Arkansas Dept. of Environmental Quality Regulation No. 2 and 303(d) List

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ADEQ
ARKANSAS
Department of Environmental Quality

Overview

What *are* Water Quality Standards?

Water Quality Standards define the goals for waterbodies in the state by designating uses for waterbodies, such as:

- Agricultural Water Supply
- Extraordinary Resource Water

Other Designated Uses

Primary Contact Recreation

Domestic Water Supply

Industrial Water Supply

Fisheries

Secondary Contact Recreation

What is Regulation No. 2?

- The Federal Clean Water Act (1972) requires each state to establish Water Quality Standards (WQS)
- Arkansas's WQS are found in Regulation No. 2.
  - ADEQ Water Division Planning Branch maintains Reg. 2
  - Arkansas Pollution Control and Ecology Commission
  - EPA must approve Reg. 2
- Regulation No. 2 includes designated uses and the criteria to protect those uses for surface waters of the state of Arkansas.
- Criteria are: numeric and/or narrative

Water Quality Criteria

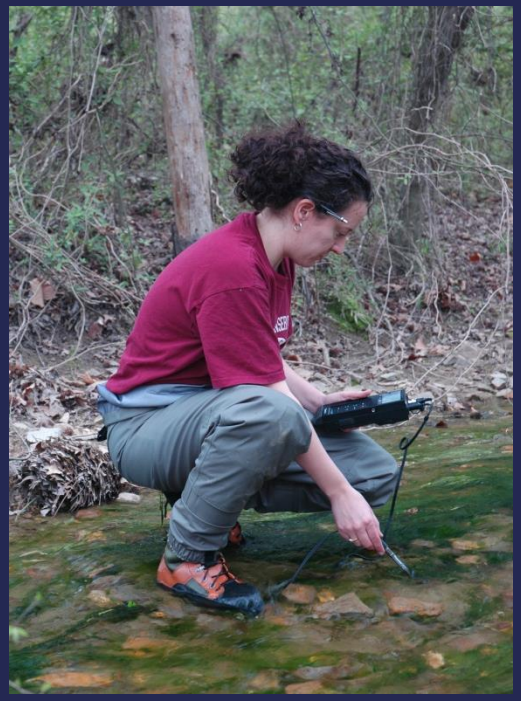
Based on their designated uses, water quality criteria are established for each waterbody

These criteria serve as the regulatory basis for water quality-based treatment controls under Section 303(e) of the Clean Water Act

Water Quality Criteria

Water Quality Standards include numerical and narrative criteria that protect Arkansas's waters

- Minerals
- Bacteria
- Temperature
- Nutrients
- Toxic Substances
- pH



Background of Triennial Review Process

- Clean Water Act (1972) requires states to establish Water Quality Standards
  - Must review standards every 3 years
- Arkansas's Water Quality Standards are found in the Arkansas Pollution Control and Ecology Commission's Regulation No. 2

Regulation No. 2

- Clean Water Act (1972) requires states to establish Water Quality Standards
- Standards must be reviewed every 3 years
  - No changes
  - Update existing standards
  - Add appropriate new standards
  - Revise standards that are difficult to interpret
  - Correct grammatical and typographical errors

What is Regulation No. 2?

- These uses set criteria for water quality parameters such as:
  - Dissolved Oxygen
  - pH
  - Nutrients
- These standards must be reviewed every 3 years
- This process is known as the Triennial Review

Triennial Review Rulemaking Process

- Petition the APC&E Commission
- Public Notice
- Public Hearing(s)
  - 60-day comment period
- Responsive Summary by ADEQ
- Legislative Review
- Adoption by the ADPC&E Commission
- Approval by EPA

Triennial Review Process

- Public Listening Sessions — Feb 2012
- Stakeholder Workgroup — we are here — May-July 2012
- Petition the APC&E Commission — Sept-Oct 2012
- Public Notice — Oct-Nov 2012
- Public Hearing(s) — Nov-Jan 2013
- 45-day Comment Period — Nov-Jan 2013
- Responsive Summary by ADEQ — Jan-Mar 2013
- Legislative Review — May-July 2013
- Adoption by the ADPC&E Commission — Aug-Sep 2013
- Submit to EPA for Approval — Feb 2014

Remaining Issues with EPA

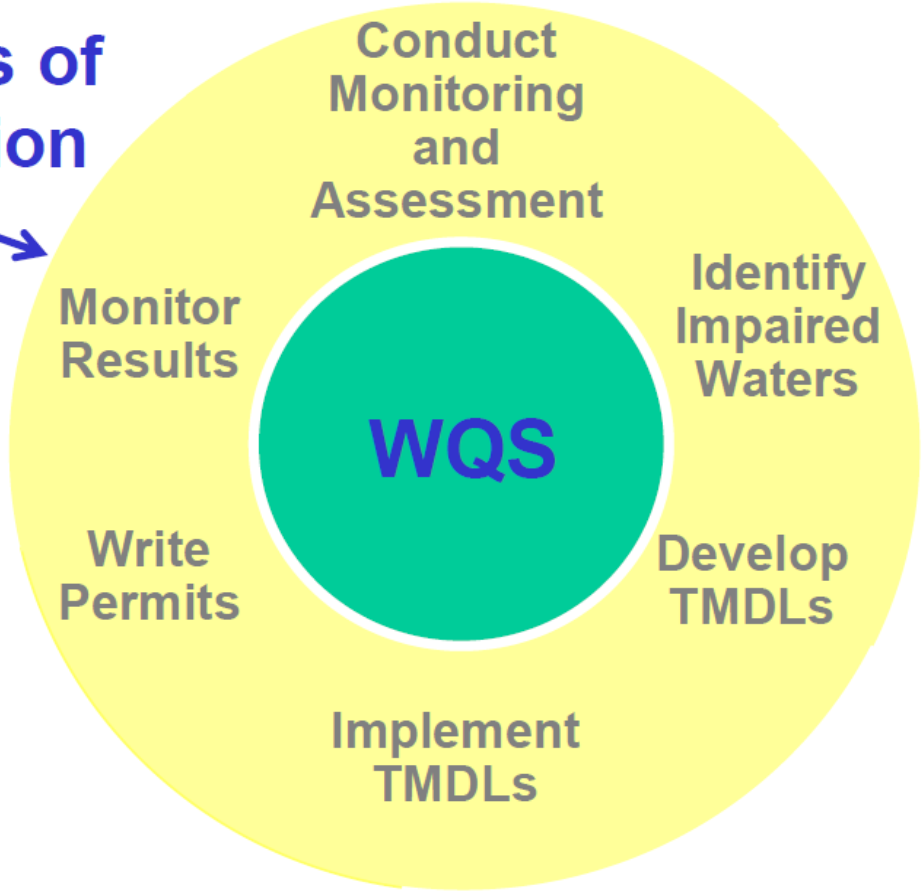
Minerals

Turbidity

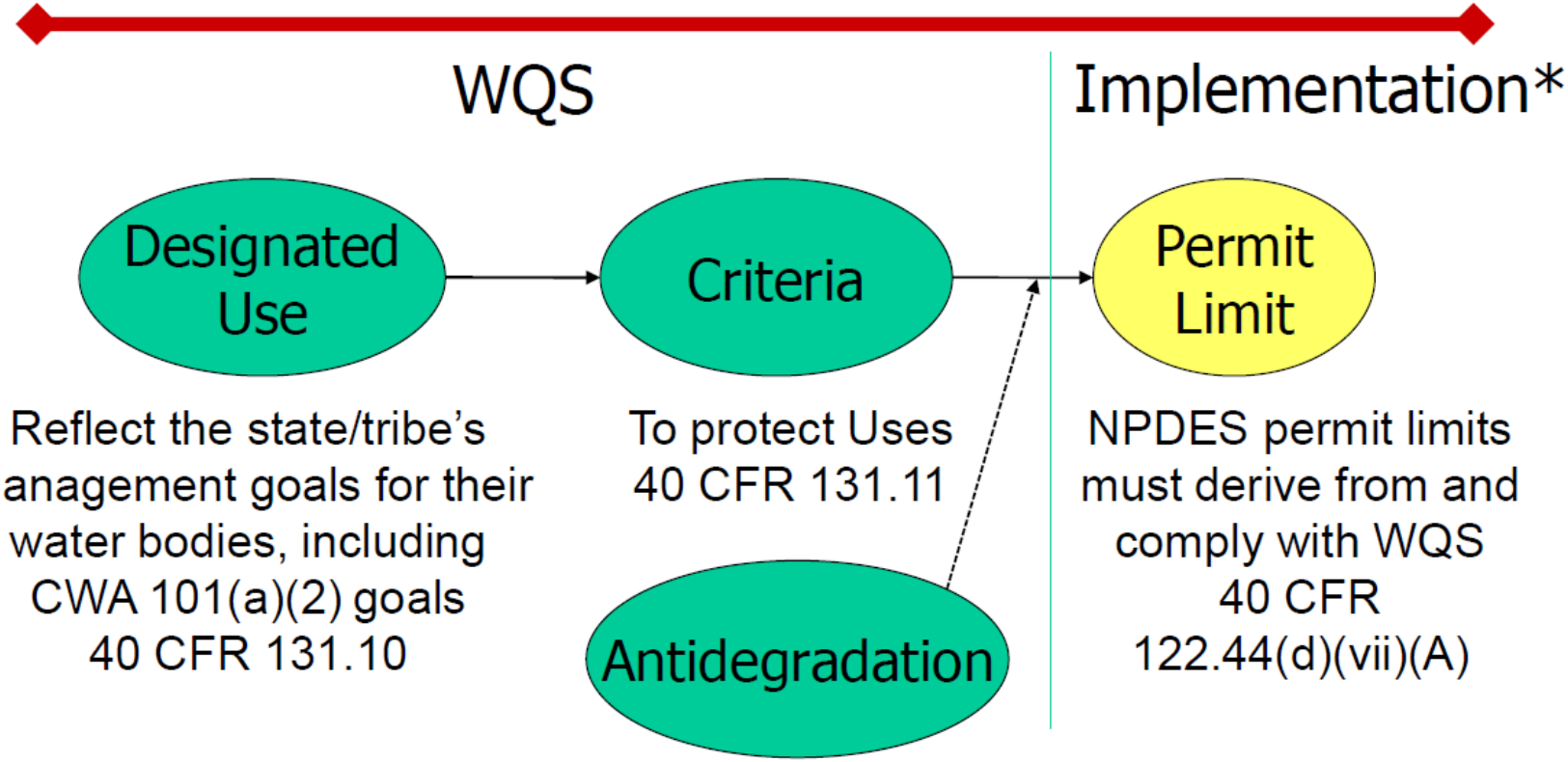
1 Meter depth measurement -

Water Quality Based Approach

Many aspects of implementation



Water Quality Standards Schematic



** NPDES is just one example of implementation*

Water Quality & Biological Data

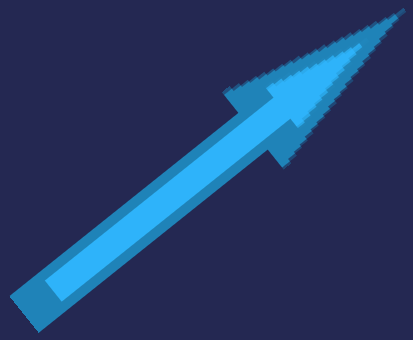
Water Quality Standards & Criteria

Assessment

Impairment

TMDL

Permit Limitations



Inventory of Quality of *All* Waters of the State

- Requires Water Quality Monitoring Network
  - Adequate Magnitude?
    - Coverage of all waters
    - Frequency of sampling
    - Parameters to sample (physical, chemical, biological)
    - Conditions when sampling
- Best Professional Judgment
  - Concentration of potential pollution activities
  - Perceived problem areas

Inventory of Quality of All Waters of the State

Five Water Quality Monitoring Networks

- Ambient Water Quality Monitoring Network
- Roving Stations Monitoring Network
- Watershed Monitoring Network
- Lakes Water Quality Monitoring Network
- Groundwater Quality Monitoring Network

Water Quality Monitoring Network

CHEMICAL ANALYSES

- Routine Analyses
  - Conventional parameters (pH, D.O., Temp.)
  - Minerals (Cl, SO_4, TDS)
  - Nutrients (forms of N and P)
  - Heavy metals (Cu, Zn, Pb, etc.)
  - Other associated ions (Na, Ca, K, etc.)
- Periodic Analyses
  - Standard Pesticide Scan (approx. 40 compounds)
  - Specialized chemical compounds

Water Quality Monitoring Network

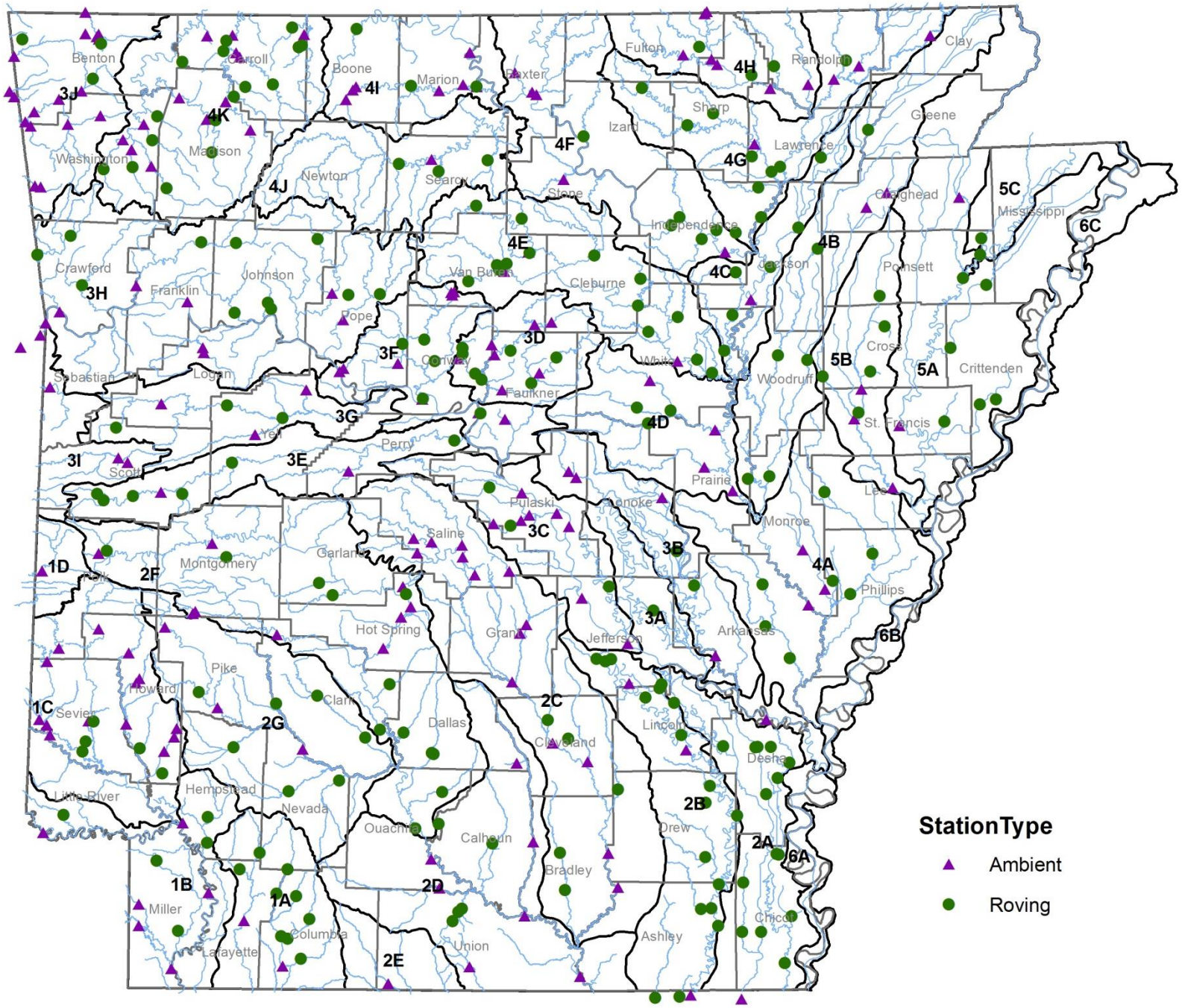
AMBIENT SURFACE WATER NETWORK

- Approximately 150 stations
- Chemical parameters and flow (when available)
- Sampled monthly for approximately 30-35 years
- Monitoring objectives
  - Big river systems
  - Below point source discharges
  - Potentially problematic nonpoint source areas
  - Least-disturbed reference streams
  - Consistent long-term monitoring

Water Quality Monitoring Network

ROVING SURFACE WATER NETWORK

- Waters with limited or no WQ Data
- Approximately 200 stations
- 1/4 stations sampled for two-year period
- Sampled every 2 months
  - Ambient Network WQ parameters
  - Bacteria
  - Specialized chemical compounds


Benton
Carroll
Boone
Marion
Baxter
Fulton
Randolph
Clay
Sharp
Greene
Izard
Lawrence
Washington
Madison
Newton
Searcy
Stone
Independence
Clay
Mississippi
Crawford
Johnson
Franklin
Van Buren
Cleburne
Jackson
Poinsett
Pope
Conway
White
Woodruff
Cross
Crittenden
Sebastian
Logan
Faulkner
St. Francis
Yell
Perry
Scott
Prairie
Lee
Pulaski
Saline
Monroe
Garland
Montgomery
Phillips
Hot Spring
Grant
Jefferson
Arkansas
Pike
Howard
Clark
Dallas
Lincoln
Cleveland
Desha
Sevier
Little River
Hempstead
Nevada
Ouachita
Calhoun
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5C
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6B
6C
StationType
Ambient
Roving

Water Quality Monitoring Network

WATERSHED MONITOR

Macroinvertebrate Community

Watershed Based: 20 – 30 sites
Statewide: 100+ samples/year
Plus Routine Water Quality Analyses & Flow

Fish Community

Watershed Based: 10 – 20 sites
Statewide: 30+ samples/year
Plus Routine Water Quality Analyses & Flow

Water Quality Monitoring Network

LAKES AND RESERVOIRS

- 15 lakes sampled quarterly since 2011
- Other lakes sampled regularly in order to:
  - Identify potential reference Lakes
  - Verify reference conditions
  - Collect adequate quantity of data
  - Develop improved water quality standards for lakes

Ambient Groundwater Monitoring

- Approximately 250 stations
- Selected public and private wells, irrigation wells, industrial supply wells, and springs
- Ions, metals, nutrients, Total Organic Carbon
- Sampled triennially
- Monitoring objectives
  - Major aquifers across Arkansas
  - Document natural background conditions
  - Consistent long-term monitoring
  - Some pesticide/VOC sampling in shallow wells near sources

303(d) Report Listing Format

Five Assessment Categories of Waters

1 – All designated uses and water quality standards are met

2 – Some uses and standards met, insufficient data to assess other uses

3 – Insufficient data to assess any uses

4 – Water impaired, does not require TMDL

- 4a -TMDL has already been completed
- 4b – Other pollution control requirements will result in WQ standards attainment
- 4c – Impairment is not caused by a pollutant

303(d) Report Listing Format

Five Categories of Waters (continued)

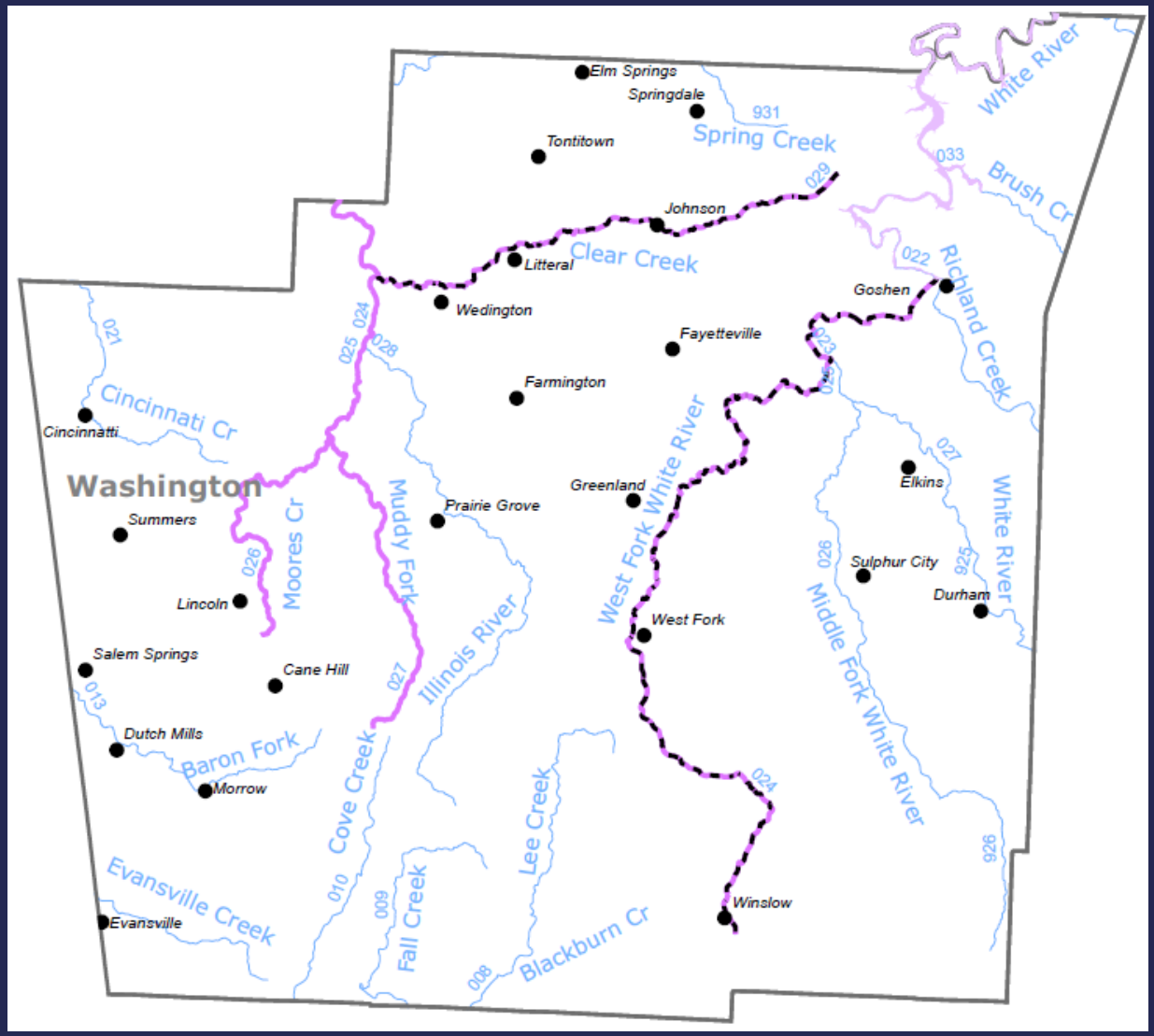
5 – Waters not meeting WQ Standards

- High
  - Truly impaired, TMDL needed
- Medium
  - Adoption of new regulations or standards
  - Questionable data (QA/QC)
  - Data verification needed
  - Impairment caused by a point source
- Low
  - Impairment is naturally occurring
  - Segment added by EPA

Prioritization of Category 5 Waters

- Primary Factors
  - Drinking Water Sources
  - Extraordinary Resource Waters
  - Ecologically Sensitive Waters
- Secondary Factors
  - Proximity to other listed waters
  - Complexity of the project
  - Cause for listing

Draft 2014 Impaired Waterbodies



Total Maximum Daily Load

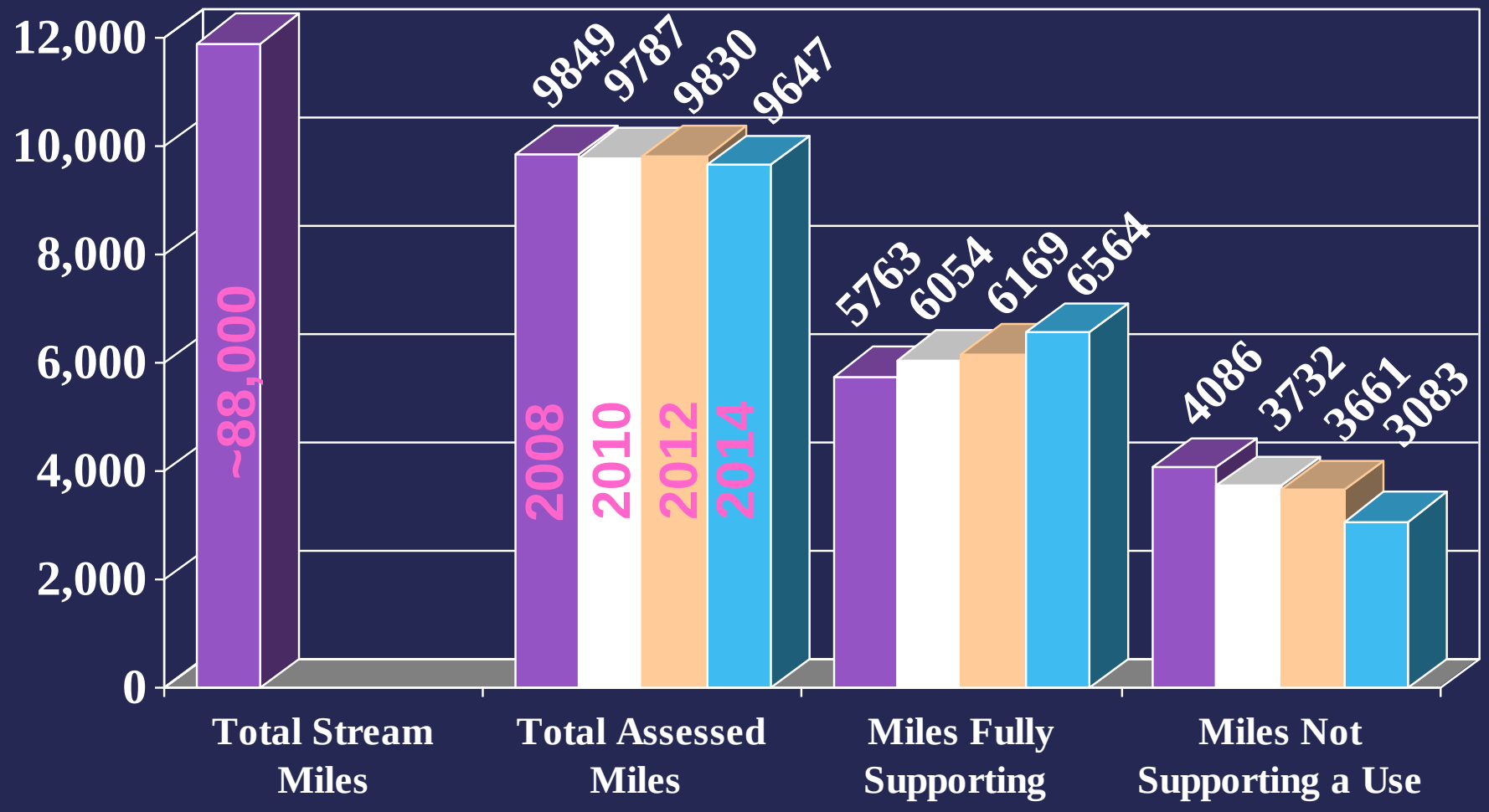
Total Maximum Daily Load (TMDL) is a calculation of the maximum amount of a specific pollutant that a waterbody can receive and still meet its water quality criteria and maintain its designated uses.

$$TMDL = WLA + LA + MOS$$

TMDLs become the basis for effluent limitations and discharge permit limits.

WLA = Waste Load Allocation; LA = Load Allocation; MOS = Margin of Safety

Designated Use Support & Water Quality Standards Attainment



De-Listing of Waters

- Development of a TMDL
- Implement control strategies other than a TMDL
- Updated assessments indicate no known impairments
- Improved delineation of impaired waterbodies
- Revised water quality standards and assessment methodologies

De-Listings from 2012 to 2014

134 Pollutant Pairs

- Minerals - Cl, SO_4, TDS (59)
- Metals - Cu, Pb, Zn (32)
- Turbidity (19)
- pH (11)
- Dissolved Oxygen (5)
- Temperature (5)
- Nutrients (1)
- Pathogens (1)

New Listings for 2014

104 Pollutant Pairs

- Minerals - Cl, SO_4, TDS (38)
- Turbidity (22)
- Dissolved Oxygen (19)
- Metals - Cu, Se (12)
- Temperature (8)
- Pathogens (4)
- pH (1)