

Charlotte County Utilities

South County Utility Improvements:

Site Selection & Hydraulic Analysis:

Elevated Water Storage Tank (EST)

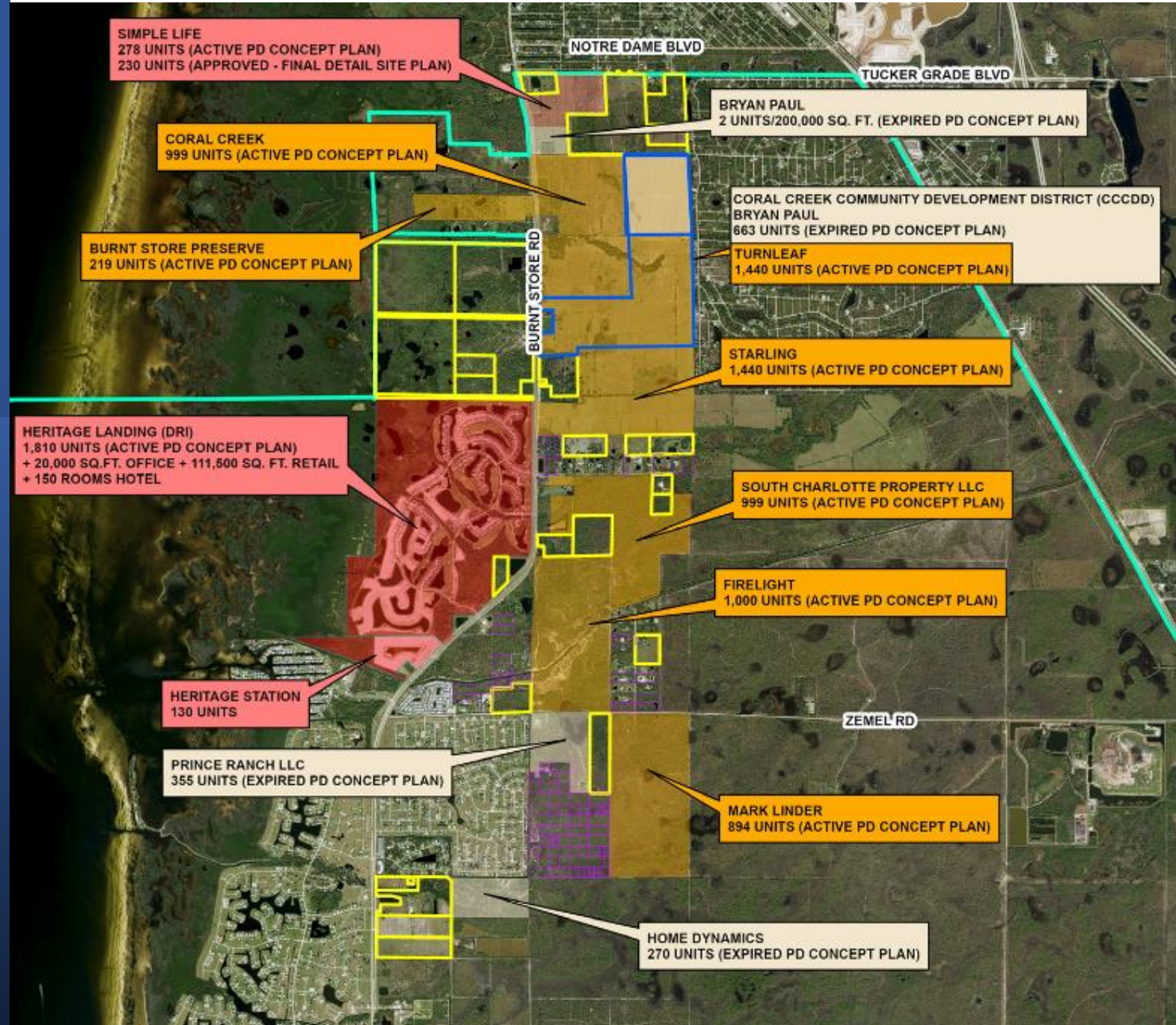
WTP Upgrades v. Remote Booster Station

Master Lift Station (MLS)



Resiliency for the future

South County Planned Developments



South County Utility Improvements

What's included?

Infrastructure Included

- Elevated Water Storage Tank (EST)
- WTP Upgrades v. Remote WBS
- Master Lift Station (MLS)

Site Selection Parameters

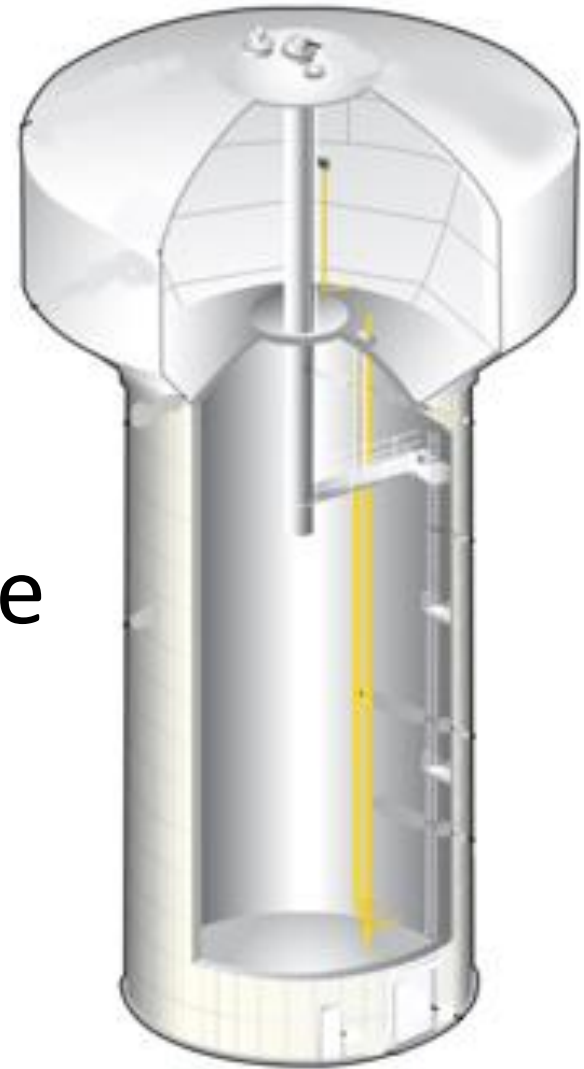
- Space Availability
- Hydraulic profile
- Construction Footprint
- Proximity To Existing Infrastructure
- Accessibility
- Zoning
- Permitting

Why an Elevated Water Storage Tank?



EST Site Selection Criteria

- Safety Radius (175ft)
- Proximity to existing infrastructure
- Optimal Hydraulic Profile
- Ease of land acquisition
- Zoning / Permitting / Future Land Use



ENGINEERING DESIGN CONSTRAINTS

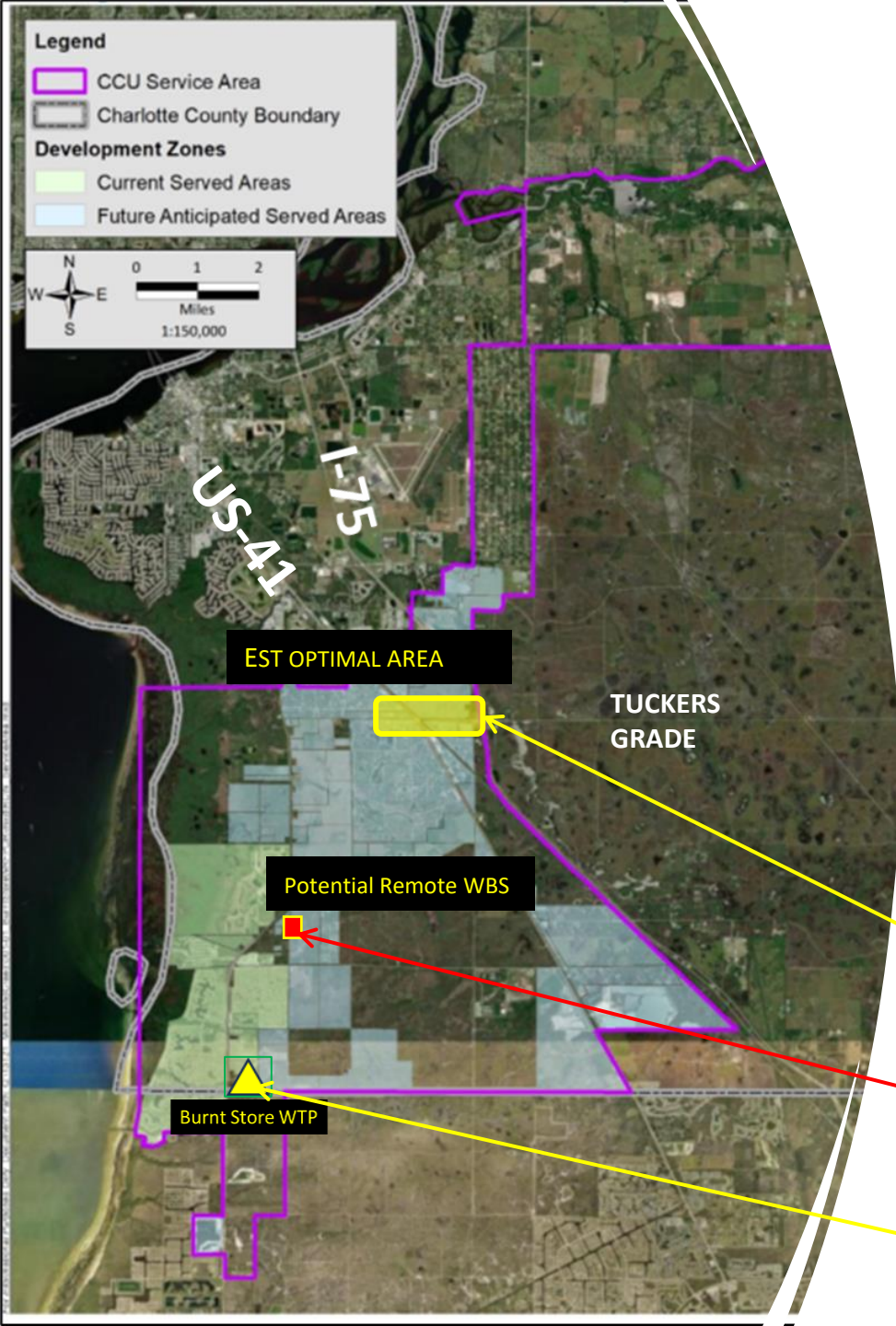
- Optimal location based on **System Hydraulics**
- Meets future system **Storage Requirements**
- **Cost Effective** design (Tank Style - \$ per gallon)

Burnt Store Water System Potable Water Demand Projections

| Year | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | 2055 | 2060 | 2065 | 2070 | 2075 |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Population | 13,237 | 17,949 | 24,456 | 32,669 | 38,249 | 40,402 | 41,766 | 43,284 | 44,287 | 45,193 | 46,032 |
| Demand (MGD) | 1.16 | 1.58 | 2.15 | 2.87 | 3.37 | 3.56 | 3.68 | 3.81 | 3.90 | 3.98 | 4.05 |

*All demands are AADD projections based on Metro Forecasting Models population projections (2024 update). Assumes ~88 gpd/capita

SYSTEM HYDRAULICS



| UPGRADE | BENEFIT |
|--|--|
| WTP Pumps replaced w/ same HP pumps, but increased flow rating | Increase WTP HSP "Firm Capacity" to account for projected demand increases |
| EST added to North end of Distribution System | Increase System Storage Capacity; Emergency Water Supply |

*Potential considerations for WBS after year 2050 include:

- Future Supply Water Origin (current Burnt Store WTP capacity reached)
- Full Build-Out Demand Profile
- Future expansions to Burnt Store WTP

GENERAL AREA OF OPTIMAL ELEVATED STORAGE TANK (EST) SITE BASED ON HYDRAULIC MODEL PROJECTIONS AND FULL BUILD-OUT SERVICE AREA.

POTENTIAL FUTURE REMOTE WBS SITE EVALUATED.

BURNT STORE WTP HAS IMMEDIATE NEED FOR PUMP REPLACEMENTS & ELECTRICAL/I&C UPGRADES.

SYSTEM STORAGE REQUIREMENTS

- System LOS goals indicate a minimum system storage equal to Annual-Average-Day-Demand (AADD) + Fire Flow Demand (FFD).
- Fire Flow Demand (FFD) = 150,000 Gallons
- Existing System Storage Capacity = 1,500,000 Gallons

| Year | AADD | Fire Flow | Required Storage | Existing Storage | Additional Capacity Needed |
|-------------|------|-----------|------------------|------------------|----------------------------|
| 2024 | 1.10 | 0.15 | 1.25 | 1.50 | 0.00 |
| 2025 | 1.16 | 0.15 | 1.31 | 1.50 | 0.00 |
| 2030 | 1.58 | 0.15 | 1.73 | 1.50 | 0.23 |
| 2035 | 2.15 | 0.15 | 2.30 | 1.50 | 0.80 |
| 2040 | 2.87 | 0.15 | 3.02 | 1.50 | 1.52 |
| 2045 | 3.37 | 0.15 | 3.52 | 1.50 | 2.02 |
| 2050 | 3.56 | 0.15 | 3.71 | 1.50 | 2.21 |
| 2075 | 4.05 | 0.15 | 4.20 | 1.50 | 2.70 |

*All capacities in Millions of Gallons. AADD projections based on Metro Forecasting Models populations projections (2024 update)

SUMMARY OF EST SITE OPTIONS



| OPTION # | LAND OWNER | CLOSE TO EX. WATER MAIN | OWNED BY COUNTY | LEGAL ACCESS |
|----------|-------------------------------|-------------------------|-----------------|--------------|
| OPTION-1 | CHARLOTTE COUNTY BCC | ✓ | ✓ | ✓ |
| OPTION-2 | FRIZONE CARLOS H TRUSTEE | ✓ | ✗ | ✗ |
| OPTION-3 | TUCKERS GRADE & US41 LLC | ✓ | ✗ | ✓ |
| OPTION-4 | CHARLOTTE COUNTY SCHOOL BOARD | ✗ | ✓ | ✗ |
| OPTION-5 | St of FL / Game & Fish Comm. | ✓ | ✗ | ✓ |
| OPTION-6 | St of FL / Game & Fish Comm. | ✓ | ✗ | ✓ |

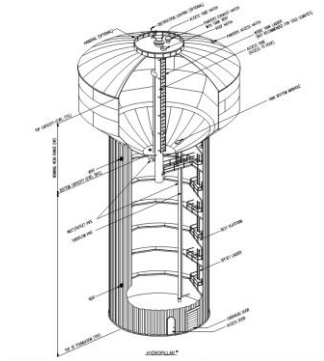
TANK STYLE/CAPACITY COST COMPARISON

| Capacity (MG) | Hydropillar (CB&I) | Cost per Gallon | Annual Maintenance (1000 gallons) | Composite (Landmark) | Cost per Gallon | Annual Maintenance (1000 gallons) |
|---------------|--------------------|-----------------|-----------------------------------|----------------------|-----------------|-----------------------------------|
| 2.0 | \$7,200,000 | \$3.60 | \$15.75 | \$7,500,000 | \$3.75 | \$12.50 |
| 2.5 | \$8,600,000 | \$3.44 | \$14.50 | \$9,000,000 | \$3.60 | \$10.85 |
| 3.0 | \$10,450,000 | \$3.48 | \$13.25 | \$10,300,000 | \$3.43 | \$9.25 |
| 3.5 | \$11,300,000 | \$3.23 | \$12.50 | - | - | \$8.50 |

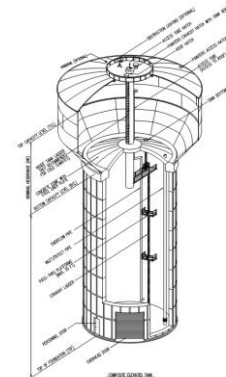
*Quotes from CB&I dated 6/9/24 & quotes from Landmark dated 9/26/24

- Note:

- A. 3-MG tank projected to provide adequate system storage at full build-out (2.5 MG tank sufficient up to 2050)
- B. Option to include alternate bid to further evaluate construction cost comparison based on size/style of tank.



HYDROPILLAR



COMPOSITE

WBS vs. WTP Upgrades



WTP Upgrades & WBS considerations

WTP Upgrades

- Current Jockey Pumps no longer adequately sized for low flow conditions
- Current Firm Capacity of WTP HSPS insufficient at MDD by 2030
- Current High Service Pumps nearing end of useful life (installed 2007)
- Recommend Upgrades to High Service Pumps with VFDs to provide adequate capacity at low flow and future build-out demands.
- Remove and Replace existing jockey pumps and HSPs with 3 new HSPs.
- Electrical upgrades required at WTP to address redundancy deficiencies

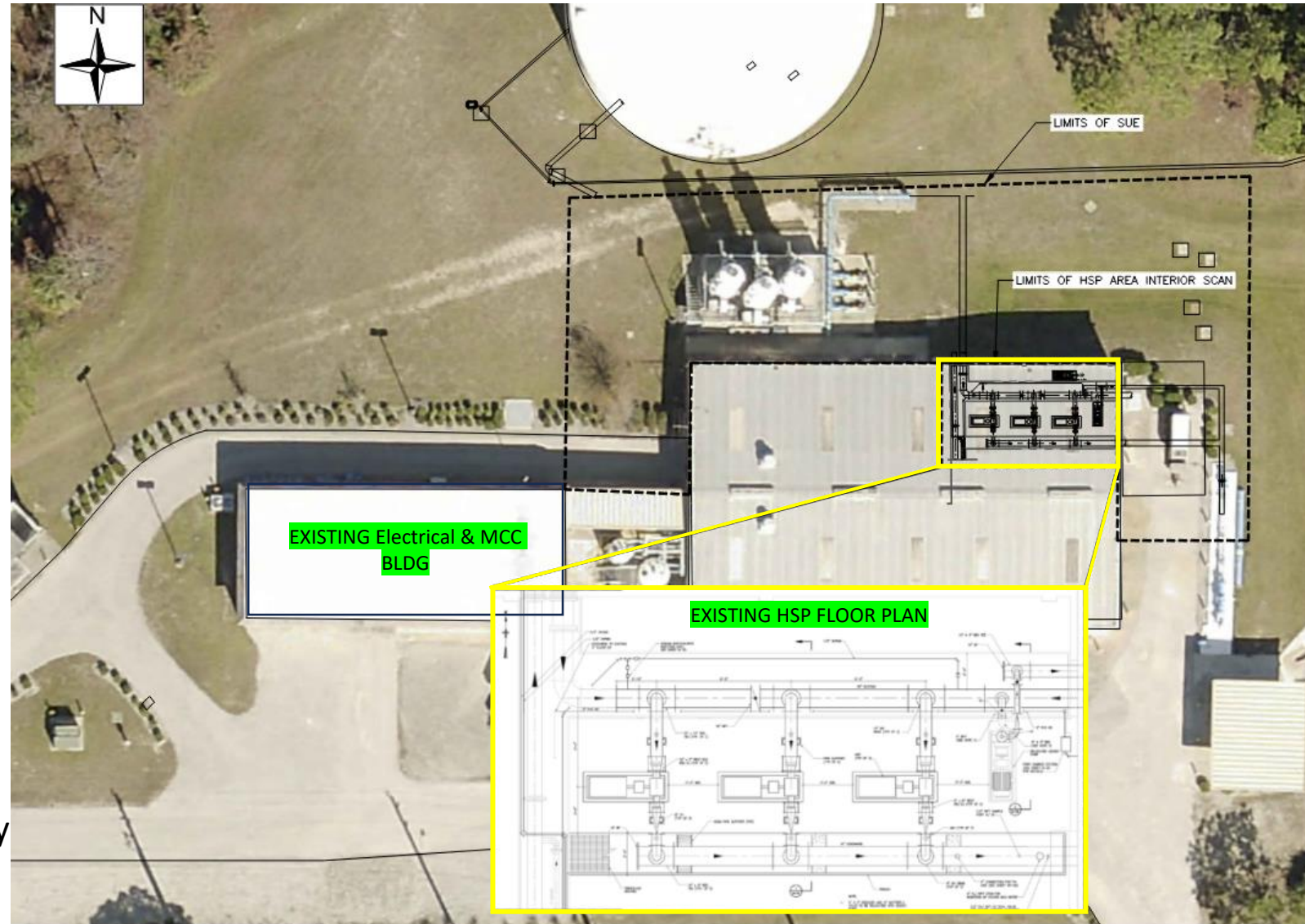
Potential Future WBS

- May be Required to Meet Full-Buildout Projected Demands (2070+)
- Dependent on future supply origin (Burnt Store WTP or interconnect with another utility)
- Fill EST at Low Demand Periods
- Provide Fire Flow Capacity at MDD

EXISTING WTP SITE HSP LAYOUT

Existing Layout:

- One- 125HP Flowserve 6LR-16B pump
Flow Capacity: 800 gpm – 2,000 gpm at 65 psi
- Two- 125HP Flowserve 5LR-15D pumps
Flow Capacity: 240 gpm – 1,100 gpm at 65 psi
- Two- small jockey pumps
Flow Capacity: 0 gpm – 300 gpm at 65 psi
- Current system operation lacks redundancy



Why upgrade the HSPs at WTP

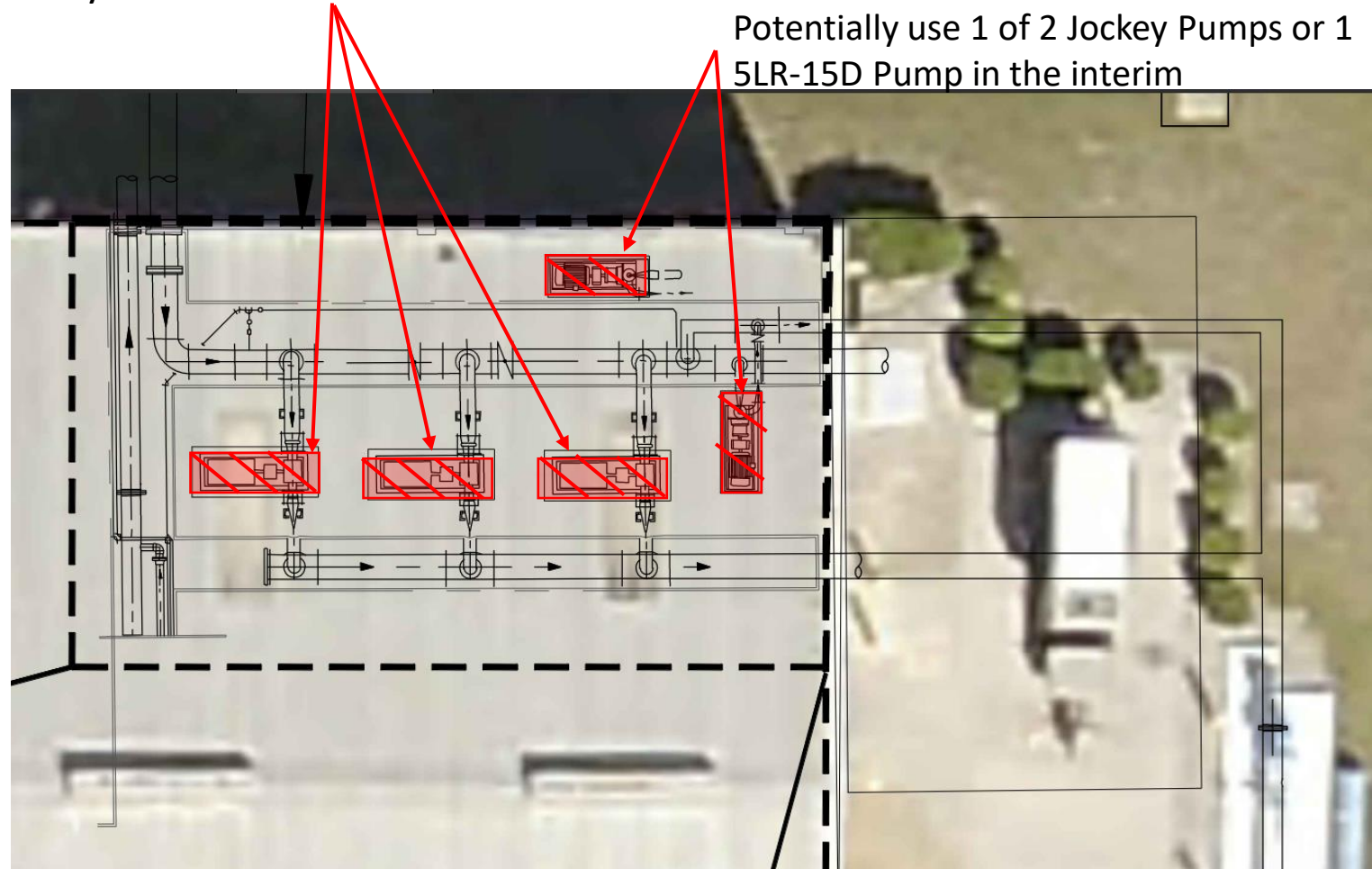
| Issue / Deficiency | Recommended Solution |
|---|---|
| Jockey pumps inadequately sized for low flow conditions | Remove and Replace Jockey Pumps with larger High Service Pumps equipped with VFDs to deliver adequate water/pressure at future low flow condition |
| High Service Pumps nearing end of useful life (installed in 2007) | Remove and replace 3 HSPs with new similar capacity to largest current Pump "A" |
| HSPS Firm Capacity to be exceeded by 2030 | Increase firm capacity by replacing Pumps "B" and "C" with larger capacity pumps like Pump "A" |
| Electrical and control room at capacity (no room for additional equipment / upgrades) | Utilize existing electrical + MCC building by replacing current HSP electrical and control equipment with new in same space. |
| Lack of redundancy for electrical back-up | New electrical system to include separate power service and back-up generator to provide redundancy if issues with existing electrical systems. |

WTP HSP UPGRADES CONCEPT LAYOUT

- Concept Layout: Remove existing HSPs
- Three- 125HP Flowserve 6LR-16B pump Flow Capacity: 800 gpm – 2,000 gpm at 65 psi
- Potentially use one of Two- small jockeys Flow Capacity: 0 gpm – 300 gpm at 65 psi
- May keep one Jockey pump and/or smaller 5LR-15D pump depending on low flow condition at time of implementation or for phasing replacements.

Replace aging and undersized HSPs with new adequately sized HSPs

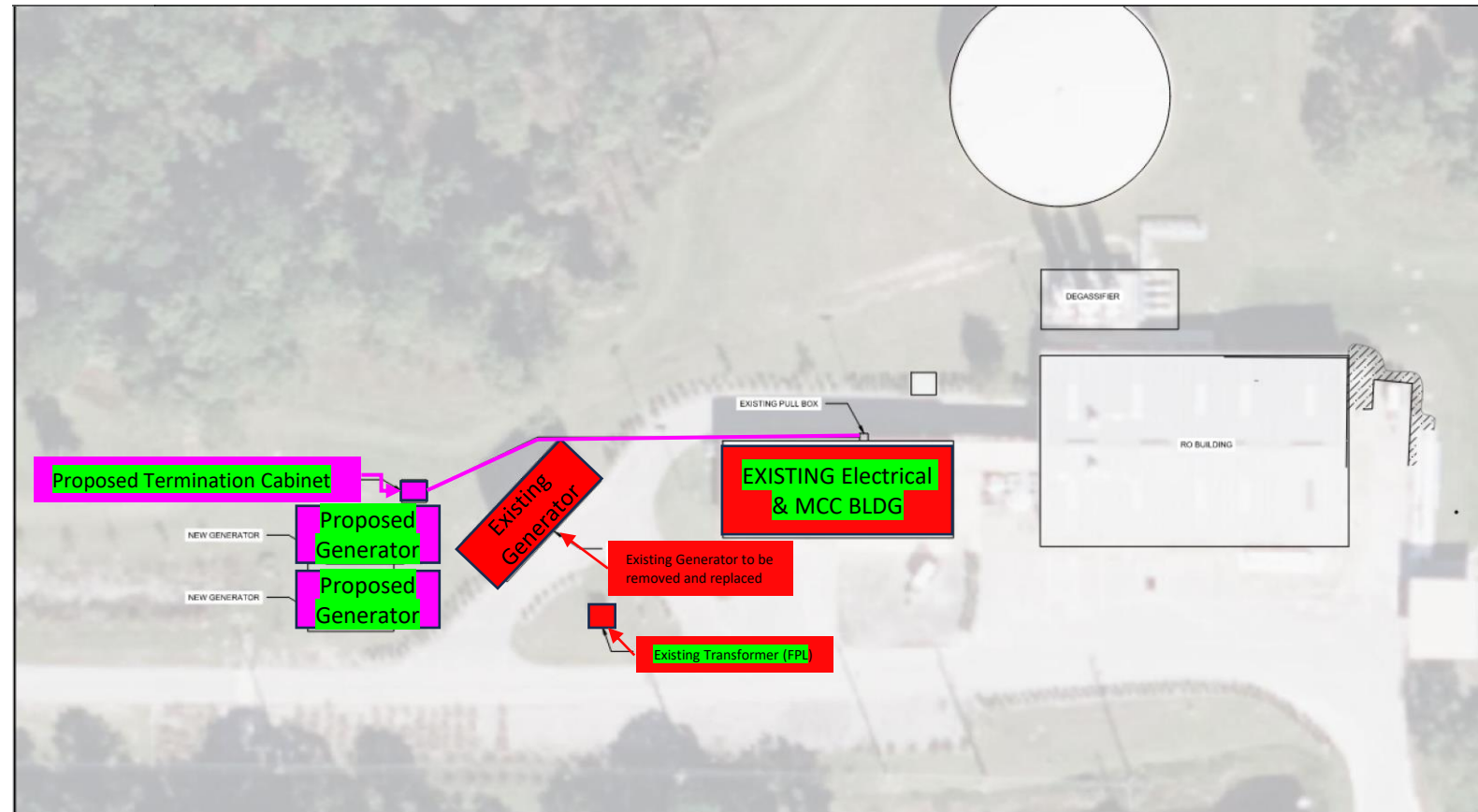
Potentially use 1 of 2 Jockey Pumps or 1 5LR-15D Pump in the interim



POTENTIAL WTP ELECTRICAL UPGRADES LAYOUT

Existing Layout:

- One- Baldor 1,250kW Generator: 480/277V, 3-Phase, w/5,000-gal Diesel Fuel tank
- One- ASCO ATS: 480V, 2,000 A, w/ Bypass to Standby Generator
- Current system operation lacks redundancy
- Existing MCC/electrical building is at capacity. May be able to accommodate upgrades using existing building.



WTP Upgrades - Order of Magnitude Cost Opinion

| Item | Unit | QTY | COST | TOTAL |
|-------------------------------|------|-----|-------------|--------------------|
| HSPS UPGRADES | | | | |
| 6" DIP | LF | 100 | \$220 | \$22,000 |
| 8" DIP | LF | 100 | \$220 | \$22,000 |
| 12" DIP | LF | 100 | \$350 | \$35,000 |
| 6" VALVES | EA | 3 | \$2,500 | \$7,500 |
| 8" VALVES | EA | 3 | \$3,500 | \$10,500 |
| PUMPS | EA | 3 | \$75,000 | \$225,000 |
| INJECTION/SAMPLE POINTS | EA | 5 | \$200 | \$1000 |
| | | | | \$323,000 |
| Electrical I&C | | | | |
| Generator, Fuel Tank, Pad | LS | 1 | \$500,000 | \$500,000 |
| Electrical, I&C Equipment | LS | 1 | \$500,000 | \$500,000 |
| Misc. Electrical Construction | LS | 1 | \$750,000 | \$750,000 |
| | | | | \$1,750,000 |
| Misc. | | | | |
| Sub-Total of Upgrades | LS | 1 | \$2,073,000 | \$2,073,000 |
| Mobilization | % | 10% | \$232,300 | \$207,300 |
| Contingency* | % | 30% | \$267,000 | \$621,900 |
| Project Total | | | | \$2,902,200 |

*includes miscellaneous plant upgrades

Master Lift Station



Master Lift Station

Purpose

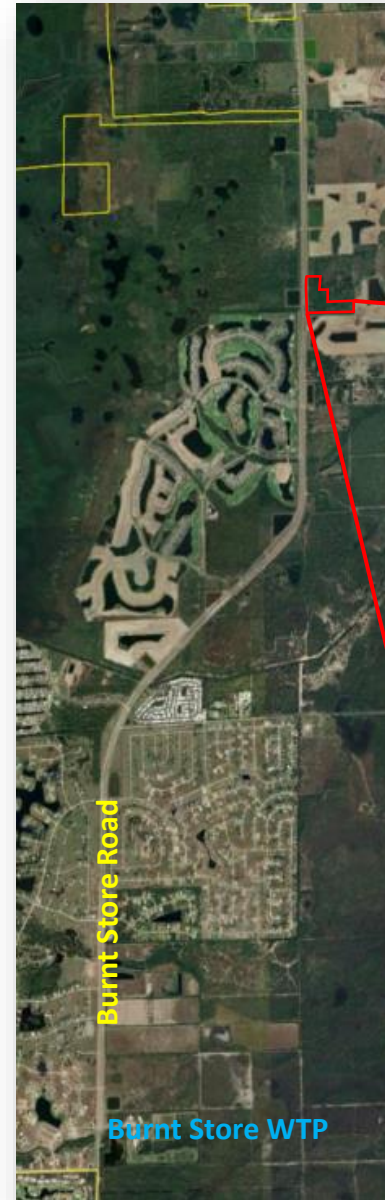
- Needed for Projected Growth in the Area
- Re-pumps Ex. Flow & Accommodates Future Development
- Conceptual Design Based on 2.5 MGD AADF **at Full Build-out**
- Preferred site selected pending approval and RE services contact

MLS v. In-line Booster option

| Inline Booster | MLS w/ Wet well |
|--|---|
| Requires upstream pipes to be flowing full (pressurized). | Flow accumulates in wet well and pumps are triggered by floats that toggle ON/OFF based on water level. |
| Inconsistent upstream flows are an operational hurdle. | Independent of upstream flows. |
| Not feasible near-term solution due to low flow conditions | Can be sized for now and future growth by intelligent wet well design. |
| Cheaper Construction Costs / Less space required | More Expensive to build & maintain / requires more space (land acquisition) |
| No odor control necessary | Odor control necessary |

Master Lift Station Site Selection Criteria

- Lift Station Footprint
 - 6,500 Sq Ft
 - Approximately 65' X 100' Rectangle
- Requires acquiring easement on T.K. Land Co. owned property
- Preferred parcel is Parcel A
 - closer to road reduces costs of land acquisition & required infrastructure
 - Parcels B, C, & D also desirable
 - Parcels E, F, G less desirable since these would require easement through adjacent parcels to tie-in.



Master Lift Station Site Selection

- Concept Layout
- Parcel A Closest to 20" FM and 16" Stub-outs



EXISTING INFRASTRUCTURE LOCATION IS APPROXIMATE

MLS Order of Magnitude Cost Opinion

| Item | Unit | QTY | COST | TOTAL |
|---------------------------------|------|-----|----------------------|--------------------|
| WET WELL | | | | |
| CONCRETE | CY | 110 | \$2,000 | \$220,000 |
| EXCAVATION | CY | 500 | \$100 | \$50,000 |
| SHORING / SHEETING | LS | 1 | \$500,000 | \$500,000 |
| DEWATERING | DAYS | 120 | \$2,500 | \$300,000 |
| MECHANICAL | LS | 1 | \$250,000 | \$250,000 |
| PUMPS | EA | 2 | \$50,000 | \$100,000 |
| COATINGS | SY | 400 | \$125 | \$50,000 |
| | | | | \$1,470,000 |
| ELECTRICAL / ACCESSORIES | | | | |
| Generator, ATS, Pad | LS | 1 | \$150,000 | \$150,000 |
| Odor Control | LS | 1 | \$100,000 | \$100,000 |
| Electrical Panel, Pad | LS | 1 | \$100,000 | \$100,000 |
| Piping / Connections | LS | 2 | \$30,000 | \$60,000 |
| | | | | \$410,000 |
| Misc. | | | | |
| Sitework | LS | 1 | \$50,000 | \$50,000 |
| Mobilization | % | 15% | \$289,500 | \$134,250 |
| Contingency | % | 30% | \$579,000 | \$268,500 |
| | | | Project Total | \$2,789,500 |

SUMMARY

| Summary of South County Utility Improvements | EST | WTP UPGRADES | MLS |
|--|--|--|--|
| BENEFIT/NEED | Increase System Storage / Provide Emergency Water Supply | Replace aging infrastructure / increase firm capacity at WTP | Accommodate new developments' wastewater flows / repump existing flows to WWTF |
| Preliminary Cost Opinion | ~\$8.6 - \$10.5 million* | ~\$2.9 million | ~\$2.8 million |

*Depends on Tank Capacity and Style chosen



QUESTIONS??

Weston & SampsonSM