



# **City of Grand Island**

**Tuesday, July 16, 2019**

**Study Session**

## **Item -1**

### **Review Wastewater Division Budget for FY 2019/2020**

**Staff Contact: John Collins, P.E. - Public Works Director**

**Public Works Wastewater Division - 10 Year Capital Improvement Program - Preliminary Draft**

| Capital Projects                                  |   | 2019        | 2020      | 2021        | 2022 | 2023        | 2024        | 2025 | 2026        | 2027        | 2028        | 2029      | Future       | TOTAL        |
|---|---|-------------|-----------|-------------|------|-------------|-------------|------|-------------|-------------|-------------|-----------|--------------|--------------|
| <b>Physical Facilities</b>                        |   |             |           |             |      |             |             |      |             |             |             |           |              |              |
|   | Relocate WWTP Entrance - Museum Drive                   |             |           |             |      |             |             |      |             |             |             |           | \$875,000    | \$875,000    |
|   | Concrete Pad Upgrade                                    |             | \$50,000  |             |      |             |             |      |             |             |             |           |              | \$50,000     |
|   | Facility Security                                       | \$50,000    | \$50,000  |             |      |             |             |      |             |             |             |           |              | \$100,000    |
|   | Fill in Building 5 (Old Headworks)                      |             |           |             |      |             |             |      |             |             |             |           | \$180,000    | \$180,000    |
|   | Building 2 Renovation (Admsin Bldg)                     |             | \$210,000 |             |      |             |             |      |             |             |             |           | \$4,250,000  | \$4,460,000  |
|   | Collection System Office and Equipment Warm Storage     |             |           |             |      |             |             |      |             |             |             |           | \$1,000,000  | \$1,000,000  |
| <b>Plant Operations</b>                           |   |             |           |             |      |             |             |      |             |             |             |           |              |              |
|   | Process modification from MLE to A2O                    |             |           |             |      |             | \$237,500   |      |             |             |             |           |              | \$237,500    |
|   | Micro C Pumping Modifications                           |             |           |             |      |             |             |      | \$1,350,000 |             |             |           |              | \$2,250,000  |
|   | Internal Recycle Pumps & Piping                         |             |           | \$900,000   |      |             |             |      |             | \$3,750,000 |             |           |              | \$3,750,000  |
|   | Aeration Basin Influent flow improvements               |             |           |             |      |             |             |      |             | \$600,000   |             |           |              | \$600,000    |
|   | Tank Baffle in Aeration Basin                           |             |           |             |      |             |             |      |             |             | \$250,000   |           |              | \$550,000    |
|   | Online Monitoring                                       | \$300,000   |           |             |      |             |             |      |             |             | \$1,070,000 |           |              | \$1,070,000  |
|   | Blower Modifications                                    |             |           |             |      |             |             |      |             |             |             |           | \$4,412,500  | \$4,412,500  |
|   | RAS Fermenter   |             |           |             |      |             |             |      |             |             |             |           |              |              |
|   | Anaerobic Digestion                                     |             |           |             |      |             |             |      |             |             |             |           |              |              |
|   | Anaerobic Digestion Study                               |             |           |             |      |             |             |      |             |             |             |           | \$300,000    | \$300,000    |
|   | Anaerobic Digestion Pilot Project                       |             |           |             |      |             |             |      |             |             |             |           | \$300,000    | \$300,000    |
|   | Silo Anaerobic Digester & Digester Building             |             |           |             |      |             |             |      |             |             |             |           | \$14,500,000 | \$14,500,000 |
|   | Biomethane Facility                                     |             |           |             |      |             |             |      |             |             |             |           | \$13,500,000 | \$13,500,000 |
|   | Sludge Drying Building (Solar)                          |             |           |             |      |             |             |      |             |             |             |           | \$9,500,000  | \$9,500,000  |
|   | Chloride Reduction                                      |             |           |             |      |             |             |      |             |             |             |           | \$8,000,000  | \$8,000,000  |
| <b>Planning and Engineering</b>                   |   |             |           |             |      |             |             |      |             |             |             |           |              |              |
|   | Revise Flow & Rate Study                                | \$270,000   |           |             |      |             | \$270,000   |      |             |             |             | \$270,000 |              | \$810,000    |
| <b>Collection System Rehabilitation</b>           |   |             |           |             |      |             |             |      |             |             |             |           |              |              |
|   | Downtown System Rehabilitation (2019-S-1)               | \$750,000   |           |             |      |             |             |      |             |             |             |           |              | \$750,000    |
|   | Riverside West Dewatering Project                       |             |           | \$3,000,000 |      |             |             |      |             |             |             |           | \$1,000,000  | \$4,000,000  |
|   | Riverside East Dewatering Project                       |             |           |             |      |             |             |      |             |             |             |           | \$2,000,000  | \$2,000,000  |
|   | Riverside Area Rehabilitation                           |             |           |             |      |             |             |      |             |             |             |           | \$1,450,000  | \$1,450,000  |
|   | Senior High School Area                                 |             |           |             |      |             |             |      |             |             |             |           | \$1,000,000  | \$1,000,000  |
|   | Pier Park Area  |             |           |             |      |             |             |      |             |             |             |           | \$1,680,000  | \$1,680,000  |
|   | Airport Sanitary Sewer Rehabilitation                   |             |           |             |      |             |             |      |             |             |             |           | \$3,000,000  | \$3,000,000  |
| <b>Sanitary Sewer Conflicts with Storm Sewers</b> |   |             |           |             |      |             |             |      |             |             |             |           |              |              |
|   | 5th and Vine  |             |           |             |      |             |             |      |             |             |             |           | Unknown      | Unknown      |
|   | 9th and Vine  |             |           |             |      |             |             |      |             |             |             |           | Unknown      | Unknown      |
|   | Home Depot Detention Cell                               |             |           |             |      |             |             |      |             |             |             |           | Unknown      | Unknown      |
| <b>Lift Stations and System Upgrades</b>          |   |             |           |             |      |             |             |      |             |             |             |           |              |              |
|   | Lift Station 6 Abandonment/6th & Market Inverted Siphon |             |           |             |      |             |             |      |             |             |             |           | \$4,800,000  | \$4,800,000  |
|   | Lift Station 11 Upgrade                                 | \$1,400,000 |           |             |      |             |             |      |             |             |             |           |              | \$1,400,000  |
|   | South Interceptor - Phase 1A (Bismark/Fonner Park)      |             |           |             |      | \$5,000,000 | \$5,500,000 |      |             |             |             |           |              | \$10,500,000 |
|   | South Interceptor - Phase 1B (Bismark/Fonner Park)      |             |           |             |      |             |             |      |             |             |             |           | \$12,000,000 | \$12,000,000 |
|   | South Interceptor - Phase 2 (To Lift Station 20)        |             |           |             |      |             |             |      |             |             |             |           | \$50,000,000 | \$50,000,000 |
|   | Upgrade LS 17 - Rehab                                   |             |           |             |      |             |             |      |             |             |             |           | \$3,600,000  | \$3,600,000  |
| <b>Storm Sewer Upgrades</b>                       |   |             |           |             |      |             |             |      |             |             |             |           |              |              |
|   | Riverside Area - Sump Pump Pilot Program                |             |           |             |      |             |             |      |             |             |             |           | \$600,000    | \$600,000    |

Public Works Wastewater Division - 10 Year Capital Improvement Program - Preliminary Draft

| Capital Projects            |  | 2019        | 2020        | 2021        | 2022 | 2023        | 2024        | 2025 | 2026        | 2027        | 2028        | 2029      | Future        | TOTAL         |
|-----------------------------|--|-------------|-------------|-------------|------|-------------|-------------|------|-------------|-------------|-------------|-----------|---------------|---------------|
| Assessment or Tap Districts |  |             |             |             |      |             |             |      |             |             |             |           |               |               |
|                             | Sanitary Sewer District (Willow Street)                  | \$218,000   |             |             |      |             |             |      |             |             |             |           |               | \$218,000     |
|                             | Sanitary Sewer District (Hanover Subd)                   |             | \$1,350,000 |             |      |             |             |      |             |             |             |           |               | \$1,350,000   |
|                             | Sanitary Sewer District (E 15th St)                      |             |             |             |      |             |             |      |             |             |             |           | \$500,000     | \$500,000     |
|                             | Sanitary Sewer District (E Seedling Mile Road)           |             |             |             |      |             |             |      |             |             |             |           | \$1,000,000   | \$1,000,000   |
|                             | Sanitary Sewer District (Claude Road)                    |             |             |             |      |             |             |      |             |             |             |           | \$450,000     | \$450,000     |
|                             | Sanitary Sewer District (Adams & Phoenix)                |             |             |             |      |             |             |      |             |             |             |           | \$150,000     | \$150,000     |
|                             | Sanitary Sewer District (E. Stolley Park Road)           |             |             |             |      |             |             |      |             |             |             |           | \$255,000     | \$255,000     |
|                             | Sanitary Sewer District (800 Lincoln, 1218 & 1204)       |             |             |             |      |             |             |      |             |             |             |           | \$150,000     | \$150,000     |
|                             | Sanitary Sewer District (Schroeder Sub/Husker Hwy Tap)   |             |             |             |      |             |             |      |             |             |             |           | \$1,200,000   | \$1,200,000   |
|                             | Sanitary Sewer District (Pioneer Blvd)                   |             |             |             |      |             |             |      |             |             |             |           | \$30,000      | \$30,000      |
|                             | Sanitary Sewer District (Scheel Road)                    |             |             |             |      |             |             |      |             |             |             |           | \$80,000      | \$80,000      |
|                             | Sanitary Sewer District (3630 S. Locust)                 |             |             |             |      |             |             |      |             |             |             |           | \$225,000     | \$225,000     |
|                             | Sanitary Sewer District (Wetzel)                         |             |             |             |      |             |             |      |             |             |             |           | \$180,000     | \$180,000     |
|                             | Sanitary Sewer District (Villa Mar Dee - S. Side)        |             |             |             |      |             |             |      |             |             |             |           | \$50,000      | \$50,000      |
|                             | Sanitary Sewer District (Doniphan)                       |             |             |             |      |             |             |      |             |             |             |           | \$4,000,000   | \$4,000,000   |
|                             | Sanitary Sewer District (East Lakes - eone)              |             |             |             |      |             |             |      |             |             |             |           | \$2,000,000   | \$2,000,000   |
|                             | Sanitary Sewer District (North Rd. - State St. to Hwy 2) |             |             | \$1,000,000 |      |             |             |      |             |             |             |           |               | \$1,000,000   |
| Totals                      |  | \$2,988,000 | \$1,660,000 | \$4,900,000 | \$0  | \$5,000,000 | \$6,007,500 | \$0  | \$1,350,000 | \$4,350,000 | \$1,320,000 | \$270,000 | \$148,217,500 | \$176,063,000 |

10 year CIP average     \$2,485,750  
5-year CIP average     \$2,909,600

# 2020 Wastewater Budget



## Enterprise fund

- Handle wastewater generated by community residents, businesses and industries.
- Meet all state and national requirements for effluent quality.
- Rely strictly on revenue collected for funding of all operations and capital improvements.
- Average residential bill for 2018 was \$31.19, well below the \$37.89 average for comparable cities

## Wastewater Overview

- Handle an average of 12.2 million gallons every day
  - Peak flows over 20 mgd
- F.O.G. (Fat, Oil, Grease) Monitoring
  - Working with County Health Dept. Inspectors
  - Will be developing a formal program in 2020
  - Particularly damaging to the collection system  
(Generation of  $H_2S$ )



## FY 2019 Capital Projects

(\$ 3,405,585)

| ITEM                   | DESCRIPTION  | 2019 COST  |
|------------------------|--|------------|
| BNR STUDY (HDR)        | PREP FOR TIGHTENING REGULATIONS                      | \$ 75,445  |
| FLOW & RATE STUDY (BV) | VERIFY HYDRAULICS & REVIEW RATES                     | \$ 205,000 |
| DIFFUSER REPLACEMENT   | REPLACE DIFFUSER IN BASINS (REG MAINT – 5-7 YR LIFE) | \$ 59,000  |
| CLARIFIER REHAB        | REHAB FINAL CLARIFIER (REG MAINT – 20 YR LIFE)       | \$ 315,000 |
| UPGRADE WAS BLOWERS    | IMPROVE BLOWERS IN W.A.S. TANKS (MAINT)              | \$ 115,298 |
| DNTN COLLECT REHAB     | CIPP COLLECTION SYST LINING (EXTEND LIFE 50+ YR)     | \$ 780,000 |
| LS 11 MOVE/UPGRADE     | PRIMARY COLLECTION FOR SF HOSPITAL                   | \$ 900,000 |
| VEHICLE REPLACEMENT    | 3 VEHICLES INCLUDING LIFT TRUCK (MAINT)              | \$ 228,449 |
| ONLINE MONITORING      | FLOW METERS IN COLLECTION SYSTEM, ETC.               | \$ 250,000 |
| FY2018 CARRY OVER      | LS-28; STOLLEY-ENGLEMAN; MISC                        | \$ 477,393 |



## Lift Station No. 11 Relocation

Carry over from FY 2019 – \$400,000 (est.)

- ❏ Late spring caused construction delay
- ❏ Located near CHI Health St. Francis
- ❏ Continuity of service is critical
- ❏ Need to install generator for backup power
- ❏ Will move 100,000 gallons per day from south interceptor to the north interceptor





# Facility Security

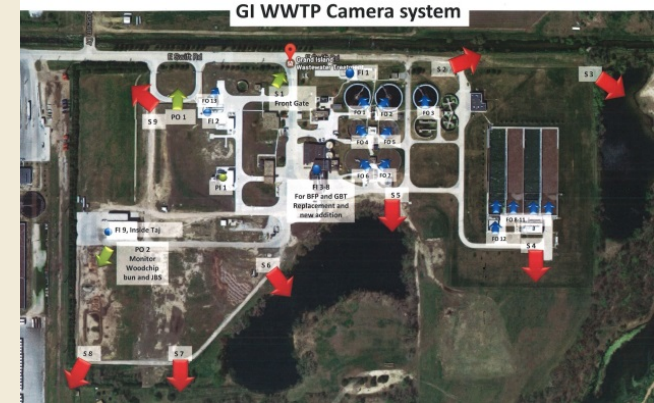
## \$50,000 (Ongoing)

### Long Range Plan

- Wastewater facility covers approx. 13 acres.
- Physical intrusion history
- America's Water Infrastructure Act 2018



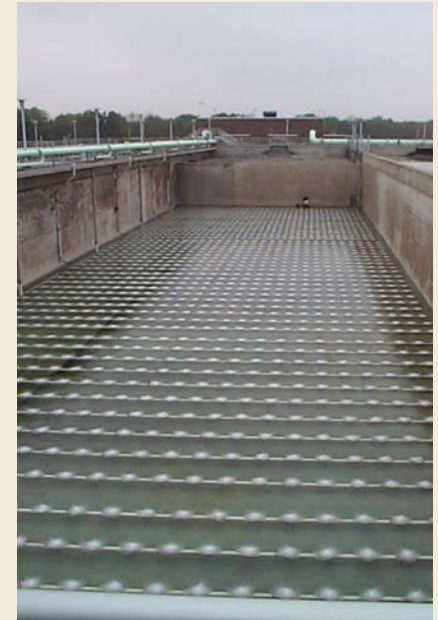
**View WWTP of Back Lot**



## Diffuser Replacement

\$50,000 (Maintenance – Included in Operating Costs)

- This will be the 2<sup>nd</sup> of 4 basins
- Each diffuser has a 5-7 year life
  - Diffusers are evaluated each year and, if necessary, individual units are repaired
- Current schedule is to replace diffusers in one basin per year



# Final Clarifier Rehabilitation

\$400,000 (Maintenance – Included in Operating Costs)

- This is the 2<sup>nd</sup> of 3 clarifiers to be done
- Final clarifiers installed in 2000
- Typically have 15-20 year life



**Anodes inhibit corrosion**

## Corrosion in Clarifier



# Capital Equipment: Flusher Truck

## \$350,000

- 19 years old
- Original cost: \$98,000
- Operating hours: 10,340 (equivalent to 400-500,000 miles)
- Total lifetime maintenance cost of almost \$150,000
- Limited water tank capacity causes frequent trips for refilling





# Capital Equipment: Biosolids Dump Truck

\$180,000

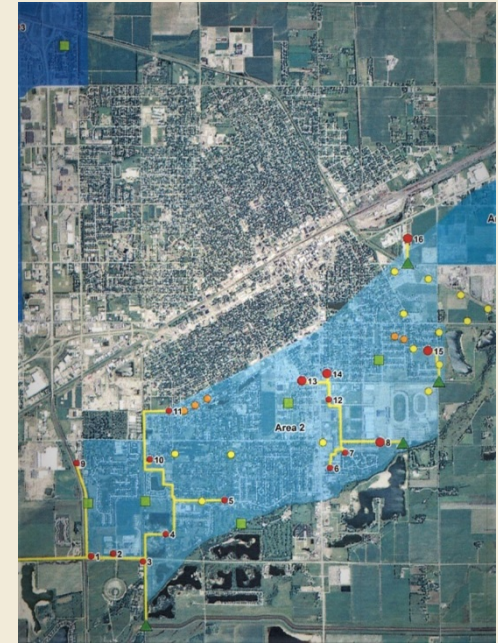
- 20 Years old
- Original Cost: \$36,000
- Uncertain total usage (meter broken)
- Substantial downtime for repair
- Total lifetime repair costs over \$66,000



# Dewatering Model

\$ 150,000

- Evaluate an alternative to \$30 million South Interceptor reconstruction and area sanitary main repairs
- Develop conceptual plan and economic benefit
- Preliminary construction estimate \$3 to \$6 million



# Assessment Districts

\$ 1,570,000

- Hanover Subdivision
- Willow Street Neighborhood



**Hanover SID**



**Willow Street SID**



## 2020 CIP Projects

| <b>DESCRIPTION</b>          | <b>REASON</b>                      | <b>COST</b>         |
|-----------------------------|------------------------------------|---------------------|
| CARRYOVER COST              | COMPLETION OF LS 11                | \$ 400,000          |
| FACILITY SECURITY (ONGOING) | INTRUSION PROTECTION, AWIA REQ     | \$ 50,000           |
| REPLACE WWTP TRUCKS         | 19, 20-YEAR OLD, HIGH MAINT        | \$ 530,000          |
| WWTP BUILDING 2             | HVAC; FACILITATE FOG PROG          | \$ 210,000          |
| UPGRADE REC STATION         | IMPROVE DUMP STATION               | \$ 100,000          |
| DEWATERING STUDY            | UPDATE MODEL, EVALUATE FEASIBILITY | \$ 150,000          |
| WILLOW STREET               | SERVICE TO RESIDENTS               | \$ 220,000          |
| HANOVER SUBDIVISION         | SERVICE TO RESIDENTS               | \$ 1,350,000        |
|                             | <b>TOTAL 2020 CAPITAL COST</b>     | <b>\$ 3,010,000</b> |

## 2020 Budget

|   |           |                   |
|---|-----------|-------------------|
| <b>Beginning Cash</b>                   | <b>\$</b> | <b>20,279,289</b> |
| <b>Revenue (Including SRF Proceeds)</b> | <b>\$</b> | <b>13,793,943</b> |
| <b>Operating Costs</b>                  | <b>\$</b> | <b>8,287,432</b>  |
| <b>Loan/Bond Payments</b>               | <b>\$</b> | <b>4,721,841</b>  |
| <b>Capital Expenses</b>                 | <b>\$</b> | <b>3,010,000</b>  |
| <b>Total Expenditures</b>               | <b>\$</b> | <b>16,019,273</b> |
| <b>Ending Cash</b>                      | <b>\$</b> | <b>18,053,959</b> |

## 2020 Capital Project Future Expenses

| Description                               | 2020        | 2021        | 2022        | 2023        | 2024        | 2020-2024<br>Total |
|---|-------------|-------------|-------------|-------------|-------------|--------------------|
| <b>New Physical Facilities/Operations</b> |             |             |             |             |             |                    |
| WWTP Paving                               |             | \$200,000   |             |             |             | \$200,000          |
| Relocate WWTP Entrance - Museum Drive     |             |             | \$1,200,000 |             |             | \$1,200,000        |
| Receiving Station Upgrade                 | \$100,000   |             |             |             |             | \$100,000          |
| Biological Nutrient Removal (BNR)         |             | \$1,000,000 |             |             | \$300,000   | \$1,300,000        |
| Revise Flow & Rate Study                  |             |             |             |             | \$300,000   | \$300,000          |
| Dewatering Study                          | \$150,000   |             |             |             |             | \$150,000          |
| Facility Security                         | \$50,000    |             |             |             |             | \$50,000           |
| Building 2 Renovation                     | \$210,000   |             |             |             |             | \$210,000          |
| 6T & Market Inverted Siphon Abandonment   |             |             | \$1,400,000 |             |             | \$1,400,000        |
| Lift Station 6 Abandonment                |             | \$1,972,643 |             |             |             | \$1,972,643        |
| Lift Station 11 Upgrade                   | \$400,000   |             |             |             |             | \$400,000          |
| South Interceptor - Phase 1               |             |             | \$500,000   | \$5,500,000 | \$6,000,000 | \$12,000,000       |
| Willow Street collection system           | \$220,000   |             |             |             |             | \$220,000          |
| Hanover Street collection system          | \$1,350,000 |             |             |             |             | \$1,350,000        |
| <b>New Equipment</b>                      |             |             |             |             |             |                    |
| Vehicle Addition/Replacement              | \$530,000   | \$50,000    | \$50,000    | 50000       |             | \$680,000          |
| <b>Maintenance/Replacement</b>            |             |             |             |             |             |                    |
| Final Clarifier Rehabilitation            | \$400,000   | \$400,000   |             |             |             | \$800,000          |
| Diffuser Replacement                      | \$50,000    | \$50,000    | \$50,000    |             |             | \$150,000          |
| <b>Total</b>                              | \$3,460,000 | \$4,422,643 | \$3,950,000 | \$6,300,000 | \$7,350,000 | \$25,482,643       |

## Wastewater Operational Awards

- 🌊 NWEA Bronze Safety Award (5<sup>th</sup> Year in a Row)
- 🌊 NWEA Scott Wilber Outstanding Facility Award (5<sup>th</sup> Year in a Row)

