STORMWATER QUALITY TRADING

A MARKET BASED APPROACH TO ADDRESSING REQUIRED STORMWATER POLLUTION REDUCTION

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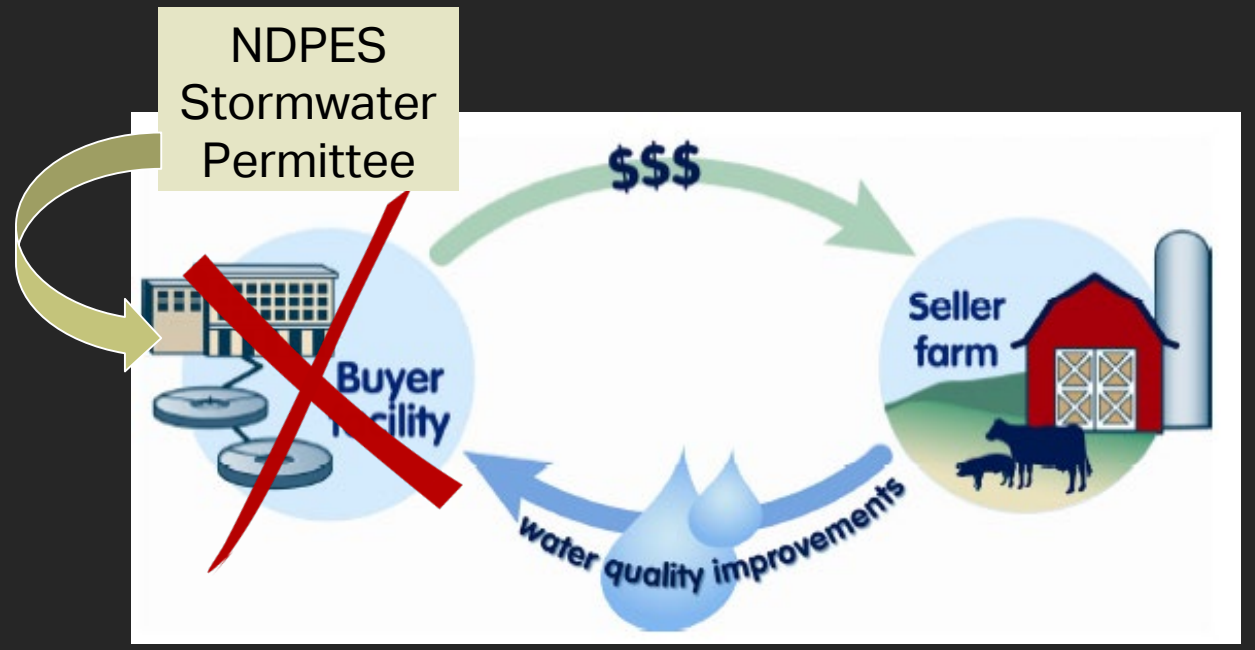
PRESENTATION AT A GLANCE

- Minnesota already has point source water quality credit trading in place.
- Expanding this market based approach to include MS4 permitted stormwater discharges may help us achieve cleaner water, faster, cheaper.



ENVIRONMENTAL MARKETS:
AT A GLANCE

Wetland Banking

- Protects against wetland loss at the landscape scale
- Rules intended to protect all wetland functions & values

Corporate Supply Chain Sustainability

- Used to maintain customer base
- Provides assurances towards having available resources & and supply chains in the future

Payment for Ecosystem Services (PES)

- One party pays another party for an ecological uplift (e.g., improved nitrogen management in wellhead protection areas for drinking water sources)

Water Quality Trading

- US EPA National Pollutant Discharge Elimination System (NPDES) permits

COST MARGINS

Wetland Banking

- Based on land costs
- Buyers develop land

Corporate Supply Chain Sustainability

- Slim, but improving
- Corporations may pass costs onto suppliers instead of customers

Ecosystem Services

- Varies
- Climate change, watershed services, biodiversity are most common

THE PROBLEM

- City of Albert Lea will need to reduce the amount of phosphorus in its municipal stormwater runoff in order to meet the requirements of the Fountain Lake maximum daily load (TMDL), yet to be approved.
- Implementing phosphorus reduction projects in a developed city is very expensive and would create a tax burden for local businesses and residents.

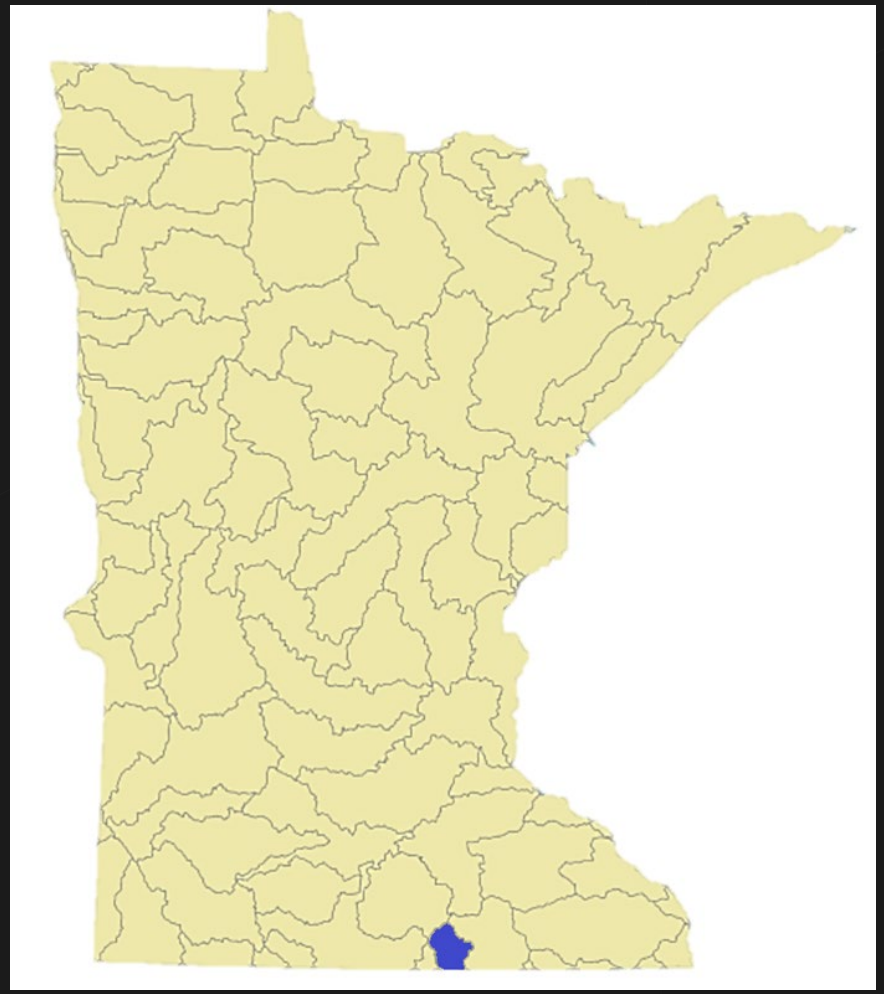
THE OPPORTUNITY

- There is ample opportunity to implement phosphorus reduction projects in the Fountain Lake watershed.
- Local agriculture producers and other landowners throughout the watershed need funding to implement projects that reduce the amount of phosphorus in Fountain Lake.

SHELL ROCK RIVER WATERSHED DISTRICT

CREDIT TRADING

- The SRRWD is a roughly 246 square mile watershed in Freeborn County
- Located in and surrounding Albert Lea, MN
- The District has been installing or implementing phosphorus reduction projects for numerous years
- The City of Albert Lea was not benefiting from the upstream improvements
- The SRRWD took a step forward and applied for funding to implement a multi-point stormwater credit trading pilot program

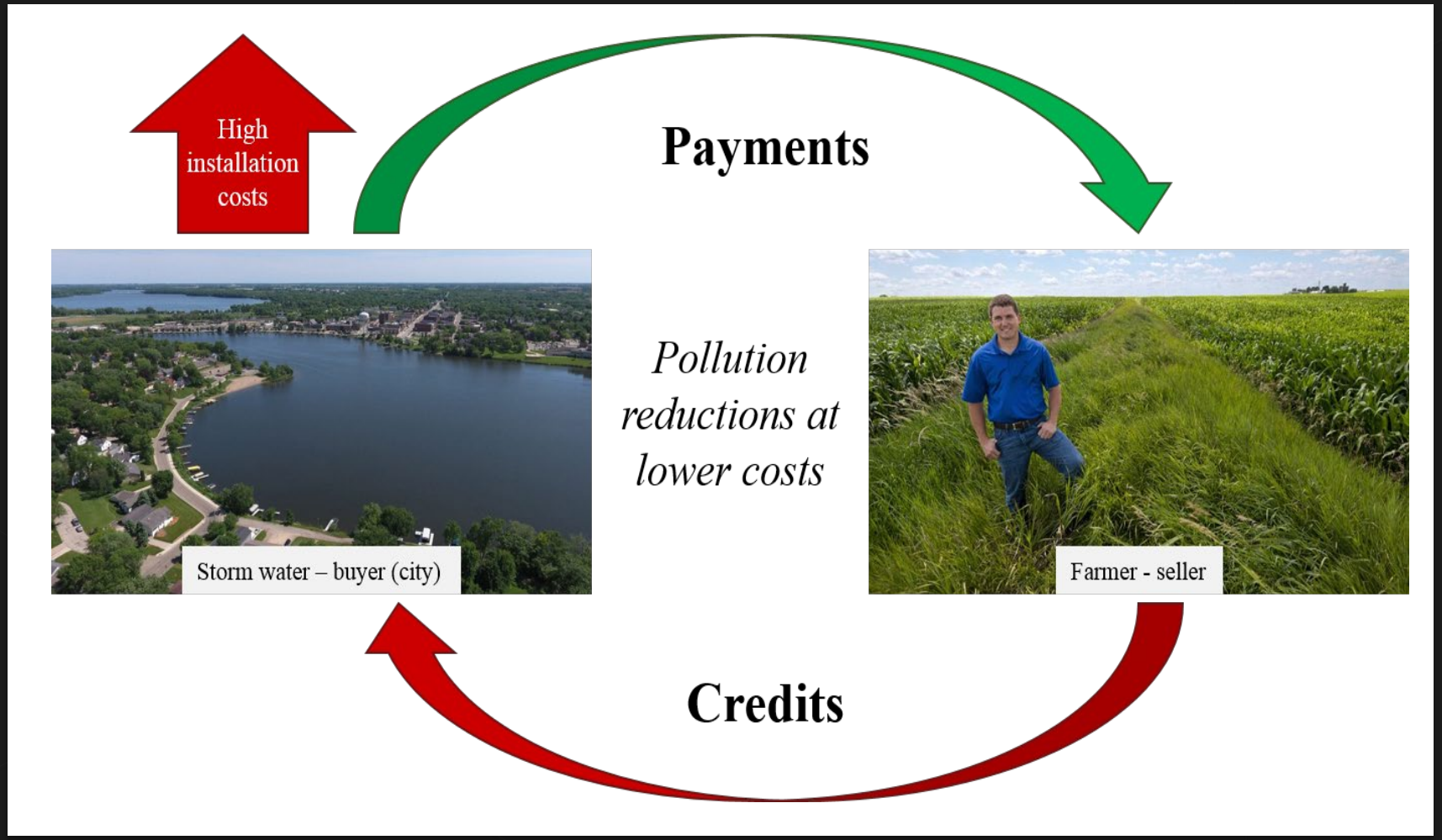


PROJECT GOALS AND OBJECTIVES

1. Create a transferable trading framework that incorporates eligibility and transaction protocols when working with a credit trading program. In doing so, this pilot program will provide a roadmap to incorporate market factors into pollution reduction goals.
2. Test numerous factors involved in water quality trading to verify and adjust the program to provide equal or greater reductions in pollution than conventional methods.
3. Provide voluntary opportunities for accelerated implementation for both point and non-point loading reductions.

WHY: TO BENEFIT EVERYONE

- Upstream landowners receive compensation by selling credits
- Buyer gets improved water quality at a lower cost by purchasing credits vs. installing expensive projects



WATER QUALITY TRADING

IMPORTANT TERMS AND DESCRIPTIONS

- **DEMAND:** created when the regulated party (City of Albert Lea) voluntarily participates because the cost of reducing pollution within municipal boundaries is too high.
- **SUPPLY:** created when the agricultural community voluntarily implements pollution reduction activities and sells those reductions to a regulated party.
- **COMMODITY:** the pollutant that must be reduced as required by the TMDL.
- **UNIT OF TRADE:** a credit
- **VERIFICATION:** each market transaction is verified to ensure regulatory requirements are met.
- **MARKET PRICE:** the unit cost (cost per credit) for the commodity is based the cost share funds that would provided through competing conservation programs, such as CRP and EQIP.
- **ELIGIBILITY:** Participation in the marketplace is restricted to operators in the watershed.

WATER QUALITY TRADING
A REGULATED MARKETPLACE

- **This is not a free market, it is a regulated market. As such, it requires:**
  - **ADMINISTRATION** to oversee, coordinate, and track marketplace activities,
  - **VERIFICATION** that the commodities being traded are real; meaning that there must be verification that pollution reduction activities actually were implemented,
  - **COMPLIANCE** with all existing laws, for the buyer and supplier,
  - **ASSURANCE** that pollution reductions are at least equal to or greater than traditional programs, and
  - **POLICIES** that provide market stability are in place.
- **WQT can provide NPDES permittees a flexible, cost-effective compliance alternative.**

CURRENT MN WATER QUALITY TRADING EXAMPLES

Rahr Malting Co.

- City of Princeton
- Southern MN Sugar Beet Coop

Minnesota River Basin General Phosphorus Permit

Lake Pepin Pre-TMDL Phosphorus Trading

MARKET: DEMAND SIDE

BUYER – MS4 PERMIT HOLDER – CITY OF ALBERT LEA

Demand = the reduction in phosphorus loading to Fountain Lake that could be addressed by trading:

- The total amount of phosphorus loading to Fountain Lake that Albert Lea must reduce to meet TMDL requirements.

MINUS

- The base level of treatment that Albert Lea is expected to meet (minimum control level).

Minimum control level = the 6 minimum control measures that are already specified in their MS4 Permit.

ENTERING THE MARKETPLACE

- The program addresses a regulatory requirement
- A buyer must obtain approval from the MPCA to enter the market
- A watershed trading management plan must be developed
  - The management plan details the framework for trading in the watershed
- The management plan becomes an overlay permit to the existing stormwater permit
- This approach potentially increases demand and market activity while reducing the cost and administrative burden to enter the market

MARKET: SUPPLY SIDE

SELLER – BMP IMPLEMENTER – AGRICULTURAL PRODUCER

Supply = the number of units of the commodity 'produced' for implementing conservation practices.

- The reduction of phosphorus in runoff that is achieved on-site when a best management or conservation practice is implemented

MULTIPLIED BY

- The location factor, which represents how much of that reduction is delivered to Fountain Lake.

ENTERING THE MARKETPLACE

REQUIREMENTS

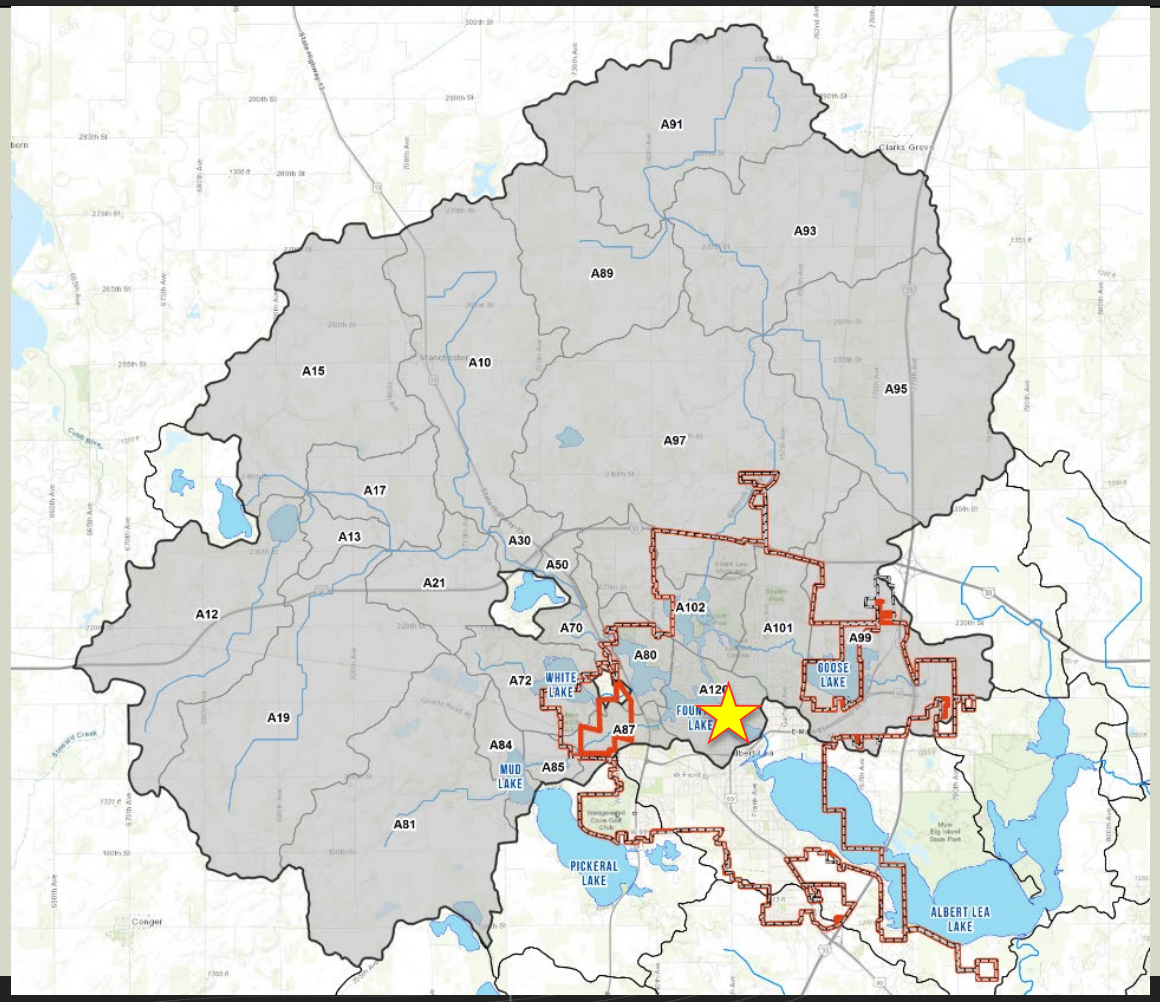
- Must be located in the approved credit generation area.
- The commodity being sold is being purchased to meet a regulatory requirement
- All state and local laws must be met
- 3 years of records to verify current conditions

CONSIDERATIONS

- Is privacy maintained?
  - Personal information is not in the NPDES permit public notice
  - The general public is not given rights to access the site
- Are conflict resolution options are clearly understood?
- Is it is clear they are regulated by the buyer's enforceable contract and not the buyers permit?

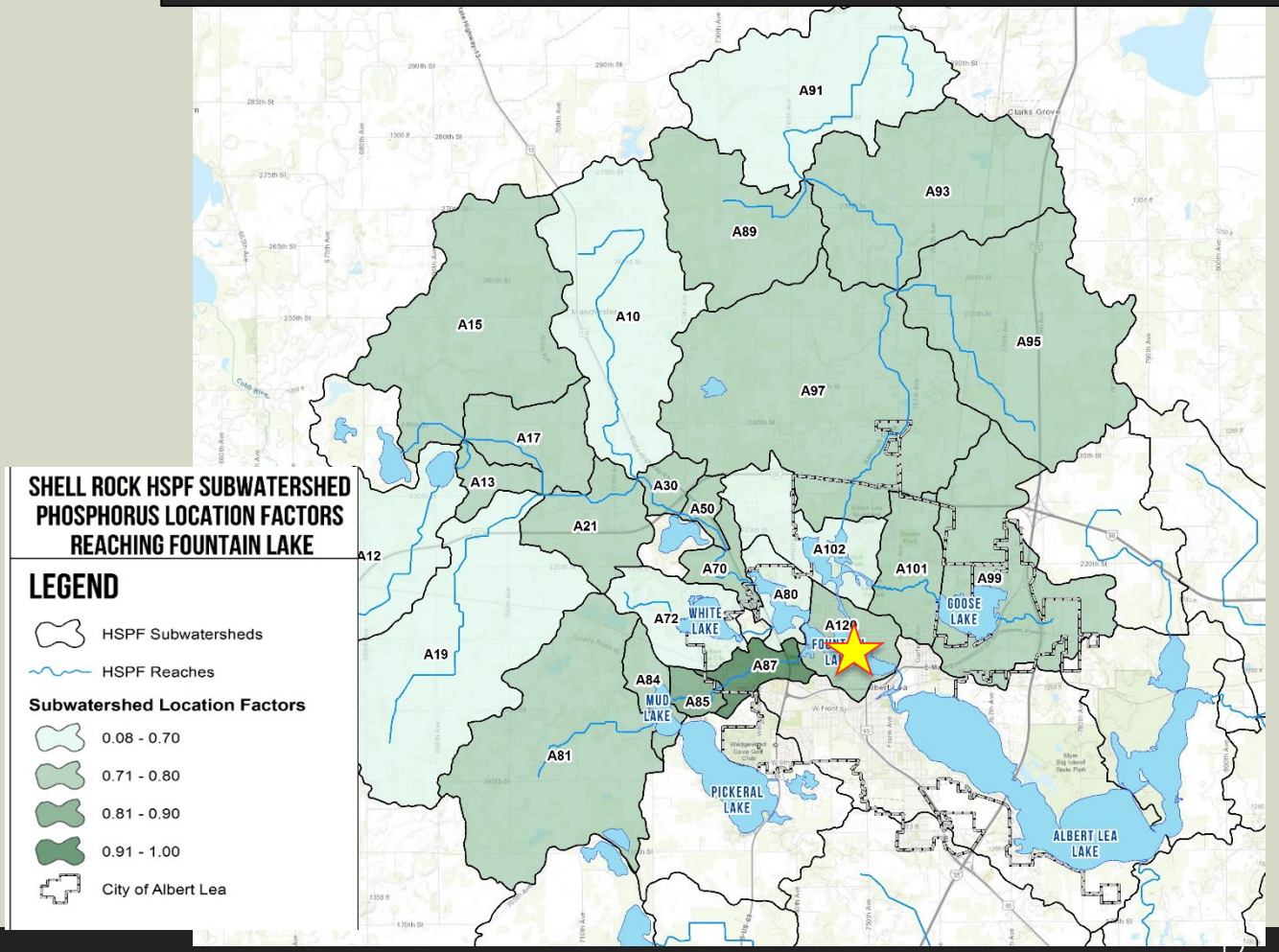
SUPPLIER ELIGIBILITY

Upstream area that does not include non-contributing areas, impoundments, or lakes (in most cases).



LOCATION 'DISCOUNT' FACTOR

Represents the 'quality' of the location in delivering the most phosphorus reduction downstream.



ESTABLISHING THE MARKET PRICE

SUPPLIER SIDE

COMPETITION

- MN Ag Water Quality Certification Program
- CRP
- CREP
- Clean Water
- 319 Grants

SELLING PRICE VARIABLES

- Location ‘discount’ factor
- Cost to implement the BMP
  - Annual recurring vs one-time
- Type and effectiveness of BMP
  - Use a science-based approach (e.g., monitoring, modeling, peer reviewed literature) to determine pollution reduction
  - Acknowledgement of uncertainties in calculated benefit
  - Introduced errors (margin-of-safety)
  - Pollutant form(s) equivalences

BUYER SIDE

COST TO MEET THE ANNUAL REDUCTION

- **Buy or create?**
  - Cost of land
  - Opportunity cost
  - Cost for long-term maintenance

RISK

- Can they pay the seller on a performance basis?
- Is the program operated by trusted community members?
- Is there open communication with program administration?
- Copied on inspection reports, or summaries without personal information
- Are the contracts with sellers adequately enforceable & penalties
- Are they involved in corrections and revocations decisions if there is a deficiency in the supply?

REDUCING POLLUTANT LOADING: UNIT COST COMPARISONS

TOTAL PHOSPHORUS

COST PER POUND REDUCTION

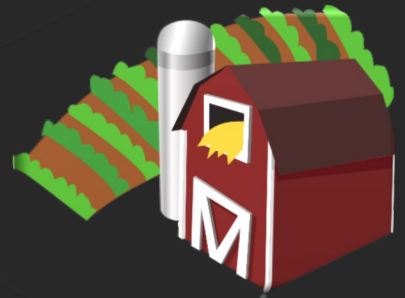
TENN: $2,680 TO $28,780
WISC: $880 TO $3,480

NO TILL: $16.81 –$ 23.07 W/BUFFER
WASCOB: $5.50
COVER CROP: $63.74 – $94.47 W/BUFFER

TOTAL SUSPENDED SOLIDS

COST PER TON REDUCTION

SO.DAK: $3,690 TO $38,450
WISC: $3,400 TO $13,500



NO TILL: $26.80 – $74.10 W/BUFFER
WASCOB: $4.10 -$8.25
COVER CROP: $129.10 – $382 W/BUFFER

*Illustration is based NTT load reduction estimates, assuming a 2.48 acre buffer treating 30% of field. Annualized total cost estimates are based on USDA NRCS EQIP payment schedule rates (~50% of capitalization costs), &, 9-yrs of replacement costs for no-till and CC. Or, the NRCS volume method for gully erosion treated by a Water and Sediment Control Basin (WASCOB). Urban stormwater costs are from three water quality trading stormwater feasibility study, not in 2019 dollars.

ADDITIONAL COSTS

- **Retirement factor**
  - Ensures equal or greater reduction than would have been achieved through traditional methods
- **Trade ratio**
  - Accounts for uncertainty in the process
  - Accounts for equivalency for topsoil corrections & 70% of subsoil corrections
  - Includes Retirement Factor

PROPOSED VALUES

- RETIREMENT FACTOR
  - 10%
- TRADE RATIO: Addresses Uncertainty and Equivalence Factors
  - 2.0:1
- TOTAL TRADE RATIO:
  - 2.1 credits must be purchased for each credit needed

SIMPLIFIED TOTAL COST CALCULATION EXAMPLE

Seller/ Supplier

- **WASCOB (water and sediment control basin)**
  - Invest $45K to install 3 structures
  - Includes
    - Cost for structures is $37,100
    - Administration and broker fees
    - Location factor
  - Sell price is $16.54 to $18.19 per credit
  - Annualized total unit cost across a 10 year life expectancy

- **Buyer funding is 75% plus design and oversight Broker cost of $6,500 and Administration fee of $250/yr**

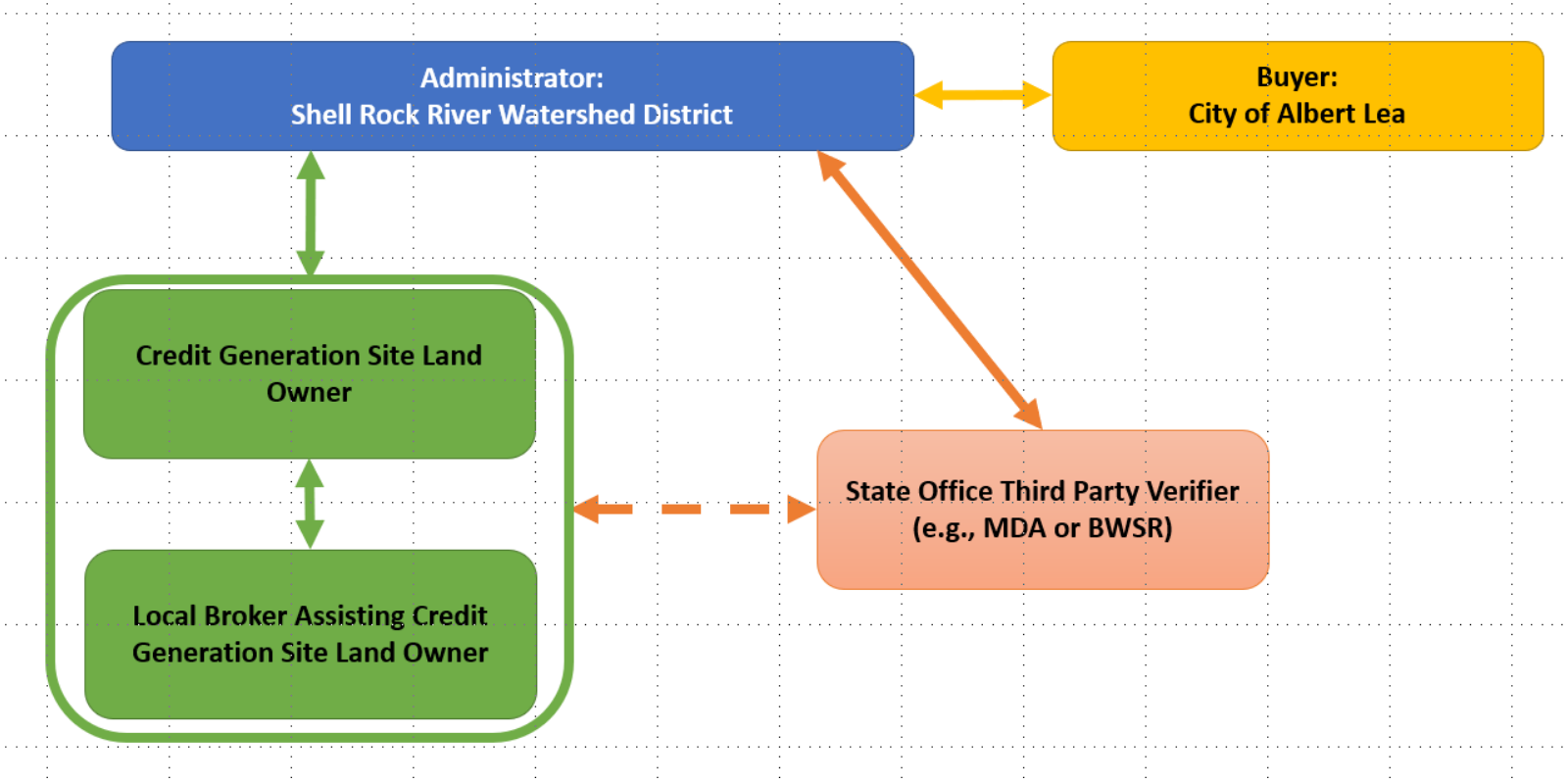
Buyer

- **Needs 100 credits/year**
  - Cost for 100 credits = $1,850
  - X 2.1 trade ratio = $3,820
  - X 10 years = $38,200.00

- **Cost for equivalent reduction from installing a stormwater treatment project:**
  - $2,600 per pound per year X 100 pounds = $2.6 M/10-yrs

ORGANIZATION AND ADMINISTRATION

RECOMMENDED SRRWD WQCT ORGANIZATION CHART:
DURING APPLICATION PROCESS



PARTNER ROLES

LOCAL BROKER(S):

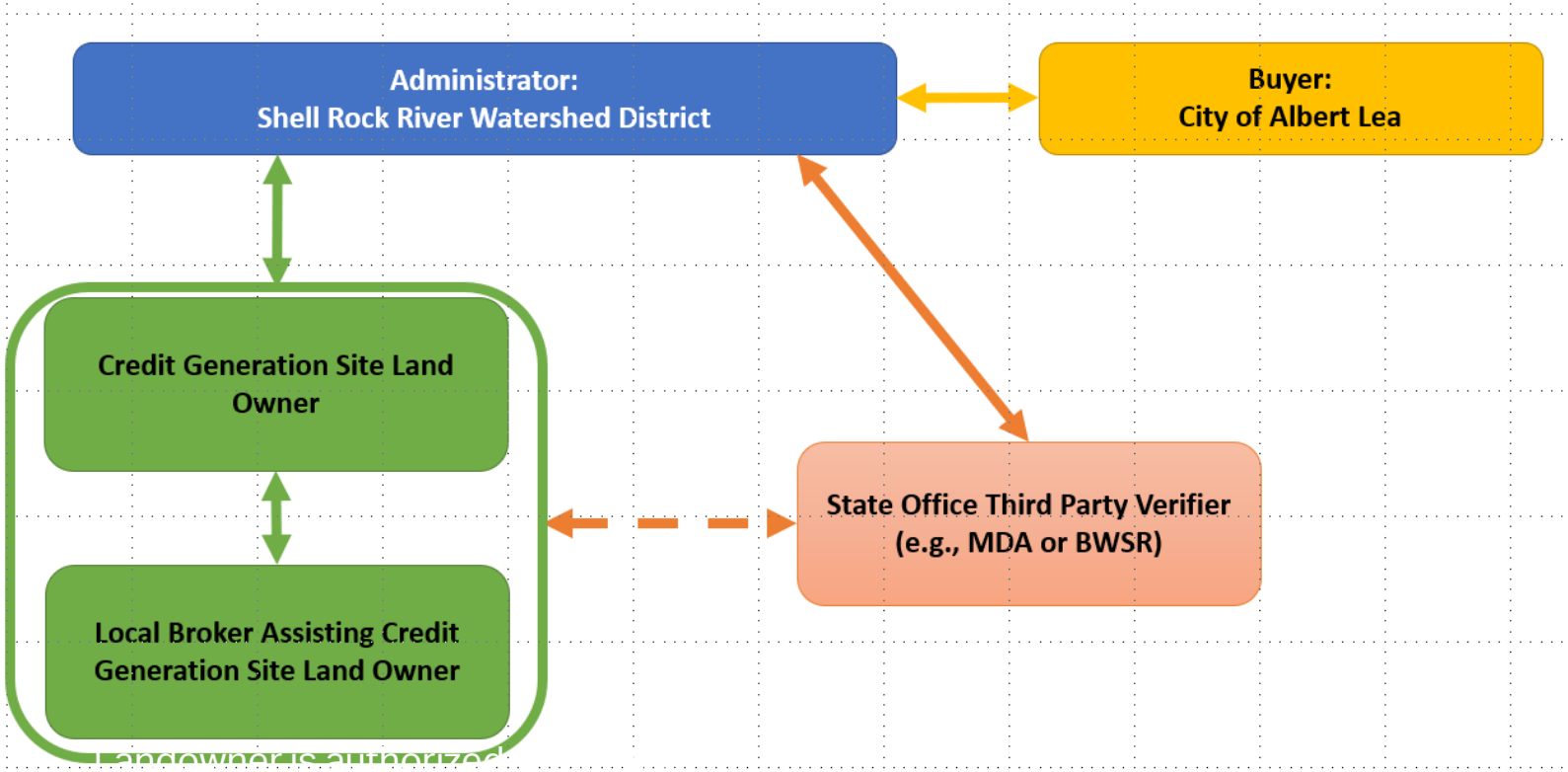
- Identifies willing land owners
- Trained in application process
- Provides service without a fee; if successful proposal provides for their service fees during implementation

THIRD PARTY VERIFIER REVIEW:

- Application completeness
- Site conditions as stated
- Credit estimate calculations
- Eligibility Criteria

RECOMMENDED SRRWD WQCT ORGANIZATION CHART:

POST AWARD



PARTNER ROLES

BUYERS:

- Fulfill contracting process with administrator's assistance

LOCAL BROKER(S):

- Potentially provide design, O&M and technical assistance
- Assist in completion of WQCT program forms
- Contract provides a service fee

THIRD PARTY VERIFIER REVIEW:

- Inspections
  - Construction
  - Establishment
  - Operation and Maintenance
  - Record keeping
- Conflict Resolution
  - Site deficiency
  - Contractual differences of opinion

REDUCTION VERIFICATION

Program field representative & third-party oversight with documentation.

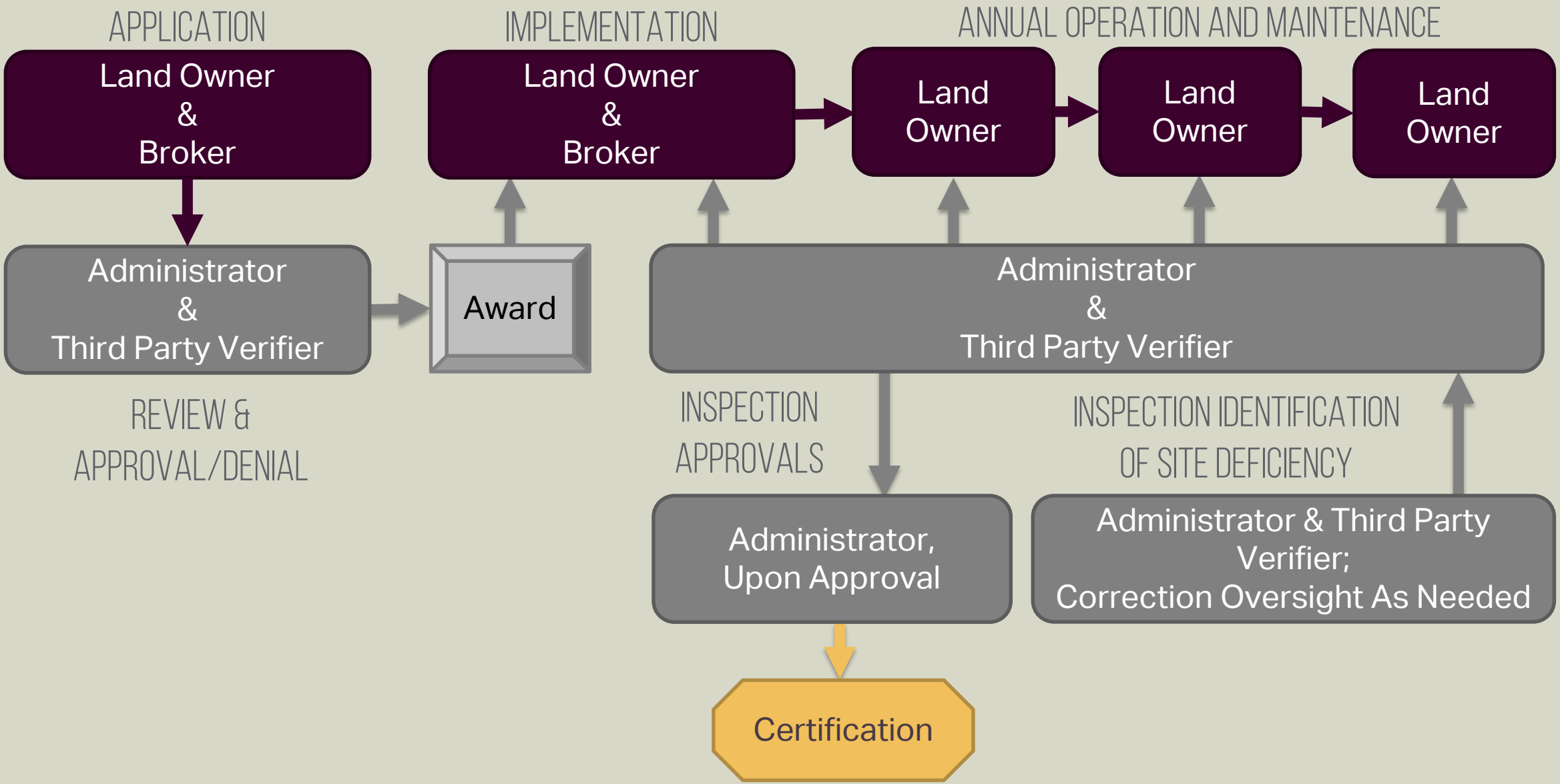
BMP quality controls

- Design standards
- Operation standards
- Site inspections (i.e., construction, establishment and O&M)

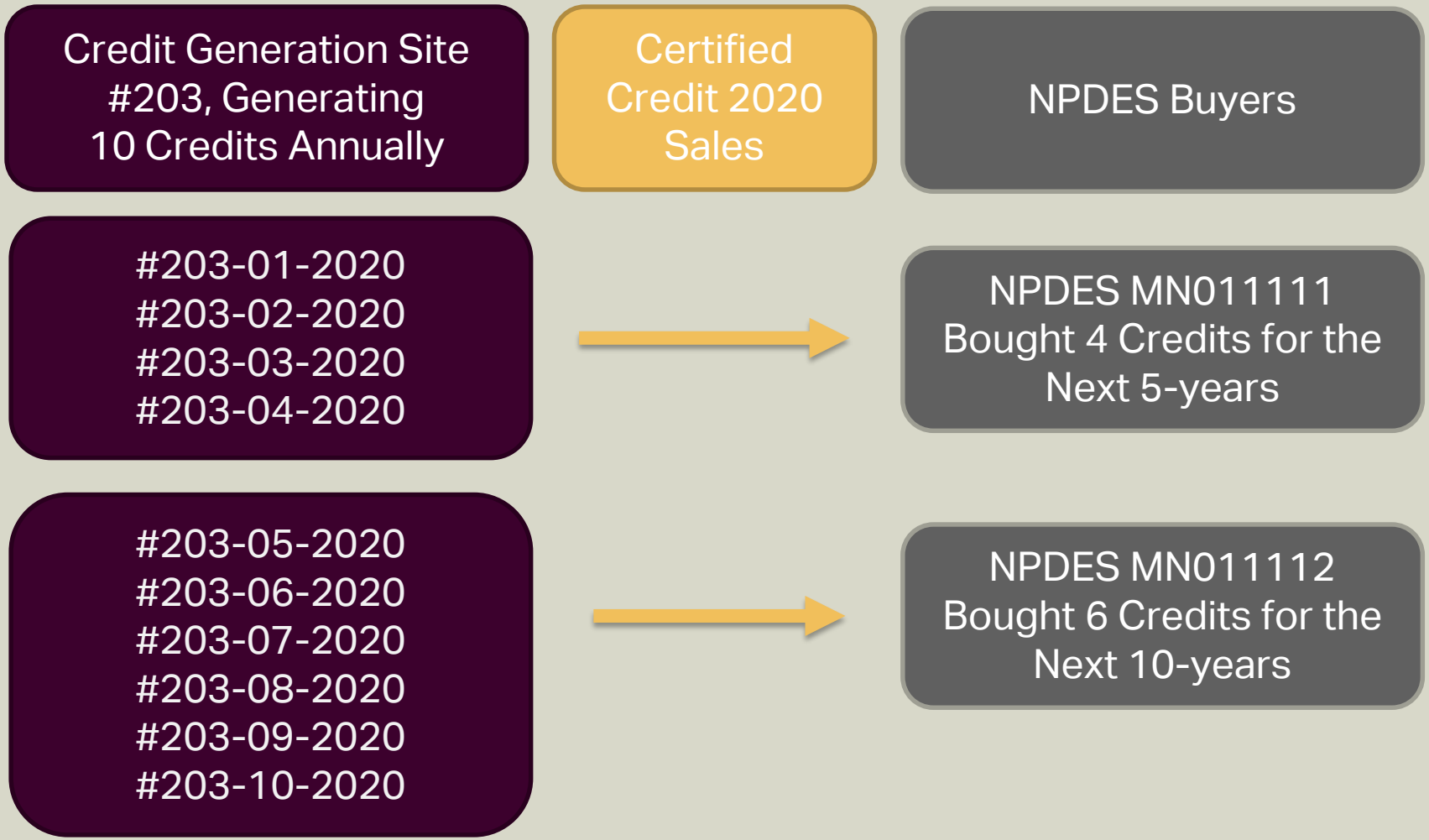
Water Quality Monitoring

- Leverage existing monitoring programs adding edge-of-field as affordable

VERIFICATION AND CERTIFICATION



CREDIT REGISTRY:
PREVENTS CREDITS BEING SOLD TWICE.



REGISTRIES

- track certified credit sales
- allow multiple buyers to participate in credit purchases at one site

BUYERS

- Can participate by dividing credits
- Can sequentially buy credits in different years, for example:
  - Buyer MN011111's contract ends in 2024
  - The credits for 2025 to 2029 are available for purchase by another buyer.

REPORTING REQUIREMENTS & RESPONSIBLE PARTIES

REPORTING SECTIONS

1. Credit Generation Applications
2. Application reviews, Awards & Denials
3. Inspections
4. Credit valuation reviews
5. Deficiency and correction processes
6. Revocation
7. Annual reporting

PROGRAM ROLES

1. Trained field representatives
2. Administrator & third-party verifier
3. Frequently – landowner & field staff; Audited by Third party verifier
4. Administrator & third-party verifier overseeing landowner and field representative
5. Administrator

Note: Goal is to strike a balance between public transparency and landowner privacy.

POLICIES TO PROVIDE FOR MARKET STABILITY

OBTAINING MARKET STABILITY

- **Program launch and NPDES permit issuance**
  - Overlay permit with water quality credit trading management plan
    - Eligible trade areas
    - Typical BMPs and approved quantification methods
    - Organizational chart
    - Compliance schedule(s) – traditional and with trading
    - Monitoring and reporting
  - Adaptive management
  - Clearly defined roles and responsibilities
- **Credit quantification methods that are science based and meet MS4 discharge needs**
  - State of the science, yet affordable
  - Meets professionally approved protocols
  - Uncertainty is captured in the trade ratio

OBTAINING MARKET STABILITY CONTINUED

- **Credit transaction legal agreement terms**
  - Responsible parties
  - Payment terms
    - Operation and maintenance
    - Payment schedules
      - Pay for performance or upfront?
    - Flexibility in credit sources (use of MAWQCP if needed)
    - Use of a broker
- **MS4 WQCT NPDES Permit Division roles & responsibilities**
  - Certification – formal application and approval process.
  - Registration – assigning a unique identifier and uploading to a publicly available website (not recommended at this time)
- **Options to address management of credit generation site deficiencies**
  - Reasonable replacement window
  - Purchase of extra credits
  - Reserve pool
  - Purchase of MAWQCP credits
  - Performance bonds

GETTING TO SCALE

GETTING TO SCALE

OBTAINING MARKET EFFICIENCIES

INCREASE DEMAND

- Using a water quality trading management plan for a watershed allows other permit holders to take advantage of the program
- Expand the program for all point source discharges, not just stormwater

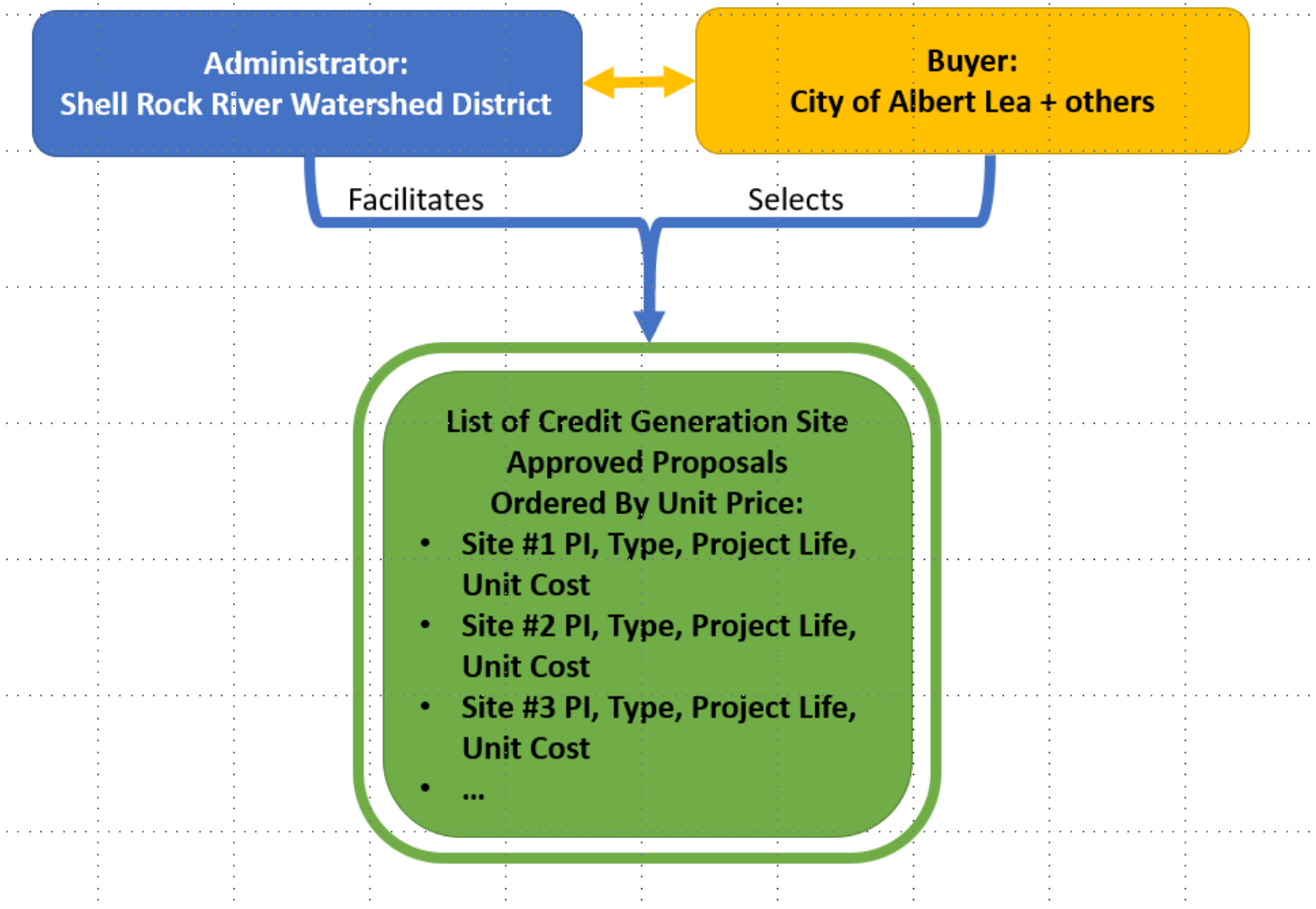
INCREASE SUPPLY

- Use bonding or other funding source to jump start credit generation

DECREASE COSTS

- Use aggregators
- Leverage existing programs and staff
  - MAWQCP
  - SWCDs/WD staff
- Competitive pricing approaches
- Funding MPCA staff for pro-active approach
- Water quality trading rule to decrease noticing requirements

RECOMMENDED SRRWD WQCT ORGANIZATION:
REVERSE AUCTION AWARD PROCESS



REVERSE AUCTION:

- New credit generation applications are accepted during a fixed time-frame.
- Applications are ranked by credit unit costs from lowest to highest.
- Applications are ranked according to additional, locally determined criteria such as:
- Preferred practice
- Additional benefits
- Others to be determined

WHAT BENEFITS DOES WQT OFFER?

WQT, DONE APPROPRIATELY, OFFERS:

CLEANER WATER FASTER, CHEAPER!

- Cost savings for buyers
- Funding for credit sellers to implement BMPs
- Accelerated TMDL implementation
- Flexible compliance schedules
- Community building
- Policy options that could be used to enhance a holistic approach

NEXT STEPS

TENTATIVE SCHEDULE

April	Incorporate the feedback from the today's meeting.
May	Technical Committee review (MPCA, BWSR, Ag, LMC)
May	Community meeting for feedback
June 30	Submit final reports to LCCMR

DELIVERABLES

- Stormwater quality credit trading manual
- Technical report with policy recommendations
- LCCMR required reports

STORMWATER QUALITY TRADING

A MARKET BASED APPROACH TO ADDRESSING REQUIRED STORMWATER POLLUTION REDUCTION

PROJECT FUNDING

Minnesota Environment and Natural Resources Trust Fund

PROJECT PARTNERS

City of Albert Lea

Minnesota Pollution Control Agency

Minnesota Board of Water and Soil Resources

Minnesota Department of Agriculture

League of Minnesota Cities

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