Water Planning Project
Water Management Strategies
Public Works Committee Recommendations

May 21, 2019
Sunset Valley Water Planning Project

Public Works Committee Recommendation

◦ Continue use of purchased surface water as the water source for the City.

◦ Proceed with water management strategies that will reduce current and future water use such as rainwater harvesting, water reuse, and conservation programs.

◦ Maximize the use of the city well for non-potable uses such as irrigation systems currently using surface water.
Sunset Valley Water Planning Project History

- In April 2011, the City Council authorized a Water Planning Project that was focused on comparing the financial costs of continuing with the City’s dual source water system or using purchased treated water from the City of Austin as the sole source of water for the city.
- While the financial analysis favored using treated water from the City of Austin, and when presented to Committees for input there was widespread support for maintaining the City’s Historic and Existing Use Permit (HEUP), there was less consensus for the timing of repairs and/or reinstatement of the current well system components.
- In May 2013, the Council directed staff to assist with development of a planning process for considering water source options for the city. The information has been organized into three general categories which provide the framework for development of a Master Water Source Plan.
- Council approved the planning process in 2014.
2014 Approved Planning Project Phases

- Phase I – Immediate Actions
- Phase II – Next Actions
- Phase II – Long Term Actions
Sunset Valley Water Planning Project Phases

Phase I – Immediate Actions (2015)

- Maintain the functioning components of the well system to ensure compliance with TCEQ requirements for a Public Water System.
- Provide well system improvement funding options to appropriate Committees for discussion and recommendation to the City Council.
- Update the City Emergency Management Plan to outline procedures for emergency alternative water supply during an isolated or regional catastrophic event.
- Develop a Water System Master Plan connections and distribution system improvements in the well service area which are intended to allow for the reinstatement of a well system.
- Continue to monitor the financial costs associated with the contract with the City of Austin and prepare updated financial projections as contained in the Water Planning Report.
- Perform a formal feasibility study to examine a new water supply well producing from the Lower Trinity aquifer as an alternative water source.
- Monitor regional studies on ground water quality and availability.
- Monitor State and Local changes to public water system permitting, treatment requirements and treatment methods.
Sunset Valley Water Planning Project Phases

Phase II – Next Actions

- Coordination with LCRA Region K
  - Participate in Lower Colorado Regional Water Plan (Region K) development process and evaluate potential Water Management Strategies (WMS) for possible inclusion in the Region K and State Water Plans.
  - Hold a series of informative workshops to educate citizens, staff and Council members on what WMS’s that may be considered for inclusion in the Region K water plan and/or that could be implemented in the City. The potential strategies to be covered in the workshops shall include but not be limited to:
    - Developing aquifer storage in the Middle Trinity aquifer, obtaining an interruptible permit from BSEACD for producing additional water from the Edwards aquifer for storage and production of the stored water in parallel to the existing Edwards aquifer well.
    - Local partnerships in a desalination supply development project.
    - Rainwater harvesting as a means of water supply with emphasis on how to further incentivize implementation of rainwater harvesting on a larger scale to reduce water demand from existing water system users and households on private wells. The consideration of this strategy should not be limited to only reduction of demand by household water users but may include commercial users and how users may convert to reliance on rainwater harvesting as a primary supply.
    - Water Re-use and Reclamation
  - Identify potential local government partners for possible participation in the development of an innovative water management strategy.
  - Identify potential implementation funding mechanisms for WMSs recommended in Region K and State Water Plans.

- Hold Public Hearings to solicit citizen’s input regarding preferred water management strategy options; provide for discussion in appropriate committees; and develop a recommendation for Council approval. The Council approved recommendation will be provided to the Region K water planning group for consideration in developing the Region K Water Plan.

- Design and install water distribution system repairs and improvements according to the Water Master Plan.
- Prepare updated financial projections as contained in the Water Planning Report on a periodic basis.
Sunset Valley Water Planning Project Phases

Phase III - Long Term Actions

- Preserve the well for future use as a Public Water Supply if needed due to changes: in the City of Austin wholesale contract, changes in water supply or water availability, or other emergency conditions.

- Implement infrastructure improvements required to meet projected water demands as determined.

- Along with any local government partners identified in Phase II, pursue development of the preferred WMS's recommended in the Region K and State Water Plans.

- Pursue funding for the preferred Water Management Strategies that are recommended in the Region K and State Water Plans through the mechanisms identified Phase II.

- Continue to monitor and evaluate recommended actions on a 5 year schedule to revise or develop new strategies as conditions change.
Water Source Planning

- Local Partnership in a Desalinations Supply Development
- Groundwater Well System – Non-Potable Use
- Groundwater Well System – Potable Drinking Water Use
- Water Conservation
- Water Re-Use and Reclamation
- Rainwater Harvesting
- Aquifer Storage Recovery in Middle Trinity Aquifer using Edwards Aquifer
Description – Pump water from the Edwards Aquifer and store in the Middle Trinity Aquifer. The stored water creates a pocket of fresh water underground and eliminate the need for surface reservoirs. This system has the potential to provide ground water for the existing well service area and/or be used as source water for additional customers. Expanding ground water use would reduce the demand on water purchased from Austin.

Implementation/ Feasibility: ASR is a new technology gaining support for use in the Austin area. It is successfully used in San Antonio, Kerrville and El Paso by Public Water Utilities. The BSEACD is creating rules to create permits for testing, drilling and production. This method may require an amendment to the existing BSEACD Permit to increase the City’s a pumpage amount. This water could be pumped from the Edward’s only during non-drought periods but could be used year-round once relocated to the Middle Trinity.

Comments: ASR provides an alternative storage method that eliminates large above ground storage tanks. In Sunset Valley the use of ground water has been limited due to pumping limits imposed during drought, cost of infrastructure and lack of adequate space for treatment and storage facilities. With ASR increased pumping amounts could be permitted. During non-drought conditions Sunset Valley could pump maximum permit amounts to be stored underground. Above ground tanks would still be required for treatment and fire protection but this method would solve the water quantity part of the equation. My recommendation would be to reevaluate this option if purchased water supplies prove to be inadequate. ASR science will improve when it is implemented locally. In another 10 years this will no longer be experimental and regulations will be in place to ensure public safety.

Aquifer Storage Recovery in Middle Trinity Aquifer Using Edwards Aquifer

Project Cost: $1,500,000
(Water plant upgrades add $250,000-$500,000)
Local Partnership in a Desalination Supply Development

Description: Brackish desalination wells in brackish zone of the Edwards Aquifer, generally this is in the southeast area of Austin east of I-35. Project would require desalination plant, drilling and completion of production wells and disposal wells, land purchases. In partnership with other agencies, a desalination project could result in reducing the demand on the Highland Lakes. Water retained in the lakes would then be available to allocate to users such as Sunset Valley or treated water could be delivered via pipeline.

Implementation/Feasibility: This would require partnership with other agencies. Use of this desalinated water in Sunset Valley is unlikely.

Comments: There are no other agencies working together at this time to “trade” water allocations. Desalination occurs in areas with poor ground water quality. This water is located east of the Sunset Valley city limits. The costs associated with acquiring land, treating and piping water to the Sunset Valley area should eliminate this option.

Projected Costs: $225,000,000-$450,000,000
Description – The existing groundwater plant is capable of producing up to 18,590,000 million gallons of water a year within the limits of its permit. Alternative non-potable uses may include irrigation water, construction water, wet pond make up water, community garden water or other auxiliary use. Depending on weather conditions approximately 750,000 gallons a year will be used for the City Hall Complex in lieu of purchased water.

Implementation/Feasibility: It is estimated that the improvements could pay for themselves within 5 years. This project would have start up administrative costs and requires planning assistance.

Comments: Phase I of this program would be to get water to city owned landscape beds in the Villas, ERW medians and possibly Village Shopping Center. Landscape areas would need new purple non-potable irrigation heads. Research is needed to determine how cross connection regulations would apply. Expand the auxiliary water distribution system to exiting irrigated areas within the City (Villas, Jones Road, ERW, Homestead, Village, La Madeline); 12.5 MG Year Groundwater =$75,000 to $125,000 annual savings. Savings increases if the water saved is water that is subject to wastewater charges.

Projected Costs: $350,000 to $550,000
Groundwater Well System – Potable Drinking Water Use

Description – The existing groundwater plant is capable of producing up to 18,590,000 million gallons of water a year within the limits of its permit. The existing well is no longer permitted to produce water meeting public drinking water standards. This is due to lack of treatment, storage and testing meeting state requirements. In order to reinstate water plant service for the 110 residential customers in “Old Town” the well and water plant should be rebuilt to updated standards.

Alternate options for additional groundwater supply

- Traditional Groundwater well/plant into the Lower Trinity Aquifer
- Additional Edwards Groundwater well/plant under an interruptible BSEACD Permit to serve more customers
- Elevated storage tanks for fire protection and additional customers +$250,000

Comments: The level of complexity in management of the water system increases significantly when the city uses two sources of water. There are ways to mix water in storage that we have not pursued but may have some benefit if the overall goal is to maximize the use of available groundwater. This option has not been recommended since it would require additional water treatment and staff oversite.

Projected Costs: $1,300,000 - $1,750,000
Rainwater Harvesting

Description – Large scale rainwater collection and re-use. Residential whole house and irrigation systems. Commercial irrigation and other re-use.

Implementation/Feasibility: Residential programs have been in place for several years. Additional rebates are available through the City of Austin up to $5,000. Commercial Program incentives and management start-up cost $5,000-$10,000.

Comments: If used to source water that is always in demands such as water for toilets, washing machines, drinking water and irrigation systems this an excellent conservation method. This will maximize the collection system and water savings can measure in the tens to hundred thousand gallons range. Startup costs can be steep for property owners and maintenance of the system is often complicated. Staff would be significantly involved with program management if public education or incentives are added.

Projected Costs: Up to $3,000 each property.
Water Re-Use and Reclamation

Description – Residential and commercial non-potable water re-use could include use of air-conditioning condensate, washing machine discharge, handwashing sink water, or other source associated with traditional grey water systems. Re-use can be limited to uses within the buildings with disposal by sanitary sewer. Re-use may also include grey water re-use for landscape applications or other outdoor use.

Implementation/Feasibility: Sunset Valley is located over the Edwards Aquifer Recharge Zone. There is the potential for pollutants to migrate into groundwater if outdoor use is not managed properly. Use of outdoor greywater in Sunset Valley is unlikely. Conservation incentives could be created. New Program start-up cost and management

Comments: Much of this could be implemented with building code requirements and development incentives. Commercial rebate is available through Austin Water.

Projected Costs: $5,000 to $10,000
Description – Residential and Commercial water conservation may include but is not limited to educational programs, retrofit incentives, and new installation regulations for indoor and outdoor water use.

Implementation/Feasibility: Annual water savings attributed to city conservation programs is estimated at 1,110,000 gallons per year.

Comments: The Current Water Conservation and Drought Contingency Plan is due for a rewrite. More staff time needs to be dedicated to the implementation of conservation programs as well as internal operations to monitor and reduce water loss.

Projected Costs: Currently $26,000 annually for residential programs.
Selection Decision Tree

Current Water Source
- 2.53 Million Gallons/yr

Available Groundwater
- 18.6 Million Gallons/yr
- With Historical Permit

Potential Groundwater Source
- Long Term Viable Water Source

Other Water Sources Evaluated
- Groundwater Well System – Potable Drinking Water Use
- Aquifer Storage Recovery in Middle Trinity Aquifer using Edwards Aquifer
- Local Partnership in a Desalination Supply Development
- Rainwater Harvesting
- Water Re-Use and Reclamation
- Water Conservation
- Water Demand Reduction Options

Purchased Surface Water
- Renewal Required
  - Contract Through 2037
  - \$575,000/yr

Existing Groundwater Well System – Non-Potable Use
- Auxiliary Water Distribution
  - Irrigation
  - \$550,000

Existing Groundwater Well System – Potable Drinking Water Use
- Residual “Old Town” / Requires Planned Rebuild and Possible Relocation
  - \$1.75 Million

Groundwater Well System – Potable Drinking Water Use with Additional Residential
- Conditional Permit Only / Requires Purchased Surface Water Backup
  - \$3 Million

Aquifer Storage Recovery in Middle Trinity Aquifer using Edwards Aquifer
- Conditional Permit Only / May Require Purchased Surface Water Backup
  - \$2 Million

Local Partnership in a Desalination Supply Development
- No Partnerships Available / No Local Supply
  - \$250-$450 Million

Encourage Large Systems
- Education Code Update Rebate Incentives
- Greywater NA

Encourage InteriorReuse

REBATES
- \$20,000/yr
Selection Decision Tree

Long Term Viable Water Sources

Current Water Source
- 232 Million Gallons/yr

Available Groundwater
- 18.6 Million Gallons/yr
- With Historical Permit

Potential Groundwater Source

Other Water Sources Evaluated

Water Demand Reduction Options

Purchased Surface Water

Renewal Required Contract Through 2027
- $575,000/yr

Existing Groundwater Well System - Non-Portable Use

Auxiliary Water Distribution
- Irrigation
- $550,000

Existing Groundwater Well System - Portable Drinking Water Use

Groundwater Well System - Portable Drinking Water Use w/ Additional Residential

Aquifer Storage Recovery in Middle Trinity Aquifer using Edwards Aquifer

Conditional Permit
- Only if requires Purchased Surface Water Backup
- $3 Million

Local Partnership in a Desalinations Supply Development

No Partnerships Available / No Local Supply

Encourage Large Systems

Rainwater Harvesting

Encourage Interior Reuse
- Greywater NA

Water Re-Use and Reclamation

Education Code Update
- Rebate Incentives

Water Conservation

REBATES
- $36,000/yr
Sunset Valley Water Planning Project

Public Works Committee Recommendation

◦ Continue use of purchased surface water as the water source for the City

◦ Proceed with water management strategies that will reduce current and future water use such as rainwater harvesting, water reuse, and conservation programs

◦ Maximize the use of the city well for non-potable uses such as irrigation systems currently using surface water.
Sunset Valley Water Planning Project Completion

Consider Next Steps Based on Recommendation:

1. Feasibility and cost analysis for an auxiliary non-potable water line extension to add irrigation customers to the well system
2. Update Water Conservation Programs