

What is a UAA, Why Should You Be Concerned?

AWEA

Emerging Regulation Requirements, Issues,
Technologies
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Presentation Topics

- Emerging Regulation Requirements – i.e. Permit Limits
- Background or “WQS 101”
- UAA as a Compliance “Tool”
- Case Studies
- Lessons Learned



You Have New Permit Limits That You Can't Meet – Surprise!



Fact or *Fiction*?

New or better treatment is
your only option to meet
permit limits.



Fiction !

Many Other Compliance “Tools” Exist Including:

- Use Attainability Analysis (UAA)
- Others:
 - Source Control/Product Substitution
 - Eliminate or modify the discharge
 - Recycle/Reuse
 - Discharge to POTW
 - Others.....



We Need Background Information: Water Quality Standards?

- **Designated Beneficial Uses (DBUs)**, plus
- **Water Quality Criteria**, plus
- (Antideg. Statement)



How to Meet CWA Goals? Water Quality Objectives

- Aquatic Life Protection / Propagation (**Fishable**)
- Recreation in and on the Water (**Swimmable**)



WQ Objectives = Designated Beneficial Uses

- By 1983, Waterbodies Assigned DBUs
- Key Point: Attainability of the DBUs is a “Rebuttable Presumption” !!!
- Are **All** DBUs Attainable?



(1) DBUs.....

(2) Water Quality Criteria

- Protect DBUs – From EPA (304(a))
OR Modified to reflect Site (SSC)
- Narrative: “...no distinctly visible solids, scum or foam....”
- Numeric, e.g.
 - Temp: 86 F (OUA ER)
 - Sulfate: 20 mg/L* (OUA ER)
 - Chloride: 15 mg/L* (OUA ER)
 - TDS: 142 mg/L* (OUA ER)



Can Some Numeric Criteria Be Over-Protective?

- AR – ER Data Helps but....
- Metals – Bioavailability Varies
- Temp – Ambient Temp > 86F
- Sulfate, Chloride, TDS
 - Based on ER least disturbed streams
 - Typical POTW/CT effluent, reclaimed mine site/naturally mineralized runoff: 200 – 500 TDS
 - SDWS are 500/250/250 TDS/Sulfate/Chloride



(1) DBUs, (2) Criteria and (3) Permit Limits – Oh My!

- Permit Limits are (usually) developed to Meet Criteria
- **Can Permit Limits be Over-Protective?**





.....Eureka Moment!

- “Rebuttable Presumption” implies a mechanism to refine or remove DBUs – **A UAA ! (40 CFR 131.10)**

...Or if no DBU change, UAA can justify **Site Specific Criteria (40 CFR 131.11)**,

...which can justify **modified Permit Limits !!**

A UAA

- Is a Structured Scientific Study
- Determines “Attainable” and “Existing” DBUs
- Used to develop **SSC**
 - **May = less stringent Permit Limits AND**
 - **Still Protect DBUs!**

Burden of Proof/Justification

- 40 CFR 131.10(g)
- Engineering and Alternatives Analysis
- Comprehensive Field Studies and Special Studies
- Data Analysis
- Modeling
- Use Analysis



40 CFR 131.10(g) Factors

- (1) Naturally occurring pollutant concentrations prevent the attainment of the use; or
- (2) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use; or
- (3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or



40 CFR 131.10(g) Factors

- (4) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition ... or
- (5) Physical conditions related to the natural features of the water body preclude attainment of aquatic life protection uses; or
- (6) Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.

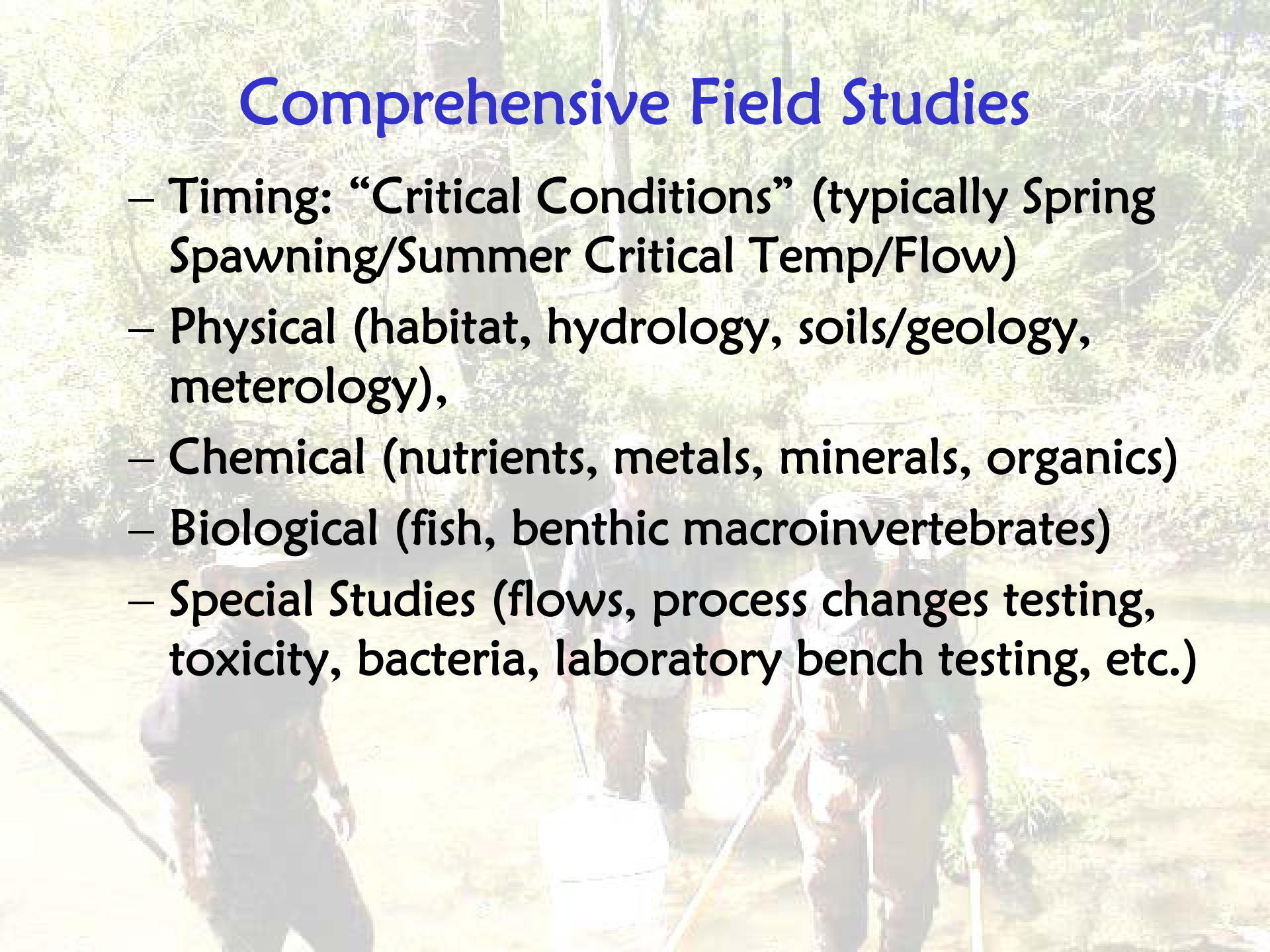


“The Key” - Alternatives Analysis

- Treatment Options
- BMPs
- Recycle/Reuse
- Product Substitutions
- Process Changes
- Alternate Sources of Water
- Alternate Discharges (HCR/POTW...)
- Many Others...

Comprehensive Field Studies

- **Timing: “Critical Conditions” (typically Spring Spawning/Summer Critical Temp/Flow)**
- **Physical (habitat, hydrology, soils/geology, meteorology),**
- **Chemical (nutrients, metals, minerals, organics)**
- **Biological (fish, benthic macroinvertebrates)**
- **Special Studies (flows, process changes testing, toxicity, bacteria, laboratory bench testing, etc.)**



Modeling

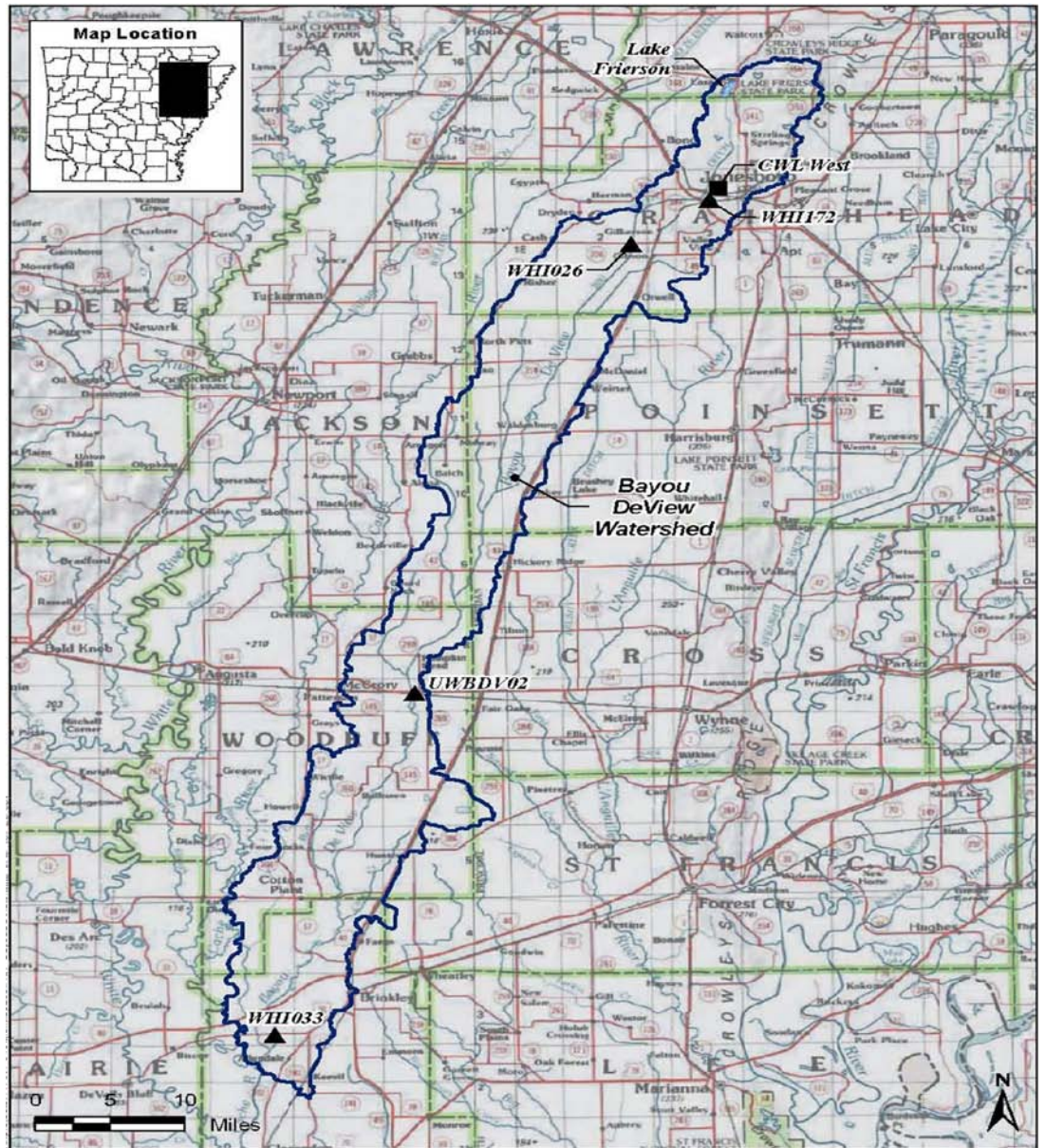
- Fate and Transport
- Mass Budget
- Thermal
- Chemical Speciation
- BLM
- Hydrologic and Hydraulic

Use Analysis

- Existing Uses (since 11/28/75)
- Attainable Uses
- Appropriate Water Quality Criteria to support DBUs
- Based on:
 - Surveys
 - Interviews
 - Research



#1. Bayou DeView and Big Creek, City Water & Light Jonesboro POTW



Reasons for the UAA

- ER (or Lower) minerals criteria
- Typical POTW effluent > ER minerals
- TMDL and 303(d) listing = future permit limits, no economically feasible alternative
- CWL – Paying Attention

Designated Beneficial Uses

- Channel Altered Delta ER Fishery Streams
- Primary and Secondary Contact Recreation
- Domestic, Industrial and Agricultural Water Supply



Water Quality Criteria

- TDS: 411 mg/L
- Sulfate: 37 mg/L
- Chloride: 48 mg/L



Modifications Approved

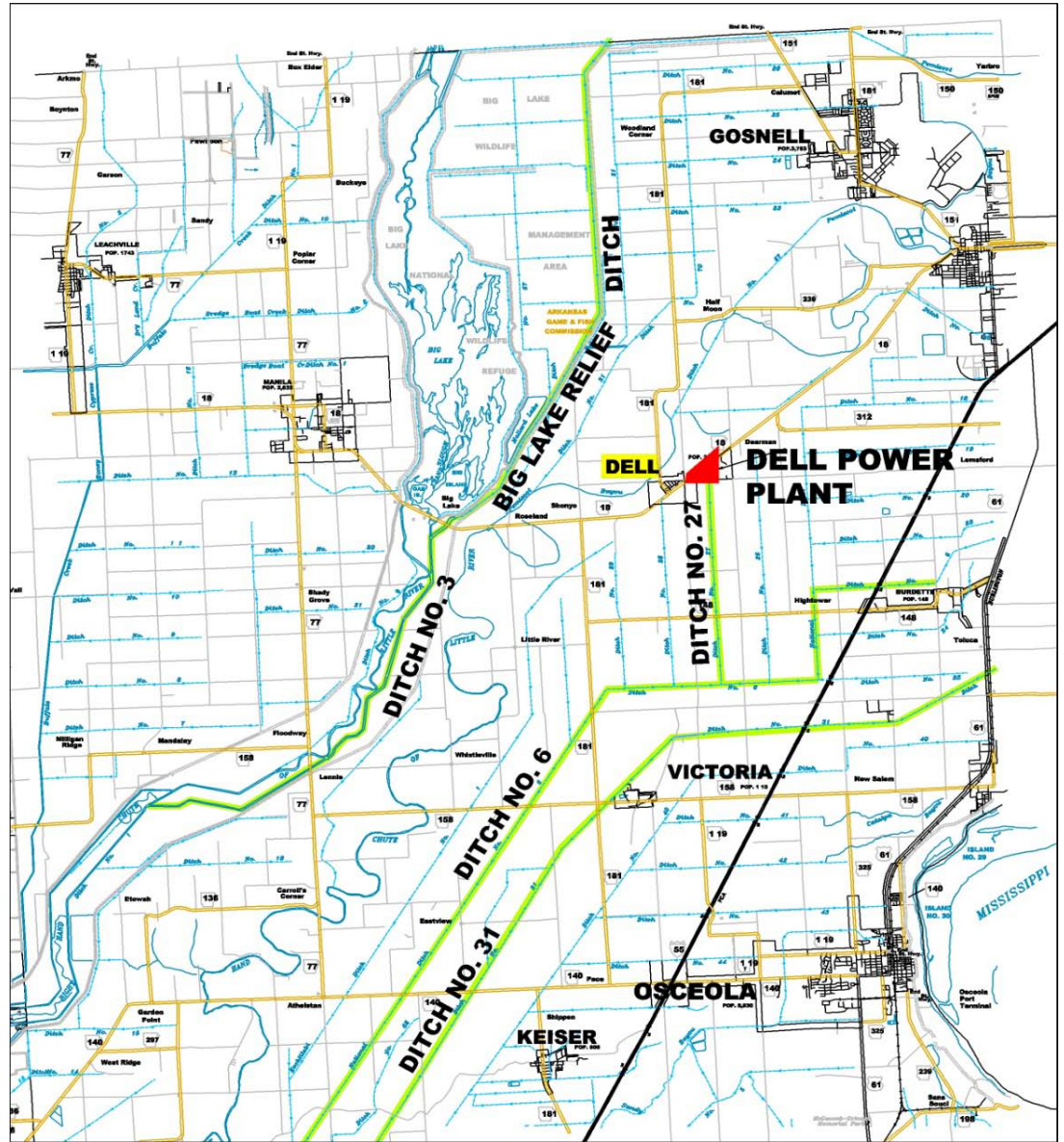
	Previous	Modified
TDS	411 mg/L	453 mg/L
Sulfate	37 mg/L	60 mg/L
Chloride	48 mg/L	71 mg/L

Keys to Success

- Alternatives Analysis
 - Economic infeasibility of minerals treatment
 - Economic impacts to rate payers
 - Treatment to ER = No Change in Protection for DBUs
- T&E - Survey and toxicity research (bivalves)
- Communication – Stakeholders
- Discharge – no problems



#2. Associated Electric Cooperative, Inc., Dell Power Plant



Background and Reasons for the UAA

- Previous NPDES permit - 7 mile pipeline to meet permit limits
- AECl Environmental Savvy & Analysis
 - Local discharge to small ditch is more environmentally acceptable and improves economics of the purchase
 - UAA needed to modify uses/criteria





Designated Uses

- Seasonal Channel Altered Delta Fishery
- Perennial Channel Altered Delta Fishery
- Primary and Secondary Contact Recreation
- Domestic Drinking Water Supply
- Industrial and Agricultural Water Supply



Water Quality Criteria

- Temperature: 32  C (89.6 F)
- Delta 5  F
- TDS: 411 mg/L
- Sulfate: 37 mg/L

Modifications Approved

	Previous	Modified
Temperature	89.6 F	95 F
Temperature	+/- 5 F	No delta 5 F
TDS	411 mg/L	1,200 mg/L
Sulfate	37 mg/L	480 mg/L
Drinking Water Use	Assigned By Default (not existing)	Removed (necessary for TDS and SO4 modifications)

Keys to Success

- Alternatives Analysis
 - Negative environmental impacts of pipeline
 - Economic infeasibility of minerals treatment
 - Economic benefit of power plant
 - Treatment to ER Minerals/Temp = No Change in Protection for DBUs
- T&E - Survey and toxicity research (bivalves)
- Communication – Stakeholders
- No effluent toxicity
- Hydraulically modified systems and channel capacities unaffected by discharge



Lessons



- Develop strategy/approach early provide Work Plan for agency review & “buy in”
- Alternatives Analysis – SSC are considered “Last Resort”
- Agency and Stakeholder Communications - early and frequently
- 40 CFR 131.10(g) conditions and other State requirements
- Be aware of all other dischargers !

Lessons, Cont'd



- Other agencies - USFWS, State Game & Fish, Dept. of Health, Natural Resources Commission, EPA, etc.
- Rulemaking Savvy - Legal Support
- Legislative Committee Reviews, Scheduling, Pitfalls
- **Sound defensible science**
- No “toxic discharges”

UAA/SSC Approach Applicability

- Metals, Nutrients, Minerals, Temp
- Incorrect 303(d) listings
- Industrial, Municipal Discharges



Questions?

Hopefully You “Heard” Something Useful

