

## Division 900's Goals and Objectives for 2015-2019

### **Goal – Improve Digesters gas production**

#### Objective

- Conversion of Imhoff tanks (Battery A) to circular primary tanks will increase West Side plant primary volatile solids from approximately 40% to 60%.
- Improve sludge feed to the digesters via new thickening facilities. These improvements will increase solids concentration to the digesters and increase digester detention times.
- It is projected that following the completion of these two projects, SWRP's volatile destruction will increase substantially and therefore, digester gas production will increase.

#### Description

- Imhoff Battery A at the West Side facility of the Stickney WRP, consisting of 36 Imhoff tanks, will be demolished and replaced with nine circular primary settling tanks.
- New circular gravity concentration tanks and new pre-digestion centrifuges will enhance thickening to the digester complex. At present, North Side, Southwest preliminary, and waste activated sludges are concentrated in an antiquated and high maintenance rectangular tank facility. In addition, the new centrifuges will have twice the throughput.

#### Measurability

Digester gas production by year starting in 2016 (baseline) until 2019

#### Affect to Biosolids Production

- The conversion from Imhoff to Primary tanks will provide sludge with higher volatile solids to the digesters. The volatile solids content could increase from 40% to 60% and the volatile solids reduction would increase from 31% to a range of 40% to 50%.
- The sludge concentration tanks and new centrifuges will thicken primary and waste activated sludges more efficiently; with a resulting digester feed concentration of 5.5% as opposed to the present average of 4.0%.

#### Relevant EMS Outcomes

Better relations with interested parties, Environmental Performance, Quality Management Practices

#### Action Plans

- The installation of circular primary tanks will be accomplished under Contract 04-128-3P, "West Side Primary Settling Tanks – Battery A Imhoff Replacement." The Contract will be awarded in late 2014.
- Contract 09-176-3P, "Sludge Thickening Facilities" is in progress and an M&O Liaison attends Engineering progress meetings.

#### Tracking Progress

- Contract 04-128-3P is in progress and status is provided quarterly by the Engineering Department
- Contract 09-176-3P is in progress and status is provided quarterly by the Engineering Department.

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**Goal – Improve Digesters gas production**

- Following completion of the two Engineering projects, it is expected that digester gas production will increase from 3,500 Mcf/day to 6,700 Mcf/day with a VSR in the 40% to 50% range.

Responsible Person(s)

Section 931, ETPO and Section 932, WS Principal Engineer

Funds/Resources

Funds are currently budgeted via Engineering Department contracts.

Target Date

Contract 04-128-3P, completion date in Mid 2018

Contract 09-176-3P, completion date is Early 2017

Foot note: Existing and projected values are from Malcom Pirnie's study:  
"Digester Gas Utilization and Storage Facilities at SWRP, CWRP and HPWRP  
SWRP Preliminary Design Report (FINAL DRAFT)", Contract: 08-867-3P

## **Division 900's Goals and Objectives for 2016-2019**

### **Goal – Improvement of Biological Phosphorous Capture**

#### Objective

Convert two new gravity concentration tanks to primary sludge fermenters to improve the enhanced biological phosphorus removal (EBPR) process and increase phosphorus removal and recovery. In addition, convert existing gravity concentration tanks to a WASSTRIP process in order to increase the phosphorous removing capabilities of the Ostara NRF.

#### Description

At present EBPR can be unstable due to carbon limitations. The use of primary sludge fermenters will increase the available carbon for EBPR resulting in a more stable process allowing for the improved removal and recovery of phosphorus.

At present the Ostara NRF recovers phosphorus only from the post-digestion centrifuge centrate resulting in approximately 3,000 tons/yr of recovered product. The addition of the WASSTRIP process will increase recoverable phosphorus from the pre-digestion centrifuge centrate, resulting in approximately 9,000 tons/yr of recovered product.

#### Measurability

Phosphorous removal by year starting in 2016 (baseline) to 2019.

#### Affect to Biosolids Production

The installation of the fermenters will stabilize EBPR and increase the removal of phosphorus and allow a better recovery in the Nutrient Removal Facility. The additional recovery of phosphorus will also improve the nitrogen to phosphorus ratio in our biosolids bringing it closer to agronomic needs.

The installation of the WASSTRIP process will reduce struvite formation in the digesters and post centrifuge systems allowing a more reliable operation. It should also increase the dewaterability of the biosolids. The additional recovery of phosphorus will also improve the nitrogen to phosphorus ratio in our biosolids bringing it closer to agronomic needs.

#### Relevant EMS Outcomes

Better relations with interested parties, Regulatory compliance, Environmental Performance, recovery of a globally limited resource.

#### Action Plans

Contract 15-124-3P, "Conversion of Two New GCTs to Primary Sludge Fermenters" will convert the new gravity concentration tanks 1 and 2 to primary sludge fermenters and install a pump station to pump the fermentate directly to the West Side primary effluent conduit feeding the aeration batteries. This will provide additional carbon to EBPR, stabilizing the process, and increase the reliable removal and recovery of phosphorus.

Contract 15-120-3P, "Conversion of Old GCTs to WASSTRIP Process" will convert gravity concentration tanks 7 and 8 to primary sludge fermenters, utilization of gravity concentration tanks 10 through 12 for WAS settling and conversion of gravity concentration tanks 13 through 16 to WASSTRIP reactors, which will provide a more concentrated stream of Ortho-P to the Ostara NRF.

Tracking Progress

An M&O liaison will be assigned when Contract 15-124-3P is awarded. Provide a quarterly Construction status progress.

Contract 15-120-3P was awarded in June 2016. An M&O liaison has been assigned and will provide a quarterly status of Construction's progress.

Responsible Person(s)

Section 931, ETPO and Section 934, COE 2

Funds/Resources

Funds are currently budgeted via Engineering Department contracts.

Target Date

Contract 15-124-3P: Award in January 2017 and completion in January 2018

Contract 15-120-3P, Completion: December 2017 and integration into the NRF in 2018