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Water Treatment Plant 5 – Preliminary Report

City Council - October 3, 2017



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Outline

- Project Team
- Service and Need
- Planning Process
- Pilot Study
- Site Selection
- Recommendation
- Planning and Architectural
- Cost and Funding
- Discussion and Questions



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Project Team

City Staff

- Ross Bintner, PE
- Chad Millner, PE
- Brian Olson, PE
- David Goergen
- Gary Wells
- Water Operators

AE2S Engineers

- Grant Meyer, PE
- Aaron Vollmer, PE
- Delvin DeBoer, PhD, PE
- Abbie Browen, EIT

Oertel Architects

- Thomas Stromsodt, AIA

Service and Need



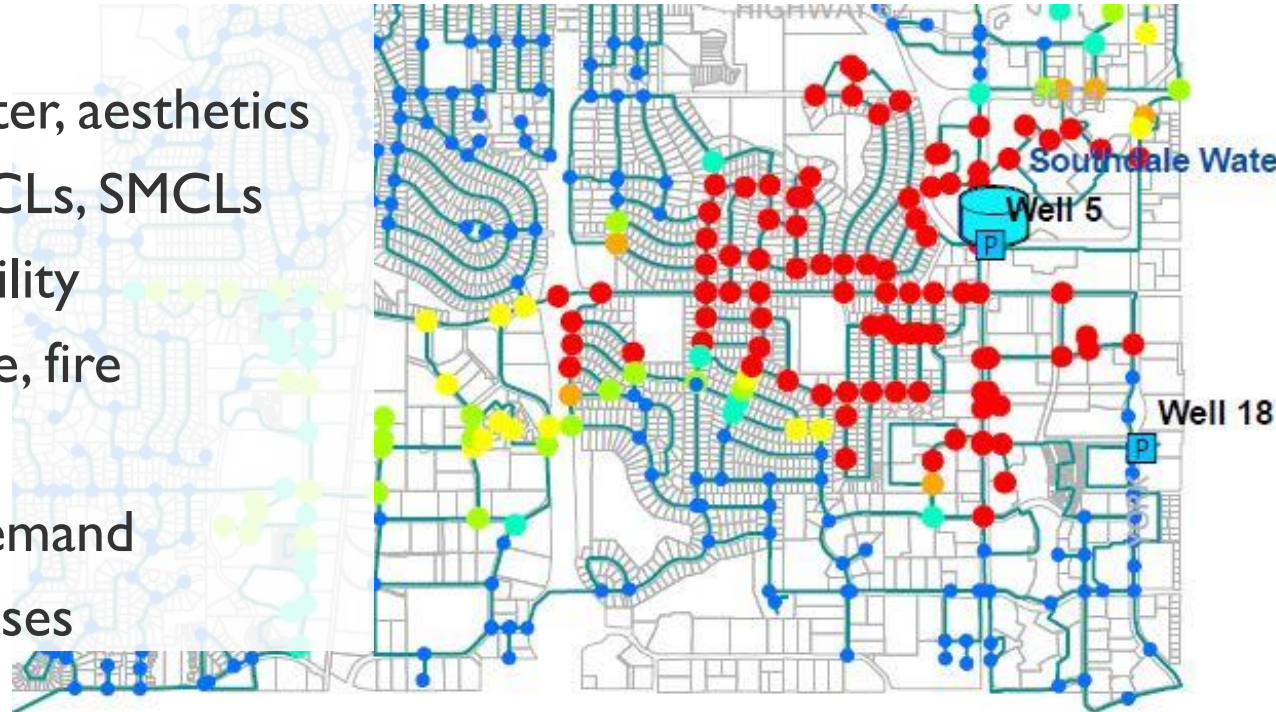
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Service

- Safe, high quality water, aesthetics
- Disinfection, EPA MCLs, SMCLs
- Conservation, reliability
- Emergency, resilience, fire

Need

- Summer seasonal demand
- Unfiltered water pulses

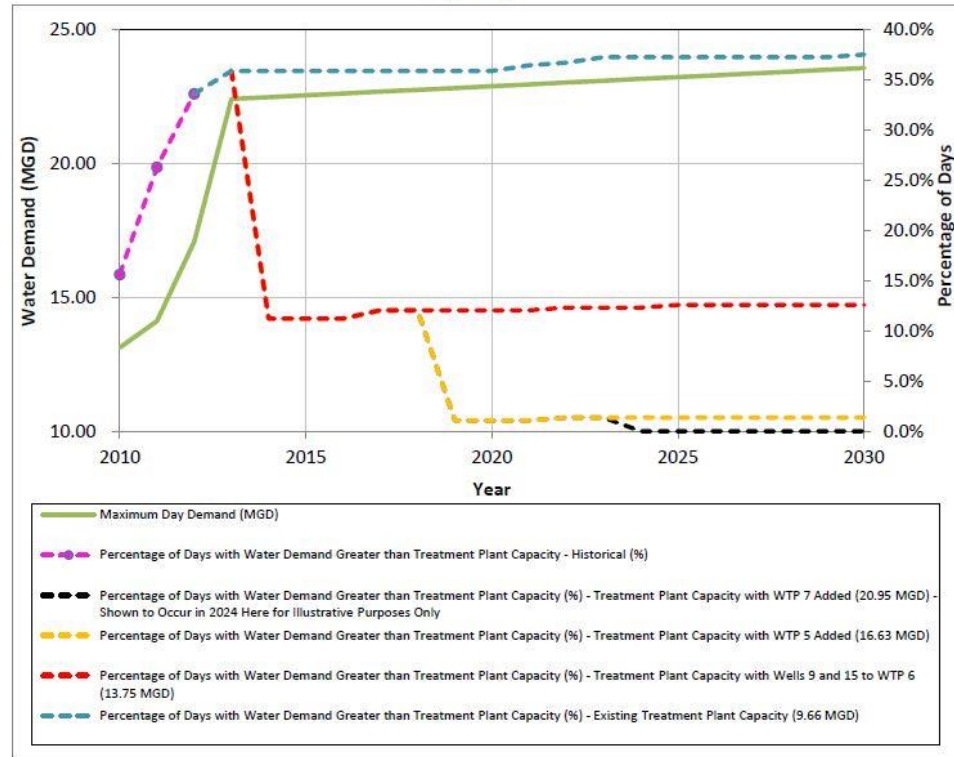




Planning Process

- History
 - 2006 CIP, UT-07-002
 - 2008 Comp plan
 - Vinyl chloride, northern well field
 - WTPs 2, 3, 4, 6, 7, 5
- Growing Filtered Capacity
- Preliminary report, pilot, site selection

Figure 4 – Projected Percentage of Days with Demand Exceeding Water Treatment Plant Capacity





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Pilot Study

- Treatment Objectives
- Process Alternatives

Pilot Study? *A scaled down version of treatment options*

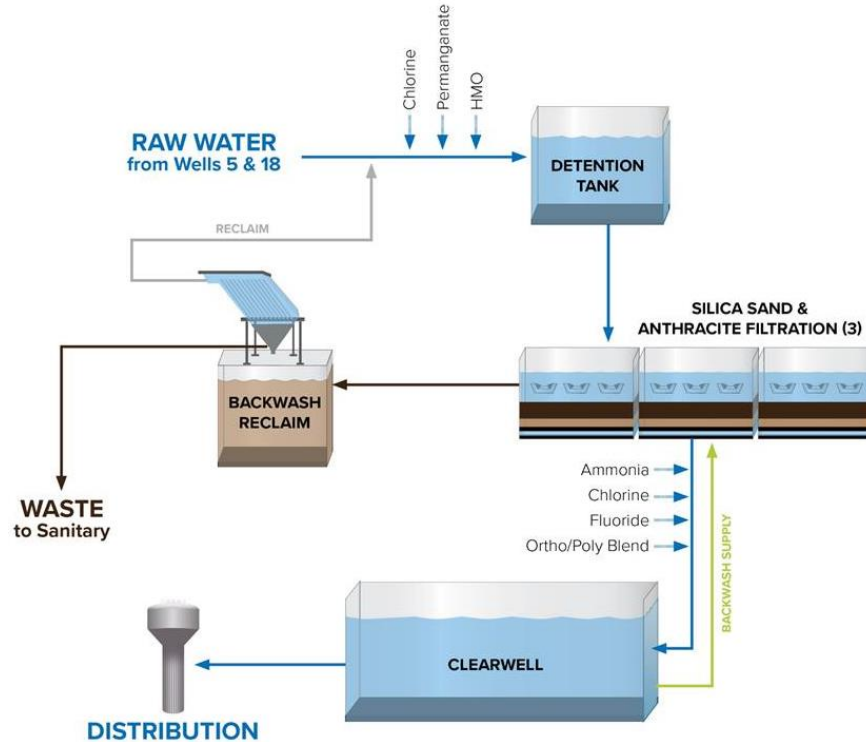
- Iron & manganese removal
- Radium removal
- Filter media selection
- Filtration rates, and backwash
- Chemical costs





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Pilot Study – Selected Process



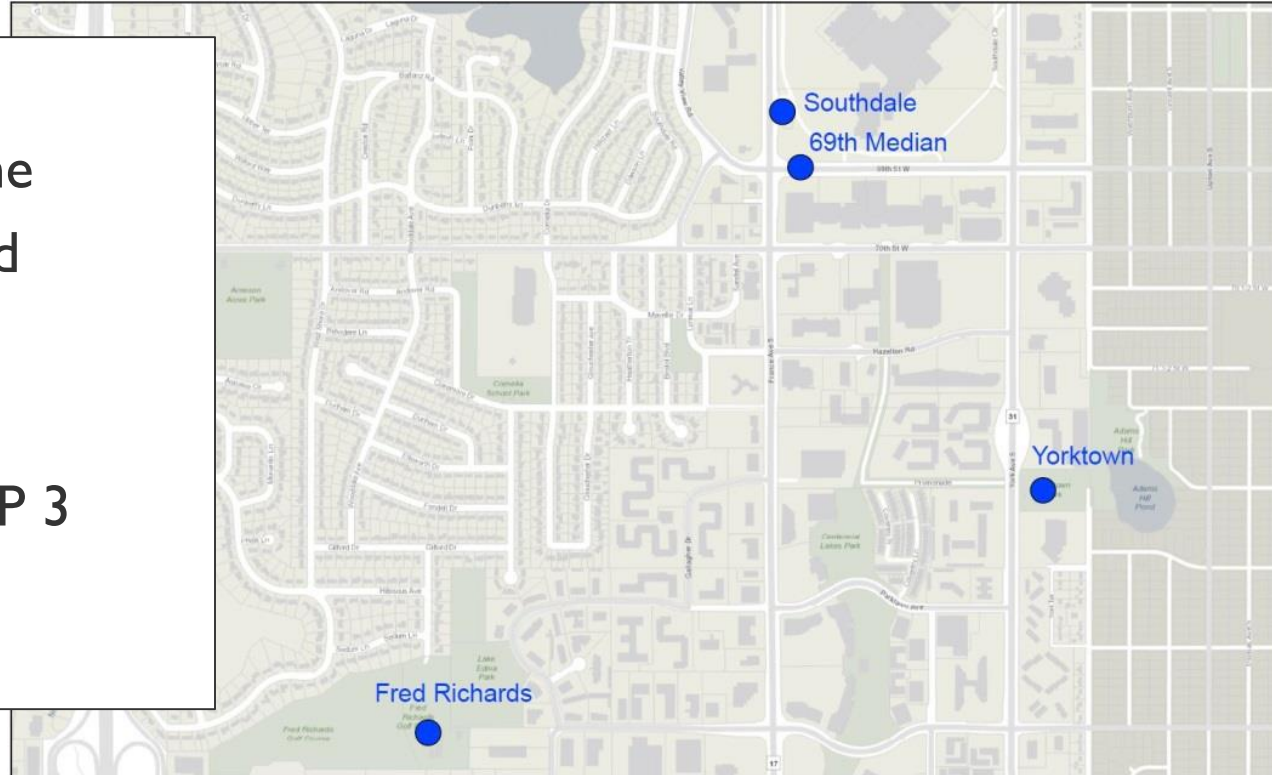
Site Selection



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Four Sites

- Southdale standalone
- Southdale integrated
- Yorktown
- 69th Median
- Fred Richards / WTP 3

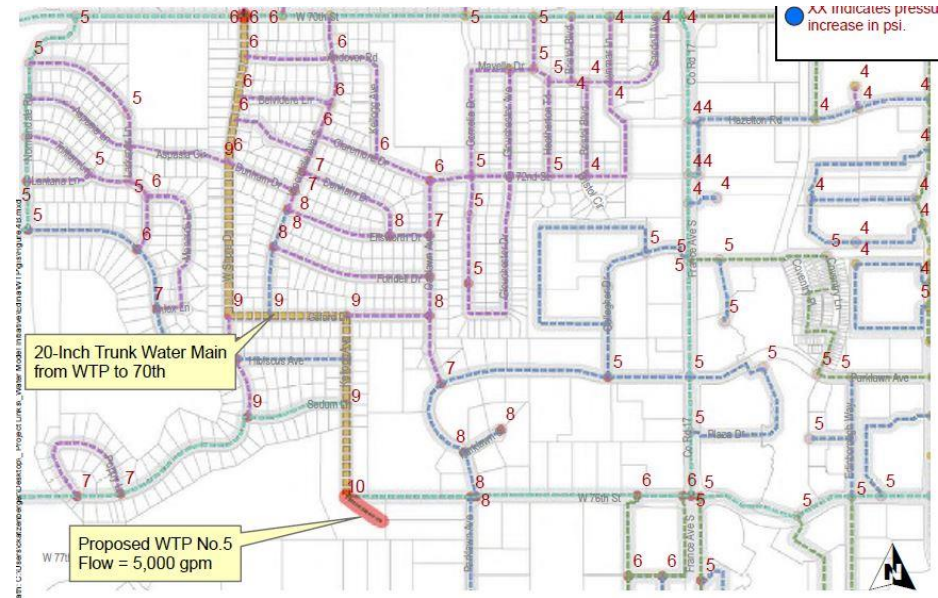




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Site Selection – Fred Richards

- Co-located with WTP 3
- Distribution systems limitations

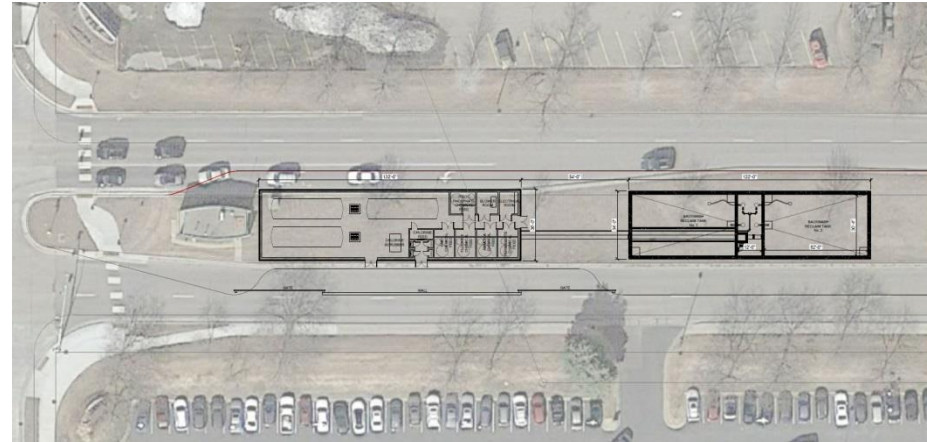


Site Selection – 69th Median



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- Located in the median of 69th street near existing well 5
- Constructability, plant security and operator safety concerns



Site Selection – Yorktown



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- Trailhead feature near fire station, YMCA, and promenade
- Utility relocation premium
- Distribution system cost premium



Site Selection – Southdale Integrated



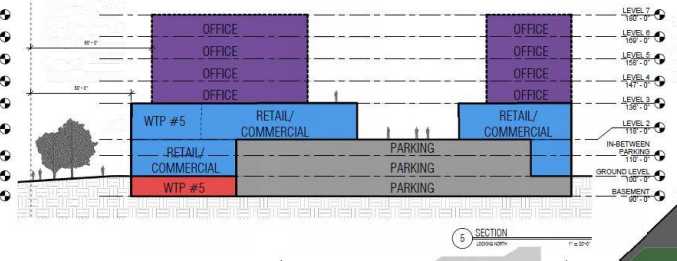
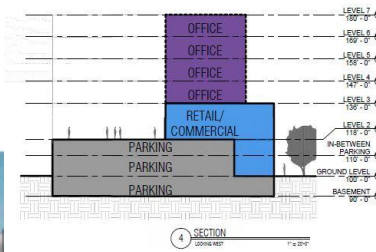
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Site Selection – Southdale Integrated



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- Highest use of land
- Discussion with property owner
- Ring road and anchor agreement constraints
- Structural option still available



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Recommendation – Southdale Standalone

- Good location in utility system for pressure and flow
- Room to meet all treatment goals





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Southdale Standalone – Architecture and Community Fit

- Acceptable community fit
- Engages France Avenue
- Constructability, tight site
- Close coordination with property owner required





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Landscape & Architectural Options





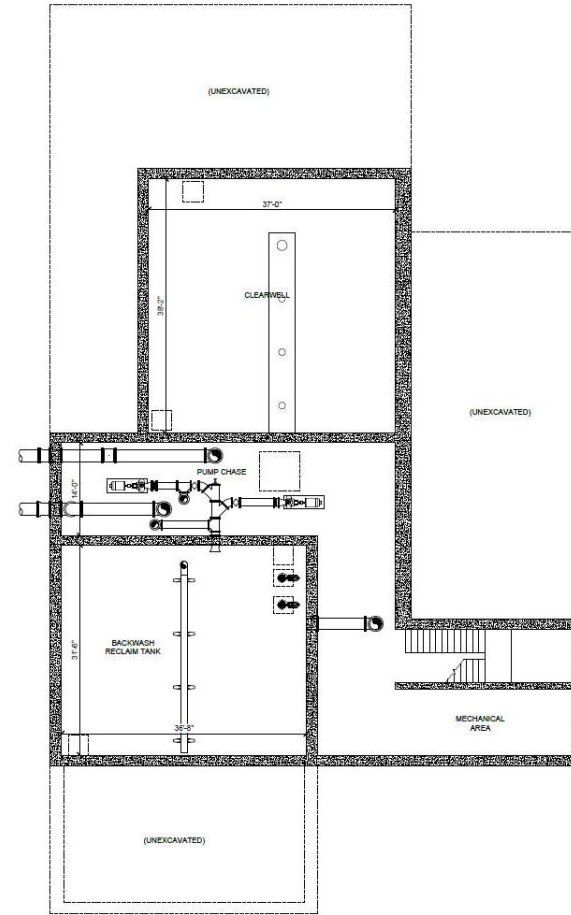
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Landscape & Architectural Options



Recommendation – Southdale Standalone

- Existing investment in raw water line
- Good fit in distribution system
- Secure delivery area
- Meets all treatment goals
- Efficient space usage with clear well and reclaim tanks underground





Cost and Funding

Item & Total Amount	Amount by Year	Funding Source - Notes
CIP 15-162 <i>New Water Treatment Plant 5</i> TOTAL \$8,675,000	2017; \$2,000,000 2018; \$6,750,000	Early estimates built off 2000gpm pressure plant. 3000gpm gravity plant recommended.
CIP 15-163 <i>New Storage at WTP 5</i> TOTAL \$1,000,000	2018; \$1,000,000	Not adding storage at WTP 5, but redirecting funds to CIP 15-162
CIP 15-164 <i>Well 21 and Raw Water Line</i> TOTAL \$675,000	2017; \$75,000 2019; \$600,000	Delay Well 21 decision until WTP 5 bid costs are known, hold these funds in reserve
CIP 15-102 <i>Well 5 Rehab</i> TOTAL \$120,000	2018; \$120,000	Estimate for removal of well house and below grade vault \$80K higher
CIP GRAND TOTAL \$10,545,000	2017; \$2,075,000 2018; \$7,870,000 2019; \$600,000	Estimated schedule puts more expenses into 2018 and 2019



Cost and Funding

PROJECT EXPENSE AND ESTIMATE

Item & Total Amount	Amount by Year	Actual and Estimate Costs - Notes
CIP 15-162	2017 To date; \$116,000	\$85.5K report + change order 1
<i>New Water Treatment Plant 5</i>		\$17K Tower stability analysis
	2017 Additional; \$368,000	\$13.6K Borings, Geotechnical Report
	2018; Estimate \$6,556,000	\$268K Preliminary design
		\$100K Final design (partial)
		\$505K Final design (remaining)
		\$38K Bidding services
		\$460K Construction services
SERVICES \$1,527,000		\$40K Soils and Material Testing
WTP \$7,591,000		\$5.513MM Construction (60% partial)
CONTINGENCY \$1,199,000	2019; Estimate \$3,677,000	\$3.677MM Construction (remaining)
INTEGRATION \$400,000		(includes integration costs and 15%,
ESTIMATE \$10,717,000		construction contingency)

Cost and Funding



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CIP 15-163 <i>New Storage at WTP 5</i> ESTIMATE \$0		Not adding storage at WTP, but redirecting funds to CIP 15-162
CIP 15-164 <i>Well 21 and Raw Water Line</i> ESTIMATE \$0 - \$1,700,000		Delay Well 21 decision until WTP 5 bid costs are known, sharpen estimate and hold these funds in reserve
CIP 15-102 <i>Well #5 Rehab</i> TOTAL \$100,000 - \$200,000	Base cost built into integration costs above OPT 1 - 2018; \$100,000 premium	Option 1 recommending removal of median well house and conversion to below grade structure and pump
TOTAL ESTIMATE; \$10,717,000 w/ OPT 1; \$10,817,000	2017; \$484,000 2018; \$6,656,000 2019; \$3,677,000	

Estimates are to nearest \$1,000's



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Discussion and Questions

- Site selection?
- Input on architectural elements?
- Replace 69th St well house 5 with underground?
- Cost, scope, schedule?





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Discussion and Questions

