Current Ground Water Quality Laws

Water Policy Interim Committee
August 16, 2007

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Water Protection Bureau
Permitting & Compliance Division
Department of Environmental Quality

Current Ground Water Quality Laws

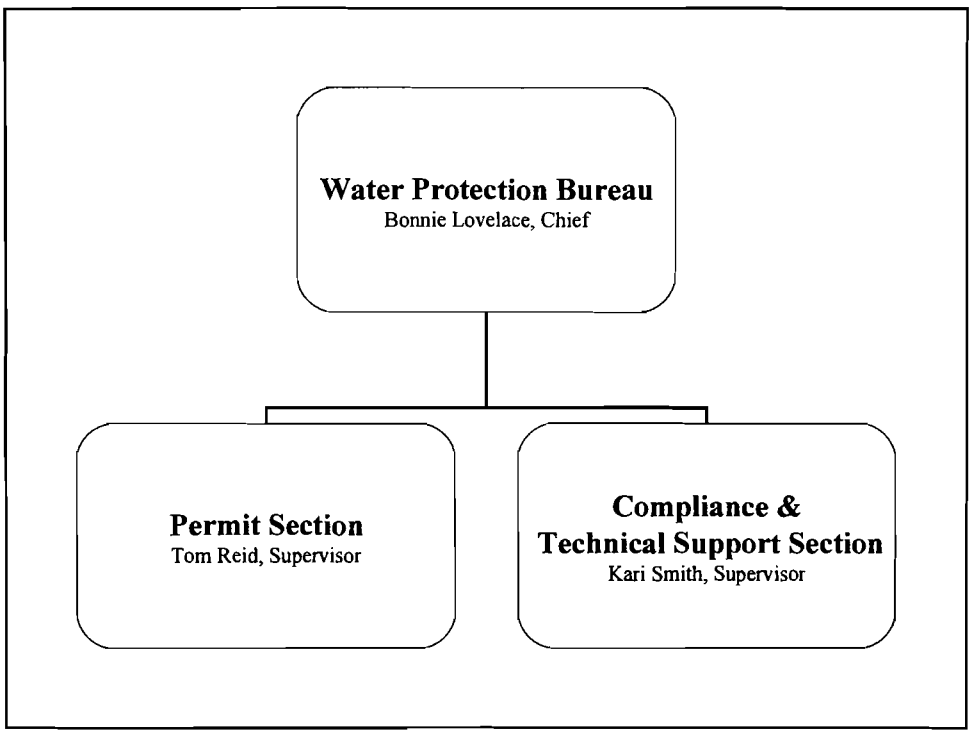
Background

1. Permitting Requirements
2. Standards
3. Federal/State Law - Where/When
4. Discharge Requirements
5. Mixing Zones
6. Drinking Water Standards
7. Public Comment

WATER POLICY INTERIM COMM.
AUGUST 16-17, 2007
EXHIBIT 3

Water Protection Bureau

- Montana Pollutant Discharge Elimination System
- Montana Ground Water Pollution Control System
- Short-Term Authorizations
  - 308 Pesticides (*applied to state waters*)
  - 318 Turbidity (*in stream construction*)
- 401 Certifications – Federal Clean Water Act



What is a Permit?

- It is a license…

  -issued by the government to a person

  - granting permission to do something which would be illegal in the absence of the permit.

  (75-5-605, MCA – It is unlawful to…)

- No right to permit; is revocable for cause
- Permit is license *to discharge wastes to state waters*

75-5-605, MCA – It is unlawful to…

1. Cause pollution of any state waters or place wastes where they will cause pollution of any state waters, *except as authorized in permit.*
2. Except for certain exclusions:

   - ***construct*** or operate a disposal system;

   - ***construct*** or use any outlet for the discharge of 'wastes' to state waters; and to

   - discharge any wastes to state waters,

   without a current permit from the Department.

Exemptions

75-5-401(5), MCA

Ground Water Only

- Class 2 (Oil & Gas) Injection Wells (UIC)
- Individuals disposing of household wastes
- Subsurface disposal of sanitary wastes serving individual residences
- Solid, Hazardous, Coal, Uranium and Hard Rock Mining Operations, and Major Facility Siting Act

Other Applicable Statutes Dealing with Wastewater

- Sanitation in Subdivisions
  Title 76, Chapter 4, MCA
- Public Water Supply Act
  Title 75, Chapter 6, MCA

Types of Wastewater
Regulated Under Water Quality Act

- Sewage
- Industrial Wastes – *includes*
  - Process Wastewater,
  - Boiler Blowdown, and
  - RO Reject/Regenerate
- Other Wastes (*solid wastes*)

State Waters – definition
75-5-103(2), MCA

Means any body of water, irrigation system, or drainage system, either surface or underground, except:

(i) ponds or lagoons used solely for treating or impounding pollutants; or

(ii) irrigation water or land applications systems where waters are not returned to state waters.

National Pollutant Discharge Elimination System (NPDES)

Delegation – 1974 (DHES/DEQ)

The purpose of this subchapter 11, 12,13 and 14 is to establish and implement one common system for issuing permits ..... which is compatible with the national pollutant discharge elimination system as established by the US EPA pursuant to section 402 of the federal Clean Water Act. ARM 17.30.1301.

Basic Program
General Permit
Federal Facilities

Non-delegated
Pretreatment
Biosolids

Who Regulates the Discharge of Waste to Ground Water in Montana?

Department of Environmental Quality (DEQ)
All discharges to ground water except as exempted by 75-5-401(5), MCA

Environmental Protection Agency (EPA)
Discharges subject to regulation under the Underground Injection Control (UIC) program

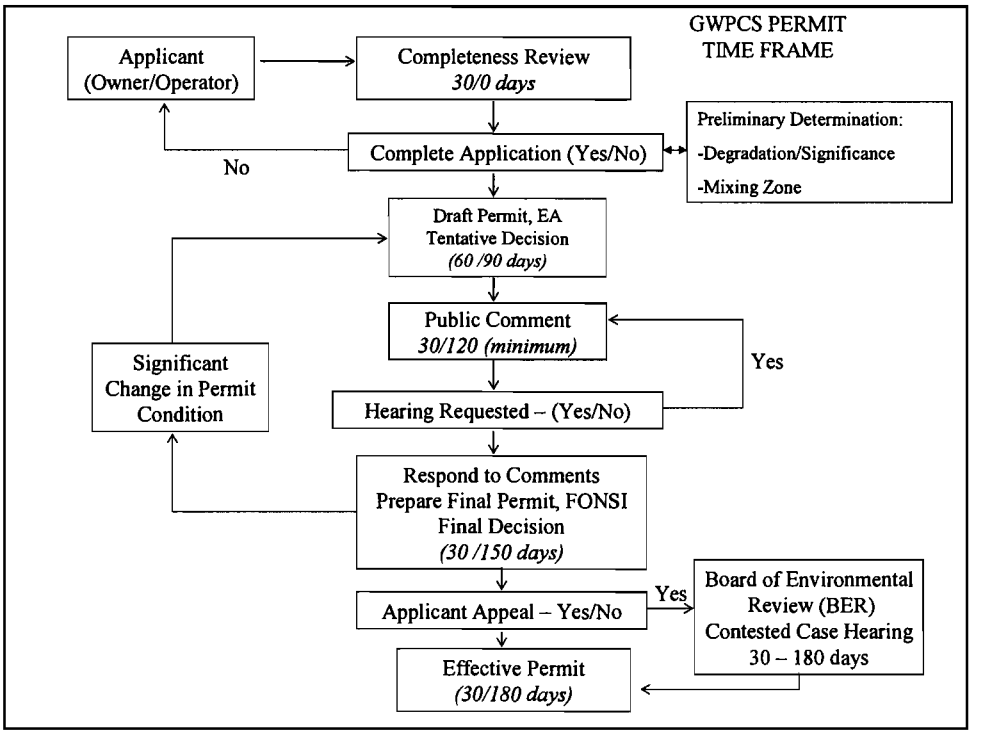
Federal UIC Program

- Safe Drinking Water Act (SDWA)
- Class I, II, III, IV, & V Wells
- Well *is a bored, drilled, driven shaft, or dug hole whose depth is greater than its largest width*
- Montana Board of O&G – delegated for Class II wells
- Class V - Wells Discharge above aquifer
- *DEQ – Not delegated under UIC*

Montana Ground Water Pollution Control System (MGWPCS)

Title 17, Chapter 30, Subchapter 10

- Existing sources required to submit application by October 29, 1982
- New Sources must apply at least 180 days prior commencement of operation
- 18 categorical exclusions/exemptions for GW permit requirements



Permit Requirements - *ARM 17.30.1023*

See Application Form GW-1

- Owner Information
- Site Plan/Map
- Water Supply Wells within 1 mile
- Waste (effluent) Characterization
- Design Conditions, Soils..
- Ground Water Characteristics
- Local Hydrogeology
- Plan to Provide Alternative Water Sources

Major Components of Permit

Effluent Limits - *75-5-402, MCA*

The department shall: clearly specify in any permit any limitations imposed to the volume, strength and other significant characteristics of the waste to be discharged.

Monitoring Requirements- *75-5-602, MCA*

The Department may require the owner or operator of any point source to: establish and maintain records; make reports; install, use and maintain monitoring equipment; and sample effluents.

Standard Conditions

Typical Effluent Limits

Parameter	Units	30-day Average	Daily Maximum
$BOD_{(5)}$	mg/L	30	45
TSS	mg/L	30	45
Arsenic	µg/L	10.	12.5
Copper,	µg/L	20.	32.0
Oil & Grease	mg/L	NA	10
Total Nitrogen	lb/d	12.5	NA
Total Phosphorus	lb/d	0.56	NA

Other Limitations:

Effluent pH shall remain between 6.0 and 9.0 standard units.

The 30-day average flow of effluent discharged to Outfall 001 shall not exceed 15, 000 gallons per day (gpd).

There shall be at least 60% removal of Total Nitrogen from the raw influent. The percent (%) removal shall be calculated using the following equation:

$$\text{Percent removal} = \frac{\text{Influent Concentration} - \text{Effluent Concentration}}{\text{Influent Concentration}} \times 100$$

Monitoring Requirements

Compliance Monitoring

- Effluent prior to dilution (last point of control)
- Compliance with permit effluent limits
- Must be submitted on DMR
  (Discharge Monitoring Report) form
- DMR must be signed and certified
- Required Monthly or Quarterly

Monitoring Requirements – *con't*

Ambient Monitoring

- Ground Water (or Surface Water)
- Up/Down gradient of discharge (outfall)
- Typically end of mixing zone
- Permit may contain trigger values
- Trigger additional monitoring/corrective action
- Safety Valve

Montana Ground Water Standards

- The board shall adopt standards classifying all state water according to their present and most beneficial uses. 75-5-301, MCA
- A water quality standard has three components:
  - » Designated Use
  - » Criterion (Numeric or Narrative)
  - » Nondegradation Provision (New Sources)
- Standards may be numeric or narrative

Classification and Uses ARM 17.30.1006

Use	Classification			
	I (1)	II	III	IV
	Specific Conductivity (µS/cm)			
	<1,000	1,000 –2,500	2,500-15,000	>15,000
Public & Private Water Supply	Yes	M	<7,000	No
Culinary & Food Processing	Yes	M	<7,000	No
Irrigation	Yes	M	Tolerant	No
Livestock & Wildlife Watering	Yes	M	M	No
Commercial & Industrial	Yes	M	Some	Some
(1) With little or no treatment; (m) marginal				

Ground Water Standards – Basis

- Human Health (HH) Standards – DEQ, Circular DEQ-7
- Based on priority (PP) and nonpriority (NPP) pollutants developed under Section 304 of the federal Clean Water Act, Health Advisories (HA), and Maximum Contaminant Levels (MCL). (DEQ-7, page 2).
- HH Standards must be based on the lowest of the acceptable risk for carcinogens (1×10^{-5}) or the Maximum Contaminate Level (MCL) (75-5-301, MCA)

Montana Ground Water Standards Nondegradation

- 75-5-303, MCA - Nondegradation Policy
  - Existing Uses and water quality shall be maintained
- 75-5-301(5), MCA - Criteria
  - Board shall adopt rules
  - Establishes criteria for ground water for nitrate (5.0 or 7.5 mg/L)
  - Level II Treatment (7.5 mg/L)
- 75-5-317, MCA - Exemptions
  - Establishes categories of activities that are nonsignificant
- Significance Criteria ARM 17.30.717
  - Carcinogen – No increase
  - Toxic - 15% of standard
  - Harmful – 10/40 Percent of standard

Example: Benzene (Carcinogen)

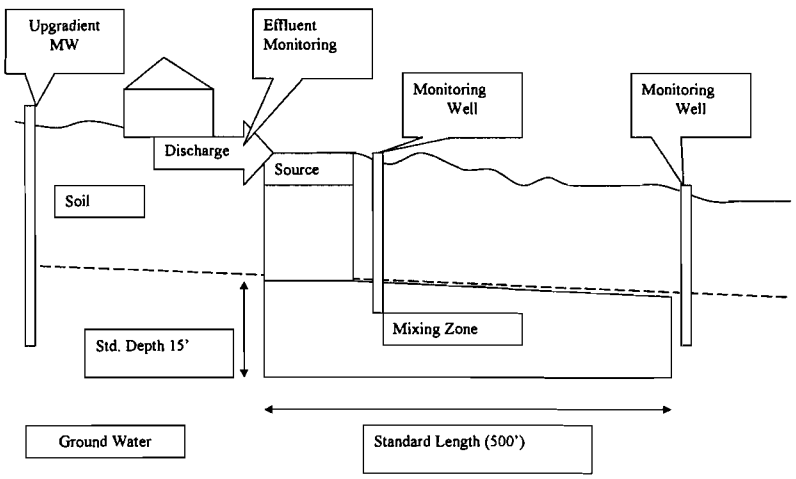
Level of Protection	Value (µg/L)	Source
Max. Contaminate Level (MCL)	5	40 CFR 141.61
MCL Goal (MCLG)	0	40 CFR 141.50
MT GW Standard	5	DEQ-7
MT Nondegradation Criteria	No. Inc.	ARM 17.30.715

Example: Nitrate (Non-Carcinogen)

Level of Protection	Value (mg/L)	Source
Max. Contaminate Level (MCL)	10	40 CFR 141.62
MCL Goal (MCLG)	10	40 CFR 141.51
MT GW Standard	10	DEQ-7
MT Statute	5.0/7.5	75-5-301(5)
MT Nonsignificance Criterion (toxic)	1.5	ARM 17.30.715

Mixing Zones

- The board shall adopt rules governing the granting of mixing zones, requiring that mixing zones have:
- the smallest practicable size;
- minimum practicable effect on uses; and
- definable boundaries. (75-5-301(4), MCA)



Septic Effluent Quality [1] (Mean)

Parameter (Std)	Units	Tank	@0.6 M	@1.2 M
BOD	mg/L	94	<1	<1
TKN	mg/L	44	0.8	0.8
NO_3 (10.0)	mg/L	0.04	22	16
T- Phos.	mg/L	8.6	0.4	0.2
Chloride	mg/L	70	41	29
Fecal Coli. (<1)	log #/100ml	4.57	nd	nd
Fecal Strep.	log #/100ml	3.60	nd	nd

(1) Source: Onsite Wastewater Treatment Manual, EPA/625/R-00/008, February 2002
nd – none detected