

Plant 5 Basin #1 Diffuser replacement

Project Number: WW 1819-08

Problem or Opportunity: The fine bubble air diffusers and piping were installed in 2000 and should have been inspected every five years to determine asset integrity and need for replacement, but to date this process has not been possible due to capacity and permit compliance. Plant #5 Basin repairs require additional treatment capacity beyond what is currently in place in order to be taken offline for inspections and replacement of the diffusers. It has been identified that Plant 5 membranes are in a state of disrepair, causing coarse air bubbles which are not fully effective in conversion of ammonia to nitrite/nitrate ammonia.

Assets Included: OWAM ID 763/764

Years Remaining Life: 32

Condition Score: 4.5

Criticality Score: 5

Recommended Solution: Replace the aeration diffusers and inspection of piping in a three-phase approach. The first phase will be to purchase the diffusers and piping. The objective of this project is for the acquisition of the materials used in subsequent phases.

Basis of Recommendation: NPDES permit compliance and increased performance in Plant 5 that will emulate performance proposed with the additional Aeration as defined within the scope of S1.

Assumptions / Risks: Increased risk of non-compliance

Primary Driver: NPDES compliance

Cost Estimate: \$124,999

Method of Delivery: Contractor installation

Belt Filter Press Discharge Conveyor Control Panel Rebuild

Project Number:	WW1920-28
Problem or Opportunity:	Sewage sludge produced by the belt filter press dewatering equipment is conveyed to a dump truck via a conveyor belt. The control panel for this conveyance system is integrated into the controls of the older, no longer operated, of two belt filter presses. Due to age and the impacts of weather conditions, this control panel has failed and can no longer control operation of the conveyor belt in the originally designed manner. Necessary safety circuits have been bypassed in order to maintain conveyor operation and must be restored.
Assets Included:	646, 336
Years Remaining Life:	-10
Condition Score:	3
Criticality Score:	2
Recommended Solution:	Rebuild of the conveyor belt control panel to bypass the abandoned belt press control system and integrate controls with the existing belt filter press currently in use. All safety systems will be restored to design intent.
Benefits:	Restores reliable long term operation of the belt filter press discharge conveyor including restoration of all designed-in safety systems.
Basis of Recommendation:	Asset is past the end of its life span and has failed in normal usage. In order to maintain operation, safety systems have been bypassed and must be restored.
Assumptions / Risks:	Existing system has failed in normal usage and can no longer be repaired. Failure to rebuild the conveyor control system will prevent integration between the in-use belt filter press and the conveyor. It will also prevent restoration of the necessary systems which provide safe operation of the conveyor belt.
Primary Driver:	Restoration of failed control system
Cost Estimate:	\$46,653
Method of Delivery:	Contractor

Replacement of Filter Influent Pump #1 VFD

Project Number: WW 2021-12

Problem or Opportunity: The variable frequency drive (VFD) for Filter Influent Pump #1 failed in normal use. The VFD is of an obsolete design for which repair parts are no longer available. The unit must be replaced.

Assets Included: OWAM ID 295

Years Remaining Life: Five years past life

Condition Score: 3

Criticality Score: 5

Recommended Solution: Because of a lack of parts for the VFD's obsolete design, replacement with a new unit is the sole logical option. Existing cabinetry and wiring will be retained as much as practicable.

Benefits: Provides required redundancy to a critical treatment facility function.

Basis of Recommendation: Asset is past the end of its expected service life and has failed beyond repair.

Assumptions / Risks: The three filter influent pumps are critical to moving treated wastewater through the treatment facility. Without the VFD replacement it is likely that insufficient pumping capacity would be available during peak operating conditions.

Primary Driver: Diagnostic evaluation of existing unit.

Cost Estimate: \$66,896

Method of Delivery: Contractor

Sodium Hypochlorite Storage Tank Replacement Emergency Project

Project Number:	WW2021-13
Problem or Opportunity:	The existing sodium hypochlorite tank developed a small but significant leak. Inspection of the tank indicated that the fiberglass structure was beyond repair. Having been in service for over 20 years, tank replacement is the most reasonable option.
Assets Included:	OWAM ID 588
Condition Score:	3
Criticality Score:	3
Recommended Solution:	Replacement of tank with similar vessel. Disposal of existing tank.
Measurable Benefits:	Renewed service life. Prevention of sodium hypochlorite spill.
Basis of Recommendation:	Observed tank leak. Inspection and recommendations by vendor
Assumptions/Risks:	Safe storage of sodium hypochlorite is essential to treatment facility operation. Tank rupture/worsening of existing leak was a consideration in decision making process. Having a functioning tank allows acceptance of full deliveries of sodium hypochlorite which minimizes chemical unit cost.
Primary Driver:	Observed leakage and subsequent inspection by vendor
Cost Estimate:	\$75,000
Method of Delivery:	Contractor

Gravity Belt Thickener #1 Motorized Operating Valve (MOV) Replacement

Project Number:	WW2021-14
Problem or Opportunity:	Thickening of activated sludge solids is required prior to anaerobic digestion. This task is accomplished by two gravity belt thickeners. The volume of solids being processed is controlled by an MOV. The MOV on Gravity Belt Thickener #1 no longer operates consistently which creates performance issues.
Assets Included:	OWAM ID 868
Condition Score:	3
Criticality Score:	2
Recommended Solution:	Repair of MOVs of this type is not a practical option. Replacement of the MOV is recommended.
Measurable Benefits:	Stable Gravity Belt Thickener operation allowing for efficient thickening as well as better management/lower cost of polymer usage.
Basis of Recommendation:	Observed failures to respond to control commands.
Assumptions/Risks:	Efficient solids processing is an essential and critical unit process in treatment facility operation. A critical part of this overall objective is best use of the facility's anaerobic digester. Thickener performance is a part of this goal. In order to maintain best performance, replacement of the MOV is required.
Primary Driver:	Efficient solids processing
Cost Estimate:	\$12,000
Method of Delivery:	Equipment vendor

Plant 5 Primary Sludge Flow Meter Replacement

Project Number:	WW2021-15
Problem or Opportunity:	The existing flow meter failed due to age. Measurement of primary sludge solids is a critical process control parameter.
Assets Included:	OWAM ID 130
Condition Score:	3
Criticality Score:	3
Recommended Solution:	Repair of the flow meter is not a practical option. Replacement is required.
Measurable Benefits:	Reliable primary sludge flow measurement. Extended service life.
Basis of Recommendation:	Failure of existing meter
Assumptions/Risks:	Measurement of primary sludge solids collected by the treatment facility is an essential component of treatment operations. Facility operation is theoretically possible without an operable flow meter however performance measurement of this critical treatment unit process would be compromised.
Primary Driver:	Instrument failure
Cost Estimate:	\$13,000
Method of Delivery:	Equipment vendor

Sludge Drying Bed Drain Valve Replacement

Project Number:	WW2021-16
Problem or Opportunity:	Following belt press dewatering, sewage sludge is placed on the sludge drying bed to further dry while awaiting hauling off site by the disposal contractor (currently Synagro). Control of liquid draining from the drying bed is achieved via a drain valve. The current valve has been in place for many years and has recently failed. Replacement is required.
Assets Included:	N/A
Condition Score:	N/A
Criticality Score:	N/A
Recommended Solution:	Valve replacement is required
Measurable Benefits:	Control of runoff from the sludge drying bed
Basis of Recommendation:	Failed valve due to age
Assumptions/Risks:	As presented above, the failed valve to be replaced controls runoff from the sludge drying bed. Were the valve not to be replaced, runoff would be uncontrolled and potentially contaminate surrounding areas as well as drain to the plant headworks creating a potential organics surge
Primary Driver:	Valve failure due to age
Cost Estimate:	\$26,850
Method of Delivery:	Equipment vendor/contractor installation

Repair of Gravity Filter Backwash Pump #2

Project Number:	WW2021-18
Problem or Opportunity:	The treatment plant's gravity filters are used to polish the facility's effluent to meet regulatory agency's effluent quality standards. The gravity filters currently act as standby to the new disk filters provided as part of the S1 facility upgrade. Part of gravity filter operation is periodic backwashing of the filter media. The backwash pump has been in service for many years and now requires rebuilding due to excessive wear.
Assets Included:	OWAM ID 457
Condition Score:	3
Criticality Score:	2
Recommended Solution:	Repair/rebuilding of the pump is a viable, cost effective alternative.
Measurable Benefits:	Extension of service life
Basis of Recommendation:	Observed failure of existing pump to provide required flow
Assumptions/Risks:	Failure to repair the backwash pump would risk incomplete filter backwashing which could in turn limit effluent filtration
Primary Driver:	Pump wear over time has resulted in a required rebuild
Cost Estimate:	\$17,000
Method of Delivery:	Equipment repair subcontractor

Repair of Filter Influent Pump #3

Project Number:	WW2021-19
Problem or Opportunity:	Secondary treated wastewater must be pumped to the tertiary filtration system. The existing filter influent pumps have been in service for many years. Filter Influent Pump #3 has worn to the point where rebuilding is required.
Assets Included:	OWAM ID 460
Condition Score:	3
Criticality Score:	3
Recommended Solution:	Rebuilding of the pump is a viable, cost effective solution.
Measurable Benefits:	Extension of pump service life. Restoration of required pumping capacity
Basis of Recommendation:	Reduced pump performance. Observed equipment wear.
Assumptions/Risks:	Pumping of plant flow through the facility's filtration system is a required process operation. Failure to have sufficient pumping capacity could result in an internal wastewater overflow if plant flow were to exceed pumping capacity.
Primary Driver:	Observed reduction in pumping performance
Cost Estimate:	\$42,134
Method of Delivery:	Equipment repair subcontractor

Replacement of Belt Filter Press Sludge Feed Pump #2

Project Number:	WW2021-20
Problem or Opportunity:	Dewatering of digested sewage sludge is a critical wastewater treatment unit process. Belt filter press dewatering is used to perform this function. Pumping of sludge into the belt filter press is required. After many years of operation, Belt Filter Press Sludge Feed Pump #2 has worn to the point that it must be replaced.
Assets Included:	OWAM ID 502
Condition Score:	3
Criticality Score:	2
Recommended Solution:	Pump repair is not a viable, cost effective solution. Pump replacement is required
Measurable Benefits:	Performance assurance of sludge feed to the belt filter press will be achieved
Basis of Recommendation:	Observed insufficient pumping capacity. Replacement cost more effective solution than repair
Assumptions/Risks:	Failure to have sufficient pumping capacity would risk the ability to efficiently dewater all sludge produced by the treatment process
Primary Driver:	Pump replacement is the most cost effective option
Cost Estimate:	\$16,007
Method of Delivery:	Equipment vendor

Replacement of Plant 5 Secondary Scum Pump #1

Project Number:	WW2021-21
Problem or Opportunity:	Pumping of solids which float to the surface of the secondary clarifiers is an essential treatment operation. Secondary Scum Pump #1 has worn out from normal use and must be replaced.
Assets Included:	OWAM ID 493
Condition Score:	3
Criticality Score:	3
Recommended Solution:	Pump replacement
Measurable Benefits:	Efficient removal of floating solids
Basis of Recommendation:	Pump has worn out from normal use. Repair is not a viable option.
Assumptions/Risks:	Failure to remove secondary clarifier floating solids could result in contamination of secondary clarifier effluent discharge leading to effluent quality non-compliance. Vector attraction, odors, etc. are also likely.
Primary Driver:	Failure to pump secondary clarifier floatables
Cost Estimate:	\$16,017
Method of Delivery:	Equipment vendor

Replacement of Digester 1 and 2 3-Way Valve

Project Number:	WW2021-22
Problem or Opportunity:	A three way valve is used to direct sludge to Digester 1 or Digester 2. The existing below ground valve has failed and is no longer capable of directing sludge to Digester 1 or 2. It must be replaced.
Assets Included:	OWAM ID 870
Condition Score:	5
Criticality Score:	5
Recommended Solution:	Valve replacement
Measurable Benefits:	Valve replacement will allow for resumption of the ability to direct flow to either digester
Basis of Recommendation:	Failure of valve to operate
Assumptions/Risks:	Failure of operation of this valve could prevent usage of one, or in worst case, both digesters (if the valve jams while transitioning from one digester to the other). Direction of sludge from the treatment process is a critical task.
Primary Driver:	Failure of existing below ground valve operation
Cost Estimate:	\$28,350
Method of Delivery:	Equipment vendor

Digester #2 Rag Screening

Project Number:	WW2021-23
Problem or Opportunity:	Digester #2 was placed in service in 2009 and has operated continuously since that time. As it is a closed system, cleaning is not possible. Typical digester operation will result in an accumulation of rags, plastics, hair, etc. for which cleaning will be required every 8 to 10 years. In December, 2020, a dramatic increase in the rag content in the digested sludge being processed was noted. Clogging of pumps, piping, and dewatering equipment severely compromised operation. In an attempt to defer digester cleaning, it was determined that a de-ragging of the digester contents would be beneficial.
Assets Included:	OWAM ID 782
Condition Score:	N/A
Criticality Score:	N/A
Recommended Solution:	External filtration of digester sludge contents to remove rags, hair, plastics, etc. with filtered solids being returned to the digester.
Measurable Benefits:	Reduction in clogs during digested sludge processing.
Basis of Recommendation:	Numerous pump, piping, and equipment blockages
Assumptions/Risks:	De-ragging operation success measurement cannot be directly measured. Reduction of clogs and blockages will determine success of this project.
Primary Driver:	Observed clogs in equipment, piping, etc.
Cost Estimate:	\$33,138
Method of Delivery:	Subcontractor equipment

Replacement of Belt Filter Press Inline Sludge Feed Grinder (Muffin Monster)

Project Number:	WW2021-24
Problem or Opportunity:	Existing inline grinder had been determined as unnecessary. Recent increase in appearance of rags and debris in belt filter press sludge feed indicates the need for a replacement grinder
Assets Included:	OWAM ID 630
Condition Score:	5
Criticality Score:	2
Recommended Solution:	Replacement in kind of grinder (known commercially as a Muffin Monster)
Measurable Benefits:	Reduction in belt press operational interruptions due to clogs from rags and debris
Basis of Recommendation:	Grinder is an industry standard for reduction of clogging materials. It will replace a failed grinder of a similar design
Assumptions/Risks:	It is assumed that the grinder will substantially reduce the quantity of interruptions in belt press operation
Primary Driver:	Observed clogs from rags, plastics, hair, etc. in the belt press sludge feed flow (digester output)
Cost Estimate:	\$12,312
Method of Delivery:	Equipment vendor

Repair of Damaged Holding Tank Pump

Project Number:	WW2021-25
Problem or Opportunity:	Rental pump was damaged when pumping sludge from the North Holding Tank. Investigation indicated that the damage was caused by a bolt entrained in the sludge flow stream
Assets Included:	N/A (rental pump)
Condition Score:	N/A
Criticality Score:	N/A
Recommended Solution:	Repair pump
Measurable Benefits:	Repair of pump to prevent excess charges from rental company
Basis of Recommendation:	Observed damage to pump internal mechanicals
Assumptions/Risks:	Damage to pump was caused when in use at Rialto WWTP
Primary Driver:	Pump repairs required
Cost Estimate:	\$14,800
Method of Delivery:	Equipment vendor

Removal of Accumulated Sludge

Project Number:	WW2021-26
Problem or Opportunity:	Disruption in sludge dewatering operation resulting in pump, piping, and equipment clogs due to rags and debris in sludge being drawn from the digester resulted in the need to divert sludge flow to abandoned tankage in Plants 1 and 2. Existing dewatering equipment lacks the time and capacity required to dispose of the accumulated material. This project will rent the required dewatering equipment.
Assets Included:	N/A
Condition Score:	N/A
Criticality Score:	N/A
Recommended Solution:	Rental of required dewatering equipment and associated support
Measurable Benefits:	Removal of accumulated sludge which can result in odors and/or vector attraction
Basis of Recommendation:	Collection of quotes, negotiation of contract pricing
Assumptions/Risks:	Contractor to be engaged has a proven record of performance
Primary Driver:	Required removal of accumulated sludge
Cost Estimate:	\$124,999
Method of Delivery:	Subcontractor