FIVEASH WATER TREATMENT PLANT EVALUATION UPDATE

February 4, 2020

CITY OF FORT LAUDERDALE

Project Scope

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- Existing Facility Condition Assessment
- Existing Water Resources Evaluation
- Treatment Systems Investigation

Project Findings

Existing Facility Condition Assessment

- Performed evaluation & visual inspection of existing facilities (Treatment Plant & Wellfield)

- Visual Condition Assessment

Existing Facility Condition Assessment

Conclusions:

- Facility has reached/exceeded projected life
- Findings consistent with the findings of the 2017 Comprehensive Utility Strategic Master Plan

Recommendations

- Limit investment to that necessary for current operations
- Do not invest in facility to meet identified goals (water quality, reliability, resiliency, etc.)

Original construction – 1954 (66 years ago)

Type	Time (in years)
Wells	20-30
Water Treatment Plant	
• Structures	32
• Water Treatment Equipment	22
• Miscellaneous Equipment	25
• Storage Reservoirs	40
• Transmission & Distribution Mains	43

From FAC 25-30.115 and 25-30.140

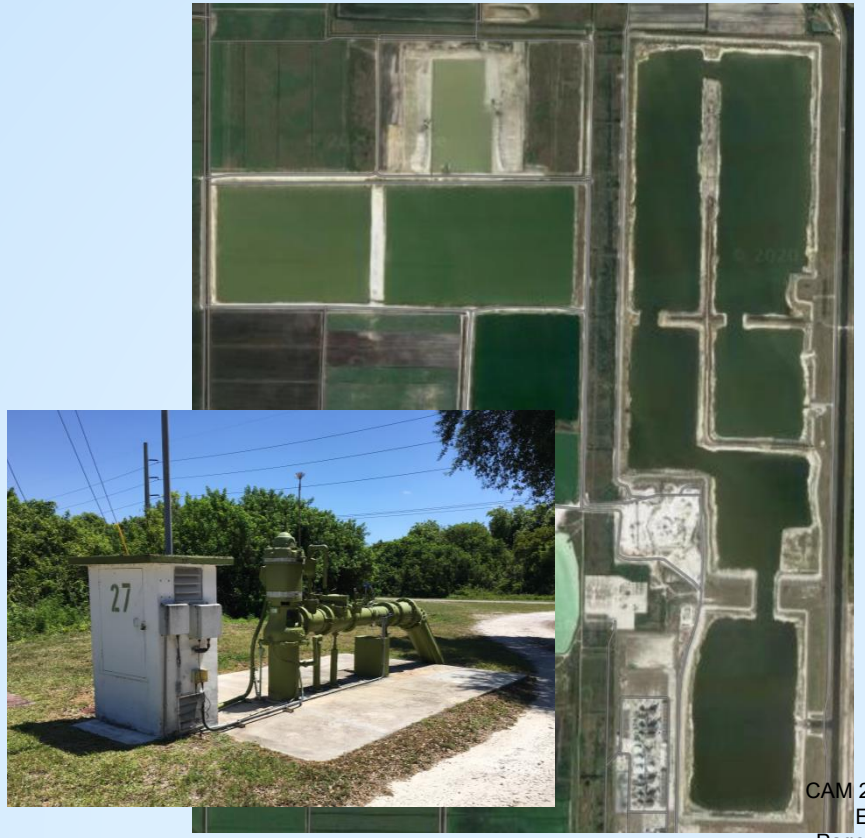
Existing Water Resources Evaluation

- Assessed planning period needs (2035) – 50 million gallons per day
- Evaluated existing SFWMD water use permit (WUP) allocations
- Performed comparison of C-51 source with Floridan Aquifer source

Conclusions

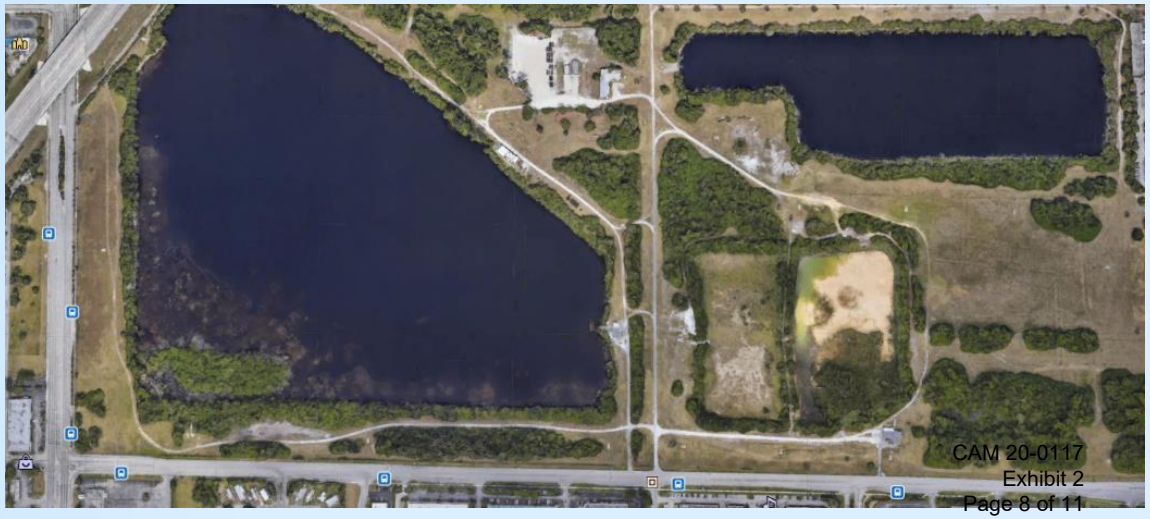
- Existing WUP allocations are sufficient for planning period needs

- Purchase/utilization of C-51 water is cost effective for post planning period requirements
  - 3 mgd reserved
  - Additional 3 mgd planned



Treatment Systems Investigation

- Investigated Multiple Treatment Process Combinations
- Replacement facility location evaluation
  - Fiveash Site
  - Prospect Wellfield
- Performed siting and cost analysis



Treatment Investigation

- 18 Treatment Systems Investigated

Primary Goals:

- Meet all regulatory requirements
- Achieve enhanced/improved aesthetic objectives (color, taste/odor, etc.)
- Establish "state of the art"/robust treatment system for the long term
- Optimize fiscal and operational considerations
- Plan for future considerations (future regulations, byproducts disposal, etc.)

Table WA5.A-1. WTP Effluent Quality, Goals, and SDWA Drinking Water Standards.

Parameter	Units	Goal	Fiveash Effluent Water Quality (2014)	Peele-Dixie Effluent Water Quality (2014)	Primary Drinking Water Standards	Secondary Drinking Water Standards
Total Hardness	mg/L as CaCO3	50 - 120	77.3	17.4	NS	NS
Sodium	mg/L	< 50	36.5	<50	160	NS
Total Dissolved Solids (TDS)	mg/L	< 500	<500	<500	NS	500
Iron	mg/L	< 0.3	0.02	0.10	NS	0.3
Manganese	mg/L	< 0.05	ND	<0.05	NS	0.05
Fluoride	mg/L	< 0.7	0.58	0.6	4.0	2.0
Sulfate	mg/L	< 200	ND	<200	NS	250
Chloride	mg/L	<100	66.5	16.7	NS	250
Color	Pt-Co	< 8	15.2	1.9	NS	15
Turbidity	NTU	< 1	0.16	0.16	NS	NS
Alkalinity	mg/L as CaCO3	> 40	60.7	54.1	NS	NS
H2S	mg/L	< 0.1	<0.1	<0.1	NS	NS
pH	Units	8.0 – 8.5*	9.19	9.0	NS	6.5-8.5
TTHM	mg/L	< 0.06	0.064	0.064	0.08	NS
HAA_5	mg/L	< 0.04	0.0318	0.0318	0.06	NS
Free Ammonia	mg/L	<0.2	<0.5	<0.5	NS	NS
Corrosivity	-----	Non Corrosive	Non Corrosive	Non Corrosive	NS	Non Corrosive
LSI	units	> 0.2	>0.3	0.3	NS	NS

Treatment Systems Investigation

- Conclusions
  - Granular Activated Carbon (GAC) & Seawater Desalination
    - more expensive than other options
  - Multiple treatment schemes available to achieve goals
  - Prospect Wellfield site is most suitable for replacement facility
  - Most “state of the art”/robust treatment system would consist of nanofiltration and ion exchange system
  - Conceptual capital cost range $350 - $400+ million

Questions ?