



Ann Arbor's Water Future

City of Ann Arbor

City Council work session and discussion of the City's water treatment alternatives evaluation and recommendations.

September 13, 2021

www.a2gov.org



Background

- 1938 original construction, O&M challenges with end of service life, evolving regulations, changing water quality, changes in governance, changes in City policies (A2Zero)
- Re-evaluation of alternatives completed in 2015.
- Council Work Session on September 13, 2021

**Re-present
2016
recommend-
ations**

**Seek
Council
members'
feedback**

**Answer
questions
from
Council
members**



The recommendation at the conclusion of the 2015 Study was to rehabilitate the existing water treatment plant.

2015 Study

Conclusions and recommendations

Four alternatives were considered:

- Construct new or expand existing well fields
- Construct a new water treatment plant
- Join a regional water provider
- Rehabilitate the existing water treatment plant

Each alternative was assessed against the City's water quality goals, sustainability framework, customer service requirements, and regulatory compliance.

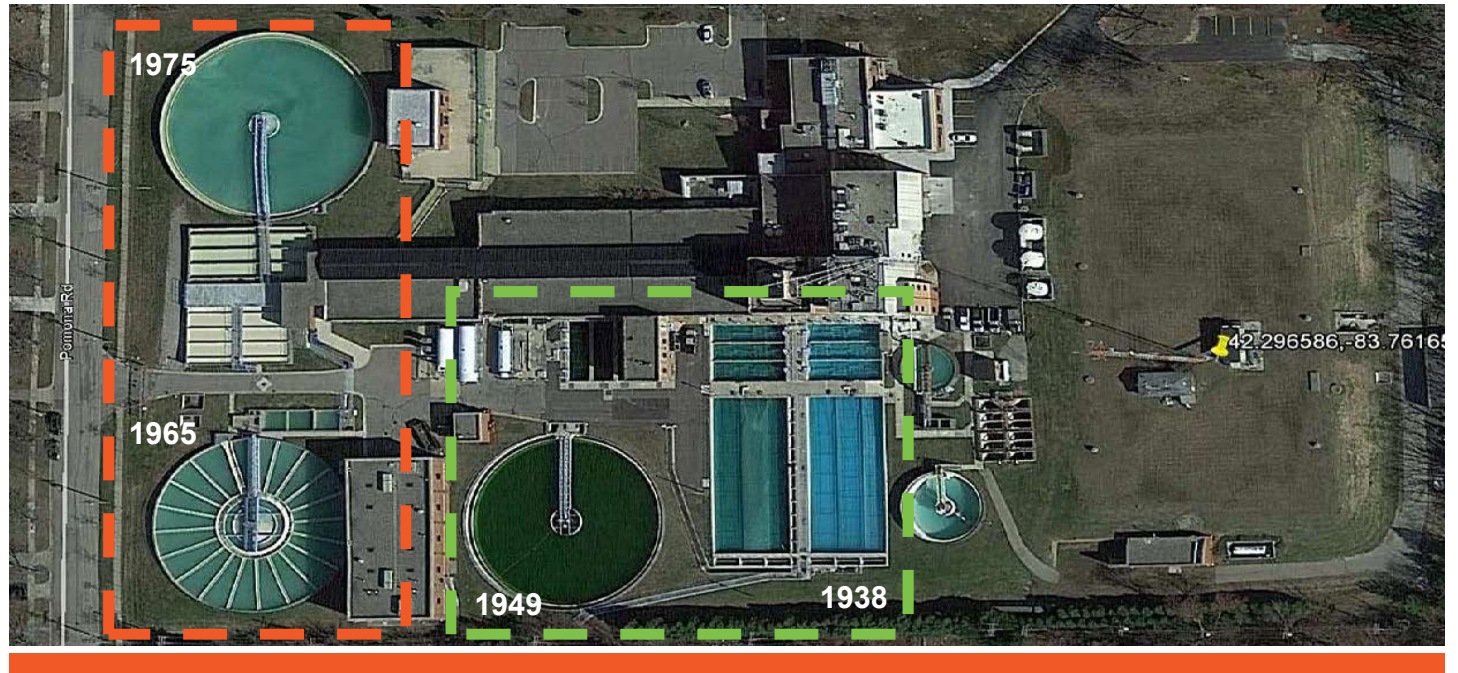
What source
water to use

Improve
redundancy
(backup)

Manage aging
infrastructure

ALTERNATIVE

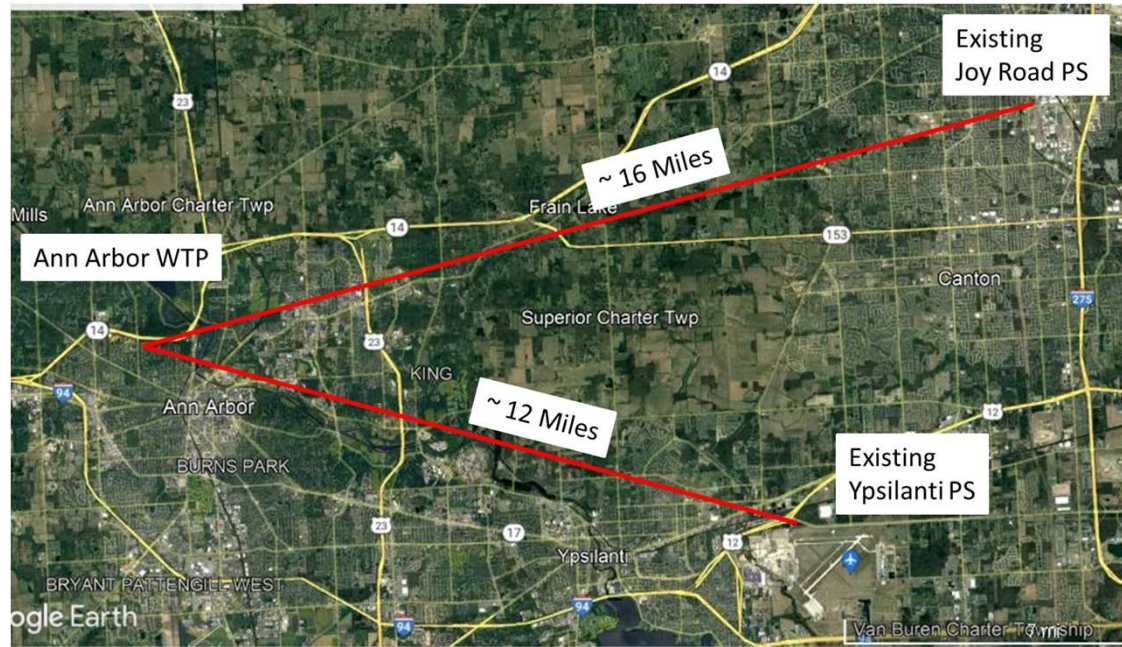
01

















Rehabilitate the water treatment plant on the existing site.

ALTERNATIVE

02



Connect and purchase drinking water as part of a regional water supply solution.

Evaluation Criteria	Rehabilitate the City's Water Treatment Plant (Alternative 1)	Connect and Purchase Water from a Regional Supply (Alternative 2)
Risk to source water quality		
Risk to treated water quality		
Ability to respond to community values		
City's carbon footprint		
Impact on schedule		
Impact on capital cost		
Impact on annual costs		

Comparison

Risk considerations for both alternatives

Green denotes lower risk/impact.

Yellow denotes medium risk/impact.

Red denotes higher risk/impact.

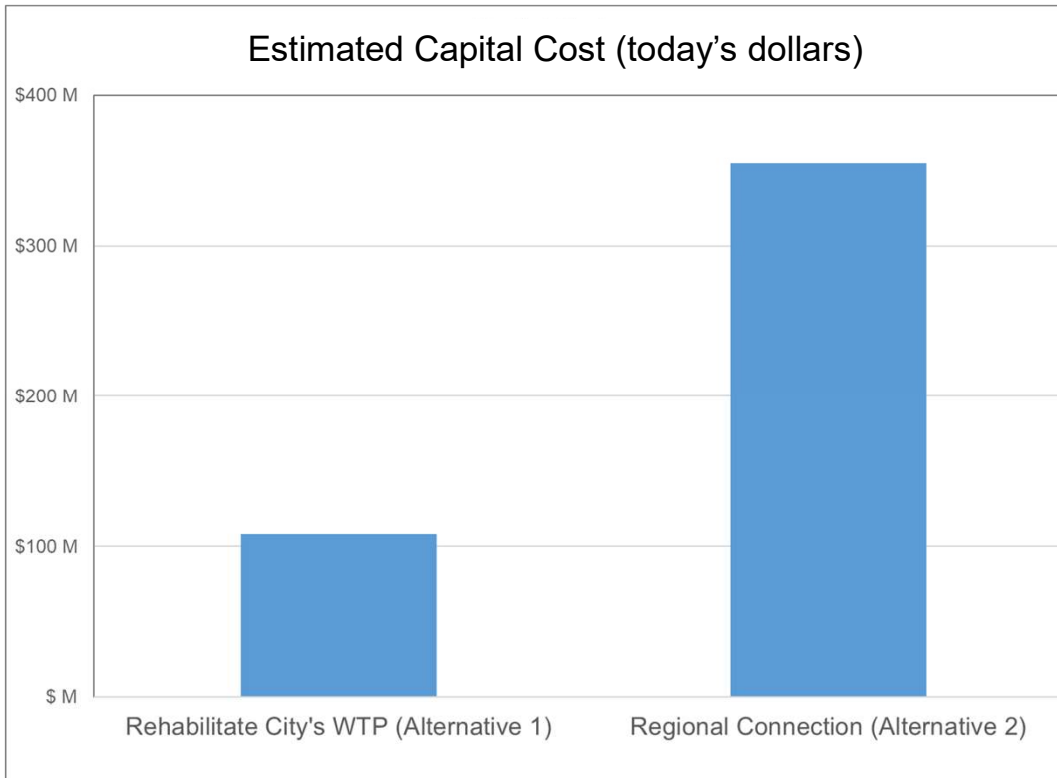
Discussions with both the state regulator (EGLE) and the regional water supplier (GLWA) are necessary to refine risks, impacts and costs.

**Water
Quality**

**Autonomy &
Community**

**Carbon
Footprint**

Estimated Capital Cost (today's dollars)



Financial Impact

Conclusions from 2015 Study

01 Rehabilitate City's Water Treatment Plant
Estimated capital cost = \$108M in today's dollars

02 Connect to regional water supply solution
Estimated capital cost = \$355M in today's dollars

Estimated Annual Revenue Requirements (FY2022)

\$75.0 M

Annualized costs for future improvements are expected for both alternatives, but have not been quantified.

\$50.0 M

\$25.0 M

\$0.0 M

Future unknown capital costs for Regional solution

Future Capital (Unknown)

Future Debt Service (Estimated)

One Time Bonding Cost (Estimated)

Purchased Water Costs (Estimated)

Water Treatment
Finance/Customer Service
Systems Planning

Public Works

Administration

Current Capital/Restricted Funds

Current Debt Service

Future unknown capital costs at WTP

Future Capital (Unknown)

Future Debt Service (Estimated)

One Time Bonding Cost (Estimated)

Water Treatment

Finance/Customer Service
Systems Planning

Public Works

Administration

Current Capital/Restricted Funds

Current Debt Service

Previously approved by Council

Rehabilitate City's WTP (Alternative 1)

Regional Connection (Alternative 2)

**STAFF
RECOMMENDATION**

**Alternative
01**



Staff recommend that the City proceed with conceptual design to upgrade the City's water treatment plant.

NEXT STEPS

Council decision at
future Council
meeting

Staff will present up to two
resolutions at a future Council
meeting.

Proceed with
conceptual design
of Alternative 1

The first resolution will be to
approve a contract for
conceptual design to rehabilitate
the City's Water Treatment Plant.

And simultaneous
evaluation of
Alternative 2?

The second resolution may be to
amend the contract to evaluate
simultaneously the regional
water supply solution, should the
Council decide to proceed with
that option.



THANK YOU
for your time

Comparison

Risk to source water quality

Rehabilitate the City's Water Treatment Plant (Alternative 1)	Purchase Water from a Regional Water Supplier (Alternative 2)
<p>Long-term, the City can manage water quality threats in the source water</p> <p><i>Cryptosporidium</i> – present in river source, effective treatment installed in 2020</p> <p>1,4-dioxane – risk of groundwater plume reaching City's river source; ongoing studies to predict timing</p> <p>PFAS – present in river source; partially removed by existing treatment; future risk if new compounds found ●</p>	<p>Long term, the regional water supplier can manage water quality threats in the source</p> <p><i>Cryptosporidium</i> – no foreseen change to pathogen risk, including <i>Cryptosporidium</i></p> <p>1,4-dioxane – no foreseen risk in source water</p> <p>PFAS – not currently present, but remains a future risk</p> <p>Algae/algal toxins – risk of harmful algae, with effective treatment available ●</p>



Comparison

Risk to treated water quality

Rehabilitate the City's Water Treatment Plant (Alternative 1)	Purchase Water from a Regional Water Supplier (Alternative 2)
Short-term treated water quality impacts due to future treatment changes are less likely	Short-term treated water quality impacts during transition to a regional water supply are more likely and may undermine public confidence in the water supply For example, changing disinfectant from chloramine to free chlorine in the distribution system potentially affects the taste and odor of the water and formation of regulated disinfection by-products



Comparison

City's carbon footprint

Rehabilitate the City's Water Treatment Plant (Alternative 1)	Purchase Water from a Regional Water Supplier (Alternative 2)
<p>Likely more compatible with A2Zero</p> <p>Energy to pump water is the most significant contributor to carbon footprint</p> <p>Portions of the existing distribution system are operated by gravity, reducing energy costs</p> 	<p>Likely less compatible with A2Zero</p> <p>More energy needed to pump the water from the regional treatment facilities to the City's distribution system (approx. 30 miles)</p> <p>Additional pumping facilities would likely be needed at the point of wholesale connection to address the City's topography</p> 



Comparison

Change to governance and ownership

Rehabilitate the City's Water Treatment Plant (Alternative 1)	Purchase Water from a Regional Water Supplier (Alternative 2)
<p>City retains complete control over drinking water infrastructure, including:</p> <ul style="list-style-type: none">• Water use restrictions• Treatment options• Expanding to serve additional communities <p>Aligns Ann Arbor's water future with community values, including:</p> <ul style="list-style-type: none">- Carbon neutrality- Environmental impacts- Equity and affordability 	<p>Contract structure may limit water use/availability</p> <p>Regional supplier involved in City system operations (water storage management)</p> <p>One of many member communities</p> <p>Regional vs. local priorities rule</p> 

Comparison

Impact on implementation schedule

Rehabilitate the City's Water Treatment Plant (Alternative 1)	Purchase Water from a Regional Water Supplier (Alternative 2)
<p>Shorter timeline for implementation</p> <p>Schedule risk managed by the City</p> <p>Begin conceptual design in 2022, with completion in 2023</p> <p>Begin construction in about five to six years from now</p> 	<p>Longer timeline for implementation</p> <p>Higher schedule risk, not all in the City's control</p> <p>Begin discussions/conceptual design in 2022</p> <ul style="list-style-type: none">Expected to add 1 to 2 years to project schedule (and study cost est'd \$300k) <p>Begin construction in six to eight+ years</p> <ul style="list-style-type: none">Timing TBD for potential capital worksTiming TBD for easement and land acquisition (could be challenging) 

Comparison

Potential capital cost impacts

Rehabilitate the City's Water Treatment Plant (Alternative 1)	Purchase Water from a Regional Water Supplier (Alternative 2)
<p>Immediate capital cost is lower; there is some future cost risk</p> <p>Immediate capital needs:</p> <ul style="list-style-type: none">Plant 1 refurbishment (\$108M)Permanent <i>Cryptosporidium</i> treatment, piping and new building (~\$10 to 15M) <p>Potential unknown capital needs:</p> <ul style="list-style-type: none">Plant 2 refurbishment (need, cost unknown)PFAS enhanced treatment (timing, scope and cost unknown)1,4-dioxane treatment (timing, scope and cost unknown)	<p>Immediate capital cost is higher; there is some immediate cost risk</p> <p>Immediate capital needs for City's system:</p> <ul style="list-style-type: none">Upgrades to receive regional water (\$355M)Repurpose water plant site (cost unknown) <p>Potential unknown capital needs:</p> <ul style="list-style-type: none">Potential upgrades to regional water supplier's transmission and pumping system to bring water to City at two points of connection (timing, scope and cost unknown)

Comparison

Potential annual cost impacts

Rehabilitate the City's Water Treatment Plant (Alternative 1)	Purchase Water from a Regional Water Supplier (Alternative 2)
Annual O&M costs will increase but less than Alternative 2	Annual O&M costs will increase and there is some future cost risk Annual O&M costs for the City's distribution system remain Annual O&M costs for a portion of the existing water treatment plant remain (< 50 percent) Annual commodity and service charges are estimated to be 30 to 100 percent higher