Protecting the Aquatic Environment
Water Quality Standards
Triennial Review – July 2007

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Water Quality Standards
The Foundation of Protection

- **Antidegradation Policy – Requires Minimal Decreases in Water Quality**
  - Category I [No Discharge Allowed]
  - Category II [Discharge only at Background]
  - Level I and Level II Evaluations
- **Beneficial Use – Classifications of Levels of Protection**
  - 1C Domestic Purposes
    - Protected for use as a raw water source for domestic water systems.
  - 3A Cold Water Fishery
- **Numeric Criteria – Numbers that Define the Beneficial Uses**
  - 50 ug/l Selenium – 1C
  - 4.6 ug/l Selenium Chronic – 3A
- **Narrative Criteria - Narrative that Defines the Beneficial Uses**
  - “become offensive”
  - “undesirable physiological responses”
Rule R317-2.
Standards of Quality for Waters of the State

• Statement of Intent
  – Pollution is:
    • A menace to public health and welfare
    • Creates public nuisances
    • Harmful to wildlife, fish and aquatic life
    • Impairs best interests of the State and its policy to conserve water resources
Rule R317-2.
Standards of Quality for Waters of the State

• Statement of Intent
  – Policy is:
  • Conserve the waters of the State
  • Protect, maintain, and improve the quality for:
    – Public water supplies
    – Propagation of wildlife, fish and aquatic wildlife
    – Agricultural, industrial, & recreational uses
  • Discharges to be treated to protect the uses
  • Prevention, abatement, and control of pollution
  • Eliminate pollution which creates public health hazards
  • Insure due consideration of financial problems imposed upon polluters.
  • Cooperate with other agencies
Rule R317-2. Standards of Quality for Waters of the State

- **Scope**
  - Apply to all waters of the state
  - Crossing the property line
  - Assigned to specific water through the classification procedures
Rule R317-2.
Standards of Quality for Waters of the State

- Antidegradation Policy
  - Maintenance of Water Quality
  - High Quality Waters – Category I
  - High Quality Waters – Category II
  - Other waters
    - Activities subject to antidegradation review
      - 401 – FERC [Dams, pipelines]
      - 401 – UPDES Permits [WWTP, Industrial Discharges]
      - 404 – Corps of Engineers [Wetlands]
      - As determined by Executive Secretary of WQB
Antidegradation Policy:
Category 1: UPDES Permits not Allowed

  - 12.1 High Quality Waters - Category 1.
  - In addition to assigned use classes, the following surface waters of the State are hereby
designated as High Quality Waters - Category 1:
  - a. All surface waters geographically located within the outer boundaries of U.S. National
  Forests whether on public or private lands with the following exceptions:
    - All High Quality Waters - Category 2 as listed in R317-2-12.2.
    - Weber River, a tributary to the Great Salt Lake, in the Weber River Drainage from Uintah
      to Mountain Green.
  - b. Other surface waters, which may include segments within U.S. National Forests as
     follows:
    - 1. Colorado River Drainage
      - Calf Creek and tributaries, from confluence with Escalante River to headwaters.
      - Sand Creek and tributaries, from confluence with Escalante River to headwaters.
      - Mamie Creek and tributaries, from confluence with Escalante River to headwaters.
      - Deer Creek and tributaries, from confluence with Boulder Creek to headwaters (Garfield
        County).
    - Indian Creek and tributaries, through Newspaper Rock State Park to headwaters.
Rule R317-2.
Standards of Quality for Waters of the State

- High Quality Waters - Category I
  - U.S. Forests (within the outer boundaries)
  - Other designated waters
- High Quality Waters - Category II
  - Discharge at background
    - Electric Lake
    - Deer Creek (4800 ft. upstream from forest boundary)
    - 80th percentile
- [Other waters (silent)].
Rule R317-2.
Standards of Quality for Waters of the State

• Levels of Antidegradation Review
  – Level I
    • Mathematical Determinations (Off-ramps)
      – 11 Categories
        » e.g., … for discharge permit renewals, if the increase in project loading over the prior permit is less than 20%
  – Level II
    • 8 Requirements in the Review
    • You may not be allowed to “pollute up to the standard”
Rule R317-2.
Standards of Quality for Waters of the State

- Colorado River Salinity Standards
- Mixing Zones
  - Acute mixing zone: Acute standard to be met
    - 50% of river or 15 minutes downstream
  - Chronic mixing zone: Chronic standard to be met
    - 2,500 feet downstream
  - Individual mixing zone: 7 Factors
Rule R317-2.
Standards of Quality for Waters of the State

- Classifications: p. 11-43
  - According to river basin and segments
  - Multiple classifications

- Unclassified Waters
  - Default: 2B, 3D
Rule R317-2.
Standards of Quality for Waters of the State

• General Classifications
  – **Class 1**: Protected for Raw Water Drinking Source
  – **Class 2**: Protected for Contact Recreation
  – **Class 3**: Protected for use by Aquatic Wildlife
  – **Class 4**: Protected for Agriculture/Stock Watering
  – **Class 5**: Protected for contact recreation, aquatic wildlife, and mineral extraction [Great Salt Lake]
Rule R317-2.
Standards of Quality for Waters of the State

- More Detail: Use Classifications
  - 1C: Treatable drinking water sources
  - 2A: Primary contact recreation
  - 2B: Secondary contact recreation
  - 3A: Cold water game fisheries, food chain
  - 3B: Warm water game fisheries, food chain
  - 3C: Non-game fisheries, food chain
  - 3D: Waterfowl, shore birds, food chain
  - 3E: Severely habitat-limited. Narrative standards, drainage ditches
  - 4: Agricultural: Irrigation, stock watering.
  - 5: Great Salt Lake: Recreation, waterfowl, food chain, mineral extraction
Rule R317-2.
Standards of Quality for Waters of the State

R317-2-13. Classification of Waters of the State (see R317-2-6).

13.1 Upper Colorado River Basin
a. Colorado River Drainage

Ferron Creek and tributaries, from Millsite Reservoir to headwaters: 1C 2B 3A 4
Beneficial Uses:
Protecting Public Water Supplies – 1C

Deer Creek Reservoir
Beneficial Uses:
Protecting Recreation – 2A, 2B

Swimming

Boating
Beneficial Uses:
Protecting Aquatic Wildlife – 3A…3E

A male brook trout in its fall spawning colors is a magnificent creature.

Game Fish &
Non-Game Fish
Beneficial Uses:
Protecting Agricultural Irrigation – Class 4
Beneficial Uses:
The Great Salt Lake - 5
Rule R317-2.
Standards of Quality for Waters of the State

• Application of Standards
  – Numeric criteria to be assigned to use classifications
  – Unlawful to:
    • Interfere with uses protected by classes
    • Cause standards to be violated

• Narrative Standards
  – Unlawful to:
    • ... offensive, unnatural deposits, floating debris, oil
    • ... nuisances, color, taste, odor
    • ... undesirable physiological responses in fish or other wildlife
    • ... undesirable human health effects
Rule R317-2.
Standards of Quality for Waters of the State

- Narrative Standards
  - Illegal to Pollute
    - “become offensive”
    - Tires in a River
    - Oil Slicks
  - “undesirable physiological responses”
    - Nuisance Algal Growth
    - Phosphorus Laden Rocks for Fill
Rule R317-2.
Standards of Quality for Waters of the State

- Protection of Downstream Uses
- Intermittent Waters
  - Unusually high or unusually low
    - Not cause for action against dischargers
- Laboratory Analyses
  - Procedures approved by Division of Water Quality
  - Performed by:
    - Office of the State Health Laboratory
    - Laboratories certified by the Utah Department of Health
Numeric Criteria: 1C Designation

- **E. coli**
  - 126 per 100 ml to protect designated swimming areas [primary recreation]
  - 206 per 100 ml to protect for surface drinking water sources and secondary recreation
  - 30 day geometric mean
  - E. coli 940 per 100 ml as a maximum not to exceed.
Methodologies: Class 1C

- E. coli: 206 organisms per 100 ml.
  - Utilization of Quanti-Tray 2000 technology

Presence or Absence

MPN
Rule R317-2. Standards of Quality for Waters of the State

- Numeric Criteria
  - Domestic, recreation, agricultural uses
    - By classification
    - Numeric criteria
      » Se [chronic], 4.6 ug/l
    - Footnotes
      - Site specific standards
  - Aquatic wildlife
Rule R317-2.
Standards of Quality for Waters of the State

- Toxics Criteria for Protection of Human Health
  - Consumption by humans
    - Water only
    - Water and Organisms
Identified Issues of Concern
Triennial Review – July 2007
Issues: Antidegradation

- Level I procedures allow “pollution creep” from permit renewal to renewal
- Confusion between a Level I and Level II review.
- Excluding all but 3A and 3B waters is arbitrary and improper
- Too many off-ramps
- Excluding all but 3A and 3B waters is arbitrary and improper
Issues: TDS Criteria

• Should the current two level TDS standard be maintained:
  – 1,200 mg/l for irrigated crops
  – 2,000 mg/l for stock-watering
• Rule is confusing in that there are two standards for the same classification (Class 4 Agriculture)
• Removing the 2,000 mg/l could affect de-icing our highways
• The maximum not to exceed value should not be eliminated, but strengthened.
Issues: Recreation Use Definition and Criteria

- E. coli criteria
  - Elimination of maximum value
- Establish numeric criteria for viruses, antibiotics and other exotic pollutants
- How do you determine the difference between Primary and Secondary Recreation [full-face immersion when water-skiing or rafting].
- There should be better definition of “wildlife areas”
Issues: Site Specific Criteria - Dissolved Oxygen

- The site specific standard for the Jordan River and the Surplus Canal should be eliminated.
- Standard should reflect diurnal variability.
Issues: Mixing Zones

- Prohibit mixing zones where there are endangered species
- Mixing zone size is excessive
Issues: Other

- Define Assessment Methodologies
- Define Use Attainability Analysis Process
- Wetlands Criteria
- Develop Nutrient Standards [phosphorus & nitrogen]
- Develop Biological Standard
- Tighten the narrative standard to be more specific
- Clean-up some classifications
- Better define temporary impacts
- Re-evaluate Standards for lakes & reservoirs
- Great Salt Lake Beneficial Use and Criteria
Strange creature in the Great Salt Lake found at 7 meters in 13 mg/l H2S [rotten egg gas]

Reported to be found by: Theron Miller, Ph.D.