Implementing Kansas NPS-TMDLs: Tricks of the Trade

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Kansas TMDLs Since 1999 – Dominated by NPS

- Over 500 TMDLs developed, most under Court Decree schedules
- Over 100 TMDLs for Bacteria
- About 60 TMDLs linking biology or pH to nutrients
- About a dozen linking biology to sediment
- Over 100 lake TMDLs dealing with eutrophication or siltation or some manifestation (pH, DO sags, excessive macrophytes)
- 22 out of 24 Federal Reservoirs are eutrophic
From the beginning, Kansas TMDLs thought about NPS

- Since a majority of our impairments in 1999-2008 were non-point in nature, we oriented our TMDLs on a watershed basis, typically a combination of 1-2 HUC-10s.

- These watersheds were defined by the monitoring stations located at their outlets; tributaries were implicated as contributors, but not individually impaired.

- TMDL implementation guidance was expressed to NPS programs in general terms.

- TMDLs began to geographically target and prioritize implementation.
NPS Management – Organizational Structure

- KDHE – Bureau of Water
  - Watershed Planning – 303d
  - Watershed Management – 319
  - Technical Services - WQS
- KS Water Office
  - State Policy & Kansas Water Plan
  - Basin Planning
- State Conservation Commission
  - Water Resource Cost-Share
  - NPS Pollution Control Fund
  - Riparian & Wetland Program
  - Buffer Initiative
- Kansas State University
  - Ks Center for Ag Resources and the Environment (KCARE)
  - Extension Service
  - Kansas Forest Service
FY 2008 SCC Implementation State Water Plan Funds

- Erosion/sediment control: 20%
- Pasture/rangeland: 13%
- Riparian protection: 6%
- Water rights retirement: 4%
- Water well plugging: 0%
- On-site wastewater: 12%
- Livestock waste system: 2%
- Other: 0%
- Streambank stabilization: 3%
- Buffer annual payments: 1%
- Multipurpose Lakes: 11%
- Watershed Dams: 9%
- State Aid to CD's: 19%
## KLR Basin Plan – TMDL Priorities

### TABLE 1
**KANSAS-LOWER REPUBLICAN BASIN HIGH PRIORITY TMDLS**

<table>
<thead>
<tr>
<th>NEW MAP ID</th>
<th>WATERBODY</th>
<th>IMPAIRMENTS</th>
<th>HUC11 WATERSHEDS</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Big Blue River</td>
<td>FCB</td>
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<tr>
<td>2</td>
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<td>10270205(050,080)</td>
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<td>3</td>
<td>Cedar Creek</td>
<td>FCB, Nitrate</td>
<td>10270104(060)</td>
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<tr>
<td>4</td>
<td>Clarks Creek</td>
<td>FCB</td>
<td>10270101(010)</td>
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<tr>
<td>5</td>
<td>Delaware River above Perry Lake</td>
<td>FCB</td>
<td>10270103(010,020,030,040)</td>
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<td>6</td>
<td>Grasshopper Creek</td>
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<td>10270103(020)</td>
</tr>
<tr>
<td>7</td>
<td>Kill Creek</td>
<td>FCB</td>
<td>10270104(060)</td>
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<td>Little Blue River</td>
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<tr>
<td>11</td>
<td>Mill Creek (WB Co.)</td>
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<td>Shunganunga Creek</td>
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<td>14</td>
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<td>Upper Wakarusa River</td>
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### WETLANDS

<table>
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### LAKES

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Recommended Actions

1. Work with stakeholder groups to incorporate TMDL implementation, nutrient and sediment reduction, and urban stormwater management goals into applicable WRAPS projects.

2. Target technical and financial assistance programs for water quality protection and restoration to implement TMDLs and WRAPS action plans.
## High Priority TMDL for Implementation

### Kansas Lower Republican Basin

### Water Quality Monitoring

<table>
<thead>
<tr>
<th>ID</th>
<th>TMDL Area</th>
<th>Impairment</th>
<th>Waterbody Type</th>
<th>Monitoring Station</th>
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<td>WS</td>
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</table>

### Water Quality Impairment

- **High Priority Streams**
- **High Priority Lakes or WAs**
- **Counties**
- **HUC8**
- **Basin Boundary**

### Map Legends

- **Bacteria DO**
- **Eutrotroph**
- **NH3**
- **Bacteria**
- **Nitrate Eutro**
- **NH3**
- **Bacteria**
- **Atrazine**
- **Eutro, Siltation**
- **Eutro, Atrazine**
- **Alachlor, Atrazine**
- **Alachlor, Atrazine, Siltation**
- **Atrazine, Bacteria, Eutro**
- **Atrazine, Bacteria Eutro**

*KDHE/BOW/WPS 4/18/2007*
Some TMDL Guidance to WQ Programs

- **Watershed Management Program – KDHE**
  - a. Support new and ongoing Section 319 implementation and demonstration activities conducted under WRAPS projects focused on Fall River Lake, including demonstration projects and outreach efforts dealing with erosion and sediment control and nutrient management.
  - b. Provide technical assistance on practices geared to establishment of vegetative buffer strips.
  - c. Provide technical assistance on nutrient management in the vicinity of streams.
  - d. Support Watershed Restoration and Protection Strategy (WRAPS) efforts for Fall River Lake.
  - e. Incorporate the provisions of this TMDL into WRAPS documents relating to Fall River Lake.

- **Water Resource Cost Share and Nonpoint Source Pollution Control Programs – SCC**
  - a. Apply conservation farming practices and/or erosion control structures, including no-till, terraces and contours, sediment control basins, and constructed wetlands.
  - b. Provide sediment control practices to minimize erosion and sediment and nutrient transport.

- **Riparian Protection Program – SCC**
  - a. Establish, protect or re-establish natural riparian systems, including vegetative filter strips and streambank vegetation.
  - b. Develop riparian restoration projects.
  - c. Promote wetland construction to assimilate nutrient loadings.

- **Buffer Initiative Program – SCC**
  - a. Install grass buffer strips near streams.
  - b. Leverage Conservation Reserve Enhancement Program to hold riparian land out of production.
Watershed Restoration and Protection Strategies (WRAPS)

- Primary Delivery Vehicle for Kansas 319 Program
- This process consists of:
  - Identifying watershed restoration & protection needs
  - Establishing watershed goals
  - Creating plans to achieve goals
  - Implementing watershed plans
- Initially supported by $800,000 of State Water Plan Funds matched with $1.2 Million in 319 Funds
- Initially centered above Federal Reservoirs, but TMDLs are emerging as a driving force
9-Elements of 319 Plans
– Tied back to Impaired Waters

1. Identification of Impairment Causes
2. Estimated pollutant load reductions
3. NPS management measures & critical areas for implementation
4. Estimated technical & financial assistance needed
5. Information & education component
6. Schedule for implementation
7. Interim milestones for implementation progress
8. Criteria for achieving load reductions and progressing toward attaining water quality standards
9. Monitoring component to evaluate effectiveness of implementation over time
Translating TMDLs for 319

- Define endpoint goals of watershed – WQS
- Set interim targets – Phased/Staged TMDLs
- Assist targeting to critical HUC-12s –
  - Where within those ~ 24K acres?
  - How does that impact the TMDL (~ 1-2 HUC-10s)?
- Define load allocations – “gross” estimates of dynamic current & desired conditions & reductions
  - Allotments among NPS categories
  - Geographic distribution among sub-watersheds
  - Flow-dependence and seasonality of pollutant delivery
  - Distill responsibility to individual behavior?
TMDLs by their nature are not easily translated

- Thus, a “Personal touch” through communication, coordination, collaboration, and integration among TMDL & 319 programs is necessary
- This means the job description for TMDL gurus changes from author to lecturer/advisor
- Kansas TMDL staff are now:
  - briefing WRAPS on 303d;
  - interpreting TMDLs and allocations (for NPDES, too);
  - recommending impairments to emphasize;
  - identifying preliminary geographic/source targets
  - suggesting interim measures of success
The Question of NPS Enforcement

- Secretary of KDHE has broad powers to prevent the introduction of pollution into waters of the state – NPS not excluded (“Any person…”)
- Enforcement thru Permits/Prohibitions/Minimum Standards
- “Warning Shots” to individuals is SOP
- Scale issues confound enforcement of NPS across a watershed
- Invitation for Legislative crossover into Executive powers – WQS; permits
- Likely next step will be better, tighter targeting before bringing out the stick and swinging at (something, anything?)
- Forum for altered approach on NPS will be State Water Planning Process – *Kansas Water Plan* Policy Section