Use-Attainability Analysis (UAA)

- Assessment of the physical, chemical, biological, and economic factors affecting attainment of a water body use
- Conducted to evaluate & determine the attainable use of a water body
- Used to support adding or removing a use
- Prospective analysis of future attainability of designated uses
  provides the demonstration necessary to support a use change

When is a UAA appropriate?

- Preliminary assessment of data indicates that the attainable use for a water body might be lower than the presumed or designated use
- To support the addition of a use to a water body
- To address a 303(d) listing for a category 5b water body
  - Category 5b: A review of the water quality standards for a water body will be conducted

Types of UAAs

- Aquatic Life Use (ALU) UAAs
  - 2 year study
    - 2 events-critical period (July 1-Sept 30; each year)
    - 1 events-non-critical (March 15-June 30; Oct. 1-15)
  - 3 biological events (fish, benthic macroinvertebrates)
  - 24-hr dissolved oxygen (DO) measurements
  - Instantaneous field measurements
  - Flow
  - Habitat
  - Water chemistry samples
- Recreational UAAs
  - Developing procedures in conjunction with Standards revision

Before Conducting a UAA

- Coordinate with your TCEQ project manager from the TMDL or NPS team (if applicable)
- Contact the TCEQ’s Water Quality Standards Group to discuss:
  - Whether or not a UAA is appropriate for the water body in question
  - Appropriate UAA procedures
  - Representative and reference sites
  - Whether or not there is a UAA scheduled for a particular water body

Conducting a UAA

- TCEQ Procedures
  - SWQM Procedures (Volume 1 and 2)
    - Biological Monitoring Fact Sheet for UAA
  - Recreational UAA Procedures
- Quality Assurance/Quality Control
  - Quality Assurance Project Plan
- Site Reconnaissance
- Stations
- Laboratory
- Conduct UAA study
ALU UAA Report

- Introduction
- Problem Statement
- Objectives
- Study Area
  - Description of water body & designated uses & criteria
  - Permitted discharges & nonpoint sources
  - Historical data
- Methodologies
  - Site reconnaissance
  - Station descriptions
  - Project design
  - Sampling methods
- Results and Discussion
  - Physical evaluation
    - Hydrology
    - Habitat
  - Physicochemical evaluation
  - Biological evaluation
  - Field data sheets & supporting documentation
- Conclusions
- References
- Attachments
  - Tables
  - Maps
  - Photographs
  - Field data sheets
  - Field notes

Recreational UAA

- Unclassified water body
  - Data collection-short survey
  - Field data sheets & supporting documentation
  - Part of proposed standards revisions
- Classified water body
  - More intensive study & data collection effort
  - Report required & supporting documentation

Adjusting Site-specific Criteria

- Receiving water assessment, water effect ratio, or special study
- DO, dissolved minerals, pH, temperature, toxics
- Data analysis
- TCEQ review & approval
- Requires a standards change
  - EPA review & approval

Standards Change

- UAA demonstrates that the attainable use for a water body is lower than the presumed or designated use
- TCEQ concurs with UAA conclusions
- Requires a Standards change
  - Texas Surface Water Quality Standards rule revision
  - Rule revision: lengthy process
  - Requires EPA approval

Rule making Process

- Rule-making procedure
  - Workgroup meetings
  - Draft markups (Standards & IPs)
  - Comments
  - Commission
  - Seek approval to go proposed
  - Texas Register publication
    - Public hearing
  - Commission
  - Adoption
  - EPA review & approval
    - Federal programs and permits

2000 Standards & the Next Revision

- 2000 Standards
  - Commission adopted 7/26/00 (effective 8/17/00)
  - Current status of 2000 Standards
    - Portions still under EPA Review
    - Aquatic life toxics criteria-freshwater
    - Comal River (Segment 1811)- temp
    - Be criteria (2 water bodies)
  - Majority approved
  - Few portions disapproved or no action

- Next Revision: What we are working on...
  - Site-specific uses & criteria
  - Recreation
  - Nutrient criteria
  - Toxics
Site-specific ALU & DO Criteria

- Classified waters (Appendix A)
  - 14 segments
- 303(d) list of impaired waters
  - Category 5b
- UAA
- WQS & EPA review
- Change in designated use
  - requires a Standards change
    (rule revision)

Unclassified Waters
Site-specific ALU and DO Criteria

- 303(d) List: 5 streams
- Receiving Water Assessment (RWA) for a Permit action
  - ~60 streams
- Conduct 2nd RWA
  - 1st RWA results indicate use is lower than the presumed use
- Assign appropriate ALU & DO criteria
- Requires a Standards change
  - Rule revision-incorporate in Appendix D

Other site-specific criteria

- TDS, Cl, SO₄
  - 21 segments (1 newly calculated); Appendix A
- pH
  - 8 segments; Appendix A
- Toxic criteria
  - Appendix E
  - Water effect ratio studies (16 initiated)
  - Approved by EPA
  - Use in permitting
    - EPA approved 307.6(c)(9) provision

Recreational Use

- Fecal coliform
  - Phase to E.coli or Enterococcus in permitting
  - Retain in oyster waters
- Enterococci for high salinity freshwater
- Implementation
  - Recreational UAA
- Assessment
  - Geometric mean only
- Single Sample
  - Swimmer notification
  - Wastewater permit compliance

Nutrients

- Reservoirs - Main body
  - Criteria based on historical chlorophyll a
  - TP as secondary screening?
- Implementation
  - Reservoir-wide
  - Localized effects
- Assessment
  - Chlorophyll a median
  - TP-secondary screening?
- Future
  - Rivers, streams, estuaries, wetlands
Human Health

- Consider adopting criteria for a variety of compounds and metals per EPA request
- ~20 new compounds and metals
- congeners of dioxin and PCBs
- Human health recalculation
  - child exposure
  - fish consumption amounts

Fish Tissue Based Criteria

- Hg - Expressed as methylmercury in fish tissue:
  - TCEQ and EPA guidance
  - 1st criteria for fish tissue conc.
- Other constituents
  - DDT and its metabolites
  - Dioxin/furans
  - PCBs

Implementation Procedures

- Changes
  - Whole Effluent Toxicity
  - Seagrass Use
  - State endangered & threatened species
  - Minimum analytical levels
  - Dechlorination
- Questions
  - Contact Karen Holligan (Water Quality Division)
  - 512-239-4589 or kvhollig@tceq.state.tx.us

Next Steps

- Workgroup meeting
  - January 6-7, 2009
- Standards & Implementation Procedures
- Commission
- Texas Register rule process
- Standards Revision Questions
  - Contact Sidne Tiemann
  - 512-239-4606 or stiemann@tceq.state.tx.us

Photos Courtesy of:

- Yahoo.com
- Google.com
- O’Henrys Hideaway
- River Sports Tube
- USGS
- Texas Parks & Wildlife
- Texas Water Safari
- University of Texas
- Florida Dept. of Environmental Protection
- Medina River Ranch Resort
- NABS (benthos.org) Rick Merritt
- C. Frank Starmer at http://frank.itlab.us/silverglen_2004/index.html

Web Pages

Primary standards web page address:
http://www.tceq.state.tx.us/nav/eq/eq_swqs.html

Standards Advisory Work Group Address:
http://www.tceq.state.tx.us/permitting/water_quality/stakeholders/swqsawg.html

Advisory … Groups
Water Advisory Groups - Water Quality
Surface Water Quality Advisory Workgroup