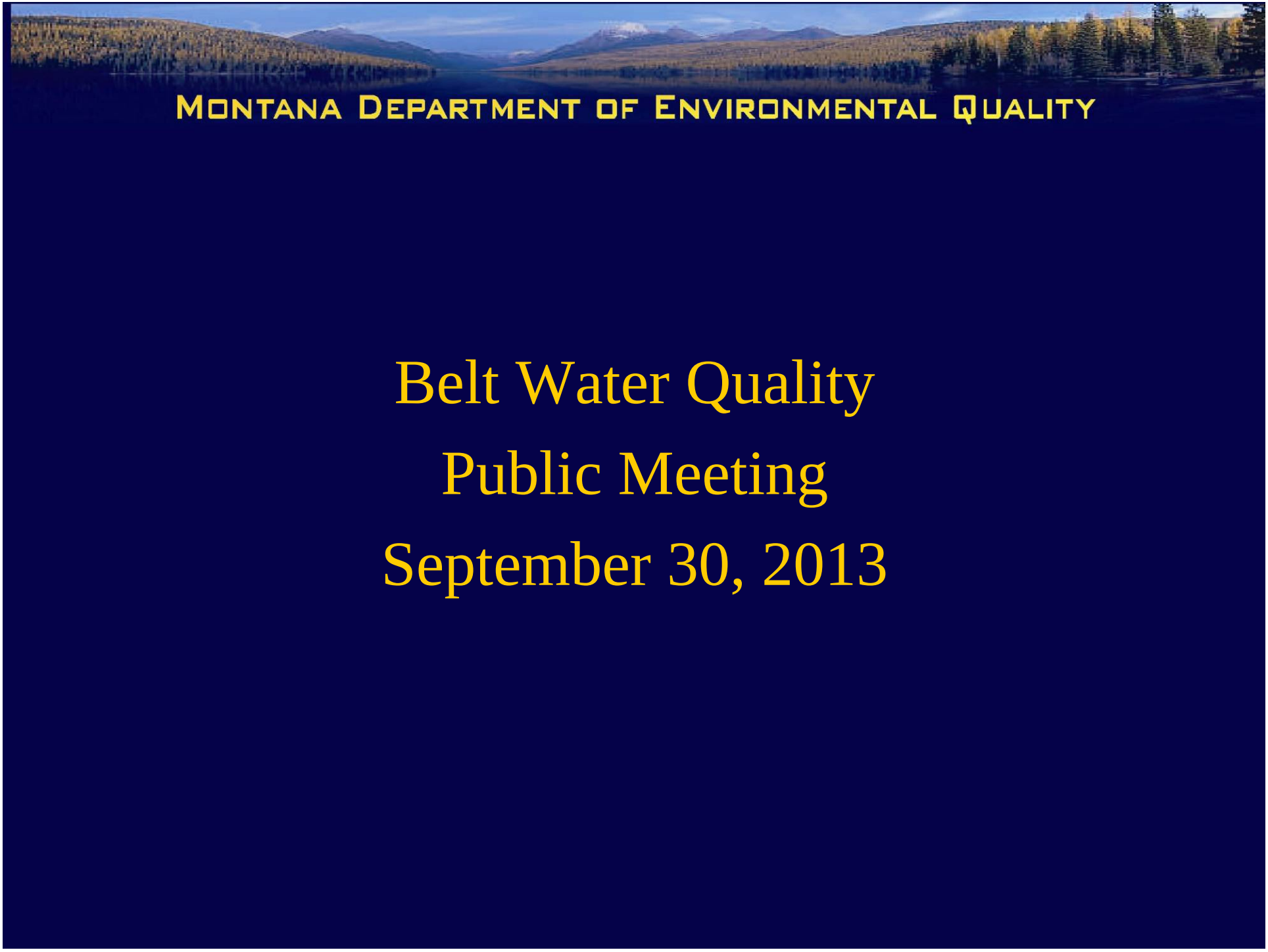
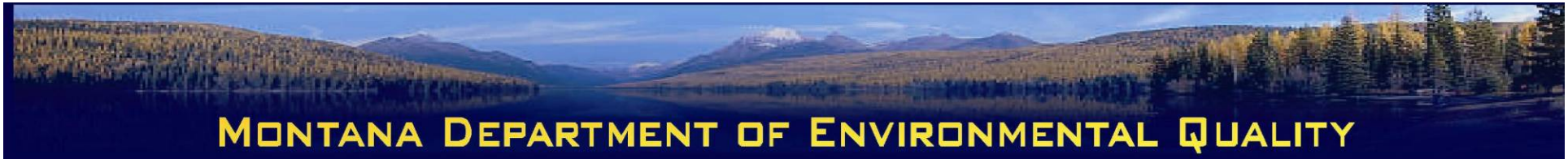

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
Belt Water Quality
Public Meeting
September 30, 2013

# Introductions

- Remediation Division
  - Jenny Chambers, Division Administrator
  - Jeni Garcin-Flatow, Public Information Officer
  - Tom Henderson, Reclamation Specialist, Abandoned Mines Program
- Permitting and Compliance Division
  - Bob Habeck, Bureau Chief, Water Quality Protection Bureau
  - Lisa-Kay Keen, Compliance Inspector, Water Quality Protection Bureau
- Planning, Prevention & Assistance Division
  - Dean Yashan, Environmental Program Manager, Water Quality Planning Bureau
  - Todd Teegarden, Bureau Chief, Technical and Financial Assistance Bureau




# Meeting Agenda

- Treatment of Acid Mine Drainage
- Belt Creek Total Maximum Daily Loads
- Water Quality Compliance
- Belt Drinking Water Project/Wastewater System Upgrade

# DEQ Abandoned Mine Lands Program

- The AML program reclaims lands impacted by past mining practices
- Reclamation work is funded by coal taxes collected in Montana through annual grants from the Department of the Interior, Office of Surface Mining
- Annual grants of approximately 5 million dollars
- Currently working with the Sand Coulee Water District to develop new source of potable water and replace distribution system bedded in coal wastes

# Coke Oven Flats Prior to 1980s Reclamation

# Acid Mine Drainage Problem Overview

- Extensive coal mining at Belt: late 1800s - early 1900s
- Coal seam contains high sulfur content (~10 percent)
- Sulfur reacts with oxygen in partially flooded mines and generates acidic water with high levels of dissolved metals
- Multiple discharge sites:
  - Anaconda Belt Mine
  - French Coulee Collection System
  - Lewis Coulee
  - Brodie Mine
  - Coke Oven Flats seepage

# Anaconda Belt Mine Workings

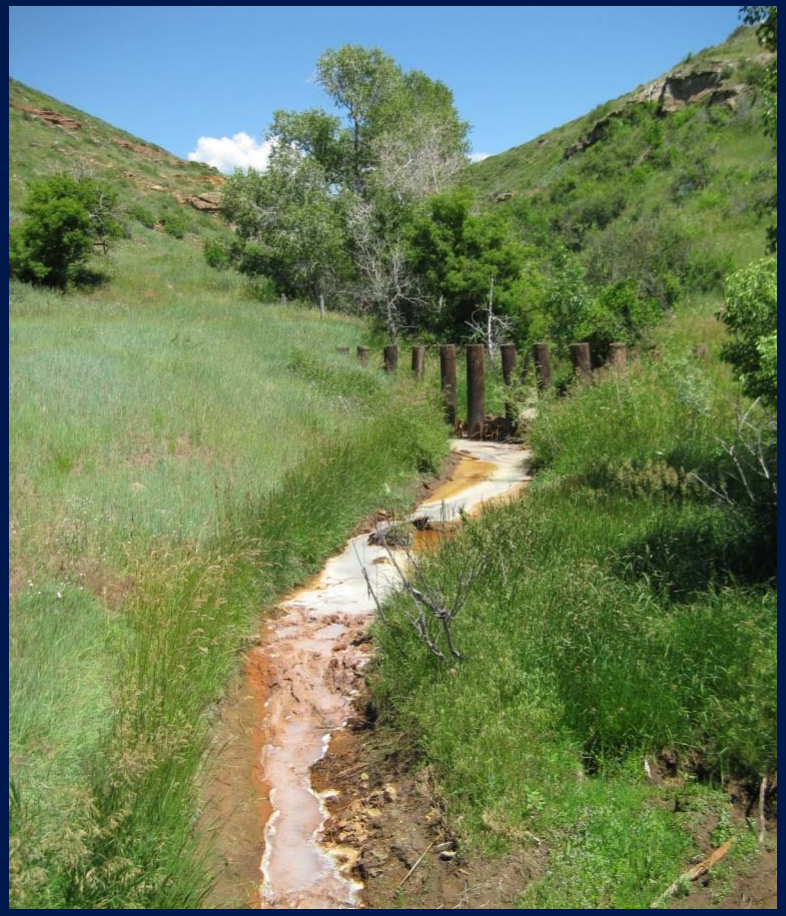
# Belt Acid Mine Drainage Overview

# AMD Discharges – West Side of Belt Creek

Anaconda Belt Mine
120 gallons per minute

French Coulee Collection System
30 gallons per minute

# AMD Discharges – East Side of Belt Creek



Lewis Coulee
20 gallons per minute

Brodie Mine
5 gallons per minute

# Coke Oven Flats Seepage to Belt Creek

Upstream area of Coke Oven Flats

Downstream area of Coke Oven Flats

Approximately 1 gallon per minute seepage to Belt Creek

# Impact to Belt Creek

# Summary of Impacts

- AMD exceeds Montana Water Quality Standards for numerous metals, including arsenic, beryllium, cadmium, chromium, iron, nickel, thallium, and zinc
- Belt Creek water quality upstream of AMD discharges meets Water Quality Standards
- Water quality in Belt Creek downstream AMD discharges is a function of the seasonal flows in the creek.
- Aluminum and iron exceed Montana Water Quality Standards during the fall, winter, and early spring.
- Iron concentration  7 times the DEQ standard in December 2012

# Metal Loading to Belt Creek

- Significant metal loads from acid mine drainage
- Calculated using 2011 data
  - 720 pounds per day iron
  - 480 pounds per day aluminum
  - 5600 pounds per day acidity
- No indication of reduction in metal loading compared to 1995 U.S. Geological Survey investigation

# Recent Timeline

- 2010 : OSM approval of water treatment account
- 2011-2012 Water Treatment Assessment
  - Inventory and prioritization of AMD discharges
  - Belt highest priority for water treatment
  - Net present value cost estimates for funding
- 2013 Coke Oven Flats Investigation
  - Groundwater and metal loading investigation
  - Evaluation of diffuse seepage loads to Belt Creek

# Look Ahead

- 2014 Engineering Evaluation/Cost Analysis
  - Evaluate treatment alternatives
  - Evaluate options for sludge handling and disposal
  - Identify recommended treatment alternative
  - Submit to Office of Surface Mining for funding approval
- Current estimate for treatment of AMD discharges in Belt is approximately 24 million dollars
  - EPA net present value calculation
  - Construction and 100 years operation and maintenance
- Approximately 7 million dollar balance in DEQ water treatment account

# Water Treatment Design Concepts

- Lime neutralization of AMD standard approach in eastern states
- Bench-scale testing of Belt AMD indicate Montana water quality standards were achieved using lime
- Coke Oven Flats is the preferred location for a treatment facility
- Generated sludge placed in engineered repository on terrace above Belt

# Water Treatment Layout

# DEQ-AML Project Documents

- Documents available online at:

  http://deq.mt.gov/AbandonedMines/CurrentProjects.mcpx

  - Great Falls Coal Field: Historic Overview
  - Water Treatment Assessment Report
  - Coke Oven Flats Investigation Report
- Copies of all documents available at DEQ Remediation Division, 1100 North Last Chance Gulch in Helena (next to YMCA)

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# Questions for DEQ-AML

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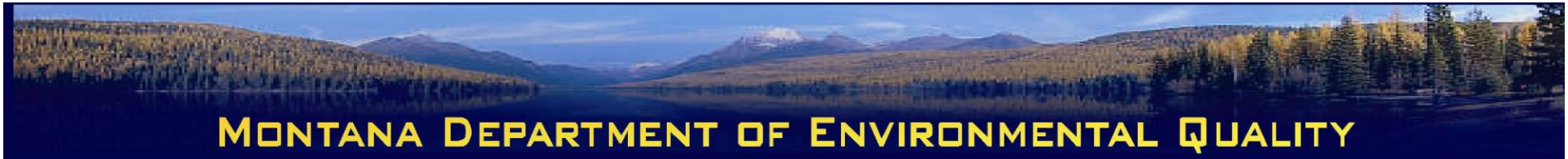
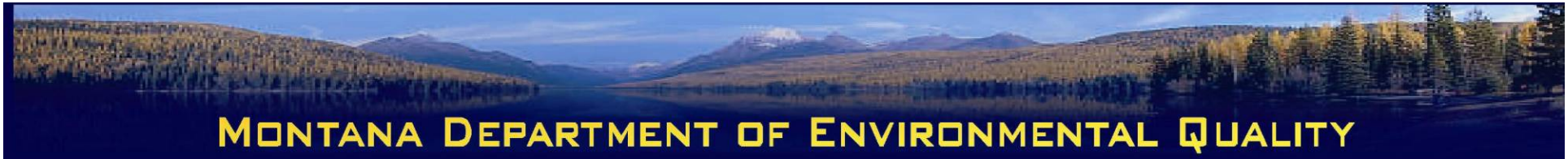



# Water Quality Planning Bureau (WQPB)

- Develops water quality plans that include total maximum daily loads (TMDLs).
- Provides technical and financial assistance to implement these plans.




# Belt Creek Total Maximum Daily Loads (TMDL)

- A water quality plan and associated TMDLs were developed for Belt Creek and Sand Coulee Creek watersheds in 2011.
- The plan focused on water quality problems linked to elevated metals and the need for further remediation from abandoned mines.
- Potential metals loading from the Belt wastewater treatment plant was also discussed in the plan.

# Belt Creek Total Maximum Daily Loads (TMDL)

- To help implement the plan, DEQ recently funded a groundwater study linked to cropping practices and the potential for reduced recharge flows through abandoned mine areas.

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# Questions for DEQ-WQPB

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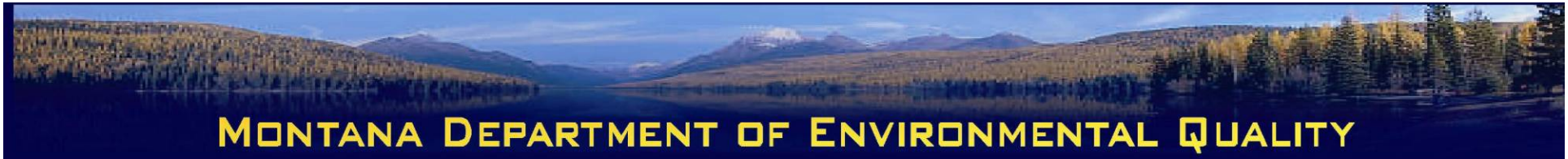



# Water Protection Bureau (WPB)

- Prevents surface and groundwater pollution by review of the potential sources of pollution.
- Issues Montana Pollutant Discharge Elimination System Permits.
- Responsible for determinations of non-degradation.

# Water Quality Compliance

- Belt's permit effective September 1, 2011, through August 31, 2016
- Interim effluent limits include BODs, TSS, *E. coli* bacteria, pH, TRC, and oil and grease
    - Minimum treatment requirements based on federal law
- Final effluent limits also include arsenic, cadmium, iron, lead, and zinc
    - Pollutants of concern for impaired water bodies; time to upgrade treatment
- Monitoring requirements include nutrients and metals
    - Collecting information to assess if limits will be required next permit cycle

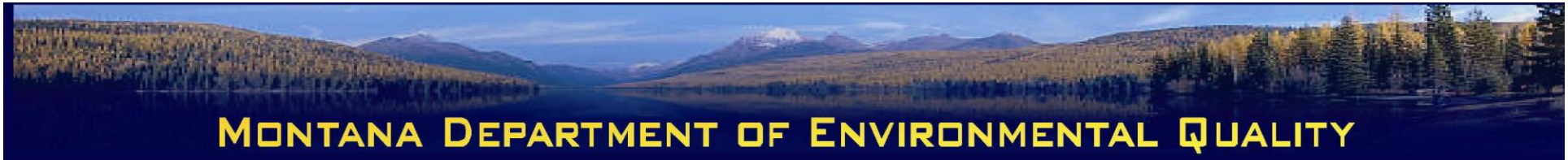
# Administrative Order

- Enforcement request was signed by the DEQ Director on December 22, 2010
- Administrative Order became effective on January 4, 2012

# Administrative Order

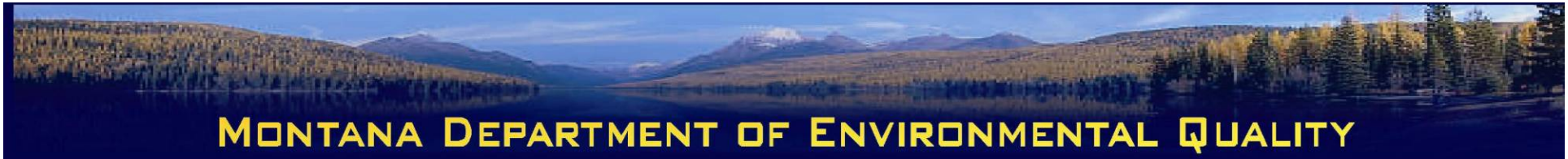
What corrective actions have been performed?

- Missing DMRs – submitted
- Corrected incomplete DMRs – submitted
- Stipulated penalties – paid
  - $700 on January 11, 2013
  - $1,500 on August 30, 2013



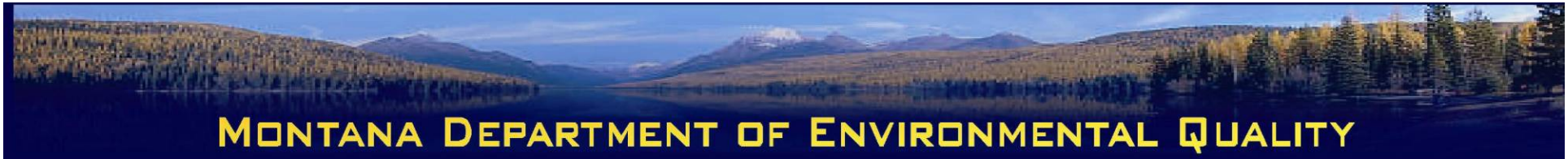

# Administrative Order Compliance Schedule

- Report, Scope of Work
- Corrected DMRs
- Inflow and Infiltration study
- Qualified Operator
- Install effluent flow meter
- Install UV disinfection




# Technical and Financial Assistance Bureau (TFAB)

- Provides low-interest loan assistance to public water and wastewater collection and treatment system projects through the State Revolving Loan Programs (SRF).
- Works closely with other public funding agencies to package grants and loans for community projects.
- Provides technical assistance and training for water and wastewater system's and their operators.



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# Belt Drinking Water Project and Wastewater System Upgrade

- A drinking water storage tank project with an estimated SRF loan amount of $633,000.

- A wastewater treatment system upgrade project with an estimated SRF loan amount of $1,300,000.

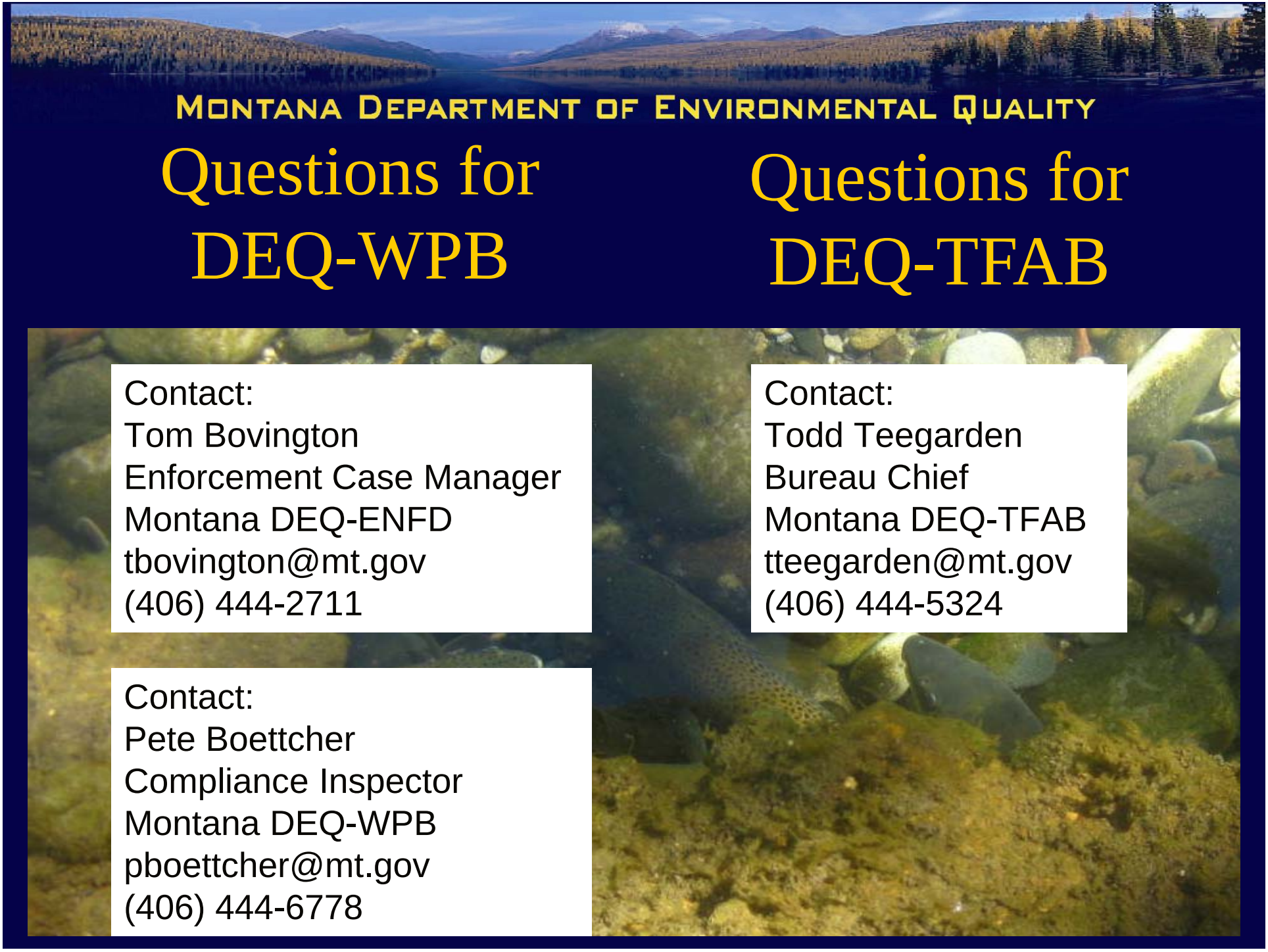
Both projects are on our SRF intended use plans, eligible for SRF loan funding, and are receiving other grant funding to help offset project costs.

# Stockett Water and Sewer District

- Proposing a wastewater treatment facility upgrade project but is currently not on the SRF priority list.
- No new drinking water projects are proposed that we are aware of.

# Sand Coulee

- Does not have a public wastewater system.
- A new drinking water well was placed in operation in 2012.



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# Questions for DEQ-WPB

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# Questions for DEQ-TFAB

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