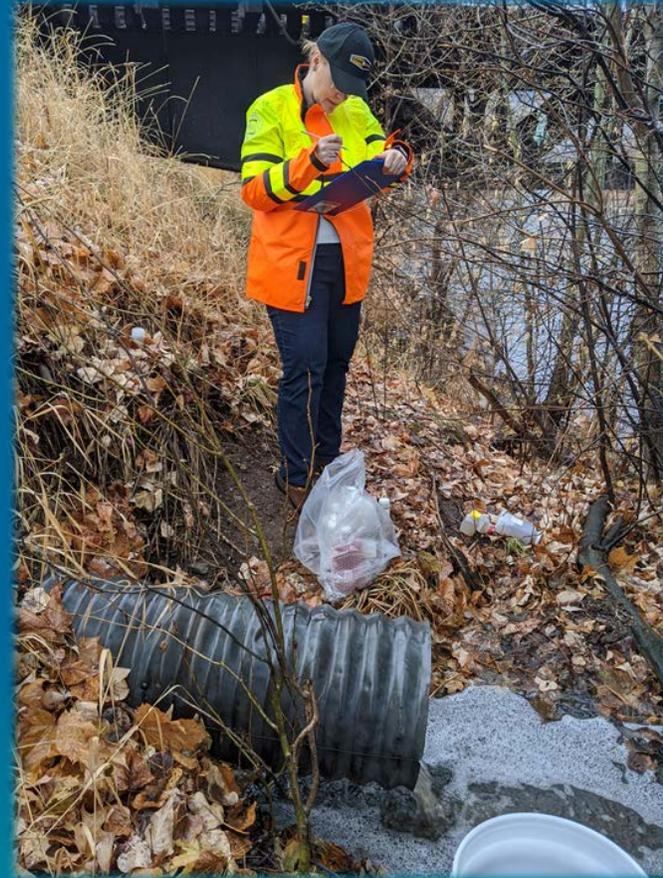
The permittee is required to conduct and/or coordinate training and track/document all municipal staff participation.



February 13 and 14, 2020
Eight City employees completed SWPPP
Administrator training

Sampling and Monitoring

The permittee must identify all outfalls that discharge to impaired waterbodies, the impaired waterbodies, and the associated pollutants of impairment. The SWMP must include a section that describes BMPs that target and reduce discharges of the identified pollutants.



Sampling and Monitoring

Table 1. City of Missoula MS4¹ assets per subwatershed and surface water

HUC ² 8 Subbasin	HUC 12 Subwatershed	Waterbody	Outfalls	Pipe (feet)	Dry Wells	Detention Points	Levee (feet)	Flood Wall (feet)
Middle Clark Fork (17010204)	Butler Creek (170102040201)	—	0	2,841	4	1	—	—
				61,772	256	7	2,764	—
	Grant Creek (170102040103)	Flynn Lowney Ditch	1					
		Grant Creek ^{IMP}	5					
	La Valle Creek (170102040202)	—	0	0	0	0	—	—
	Lower Rattlesnake Creek (170102040102)	Rattlesnake Creek	13	5,601	291	—	—	—
				88,107	3,910	27	9,205	898
	Marshall Creek-Clark Fork (170102040104)	Clark Fork River ^{IMP}	27					
		Orchard Homes Ditch Company	6					
		Missoula Irrigation District	1					
Martin Gulch-Clark Fork (170102040205)	—	0	19,529	0	10	—	—	
Bitterroot (17010205)	Hayes Creek-Bitterroot River (170102051603)	Bitterroot River ^{IMP}	1	152,915	1,791	22	6,060	—
		Pattee Creek	5					
	Miller Creek (170102051601)	Miller Creek ^{IMP}	0	1,891	117	—	—	—
Total			59	332,656 (63 mi)	6,369	67	18,029	898

¹municipal separate storm sewer system

²U.S. Geological Survey Hydrologic Unit Code

^{IMP}Impaired surface water per Montana Department of Environmental Quality Water Quality Integrated Report (MDEQ, 2018a and b).

- 59 outfalls
- Discharge to 8 waterbodies
- 3 of the 8 are impaired



Sampling and Monitoring

Table 2. Impaired waters within the City of Missoula's MS4¹ per Montana Department of Environmental Quality Water Quality Integrated Report (MDEQ, 2018a and b)

Waterbody Name (ID)	Cause of Impairment	Source
Bitterroot Subbasin	<ul style="list-style-type: none"> Alteration in stream-side or littoral vegetative covers Lead^{TMDL} Temperature^{TMDL} 	<ul style="list-style-type: none"> Agriculture Rangeland Grazing Source Unknown Wet Weather Discharges (Non-Point Source) Wet Weather Discharges (Point Source and Combination of Storm Water)
	<ul style="list-style-type: none"> Alteration in stream-side or littoral vegetative covers Sedimentation/Siltation^{TMDL} Temperature^{TMDL} 	<ul style="list-style-type: none"> Crop Production (Crop Land or Dry Land) Grazing in Riparian or Shoreline Zones Loss of Riparian Habitat Silviculture Activities
Clark Fork River, Blackfoot River to Rattlesnake Creek (MT76M001_030)	<ul style="list-style-type: none"> Arsenic^{TMDL} Cadmium^{TMDL} Copper^{TMDL} Eutrophication^{TMDL} Iron^{TMDL} Lead^{TMDL} Zinc^{TMDL} 	<ul style="list-style-type: none"> Dam or Impoundment Industrial Point Source Discharge Mill Tailings
Middle Clark Fork Subbasin	<ul style="list-style-type: none"> Chlorophyll-a^{TMDL} Copper^{TMDL} Iron^{TMDL} Lead^{TMDL} Nitrogen, Total^{TMDL} Organic Enrichment^{TMDL} Phosphorus, Total^{TMDL} 	<ul style="list-style-type: none"> Industrial Point Source Discharge Mill Tailings Municipal Point Source Discharges
	<ul style="list-style-type: none"> Algae Alteration in stream-side or littoral vegetative covers Flow Regime Modification Nitrate/Nitrite (Nitrite + Nitrate as N)^{TMDL} Nitrogen, Total^{TMDL} Sedimentation/Siltation^{TMDL} Temperature^{TMDL} 	<ul style="list-style-type: none"> Crop Production (Irrigated) Loss of Riparian Habitat Site Clearance (Land Development or Redevelopment) Streambank Modifications/destabilization Water Diversions

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^{TMDL}Total Maximum Daily Load has been established.



Historical mining activities upstream

Dewatering and habitat loss



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