

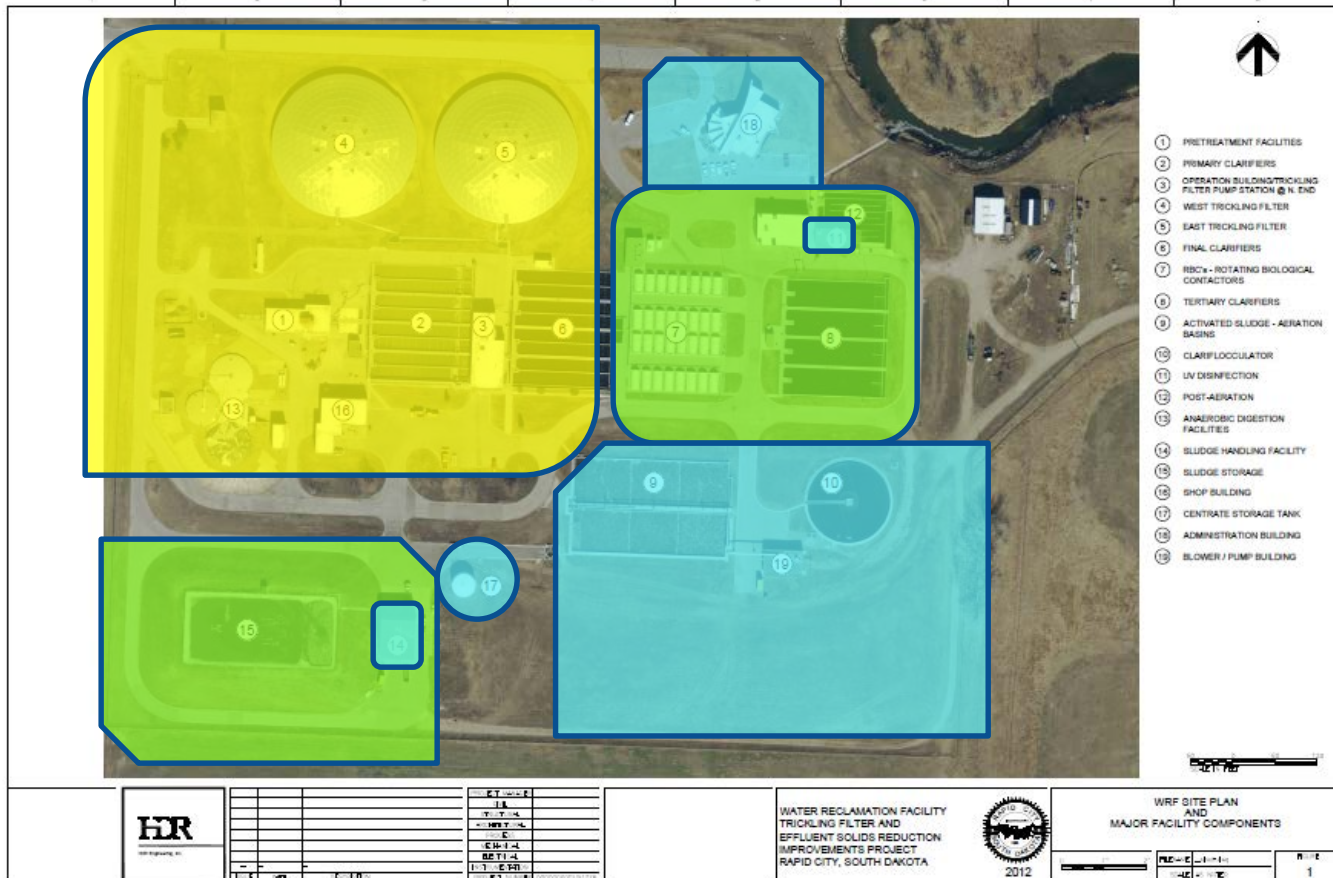
Water Reclamation Facility

Trickling Filter and Effluent Solids Reduction Project

Project necessity

- Violations of the facility Surface Water Discharge Permit
- Increasingly stringent regulations and permit requirements
- Facility Lift Station degradation
- Trickling Filter distributor arm deficiencies
- Algae growth resulting in high solids and bacterial levels, and high maintenance.
- UV System under sizing

WRF Evolution



| | |
|-------------|----------|
| PROJECT NO. | 11 |
| DATE | 10/15/11 |
| SCALE | AS SHOWN |
| DRAWN BY | J. J. J. |
| CHECKED BY | J. J. J. |
| DATE | 10/15/11 |
| PROJECT NO. | 11 |

WATER RECLAMATION FACILITY
TRICKLING FILTER AND
EFFLUENT SOLIDS REDUCTION
IMPROVEMENTS PROJECT
RAPID CITY, SOUTH DAKOTA

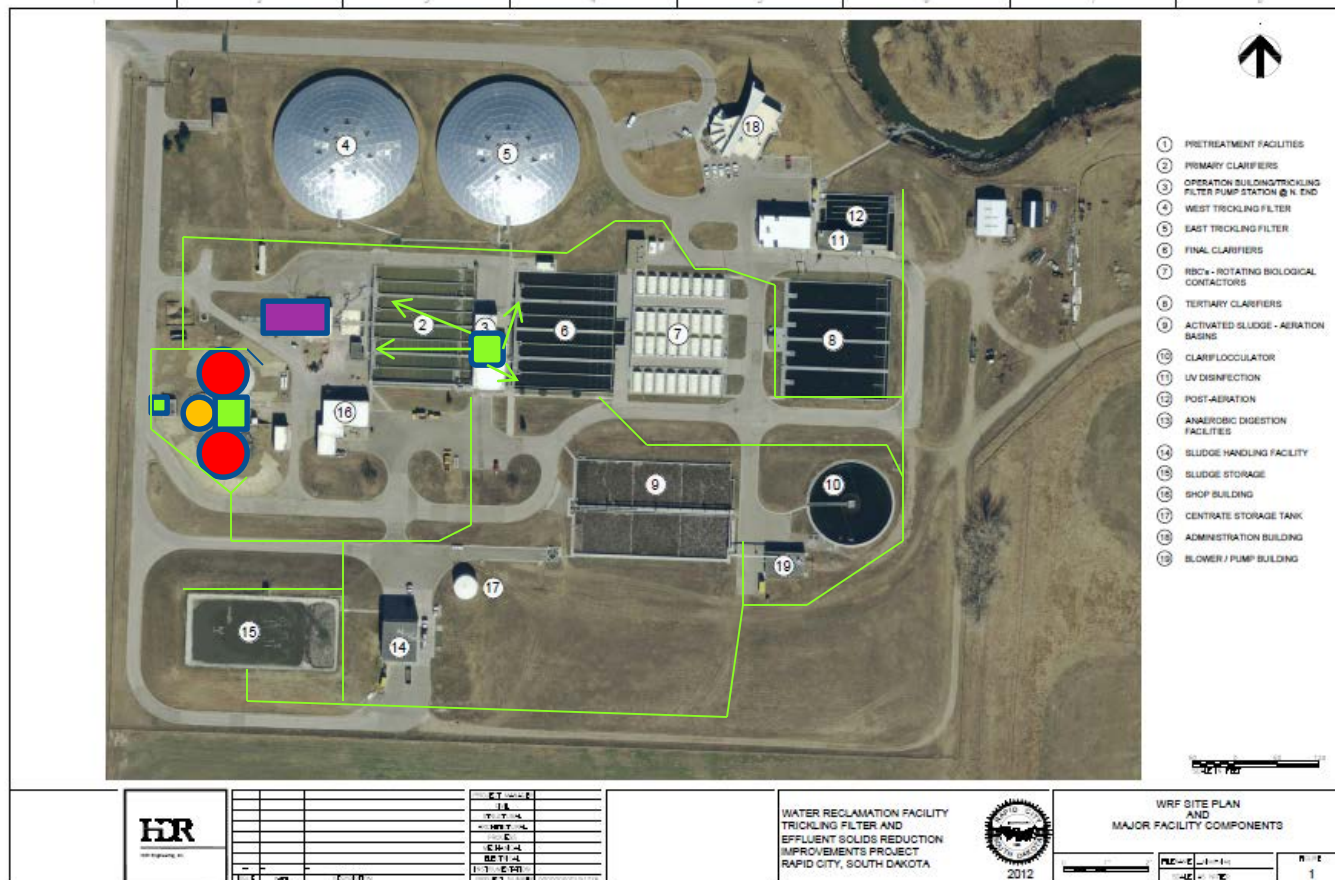


2012

WRF SITE PLAN
AND
MAJOR FACILITY COMPONENTS

| | |
|-------------|----------|
| SCALE | 1" = 40' |
| DATE | 10/15/11 |
| PROJECT NO. | 11 |

Recent Improvements



| | |
|-------------|-------------|
| PROJECT NO. | 11-10-00000 |
| DATE | 11/14/12 |
| SCALE | AS SHOWN |
| DRAWN BY | W. J. H. |
| CHECKED BY | W. J. H. |
| DATE | 11/14/12 |
| PROJECT NO. | 11-10-00000 |

WATER RECLAMATION FACILITY
 TRICKLING FILTER AND
 EFFLUENT SOLIDS REDUCTION
 IMPROVEMENTS PROJECT
 RAPID CITY, SOUTH DAKOTA



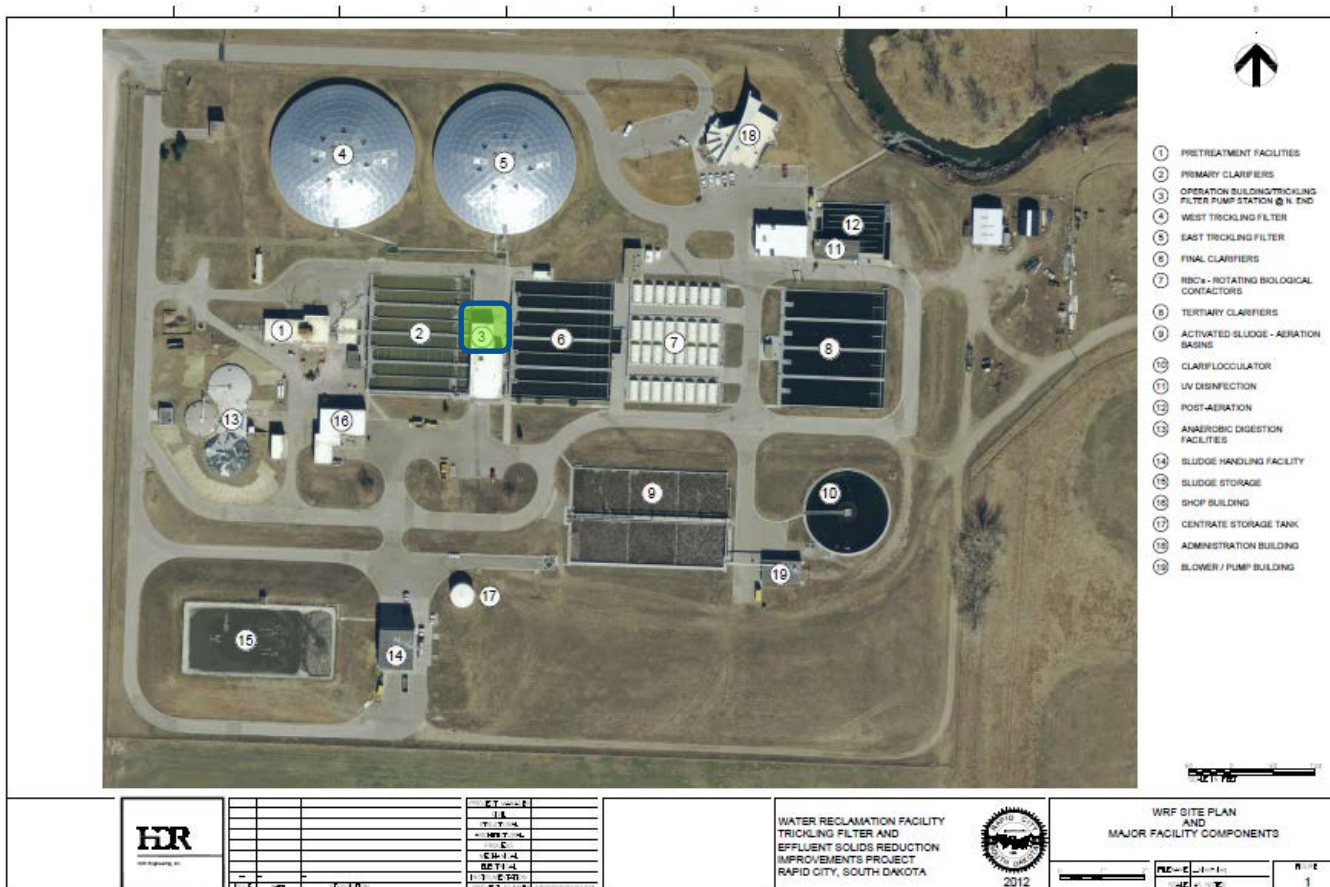
WRF SITE PLAN
 AND
 MAJOR FACILITY COMPONENTS

| | | | |
|-------------|-------------|-----------|----------|
| SCALE | AS SHOWN | DATE | 11/14/12 |
| PROJECT NO. | 11-10-00000 | SHEET NO. | 1 |

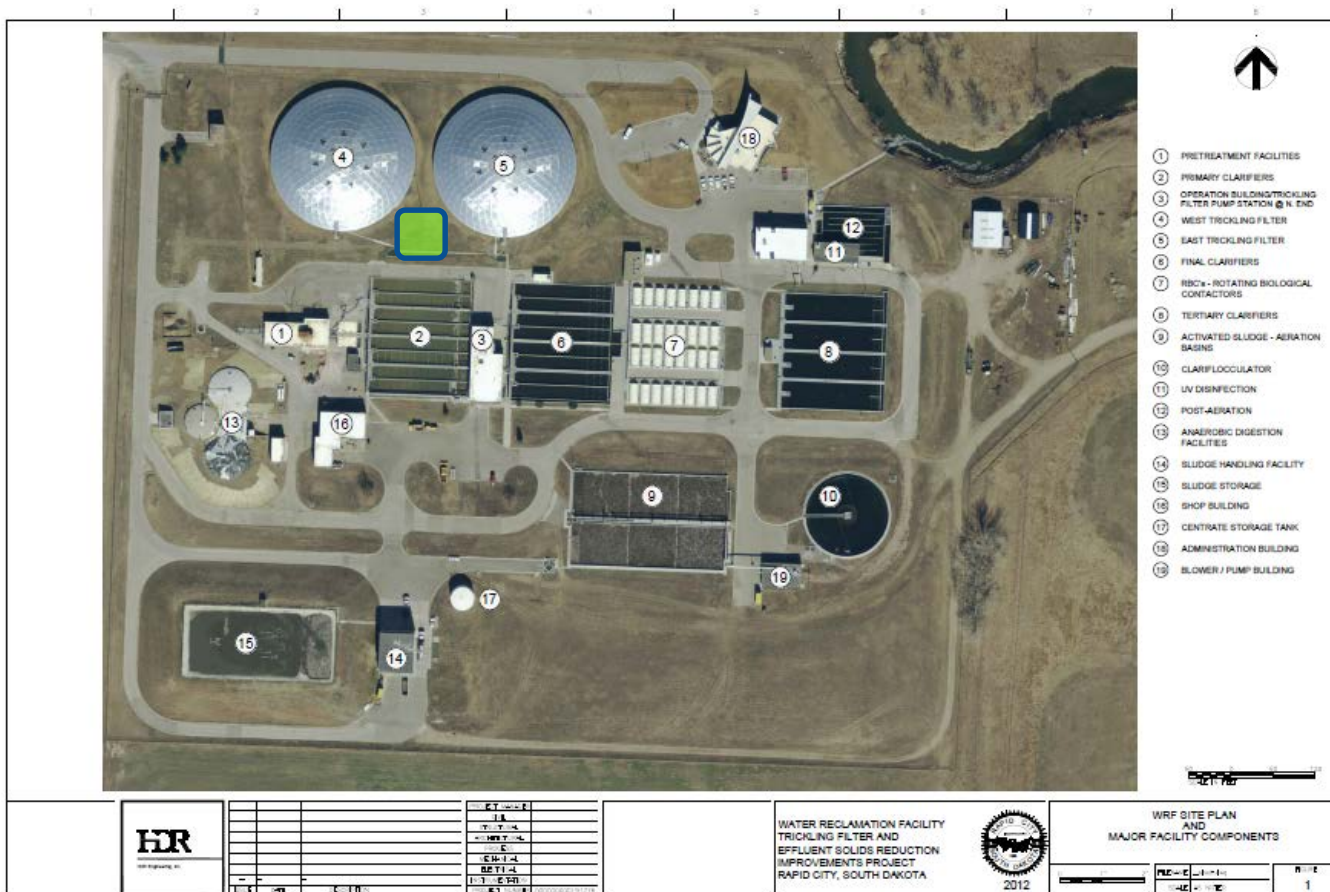
Project Scope

- Trickling Filter and Effluent Solids Reduction Improvement Project Evaluation Phase
- Interim Lift Station Repair
- Algae Control
- UV Disinfection System & Post Aeration system Improvements
- Lift Station Replacement
- Trickling Filter Upgrade

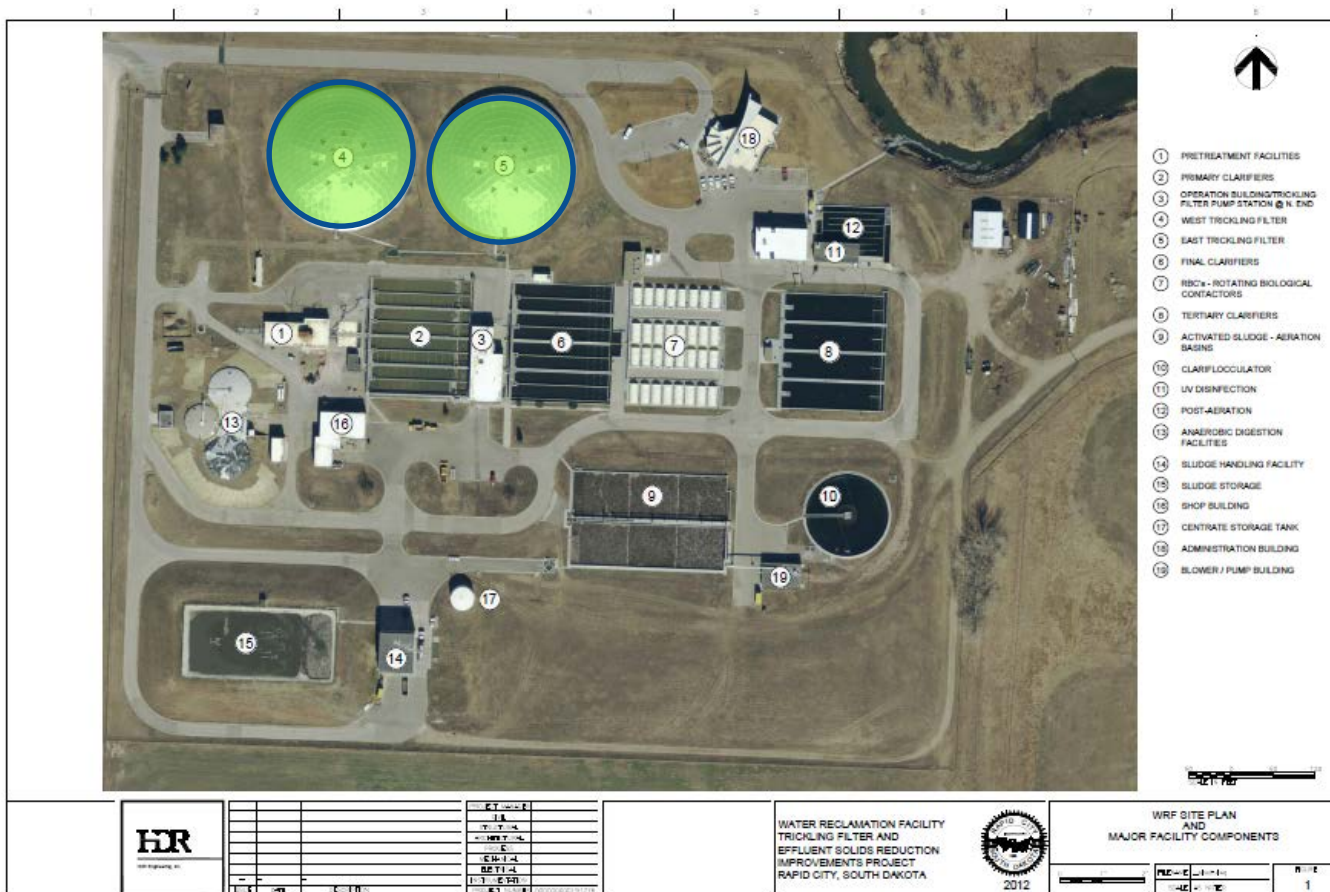
Interim Pump Station Repairs



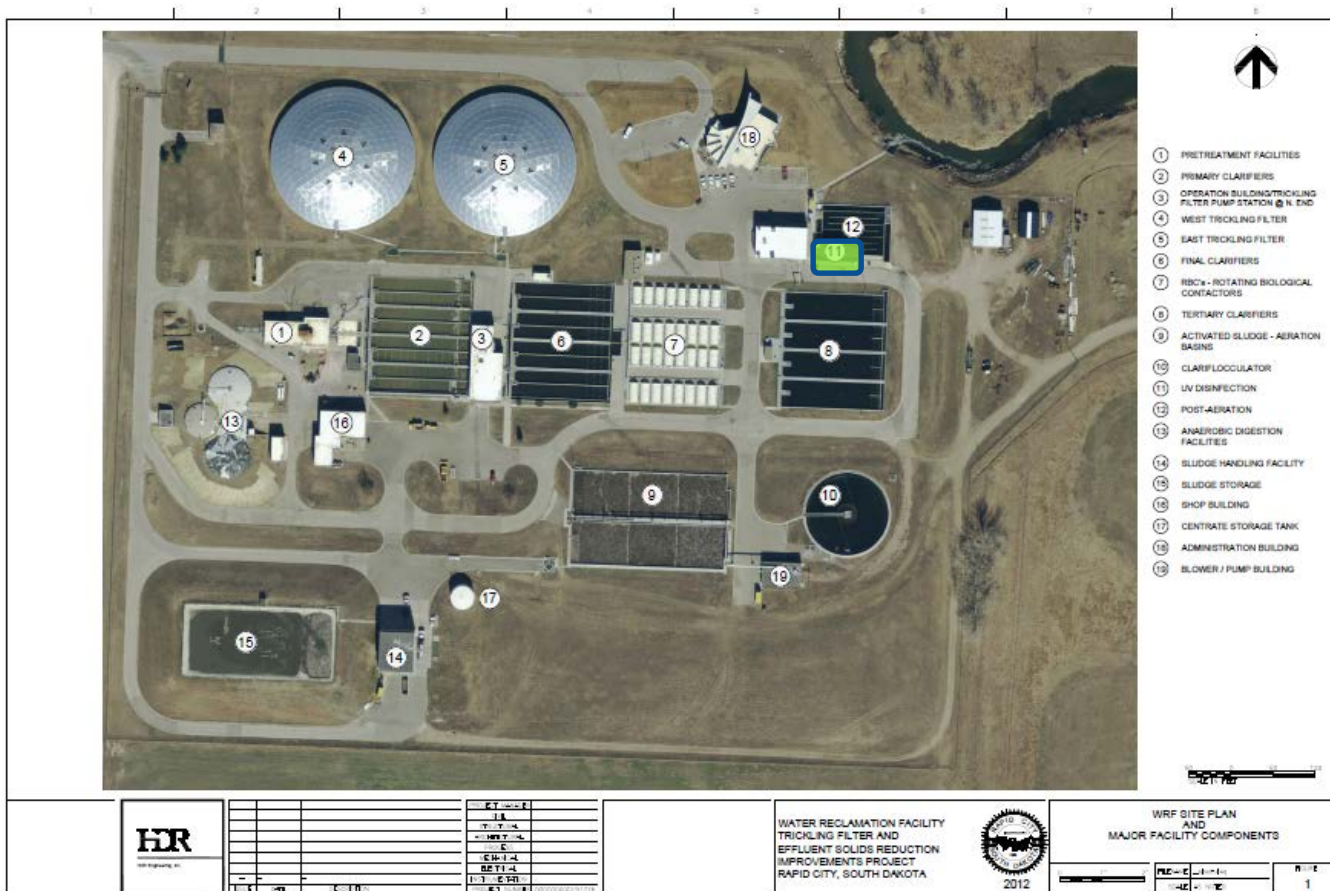
New Trickling Filter Pump Station



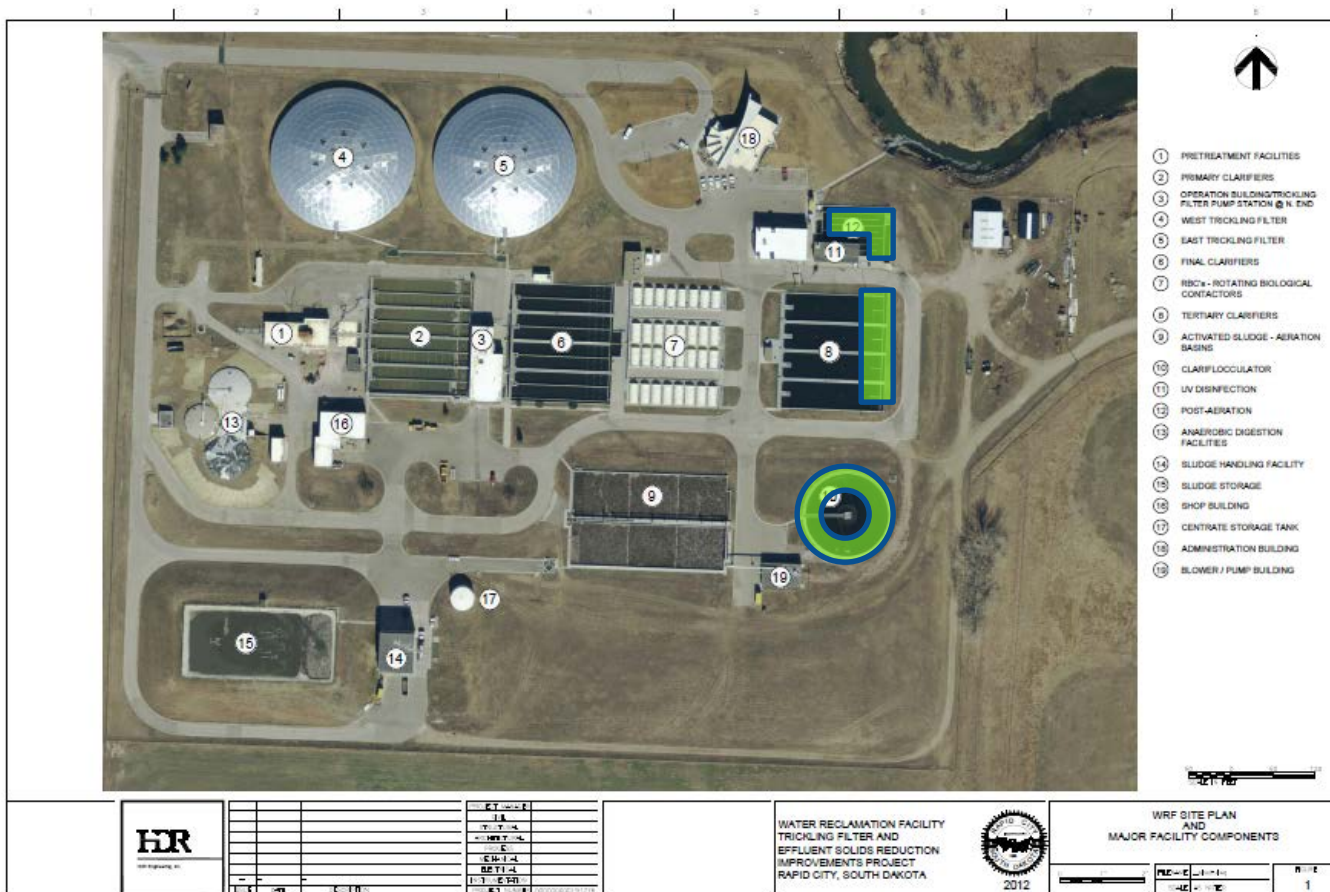
Trickling Filter Distributer Replc.



Ultraviolet Disinfection



Channel Covering



Project Costs

- P. S. Interim imp \$307,526 (contracted)
- *Project Engineering* \$1,500,000
- *Algae Control* \$275,000
- *New Pump Station* \$7,200,000
- *Trickling Filter* \$830,000
- *Ultra Violet Disinfection* \$2,720,000
- *Overall Plan* \$12,832,526

Funding

- HDR tasked to recommend most cost effective funding sources.
- Identified sources include:
 - Engineering Services – Water Reclamation CIP
 - Algae Control - Water Reclamation CIP
 - New Pump Station – WRD Fund and/or loan/bond
 - UV Disinfection – WRD Fund and/or loan/bond
 - Trickling Filter Distributers – WRD Fund or loan/bond

Wrap Up

- Questions?