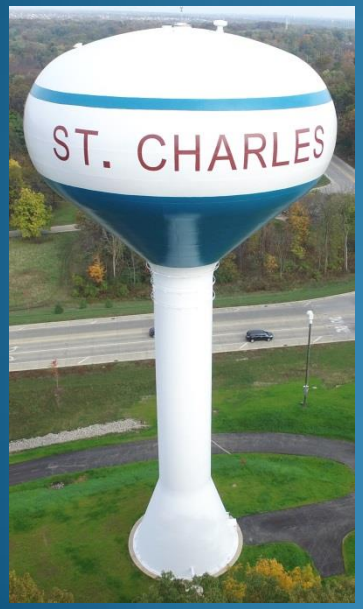
10 Year Water Utility Master Plan – Water Supply Component



Government Service Committee Meeting

October 22, 2018

Chris Adesso

TROTTER and ASSOCIATES, INC.
ENGINEERS AND SURVEYORS
Experienced Professionals - Better Solutions

Presentation Agenda

- Background
- Current Water Production
- Future Production Needs
- Production Recommendations
- Utility Scale Water Softening
- Next Steps
- Questions?

Background

- 2018 Water Utility Master Plan – August GSC Presentation
  - 4 – Components of Master Plan
  - Water Storage & Distribution – No Further Discussion Anticipated
- **Water Supply & Treatment – Tonight's presentation for Information Only**
  - **Staff does not need an Official Resolution this Evening**

Water Production – Current Cont…

- 2018 Population (+/-) 33,403
- Extrapolated Population Equivalents (PE)
  - Residential = 33,403 PE
  - Non-Residential = 19,797 PE
  - Total **53,200 PE**
- Current Water Demands
  - Average Daily Water Pumped – 4.0 Million Gallons a Day
  - Maximum Daily Water Pumped – 9.43 Million Gallons a Day

Water Production - Current

- Design vs. Current Production Capacity

		Design		Current (2018)	
Well	System Served	Design Capacity (GPM)	Design Capacity (MGD)	Current Capacity (GPM)	Current Capacity (MGD)
3	Inner	1,000	1.44	850	1.22
4	Inner	1,000	1.44	750	1.08
Total	**Inner**	**2,000**	**2.88**	**1,600**	**2.3**
7	Outer	1,750	2.52	1,500	2.16
8	Outer	1,200	1.73	950	1.37
9	Outer	2,150	3.10	1,500	2.16
11	Outer	1,900	2.74	1,000	1.44
13	Outer	1,500	2.16	1,500	2.16
Total	**Outer**	**8,500**	**12.25**	**6,450**	**9.29**
	Total System Capacity:		15.13		11.59
	Total Firm Capacity:		12.03		9.43

Water Production – Future Needs

- 2018 Current Extrapolated PE = 53,430 PE
- 2023 Planned PE Growth = 66,329 PE
- 2030 Programmed PE Growth = 75, 526 PE

	Future Demands and Supply Capacities				
Year	Max Demand (MGD)	Total Supply (MGD)	Total Deficiency (MGD)	Firm Supply (MGD)	Firm Deficiency (MGD)
2018	9.74	11.59	0.00	9.43	0.31
2023	12.10	11.59	0.51	9.43	2.67
2030	13.50	11.59	1.91	9.43	4.07
2040	14.60	11.59	3.01	9.43	5.17

Water Production – Alternatives

Alternative	Project Cost	Capacity Increase (MGD)	Cost Per Gallon of Increased Production
Alternative 1 - DuPage Water Commission	$65,720,000	4.86	$13.53
~~Alternative 2 - Fox River~~	N/A	N/A	N/A
Alternative 3 - Well 10 (Crane Road Shallow Well)	$3,640,000	2.16	$1.69
Alternative 4 - Well 12 (Abbeywood Drive Shallow Well)	$3,620,000	2.16	$1.68
Alternative 5 - Well 14 (Peck Road Shallow Well)	$3,950,000	2.16	$1.83
Alternative 6 - Galesville at Well #7/13	$3,110,000	1.44	$2.16
Alternative 7 - Galesville at Well #9/11	$3,190,000	1.44	$2.22

- DWC – Very high Capital Expenditures
- Fox River - Withdrawal limits & Highest Capital
- Drill & Construct City Utility Operated Wells

Water Supply Recommendation

- Next 1 – 5 years to Address Anticipated 2023 Demand
  - Continue Optimize Existing Production
  - Update Well #7 Facility & Combine with Well #13 Site
  - Test drill additional well site locations
  - Test alternative treatment options
  - Development of a Additional 2.25 MGD by Drilling a New Shallow/Deep Well
  - Expected CIP Expenditures for above - $15 - $20mm

Utility Scale Water Softening

Utility Scale Softening Summary (20% Contingency)			
Softening Process	Well #7/13 Capital Cost	Well #9/11 Capital Cost	Total Capital Cost
Ion Exchange	$14,665,583	$11,910,039	**$26,575,622**
Nanofiltration	$34,266,623	$34,754,501	**$69,021,124**
Lime Softening	$34,761,333	$42,403,079	**$77,164,412**
Pellet Softening	$20,579,862	$30,362,830	**$50,942,693**
Pellet/IEX Softening	$24,968,469	$33,726,663	**$58,695,133**

- Ion Exchange is not a viable option
- Softening Threshold = Lake Michigan Water (Inner Zone)
- DPC – Generally meets Supply & Softening thresholds
- 2018 Dollars - Cost does not include Anticipated Growth

Next Steps

- Staff will Execute the Supply Recommendations over next 1 – 5 years.
  - Critical Path – Well #7/Well #13 Interconnection & Common Treatment Plan
  - Investigate New Well Locations
  - Trial Test New Treatment Alternatives
- Update & Incorporate Projects into the CIP
- Conduct Further Studies as Needed
- Understand the Policy Direction of Utility Scale Water Softening (Budget Season)

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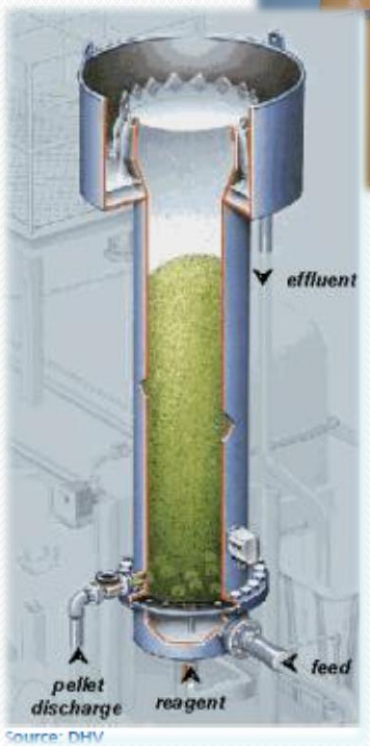

Source: DHV