

Executive Summary: **Upper Pecos River (Segment 2311) Aquatic Life Monitoring (ALM)**

Most rivers and major reservoirs are designated as classified water bodies in the *Texas Surface Water Quality Standards* (TSWQS). Site-specific uses and numerical criteria for classified segments are described in Appendix A of Chapter 307.10 in the TSWQS. As part of the triennial revision of the TSWQS, the Water Quality Standards Team (WQST) reviews established criteria and may adjust the designated uses for a particular waterbody through the Use Attainability Analysis (UAA) process. A UAA evaluates data that characterize the physical, chemical, and biological properties of a water body, in addition to economic factors, which determine the attainability and appropriateness of designated uses and criteria and, if necessary, help develop use and criteria adjustment information.

Classified water bodies determined not to be supporting established criteria or designated uses are determined to be impaired. The aquatic life use for the Upper Pecos River (Segment 2311) is currently listed as impaired on the draft 2010 Texas 303(d) List for depressed 24-hr dissolved oxygen (DO). Depressed DO, biological integrity of the fish and macrobenthic communities, and habitat quality, in Segment 2311, were first identified as use concerns in the 2002 Integrated Report (IR). The WQST has requested ALM sampling for Segment 2311 to determine the appropriate aquatic life use and develop the UAA.

Data collection activities to support and evaluate the water quality standard will occur in FY 2011. TCEQ Central Office SWQM staff will collect biological and physicochemical samples from four stations during the time of year when streamflows are historically lowest. Personnel from TCEQ Region 7 (Midland) or the International Boundary Water Commission (IBWC) will assist SWQM Central Office staff on the data collection teams when necessary.

Two ALM sampling events will be conducted in FY 2011 at four stations (13265, 13260, 13257, and 15114) in the Upper Pecos River (Segment 2311). Samples for nekton and macrobenthic assemblages, habitat quality, 24-hr DO, conventional water analyses, field measurements, and instantaneous flow will be collected during the time of year when streamflows are historically lowest. Physicochemical sampling will coincide with the biological collection efforts. *Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, June 2007 (RG-416)* specifies one event in the critical period (July 1 – September 30) and one event in the non-critical portion of the index period (March 15 – October 15) for ALM. Water is released from Red Bluff Reservoir for irrigation use throughout the summer and early autumn thus the lowest streamflow conditions in the upper Pecos River typically occur outside of the critical period. This will require that sampling for this project be adjusted to autumn and early winter (FY 2011). See Table 1.

Twenty-four hour DO data are required to be collected at each station in conjunction with biological samples. These may be collected via deployed sonde or an existing continuous water quality monitoring network (CWQMN) station. Sonde sensors used for longer term CWQMN deployments may be affected by sediment accumulation or biofouling thus degrading data integrity over time. Therefore, 24-hr data derived from a CWQMN station must have been collected within 72 hours of a sonde exchange by the operator. There will be a minimum of one month between sampling events. A map of the proposed sites is included as Figure 1.

The project will be conducted in accordance with quality assurance procedures outlined in the most current *TCEQ SWQM, WQS and WQA Programs QAPP*. Field sampling will be conducted according to procedures documented in the *TCEQ Surface Water Quality Monitoring Procedures Volume 1: Physical and Chemical Monitoring Methods for Water, Sediment, and Tissue, October 2008.(RG-415)* and *Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, June 2007 (RG-416)*. Appendix E of Volume 2 specifies a total of three events for adjusting a designated use. However, along with the two events for this ALM the WQST will utilize biological and habitat data collected in 2006 as part of a Texas State Soil and Water Conservation Board Watershed Protection Plan.

Table 1. Sampling Sites and Monitoring Frequencies

| Fiscal Years | Segment | Region | Site Description | Station ID | Event | | | | | | | Notes |
|--------------|---------|--------|--|------------|----------|-----------------|----------|--------|--------------|-----------|-------|---|
| | | | | | 24 HR DO | Aquatic Habitat | Benthics | Nekton | Conventional | Inst Flow | Field | |
| 2011 | 2311 | 7 | Pecos River at FM 652 bridge NE of Orla | 13265 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | Sampling will occur outside of the critical period. |
| 2011 | 2311 | 7 | Pecos River at FM 1776 SW of Monahans CAMS 709 | 13260 | * | 2 | 2 | 2 | 2 | 2 | 2 | Sampling will occur outside of the critical period. |
| 2011 | 2311 | 7 | Pecos River at US 67 NE of Girvin | 13257 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | Sampling will occur outside of the critical period. |
| 2011 | 2311 | 8 | Pecos River 1.6 mi upstream of SH 290 bridge SE of Sheffield | 15114 | * | 2 | 2 | 2 | 2 | 2 | 2 | Sampling will occur outside of the critical period. |

* 24 hr dissolved oxygen minimum/averages may be derived from existing Continuous Water Quality Monitoring Network (CWQMN) sites at stations 13260 and 15114 if the sonde has been exchanged within 72 hours. A CWQMN site is planned for deployment at station 13257 in FY 2011.

Figure 1. Upper Pecos River (2311) Aquatic Life Monitoring (ALM) Sample Sites

