



# Missouri Water Quality Trading

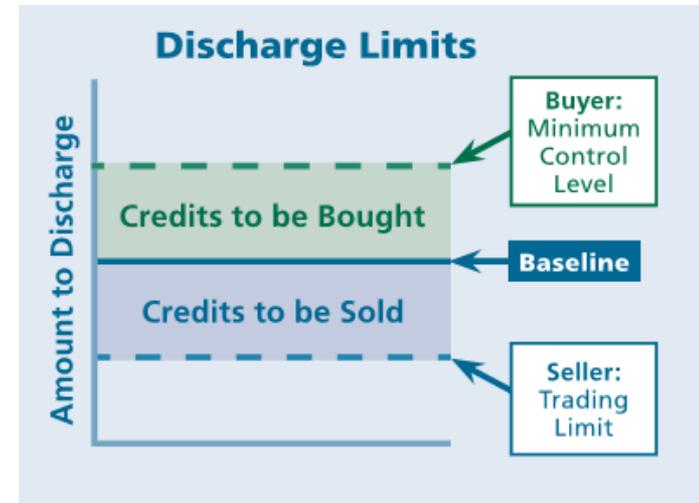
Potential Framework for  
Point-to-Point Trading  
November 13, 2015

# Point Source Workgroup Recommendations

- **Key Policy Issues and Recommendations**
  - Baselines and Eligibility of Practices
  - Trading Margins
  - Market Structure
  - Consequences
  - Monitoring/Enforcement
  - Time Terms of Trades
- **Example Point Source-to-Point Source Trading Scenario**
- **Remaining Key Policy Issues**
  - Trading Areas
  - Trading Ratios

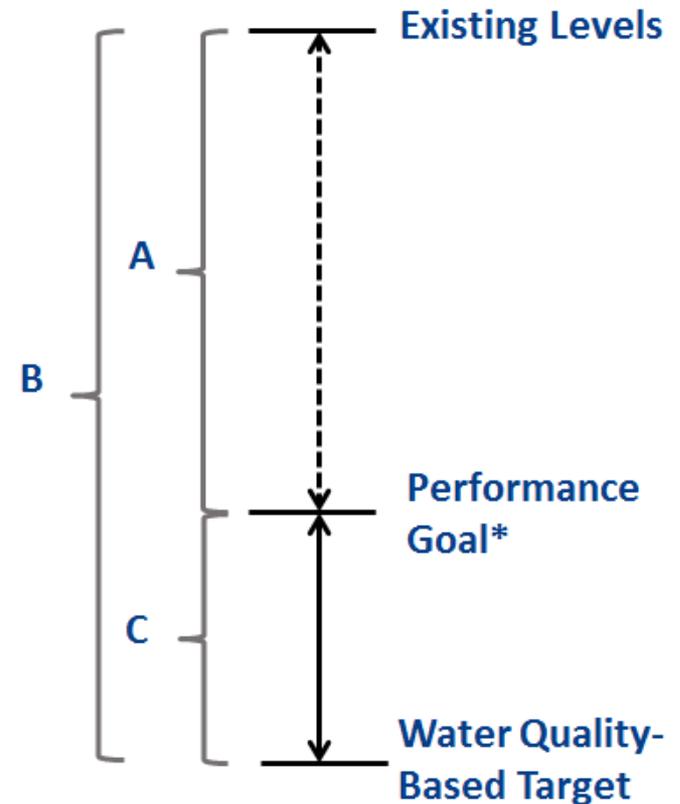
# Baselines and Eligibility of Practices

- **Baseline** – “The baselines for water quality trading are the NPDES permit limits (for point sources) or BMPs (for nonpoint sources) that would apply in the absence of trading.” (EPA WQT Toolkit for Permit Writers)
- **Eligibility of Practices** - Must meet baseline before credits can be generated/sold
- **Recommendations**
  - Baseline defined by NPDES permit limits in the absence of trading after consideration of near-field impairments
  - In the absence of a driver (i.e., no permit limits)
    - Baseline equals annual average nutrient effluent quality that occurs without nutrient removal
    - If a facility installs nutrient removal ahead of a driver, then credits can start accruing but retirement needs to be considered



# Trading Margins

- Incremental difference between existing and required loading
- What are we trading from and to
- **Recommendation**
  - Define by the maximum allowable margin allowed by regulation (i.e., do not require attainment of performance goals prior to trading unless in rule).
  - Existing levels for point source buyers and sellers are outcome based as measured by actual performance.



# Market Structure

- **Sole-Source Offsets: One Regulated Entity**
- **Bilateral Trades: One-on-One Negotiations**
- **Clearinghouse: Single Intermediary Links Buyers and Sellers**
- **Exchange: Buyers and Sellers in Public Forum**
- **Recommendations**
  - All market structures should be permitted
  - Clearinghouse operated by third party is essential for Point-to-Nonpoint trades
    - Clearinghouses provide more protection from point-source liability than Exchanges
    - Clearinghouses allow for pooling of credits, which distributes risk
    - Clearinghouses reduce administrative burden
  - Bilateral trading could be effective for point-to-point source trading

# Consequences

- **What are the repercussions should a trading partner fail to produce as many credits as expected?**
- **Generally more of a concern with nonpoint source trades where there is greater uncertainty**
- **Market structure has implications with regards to consequences**
  - Clearinghouse – Contractual link between the buyer and seller is completely broken
  - Consequences are potentially greater for a buyer with an exchange or bilateral negotiation
- **Recommendations**
  - Point source trades
    - Seller assumes all responsibility for generating credits
    - No consequences for the buyer if the seller does not generate the agreed upon credits
  - Clear permit obligations and requirements are essential for both buyers and sellers

# Monitoring/Enforcement

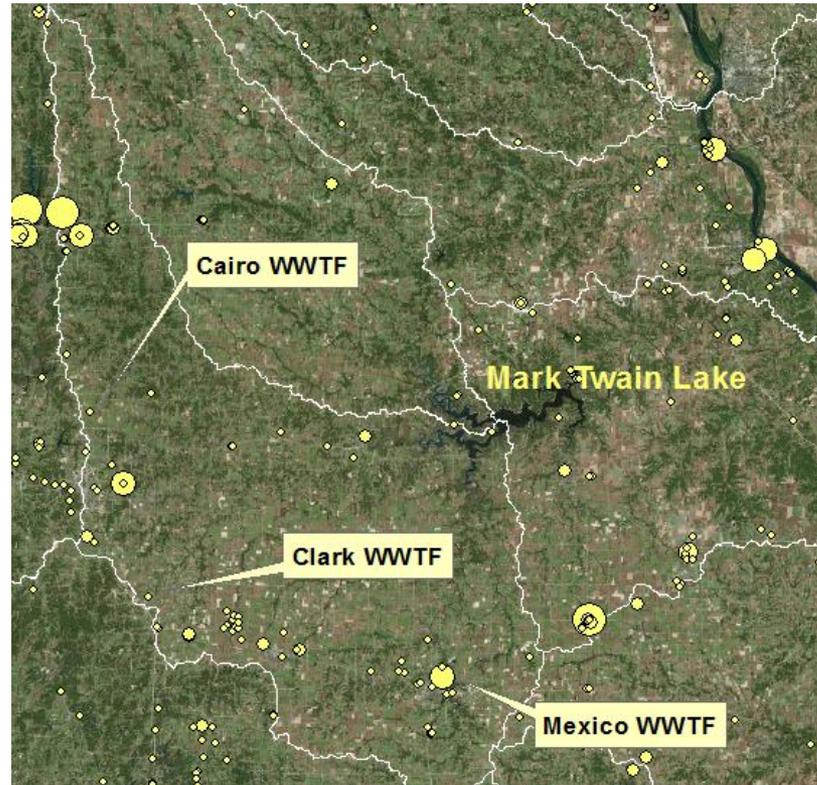
- **Monitoring and reporting requirements are fundamental to establishing compliance with the CWA**
- **For point sources, monitoring and enforcement is handled within the confines of the NPDES permit and the state's compliance and enforcement program**
- **Recommendations**
  - Monitoring and enforcement continues to be addressed within the confines of NPDES permits and the state's compliance and enforcement program
  - Discharge monitoring data used to determine credit deficit or surplus (i.e., point source trading program is outcome based as measured by actual performance)
  - Missouri's voluntary nutrient monitoring program (NLRs action) may provide valuable data for establishing existing conditions.

## **Time Terms of Trades: Recommendations**

- **Credits should be generated either before or within the time period they are to be used**
- **“Squaring Up” Period**
  - If purchased at the outset of the year, credit surplus/deficit should be determined at the end of the year. Any credit surplus (e.g., buyer did not need all purchased credits) can be applied to the subsequent year. Any credit deficit can be rectified through the purchase of additional credits.
  - If purchased at the end of the year, no “squaring up” period is necessary
- **Credit Expiration**
  - Retirement of accrued credits needs consideration
- **Banking Early Credits**
  - Point and nonpoint sources should be allowed to bank credits ahead of a driver

# Pt-to-Pt Hypothetical Trading Scenario

- Hypothetical Driver: Mark Twain Lake Nitrogen TMDL
- Hypothetical Baseline: TMDL TN WLA = 8 mg/L (Biological Nutrient Removal)



## Pt-to-Pt Trading Scenario – Required Reductions

Facility	Flow (MGD)	Existing TN Load*(lbs/yr)	Required TN Load (lbs/yr)	Required TN Reduction (lbs/yr)
Mexico WWTF	2.6	158,293	63,317	94,976
Cairo WWTF	0.045	2,740	1,096	1,644
Clark WWTF	0.022	1,339	536	804

\*Existing effluent quality: TN = 20 mg/L, Baseline effluent quality: TN = 8 mg/L

# Pt-to-Pt Trading Scenario – Costs

## Costs to Treat to Baseline (BNR)

Facility	Required TN Reduction (lbs/yr)	Annual Treatment Costs	Cost/lb
Mexico WWTF	94,976	\$511,778	\$5
Cairo WWTF	1,644	\$144,957	\$88
Clark WWTF	804	\$111,028	\$138

## Incremental Cost to Treat to ENR for Mexico WWTF

Mexico WWTF	Value
Overall ENR Treatment Cost, \$/yr	\$1,082,637
Marginal ENR Cost, \$/yr	\$570,859
Additional Credits Generated	23,744
Marginal Cost for TN Credits, \$/lb	\$24

- By going below baseline (ENR), Mexico generates extra credits that can be sold to other communities
- Because Mexico can generate the extra credits at a lower cost, it is more cost effective for other communities to purchase credits than install BNR

**POLICY DECISIONS FOR ANOTHER DAY**

# Trading Areas

- The geographic limitations placed on nutrient trading
- **Recommendations**
  - As large as permitted by regulation
  - No upstream limitations
  - Allow downstream trading if “hot spots” are not caused

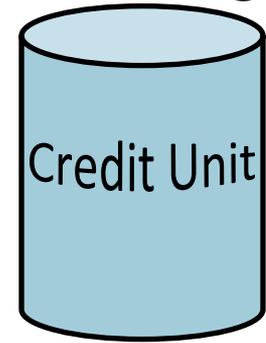
# Trading Ratios

- **Delivery Ratio** (instream attenuation)
- **Equivalency Ratio** (different forms of the same pollutant)
- **Uncertainty Ratio** (account for issues in estimating loadings)
- **Retirement Ratio** (net improvements)
- **Recommendations**
  - Delivery ratio should be dependent upon parameter fate & transport (e.g., conservative nature, assimilation)
  - No delivery ratio for facilities located within a defensible watershed scale
  - No delivery ratio for big river traders located within close proximity to the Missouri or Mississippi River
  - Equivalency, uncertainty and retirement ratios do not apply to point-to-point trades

**Purchased**



**Required in the absence of trading**



**X:1 Trading Ratio**