Implementing Kansas NPS-TMDLs: Tricks of the Trade

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Kansas TMDLs Since 1999 – Dominated by NPS

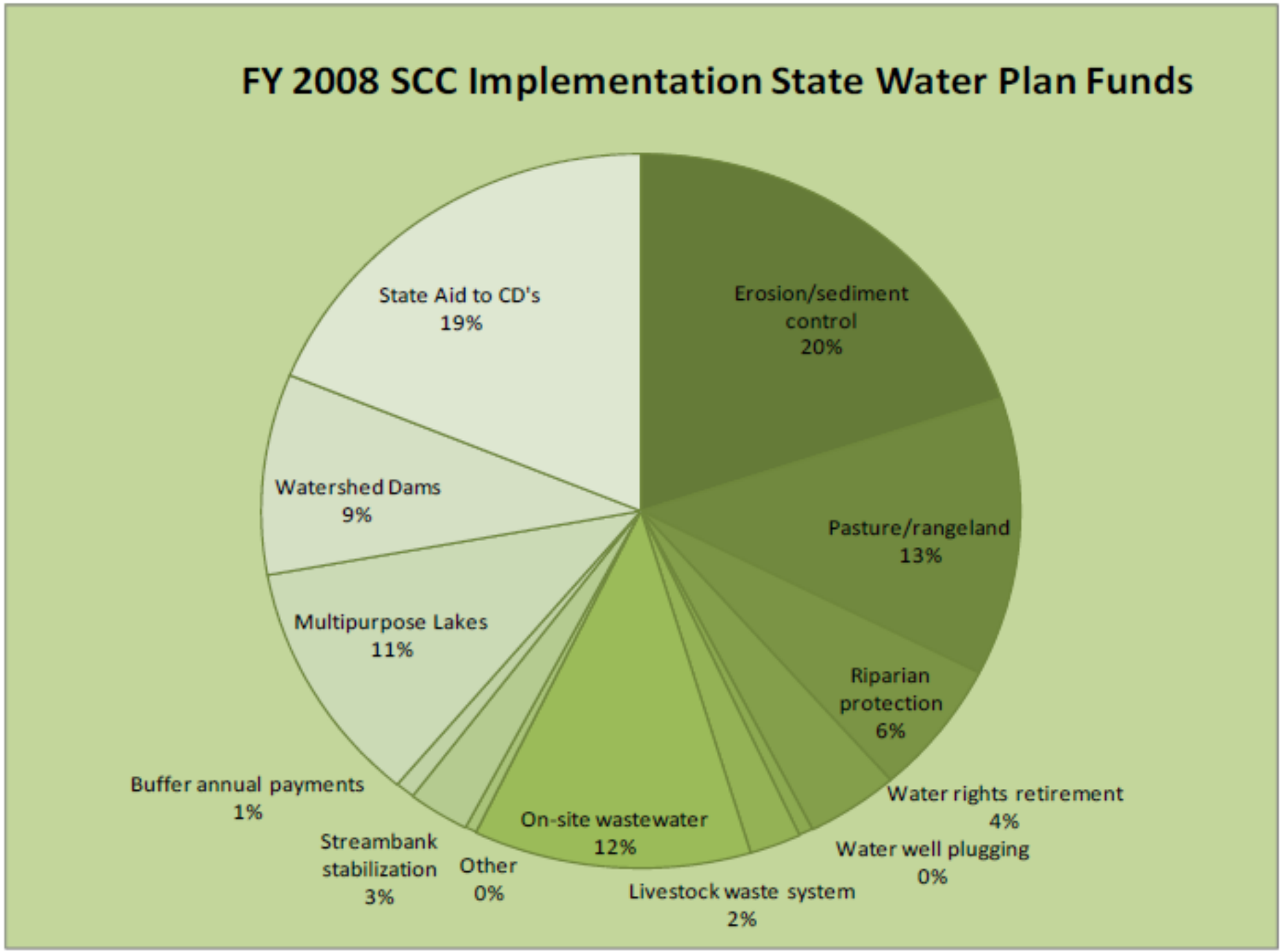
- Over 500 TMDLs developed, most under Court Decree schedules
- Over 100 TMDLs for Bacteria
- About 60 TMDLs linking biology or pH to nutrients
- About a dozen linking biology to sediment
- Over 100 lake TMDLs dealing with eutrophication or siltation or some manifestation (pH, DO sags, excessive macrophytes)
- 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
State Aid to CD's 19%
Erosion/sediment control 20%
Watershed Dams 9%
Pasture/rangeland 13%
Multipurpose Lakes 11%
Riparian protection 6%
Buffer annual payments 1%
Water rights retirement 4%
On-site wastewater 12%
Streambank stabilization 3%
Other 0%
Water well plugging 0%
Livestock waste system 2%

KLR Basin Plan – TMDL Priorities

TABLE 1
KANSAS-LOWER REPUBLICAN BASIN HIGH PRIORITY TMDLS

NEW MAP ID	WATERBODY	IMPAIRMENTS	HUC11 WATERSHEDS
	STREAM SEGMENTS		
1	Big Blue River	FCB	10270205(040,070)
2	Black Vermillion River	FCB	10270205(050,060)
3	Cedar Creek	FCB, Nitrate	10270104(060)
4	Clarks Creek	FCB	10270101(010)
5	Delaware River above Perry Lake	FCB	10270103(010,020,030,040)
6	Grasshopper Creek	FCB	10270103(020)
7	Kill Creek	FCB	10270104(060)
8	Little Blue River	FCB	10270207(075,085,090)
9	Lower Kansas River	ECB	10270104(020,050,060)
10	Mill Creek (JO Co.)	FCB, BIO	10270104(060)
11	Mill Creek (WB Co.)	FCB	10270102(030,040)
12	Salt Creek	FCB, DO	10250017(030)
13	Shunganunga Creek	FCB, DO	10270102(090)
14	Stranger Creek	FCB	10270104(030,040)
15	Upper Soldier Creek	Sed	10270102(080)
16	Upper Wakarusa River	FCB, Sed/TSS, Nutr/BOD	10270104(010)
17	Vermillion Creek	FCB	10270102(020)
18	Washington Creek	DO	10270104(020)
19	Wildcat Creek	FCB, DO	10270101(020)
	WETLANDS		
20	Baker Wetlands	DO	10270104(020)
	LAKES		
21	Clinton Lake	E	10270104(010)
7	Gardner City Lake*	DO, E	10270104(060)
3	Lake Olathe & Cedar Lake	E	10270104(060)
22	Mission Lake	Pest, E	10270103(020)
23	Tuttle Creek Lake	Silt, Pest, E	10270205(011,031,040,050,060) 10270205 (070,080,090) 10270206(071) 10270207(034,035,075,085,090)

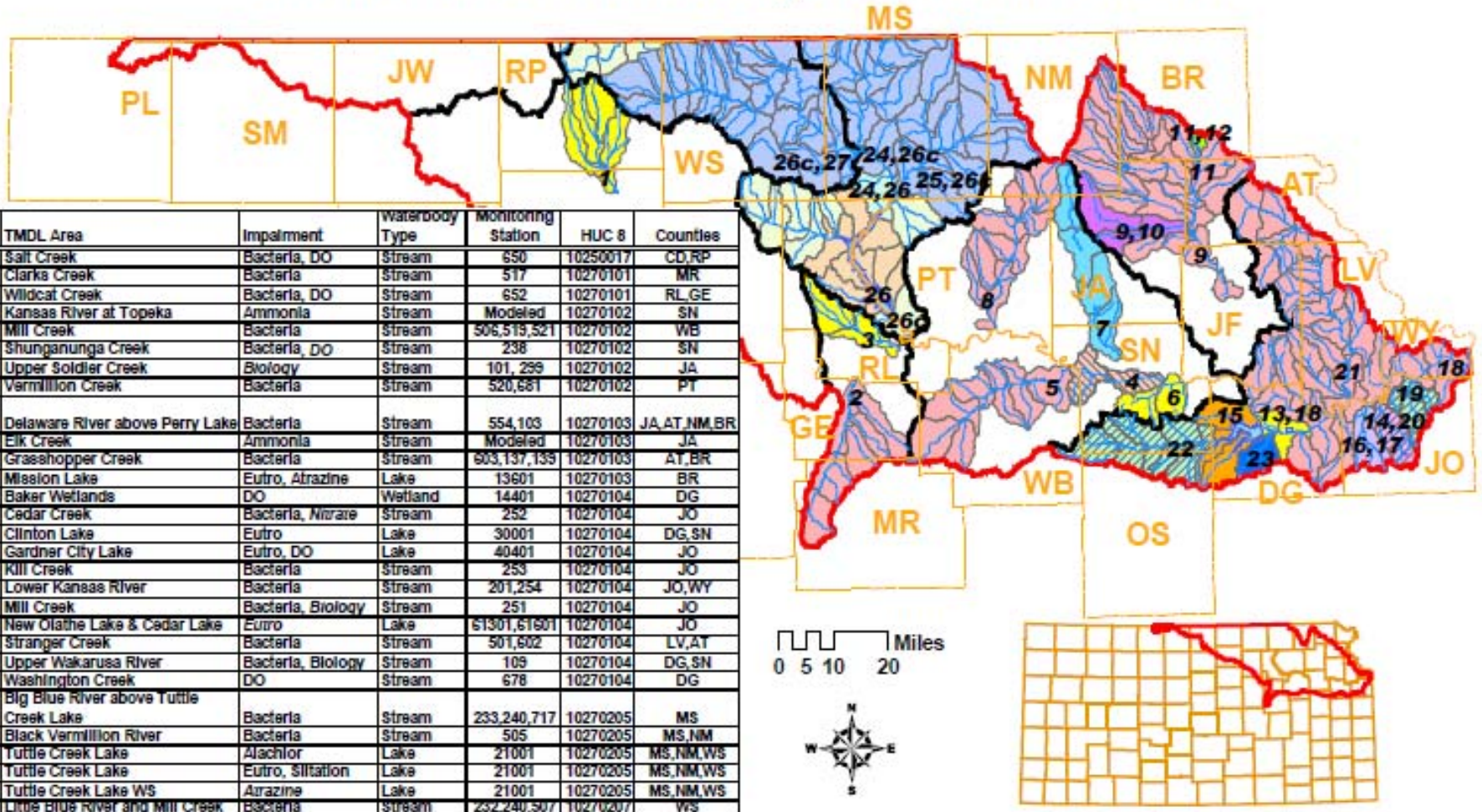
Excerpt from KS Water Plan – KLR Basin

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



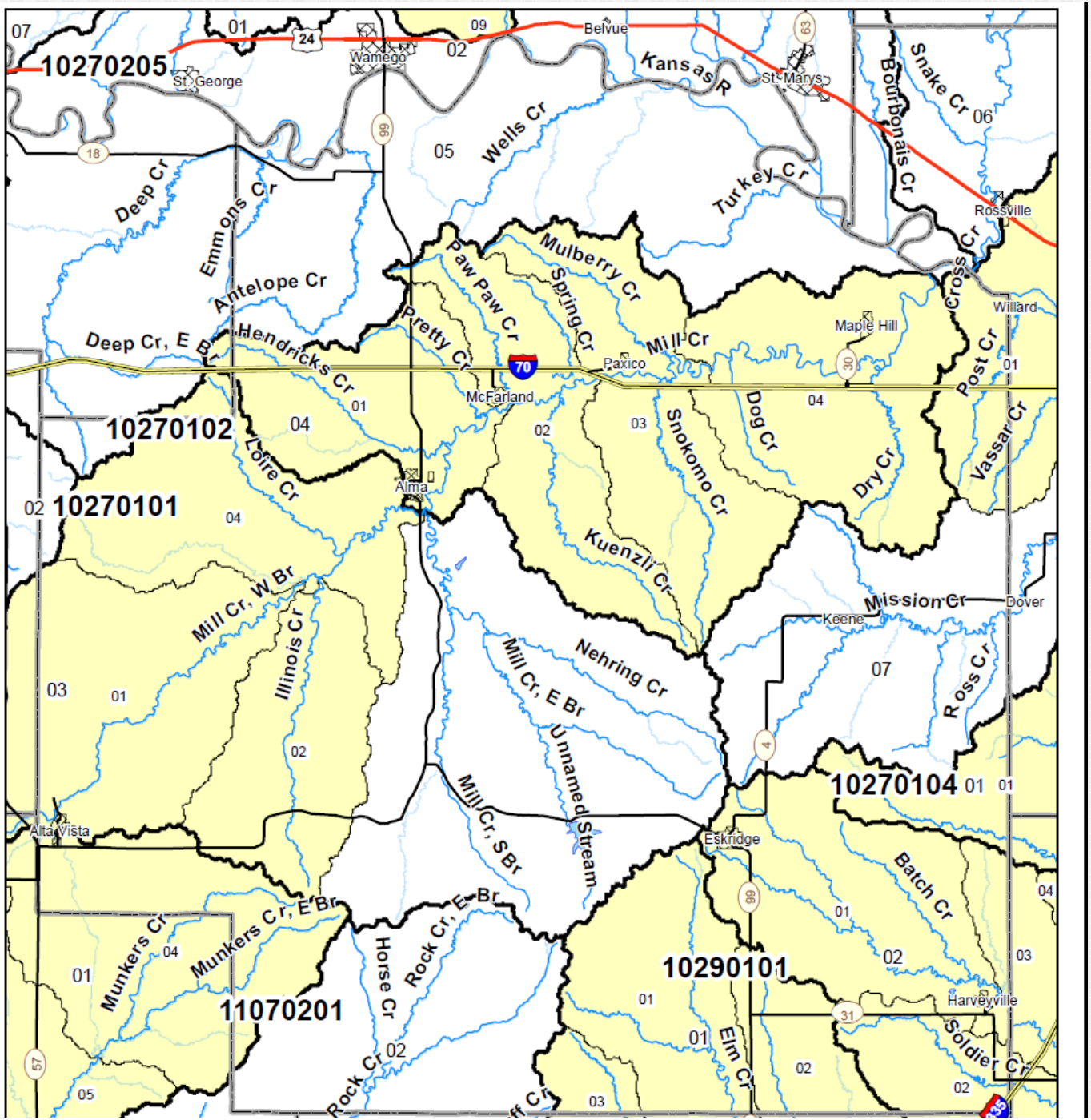
ID	TMDL Area	Impairment	Waterbody Type	Monitoring Station	HUC 8	Counties
1	Salt Creek	Bacteria, DO	Stream	650	10250017	CD,RP
2	Clarks Creek	Bacteria	Stream	517	10270101	MR
3	Wildcat Creek	Bacteria, DO	Stream	652	10270101	RL,GE
4	Kansas River at Topeka	Ammonia	Stream	Modeled	10270102	SN
5	Mill Creek	Bacteria	Stream	506,519,521	10270102	WB
6	Shunganunga Creek	Bacteria, *DO*	Stream	238	10270102	SN
7	Upper Soldier Creek	*Biology*	Stream	101, 299	10270102	JA
8	Vermillion Creek	Bacteria	Stream	520,681	10270102	PT
9	Delaware River above Perry Lake	Bacteria	Stream	554,103	10270103	JA,AT,NM,BR
10	Elk Creek	Ammonia	Stream	Modeled	10270103	JA
11	Grasshopper Creek	Bacteria	Stream	603,137,139	10270103	AT,BR
12	Mission Lake	Eutro, *Atrazine*	Lake	13601	10270103	BR
13	Baker Wetlands	DO	Wetland	14401	10270104	DG
14	Cedar Creek	Bacteria, *Nitrate*	Stream	252	10270104	JO
15	Clinton Lake	Eutro	Lake	30001	10270104	DG,SN
16	Gardner City Lake	Eutro, DO	Lake	40401	10270104	JO
17	Kill Creek	Bacteria	Stream	253	10270104	JO
18	Lower Kansas River	Bacteria	Stream	201,254	10270104	JO,WY
19	Mill Creek	Bacteria, *Biology*	Stream	251	10270104	JO
20	New Olathe Lake & Cedar Lake	*Eutro*	Lake	61301,61601	10270104	JO
21	Stranger Creek	Bacteria	Stream	501,602	10270104	LV,AT
22	Upper Wakarusa River	Bacteria, Biology	Stream	109	10270104	DG,SN
23	Washington Creek	DO	Stream	678	10270104	DG
24	Big Blue River above Tuttle Creek Lake	Bacteria	Stream	233,240,717	10270205	MS
25	Black Vermillion River	Bacteria	Stream	505	10270205	MS,NM
26a	Tuttle Creek Lake	*Alachlor*	Lake	21001	10270205	MS,NM,WS
26b	Tuttle Creek Lake	Eutro, *Siltation*	Lake	21001	10270205	MS,NM,WS
26c	Tuttle Creek Lake WS	*Atrazine*	Lake	21001	10270205	MS,NM,WS
27	Little Blue River and Mill Creek	Bacteria	Stream	252,240,507	10270207	WS

* Impairment in *italic* is under review at EPA.

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

- Alachlor Atrazine Bacteria Eutro
- Alachlor Atrazine Eutro Siltation
- Atrazine
- Atrazine Bacteria
- Atrazine Bacteria Eutro
- Bacteria
- Bacteria Biology
- Bacteria DO
- Bacteria DO Eutro
- Bacteria NH3
- Bacteria Nitrate Eutro
- Biology
- DO
- Eutro
- NH3

KDHE/BOW/WPS 4/18/2007


10270205
10270102
10270101
11070201
10290101
10270104
St George
Wamego
Belvue
St Marys
Rossville
Willard
Maple Hill
Paxico
McFarland
Alma
Keene
Dover
Eskridge
Alta Vista
Harveyville
Kansas R
Wells Cr
Deep Cr
Emmons Cr
Antelope Cr
Deep Cr, E Br
Hendricks Cr
Pretty Cr
Paw Paw Cr
Mulberry Cr
Spring Cr
Mill Cr
Turkey Cr
Bourbonais Cr
Snake Cr
Cross Cr
Post Cr
Vassar Cr
Dog Cr
Dry Cr
Snokomo Cr
Kuenzli Cr
Loire Cr
Mill Cr, W Br
Illinois Cr
Nehring Cr
Mission Cr
Ross Cr
Mill Cr, E Br
Unnamed Stream
Mill Cr, S Br
Batch Cr
Munkers Cr
Munkers Cr, E Br
Horse Cr
Rock Cr, E Br
Rock Cr
Elm Cr
Soldier Cr
70
24
18
99
63
30
4
57
31

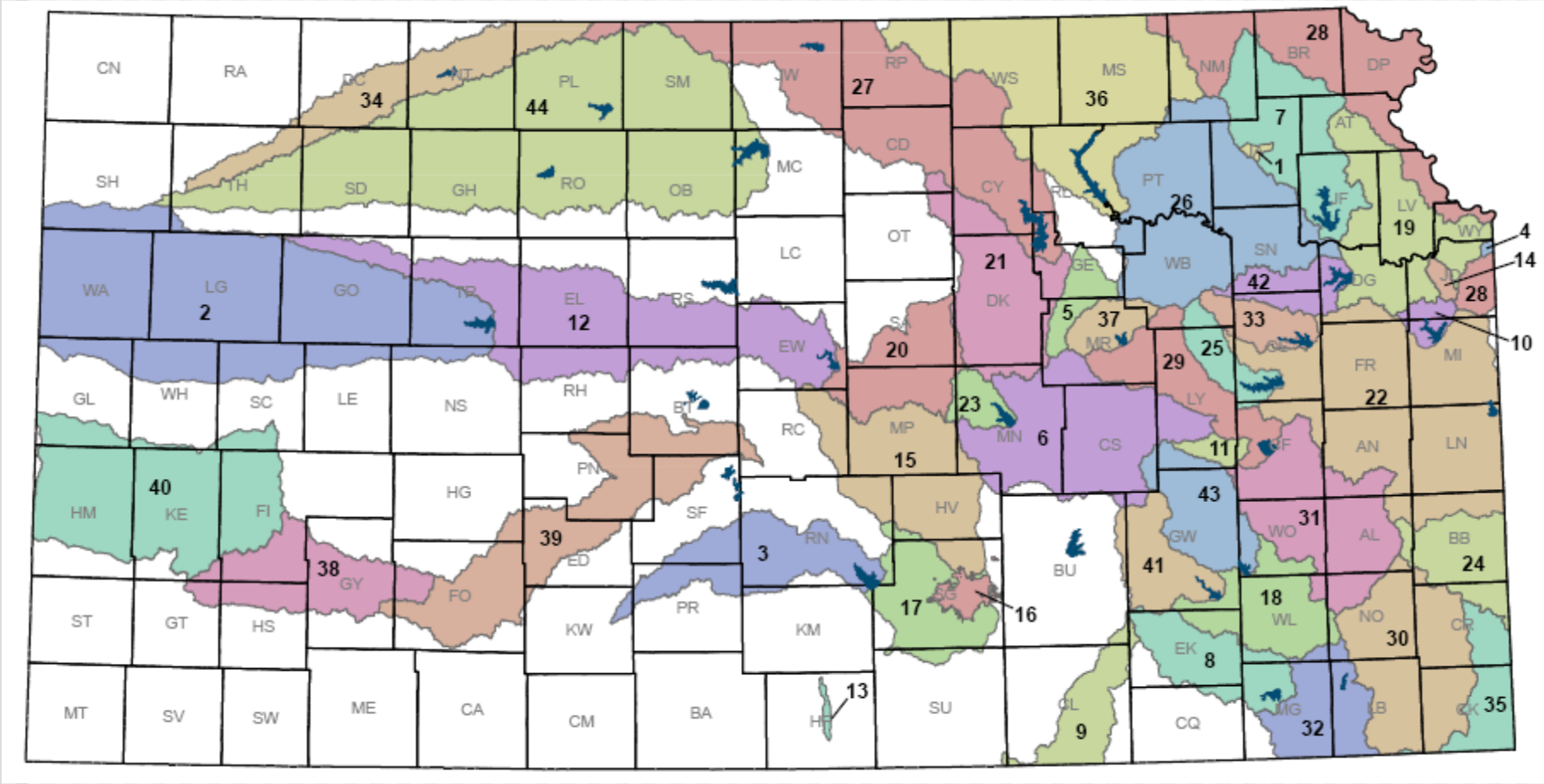
Some TMDL Guidance to WQ Programs

- **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

WRAPS Projects
Geographic Coverage



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