North Bosque River TMDL and I-Plan

Status of Implementation

August 2020

Four Feasible Measures

Two phases in the I-Plan. Only strategies for Phase I were developed. Phase II is to be developed if needed.

- Establish phosphorus application rates for waste application fields (WAFs)

- Reduce phosphorus in diet of dairy cows

- Remove approximately half the dairy-generated manure for disposal or use outside the watershed

- Establish effluent limits for phosphorus at wastewater treatment facilities (WWTFs)

Management Strategies

- Comprehensive nutrient management planning for all identifiable agricultural sources

- Microwatershed approach to water quality monitoring and agricultural producer assistance

- Establishing commercial composting facilities in the region and a sustainable market for compost products

Management Strategies, continued

- Establishing phosphorus permit limits for municipal WWTFs

- Adapting rules, permit reviews, and enforcement activities, including changes to the CAFO regulations

- Monitoring water quality for TMDL model refinement and goal attainment

Strategy: Comprehensive Nutrient Management

- CNMPs developed by CAFO operators in cooperation with the TSSWCB

- Whole-operation plans, addressing all aspects of nutrient management, including feed, certified by the TSSWCB

- CNMP guidance completed in 2003

- By August 2010, TSSWCB had certified CNMPs for all dairy CAFOs in the watershed

- New or amended plans are certified annually

Strategy: Comprehensive Nutrient Management, continued

- AFOs (operations that run less than 200 cattle) encouraged to develop Water Quality Management Plans (WQMPs)

- TSSWCB reviews the status of AFOs that operate under certified WQMPs biennially

- New or amended WQMPs are reviewed and certified annually, as appropriate

- Permit requirements for application rates and soil sampling at WAFs

Strategy: Microwatershed Approach

- TSSWCB and Soil and Water Conservation Districts (SWCDs) formed councils of agricultural producers in microwatersheds

- Provided education and support for nutrient management and information about technical and financial assistance

- Monitoring at 13 microwatershed sites ended in July 2014. Final report indicated small but measurable reductions of instream phosphorus

Strategy: Composting Manure

- Dairy Manure Export Support (DMES) project.
  - TSSWCB sponsored the DMES project to provide incentives to haulers to transport manure from dairies to composting facilities
- Composted Manure Incentive Project (CMIP)
  - TCEQ developed and issued a new permit for compost facilities
  - Developed markets for manure compost

Strategy: Composting Manure, continued

- Through August 2006, when the CMIP and DMES were completed, over 650,000 tons of dairy manure were hauled to composting facilities, and about 329,000 cubic yards of compost were exported from the watershed (over 1.48 million pounds of phosphorus)

- Performance monitoring indicated a positive correlation between participation in the compost program and reductions in phosphorus in the river

Strategy: Municipal WWTF Permits

- In Phase I, municipal WWTFs without phosphorus limits implemented new limits (loads or concentrations) consistent with the TMDL allocations

- Major permit amendments and upgrades for the Stephenville and Clifton WWTFs

- In Phase II, all new load or concentration limits made regulatory through permits

- By 2006, all WWTFs consistent with the TMDL

Strategy: Adapting Rules, Permits, and Enforcement

- Rules for Chapter 321, Subchapter B were amended in 2004 and 2014, implementing more stringent requirements for Dairy CAFOs

- Process for reviewing applications was revised

- Dairy CAFOs in the Bosque watershed must have individual permits

- Beef cattle CAFOs operate under a general permit, last renewed 2019

Strategy: Adapting Rules, Permits, and Enforcement, continued

- Some of the CAFO requirements include:
  - Nutrient management plans required
  - Annual soil testing on WAFs (aka LMUs)
  - Crops and yield goals for WAFs
  - Waste management (WW, sludge, manure)
    - Delivery to authorized compost facility, or
    - Delivery to landfill outside the watershed, or
    - Land application outside the watershed, or
    - Land application at WAFs in the watershed, or
    - Other beneficial use approved by the TCEQ

Strategy: Adapting Rules, Permits, and Enforcement, continued

- Requirements for land application
  - Must be applied at specified rates depending on results of annual soil tests
  - Must be incorporated within 48 hours
  - Must not exceed the crop nitrogen requirements if phosphorus in soil tests exceed specified limits
  - Results in soil phosphorus rates trigger other nitrogen or phosphorus application limits
  - Cannot be applied if phosphorus too high, based on soil tests

Strategy: Adapting Rules, Permits, and Enforcement, continued

- Other CAFO requirements
  - Retention control structure (RCS) design, construction, and management
  - Additional record keeping
  - Additional conservation practices between WAFs and waters of the state
  - Operator continuing education

Strategy: Adapting Rules, Permits, and Enforcement, continued

- Enforcement through TCEQ Region 9, Region 4, and Stephenville special projects office
  - Regular schedules for compliance inspections of CAFOs, WWTFs, and composting facilities
  - Sanitary sewer overflow prevention and remediation
  - Annual soil sampling for permitted dairies
  - Track the number of cattle
  - Investigate complaints

# Strategy: Water Quality Monitoring

- TMDL Refinement (2003 – 2010)
  - Updated model supported the validity of the original TMDL report and its load allocation
- Compost and Microwatershed projects
  - Positive correlation with reductions of phosphorus
- I-Plan Effectiveness (2003 – present)
  - Five index stations, routine and stormwater
  - Biweekly, monthly, or quarterly
  - GIS inventory of CAFOs, AFOs, and WAFs
  - Annual Trends Report

Activities Not in the I-Plan

- Validation and improvement of the phosphorus index for predicting site vulnerability

- Improvement and standardization of the Mehlich III soil test method

- Lake Waco constructed wetland (2003)

Overall Status

- All Phase I measures of the I-Plan have been implemented

  - Enforcement activities and I-Plan effectiveness monitoring continue

- Water quality is improving, but not all goals are met
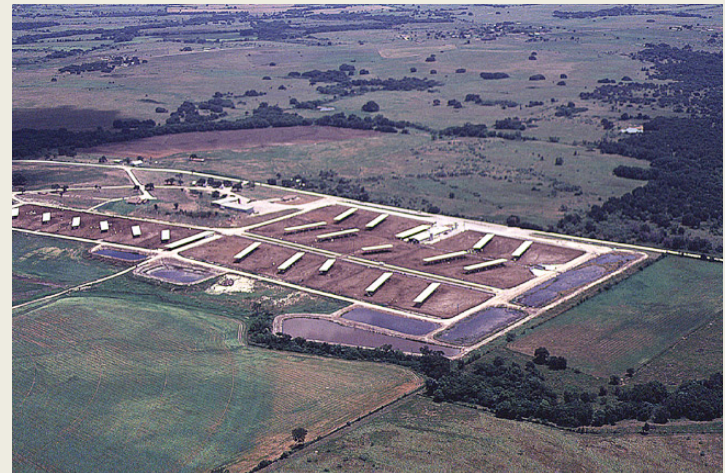
Questions?

- Bosque River TMDL website:

  www.tceq.texas.gov/waterquality/ tmdl/06-bosque.html

  Annual status report and trends report, TMDL, and I-Plan