

Appendix 4-1. Summary of Existing Facilities Assessed - Solids

Item Name	Location	Tag(s)	Description	Redundancy % Backup	Redundancy Recommended	Year Installed	Condition	Typical Lifespan	Anticipated Replacement	Mode of Failure	Consequence Description	Notes
RAS Distribution Box												
Building Components												
Structure (masonry)	RAS Distribution Box	N/A	No notable issues	-	-	1992	Good	50-100	Long-term	Cracks	-	-
Roofing	RAS Distribution Box	N/A	-	-	-	1992	Good	40-60	Long-term	Leaks	-	-
Sludge Piping	RAS Distribution Box	N/A	10" WAS Piping	none	no	1992	Good	40-80	Long-term	Corrosion	Can't waste/return sludge	-
Scum Piping	RAS Distribution Box	N/A	-	none	no	1992	Poor	20-40	Short-term	Plugged	Can't waste primary scum	Scum wells are checked 2x a day, they are pumped down/decanted manually, then a vac truck sucks it out.
Electrical/Controls	RAS Distribution Box	N/A	-	-	-	Upgraded in 2011	Excellent	20-30	Long-term	Obsolete / Corrosion	Can't operate RAS/WAS pumps	Electrical gear was replaced within the last few years.
Process Components												
Slide Gates (8)	RAS Distribution Box	SG-201-209, RDB-RAS-SG-01,02	Slide Gates	none	no	Recent	Good	20-40	Long-term	Corrosion	Can't control RAS fed to Aeration Basins	1 gate per aeration basin, one for a future aeration basin.
Plug Valves (8)	RAS Distribution Box		10" DeZurik Plug Valves	none	no	1972	Poor	30-50	Short-term	Corrosion	Can't isolate pumps for removal	Isolation valves haven't been exercised and most can't be opened/closed.
RAS Pumps (2)	RAS Distribution Box	RDB-RAS-P01, 02	Centrifugal non-clog, 2.5 mgd, VFD, 30' TDH, 25 hp	100%	yes	2013	Good	20-40	Long-term	Corrosion / Wear	Can't pump RAS to Aeration Basins	Two centrifugal pumps
WAS Pump (4)	RAS Distribution Box	WASP-1-4	Progressing Cavity, 1400 gpm, VFD, 100' TDH, 75 hp	100%	yes	2,4 - Recent 3 - 1992	Excellent	20-40	Long-term	Corrosion / Wear	Can't waste activated sludge (send to GBTs)	Two pumps are new (#2,4), #1 was removed for service. WAS is sent to the Gravity Belt Thickeners
Gravity Thickeners												
Gravity Thickener Structure Components												
CIP Concrete tank	Gravity Thickeners	Gravity Thickener 1 Gravity Thickener 2 Gravity Thickener 3 Gravity Thickener 4	50' Ø, 15' SWD, 7.5 hp, 25 lb/sf/d (38 du/d)	100%	yes	1987	Good	50-100	Long-term	Cracks	-	Two gravity tanks operate at a time, two are constantly out of service. The empty GT's are left closed in the winter, and duct dampers closed. The operating tanks alternate each year. Significant amount of rags and grit found when taken offline.
HVAC / Plumbing	Gravity Thickeners	GT-MAU-03,04	Make Up Air Units (7,200 cfm, 700 MBH)	100%	yes	2011	Poor	10-20	Short-term	Corrosion, Heating Element	Units fail to heat occupied space, accumulation of corrosive air	Designed to run at 6 ACH continuous, 12 ACH when occupied. Faster airflow causes the heating element to blow out.
Thickener Structure Components												
Roofing	Gravity Thickener Structure	N/A	EPDM Membrane	-	-	2011	Good	20-35	Long-term	Leaks	Leaks and potential equipment damage.	Guardrail.
Instrumentation	Gravity Thickener Structure	-	H2S Sensor	none	no	2011	Unknown					Hydrocarbon & H2S Sensors
Instrumentation	Gravity Thickener Structure	GT-FM-01-03	Flow Meter (3)	100%	yes	2011	Unknown					Hydrocarbon & H2S Sensors
HVAC	Gravity Thickener Structure	GTH-AHU01	Make Up Air Unit (1,000 cfm, 40.1 MBH)	none	no	2011	Good	15-20	Long-term	Corrosion, Heating Element	Unit fails to heat electrical room.	The electrical room wouldn't be heated.
Electrical/Controls	Gravity Thickener Structure	-		-	-	2011						
Splitter Structure Components												
Structure (masonry)	Gravity Thickener Splitter	N/A	No notable issues	-	-	1987	Good					
HVAC	Gravity Thickener Splitter	GTH-AHU02	Make Up Air Unit (1,200 cfm, 110 MBH)	none	no	2011	Poor	15-20	Short-term	Corrosion, Heating Element	Unit fails to heat occupied space, accumulation of corrosive air	The operating area wouldn't be heated and corrosive air would build up in the room.
Scum Piping	Gravity Thickener Splitter	-	Scum to TS pipe connection	none	no	1987	Poor	10-20	Short-term	Plugged Piping	Can't waste scum into TS line	Scum wells are checked 2x a day, they are pumped down/decanted manually, then a vac truck sucks it out.
Instrumentation	Gravity Thickener Splitter	-	H2S Sensor	none	no	2011	Unknown					H2S Sensor
Instrumentation	Gravity Thickener Splitter	-	LEL Sensor	none	no	2011	Unknown					Explosive Gas Detection

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Process Components												
Drive / Mechanism (4)	Gravity Thickeners	GTH-COL-01, GTH-COL-02, GTH-COL-03, GTH-COL-04	50" dia, 1.5 hp	100%	yes	2011	Good	20-40	Long-term	Corrosion	Metal breaks down, can't scrape solids to center.	All mechanisms were replaced in 2011 and in good condition.
Thickened Primary Sludge Pump (4)	Gravity Thickener Pump Room	GTH-TPS-P01, GTH-TPS-P02, GTH-TPS-P03, GTH-TPS-P04	Progressing Cavity (Moyno) Pumps, 25 gpm min, 110 gpm @ 100 psid, VFD, 20 hp	none	yes	2011	Good	20-40	Long-term	Plugged / Wear	Thickener unit redundancy, no pump redundancy. Would have to divert all PS to a single GT or turn a second GT online.	TSPs pull directly from the bottom of the gravity thickeners - the pumps alternate running to maintain 4-6% solids from the gravity thickeners. Issues with the lines getting fouled. Progressive Cavity Moyno.
Thickener Scum Pump	Gravity Thickener Pump Room	GTH-TSP-1, GTH-TSP-5	Centrifugal (Goulds) Pumps, 470 gpm, full speed, 70' TDH, 20 hp	100%	yes	1987	Poor	20-40	-	Corrosion / Wear		Hard Piped flushing connections. 2 pumps were removed in liquids project, Not used.
Gravity Thickener Splitter Box Grit Pump	Gravity Thickener - Tunnel Area	GTH-GRT-P01	Recessed Impeller Pump, 150 gpm, 44-ft TDH, 10 hp	none	no	2011	OK	20-40	Long-term	Corrosion / Wear		
Piping	Gravity Thickener Pump Room	N/A		-	-	1987	Poor	40-80	Long-term	Corrosion		
Flow Meters (FIT)	Gravity Thickener Pump Room	GTH-FIT-5042, GTH-FIT-5062	Thickened Primary Sludge Magnetic Flowmeters	100%	yes		Unknown					1 surface sonic from grit pump, 2 mag meters on tps pumps (tag numbers assigned for clarity)
Air Compressor	Gravity Thickener Pump Room	GT-AC-1		none	no		Unknown					
Blower (2)	Gravity Thickener Pump Room	GT-B-1, 2		100%	yes		Unknown					
Slide Gate (5)	Gravity Thickeners Splitter	GT-SG-1 - 5		none	no	1987	Fair	20-40	Long-term	Corrosion		Gate is missing an operator and is locked open
Gravity Thickener Odor Control Building												
Building Components												
Structure (Precast Concrete Panels)	Gravity Thickener Odor Control Building	N/A		-	-	2011	Good	50-100	Long-term			
Roofing	Gravity Thickener Odor Control Building	N/A	EPDM Membrane	-	-	2011	Good	20-35	Long-term	Leaks	Leaks and potential equipment damage.	External mount guardrail.
HVAC	Gravity Thickener Odor Control Building	GTO-AHU-01	Make Up Air Unit (2,200 cfm, 215 MBH))	none	no	2011	Good	15-20	Long-term	Corrosion / Wear	Building wouldn't receive heat.	No temperature sensor to indicate when heating is out. Water line froze and burst without anyone knowing.
HVAC	Gravity Thickener Odor Control Building	GTO-FAN01	Wall mounted Exhaust Fan (2,200 cfm)	none	no	2011	Good	15-20	Long-term	Corrosion / Wear	Building wouldn't achieve required air exchanges for occupancy.	
Instrumentation - Air Flow	Gravity Thickener Odor Control Building		Hot wire thermal measurement instrument	none	no	2011	Poor			Corrosion	Can't monitor odor airflow rate.	Having issues getting accurate flow measurements, it fouls and is not used.
Instrumentation - H2S	Gravity Thickener Odor Control Building		H2S Sensor	none	no	2011						H2S Sensor in the building.
Process Components												
Odor Control Carbon Vessel Unit	Gravity Thickener Odor Control Building	GTO-AOD-VES01	12-ft dia, 16-ft tall, FRP Tank with non-impregnated high capacity carbon	none	no	2011	Excellent	20-40	Long-term	Wear	Spent carbon would allow odors to pass through the unit	Carbon is scheduled to be replaced in the near term for the first time since installed in 2011. Used to treat air from GT's and GT splitter box.
Odor Control Fan	Gravity Thickener Odor Control Building	GTO-AOD-F01	16,500 scfm @ 8.5 in wc, 40 hp	none	no	2011	Good	20-30	Long-term	Corrosion / Wear	Fan wouldn't remove corrosive air from GT's leading to significant corrosion and preventing maintenance from entering.	Odor control air draw is adequate, in good condition

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Thickening and Dewatering Building (TDB)												
Building Components												
Structure (masonry)	Thickening & Dewatering Building	N/A		-	-	2000	Excellent	50-100	Long-term	Cracks		
Structure - Centrate tank (2)	Thickening & Dewatering Building		Two concrete tanks receiving centrate	100%	yes	2000 2010 Upgrades	Good	50-100	Long-term	Cracks		Understood to be in good condition. Stockpiles centrate for ABO (high streng
Structure - Sludge Holding tank	Thickening & Dewatering Building		10.5' x 9.5' x 30', 22,000 gal	none	no	2000 2010 Upgrades	Good	50-100	Long-term	Cracks		Checked a few years ago, in good condition.
Roofing	Thickening & Dewatering Building	N/A	Ballasted BUR System	-	-	2000	Good		Long-term	Leaks		Partial temporary guardrail.
WAS Piping	Thickening & Dewatering Building			none	no	2000	Good	40-80	Long-term	Corrosion, Leaks		
HVAC	Thickening & Dewatering Building	TDB-MAU1, 2	MAU Units (x2)	none	no	2000	Fair	10-20	Short-term	Corrosion / Wear		
HVAC	Thickening & Dewatering Building	TDB-ACU1	Roof Mounted ACU Unit (x1)	none	no	2000	Good	20-30	Long-term	Corrosion / Wear		
HVAC	Thickening & Dewatering Building	TDB-EF-1,2,5,6,7	Exhaust Fans (x5)	none	no	2000	Good	20-30	Short-term	Corrosion / Wear		
Electrical Rm DX Air Handler	Thickening & Dewatering Building	TDB-AHU01	York, XTO-30X60, 3,000 CFM	none	no							
Electrical Rm Air Cooled Condenser	Thickening & Dewatering Building	TDB-ACC01	Addison, RCU-120, 129.2 MBH	none	no							
Electrical/Controls	Thickening & Dewatering Building			-	-							
Process Components												
Odor Control Unit	Thickening & Dewatering Building		Chemical Wet Scrubber	none	no	2000	Poor	20-40	Immediate	Corrosion / Wear	Building and process air can't be treated	Wet Scrubber is being replaced with a Carbon Odor unit.
Poly mer Bulk Tank	Thickening & Dewatering Building		11,000 gallon, 12-ft dia x 13-ft tall, FRP Tank	none	no	2000	Fair	20-30	Short-term	UV Damage	Leaks, loss of use of tanks	Should be replaced in the next 5-10 years
Poly mer Transfer Pumps (x2)	Thickening & Dewatering Building	BEA-101-P1, BEA-101-P2	Progressing Cavity Pump, 0.73 gpm, 54 psi	100%	yes	2000	Fair	20-30	Short-term	Wear	Leaks, loss of transfer capability	Should be replaced in the next 5-10 years
Poly mer Day Tanks	Thickening & Dewatering Building		2,300 gallon, 6-ft dia x 11-ft tall, FRP Tank	100%	yes	2000	Fair	20-30	Short-term	UV Damage	Leaks, loss of use of tanks	Supplies 6-8 hours of poly mer. Should be replaced in the next 5-10 years
Centrifuge Poly mer Pump	Thickening & Dewatering Building	BEA-105-P, TDB-POL-P02	Progressing Cavity, 42 gpm, 67 psi	100%	yes	2000	Fair	20-30	Short-term	Wear	Leaks, loss of transfer capability	Pumps are replaced periodically
GBT Poly mer M etering Pumps	Thickening & Dewatering Building	BEA-110-P1, BEA-110-P2	Progressing Cavity, 4 gpm, 75 psi	100%	yes	2000	Fair	20-30	Short-term	Wear	Leaks, loss of transfer capability	Pumps are replaced periodically
WAS Polymer Injection	Thickening & Dewatering Building		Static Mixer	100%	yes	2000	Good	20-30	Long-term	Corrosion, Plugging	Would eliminate feed to one centrifuge	Polymer is injected into the WAS line through a static mixer
Centrifuge (2)	Thickening & Dewatering Building	TDB-CEN-01, TDB-CEN-02	270 gpm, 4000 lb/hr, 300 hp (48 dt/d) - Softstart motor	100%	yes	2000	Good	20-40	Long-term	Wear / Electrical	Solids would build up in digester (both offline)	Centrifuges are alternated each month for maintenance. Centrifuges dry cake to 19% for the dryer. Can dry up to 27%. Bowls and scrolls are in good condition.
Cake Conveyor Belt	Thickening & Dewatering Building		10 hp	none	no	2000	Good	30-50	Long-term	Wear / Electrical	Can't move cake from centrifuges	Belt recently replaced (2005), rollers are replaced periodically. Bypass blade is replaceable. Used to divert cake from dryers to
Cake Conveyor Belt Scale	Thickening & Dewatering Building		10 tons/hr	none	no	2000	Fair	20-30	Short-term	Wear / Electrical	Wouldn't know the cake feed rate to FSF	Evaluate other options for weighing cake.
Gravity Belt Thickener (2)	Thickening & Dewatering Building	TDB-GBT-01, TDB-GBT-02	2 meter @ 400 gpm, 2000 lb/hr, 7.5 hp (40 dt/d)	100%	yes	2000	Good	30-50	Long-term	Wear / Electrical	No backup unit, loss of WAS thickening	Bearings were replaced on both units, and belts have lasted much longer since.
Primary Sludge Screens	Thickening & Dewatering Building	TDB-PRI-SC01, TDB-PRI-SC02, TDB-PRI-SC03	200 gpm with 5% TS, 60 dtpd, 5 hp	200%	yes	1, 2 (2000) 3 (2011)	Good	30-50	Long-term	Wear / Electrical	Primary Sludge would be sent to the centrifuge with inorganic contaminants	1 duty, 2 standby. Screenings increased significantly this past spring. New 1/4" screens are being installed at the HW, which should
Digester Feed Pumps (2)	Thickening & Dewatering Building	TDB-DGF-P01, TDG-DGF-P02	Progressing Cavity (Netzsch) Pumps, 430 gpm, 110 psi, 75 hp, VFD	100%	yes	2011	Excellent	30-50	Long-term	Wear/ Corrosion	No ability to move thickened waste sludge (both offline).	Combine thickened primary & WAS from the sludge blend tank and send to the digesters.

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Thickening and Dewatering Building (TDB)												
Process Components												
Wetwell Recycle Pumps	Thickening & Dewatering Building	TDB-___-P	Nonclog centrifugal, 1200 gpm, 35' TDH, 20 hp, VFD	100%	yes	2000	Good	30-50	Long-term	Wear/Corrosion	Leaks, loss of transfer capability	Recycle pumps cycle sludge through the heat exchanger
Centrate Feed Pumps	Thickening & Dewatering Building	TDB-CEN-P01, TDB-CEN-P02	Non-Clog Centrifugal, 175 gpm, 18-ft TDH, 2 hp, VFD	100%	yes	2011	Excellent	30-50	Long-term	Wear/Corrosion	Leaks, loss of transfer capability	Recycle pumps send GBT filtrate to the head of the plant
Centrate Tank Submersible Mixers	Thickening & Dewatering Building	TDB-CEN-M01, TDB-CEN-M02	Submersible, mast mounted, 10 hp	100%	yes	2011	Unknown	20-30	Long-term	Wear/Corrosion	None	Not used, condition unknown
Digestion Complex (DIG)												
Digester No. 1												
Structure - CIP Concrete tank	Digester No. 1	DIG-DGS-TK01	90' Ø 32.5' deep, 1.6 MG (20 dtpd)	-	-	2011	Excellent	50-100	Long-term	Cracks	Leaks	
Piping & Nozzles	Digester No. 1	DIG-DGS-TK01		none	no	2011	Unknown	40-80	Long-term	Corrosion	Leaks	
Digester No. 2												
Structure - CIP Concrete tank	Digester No. 2	DIG-DGS-TK02	90' Ø 32.5' deep, 1.6 MG (20 dtpd)	-	-	2011	Excellent	50-100	Long-term	Cracks	Leaks	
Piping & Nozzles	Digester No. 2	DIG-DGS-TK02		none	no	2011	Unknown	40-80	Long-term	Corrosion	Leaks	
Digester No. 3												
Structure - CIP Concrete tank	Digester No. 3	DIG-DGS-TK03	90' Ø 32.5' deep, 1.6 MG (20 dtpd)	-	-	2011	Excellent	50-100	Long-term	Cracks	Leaks	
Piping & Nozzles	Digester No. 3	DIG-DGS-TK03		none	no	2011	Unknown	40-80	Long-term	Corrosion	Leaks	
Sludge Holding Tank												
Structure - CIP Concrete tank	Sludge Holding Tank	DIG-STG-TK04	90' Ø 32.5' deep, 1.6 MG (20 dtpd)	-	-	2011	Excellent	50-100	Long-term	Cracks	Leaks	
Piping & Nozzles	Sludge Holding Tank	DIG-STG-TK04		none	no	2011	Unknown	40-80	Long-term	Corrosion	Leaks	
Building Components												
Structure (Precast Concrete Panels)	Digester Control Building	N/A		-	-	2011	Excellent	50-100	Long-term	Cracks		
Roofing	Digester Control Building	N/A	EPDM Membrane	-	-	2011	Good	20-35	Long-term	Leaks	Leaks and potential equipment damage.	Tall parapet guardrail protection.
Piping	Digester Control Building	N/A		none	no	2011	Excellent	40-80	Long-term	Seals, Corrosion	Leaks	
Valves	Digester Control Building		Isolation and control valves	none	no	2011	Excellent	30-50	Long-term	Seals, Corrosion	Leaks, Loss of actuation	Valves in pump room have been difficult to open lately. Believed due to Buna seals expanding from Ferric Acid. Monthly valve exercising has started this year. Plan to replace valve seals with
HVAC	Digester Control Building	DIG-EF01 - 10	Power Roof Exhaust Fan (10)	none	no	2011	Good	20-30	Long-term			
HVAC	Digester Control Building	DIG-EF11, 12	Wall Exhaust Fan (2)	none	no	2011	Good	20-30	Long-term			
HVAC	Digester Control Building	DIG-SF01 - 04	Wall Supply Fan (4)	none	no	2011	Good	20-30	Long-term			
HVAC	Digester Control Building	DIG-ACCU01	Condensing Unit for AHU05	none	no	2011	Good	10-20	Long-term			
HVAC	Digester Control Building	DIG-AHU01 - 05	Air Handling Unit 1 (5)	none	no	2011	Good	20-30	Long-term			
HVAC	Digester Control Building	DIG-VPAC01	Vertical Packaged Air Conditioning Unit	none	no	2011	Good	20-30	Long-term			
HVAC Heating Water Circulating Pump (2)	Digester Control Building	DIG-HWP01, 02	Centrifugal, 5 (3) / 20 (2) hp	100%	yes	2011	Excellent	30-50	Long-term			

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Digestion Complex (DIG)												
Instrumentation	Digester Control Building	N/A	Level Sensors	none	no	2011	Poor	20-30	Short-term			Digesters 1, 2 & 3 had two level measurement methods - Radar and Static Pressure. Radar works on 1 & 2. Static pressure stopped working because pump influent gauge iso ring has issues. Manual measurements are taken for Digester (SH) 4. A line is dropped through a roof hatch daily. If the level drops below the overflow, gas can escape. Once this happened and all DG inventory escaped.
Electrical/Controls	Digester Control Building	N/A				2011						
Process Components												
Digester Mixing Pumps (6)	Digester Control Building	DIG-MIX-P01, DIG-MIX-P02, DIG-MIX-P03, DIG-MIX-P04, DIG-MIX-P05, DIG-MIX-P06	Centrifugal End Suction Chopper Pumps, 6000 gpm, 31-ft TDH, 100 hp, Pumps 1, 3 and 6 with VFDs, Pumps 2, 4 and 5 with Constant Speed	100%	yes	2011	Excellent	30-50	Long-term			Staff are replacing PD pump BUNA stators frequently (2-3 yrs) due to overheating and motor burnout. Replaced one with Viton a few years back, works well.
Sludge Recirculation Pumps (7)	Digester Control Building	DIG-SRC-P01, DIG-SRC-P02, DIG-SRC-P03, DIG-SRC-P04, DIG-SRC-P05, DIG-SRC-P06, DIG-SRC-P07	Centrifugal End Suction Chopper Pumps, Pumps 1 and 5: 400 gpm, 19-ft TDH, 5 hp Pumps 2, 3 and 4: 700 gpm, 26-ft TDH, 10 hp Pumps 6 and 7: 150 gpm, 12-ft TDH, 5 hp	100%	yes	2011	Excellent	30-50	Long-term			Staff are replacing PD pump BUNA stators frequently (2-3 yrs) due to overheating and motor burnout. Replaced one with Viton a few years back, works well.
Sludge Transfer Pumps (5)	Digester Control Building	DIG-ST-P01, DIG-ST-P02, DIG-ST-P03, DIG-ST-P05, DIG-ST-P06	Progressing Cavity Pumps, 425 gpm, 35 psi, 30 hp	100%	yes	2011	Excellent	30-50	Long-term			Staff are replacing PD pump BUNA stators frequently (2-3 yrs) due to overheating and motor burnout. Replaced one with Viton a few years back, works well.
Centrifuge Feed Pumps (2)	Digester Control Building	DIG-CFD-P01, DIG-CFP-P03	Progressing Cavity, 300 gpm, 65 psig, 30 hp, VFD	100%	yes	2011	Excellent	30-50	Long-term			Staff are replacing PD pump BUNA stators frequently (2-3 yrs) due to overheating and motor burnout. Replaced one with Viton a few years back, works well.
Buna Rubber Isolation Material	Digester Control Building	n/a	n/a	n/a	n/a	2011	Fair	15-20	Short-term			The Buna rubber ring is failing, Digester 3 shows levels feet above what is possible. Radar being repaired on 3.
Boilers (3)	Digester Control Building	DIG-HWB-001, DIG-HWB-002, DIG-HWB-003	5.375 mmBtu/hr, 75 psi, 200 hp, Dual Fuel (NG & DG)	200%	yes	2011	Excellent	30-50	Long-term			2 pairs of boilers, RH and HR. RH run using hot water from the boilers. HR run using hot water from final stabilization.
Boiler Heating Water Pumps (3)	Digester Control Building	DIG-HWB-P01, DIG-HWB-P02, DIG-HWB-P03	Centrifugal Pumps, 670 gpm	100%	yes	2011	Excellent	30-50	Long-term			
Heat Recovery Exchanger (2)	Digester Control Building	DIG-HR-E01, DIG-HR-E02	Spiral, 1,170 mmBtu/hr	100%	yes	2011	Excellent	30-50	Long-term			
Regular Heat Exchangers (3)	Digester Control Building	DIG-RH-E01, DIG-RH-E02, DIG-RH-E03	Spiral, Nos. 1 and 2: 3.7 mmBtu/h, No. 3: 0.315 mmBtu/hr	100%	yes	2011	Excellent	30-50	Long-term			
Heat Exchanger Heating Water Pump (6)	Digester Control Building	DIG-HW P01, 02, 04-06	5 (3) / 20 (2) hp	100%	yes	2011	Excellent	30-50	Long-term			
Digester Steel Covers (3)	Digesters 1, 2 and 3	DIG-DGS-TK01, DIG-DGS-TK02, DIG-DGS-TK03	90-ft dia, Steel, Radial Beam	-	-	2011	Varies	15-30	Varies	Peeling coating, corrosion	Leaks of digester gas	In Fall 2019 Digester 3 was removed from service and interior was inspected. The top coat of a multicoat system was peeling off at the sludge level interface. Some oakum seal

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Digestion Complex (DIG)												
Process Components												
Dystor System	Sludge Storage Tank	DIG-M CV-D01	166,000 cu ft, 12 in w.c.	0%	no	2011	Excellent	30-50	Long-term			Monitors hydrocarbon content in interstitial air between membranes to detect leaks.
Membrane System Blowers (3)	Digester Control Building	DIG-M CB-001, DIG-M CB-002, DIG-MCB-003	835 cfm, 18 in w.c., 5 hp	100%	yes	2011	Excellent	30-50	Long-term			
Digester Gas Dryer	Digester Control Building	DIG-DRY-D01	Heat Exchanger and Chiller	0%	no	2011	Excellent	20-30	Long-term			H2S condenses and is highly corrosive
Digester Gas Boosters (2)	Digester Control Building	DIG-GB-001, DIG-GB-002	230 scfm, 36 in w.c., 10 hp	100%	yes	2011	Excellent	20-40	Long-term			
Digester Gas Compressor	Digester Control Building	DIG-CP-001	525 scfm, 14.8 psi, 75 hp	0%	no	2011	Excellent	20-40	Long-term			
Air Separator	Digester Control Building	DIG-AS-001		0%	no	2011	Excellent	20-40	Long-term			
Expansion Tank	Digester Control Building	DIG-ET-001	125 psi, 529 gallons, 48" dia x 93" tall	0%	no	2011	Excellent	30-50	Long-term			
Foam Separator (2)	Digester Control Building	DIG-FMS-001, DIG-FMS-002	85,500 cfm, 36" dia x 115" tall	100%	yes	2011	Excellent	30-50	Long-term			
Waste Gas Flare	Digester Control Building	DIG-FLR-001	85,500 cfm	0%	no	2011	Excellent	30-50	Long-term			
Chemical Handling Building (CHB)												
Building Components												
Structure (masonry)	Chemical Handling Building	N/A		n/a	n/a	2011	Excellent	40-80	Long-term			
Roofing	Chemical Handling Building	N/A	EPDM Membrane	n/a	n/a	2011	Good	20-35	Long-term	Leaks	Leaks and potential equipment damage.	No Guardrail.
HVAC	Chemical Handling Building	CHB-AHU01	DES CHAMPS, PKS-08, 7,600 CFM, 810 MBH	none	no	2011	Good	15-20	Long-term	Wear / Electrical	CHB won't be heated, ferric and caustic could freeze. Liquids expand upon freezing.	System showing signs of corrosion. Ferric overflows once allowed vapor to escape into the room. Now the P-traps are filled.
HVAC	Chemical Handling Building	CHB-AHU02	Xetex, XAH-600, 600 CFM	none	no	2011	Good	15-20	Long-term			
HVAC	Chemical Handling Building	CHB-ACC02	York, H1ZD030S06, 30 MBH	none	no	2011	Good	10-20	Short-term			
Piping	Chemical Handling Building	N/A	PVC	none	no	2011	Excellent	30-50	Long-term	Cracks, UV Damage	Leaks and potential equipment damage.	
Electrical/Controls	Chemical Handling Building					2011						
Process Components												
Ferric Storage Tank	CHB	CHB-FCL-ST01, CHB-FCL-ST02, CHB-FCL-ST03	Palmer, Plas-Tanks, 11,800 gal, 12' dia, 15 ft tall, FRP	100%	yes	2011	Excellent	20-40	Long-term	UV Damage	Leaks	P-traps were reported to be drying out and Ferric odors may have caused corrosion in the HVAC system. Operations has revised procedures to ensure the traps are filled.
Caustic Storage Tank	CHB	CHB-NAOH-ST01	Palmer, Plas-Tanks, 11,800 gal, 12' dia, 15 ft tall, FRP	none	no	2011	Excellent	20-40	Long-term	UV Damage	Leaks	
Ferric Metering Pumps	CHB	CHB-FCL-P01, CHB-FCL-P02, CHB-FCL-P03, CHB-FCL-P04, CHB-FCL-P05, CHB-FCL-P06	Diaphragm Metering Pump, Milroyal B, Pulsar 7120, 1", 44 gph or 2", 82 gph	100%	yes	2011	Excellent	20-30	Long-term	Wear / Electrical		

Item Name	Location	Tag(s)	Description	Redundancy % Backup	Redundancy Recommended	Year Installed	Condition	Typical Lifespan	Anticipated Replacement	Mode of Failure	Consequence Description	Notes
Chemical Handling Building (CHB)												
Process Components												
Caustic Metering Pumps	CHB	CHB-NAOH-P01, CHB-NAOH-P02	Diaphragm Metering Pump, Milroyal B, Pulsar 7120, 1", 33 gph	100%	yes	2011	Excellent	20-30	Long-term	Wear / Electrical		
Caustic Containment Sump Pump	CHB	CHB-NAOH-SP01	Vanton, Sethco, SG-1000, UDS-100, 100 gpm	none	no	2011	Excellent	20-30	Long-term	Wear / Electrical	If one of the storage tanks had a significant leak, the room would fill with Caustic	
Ferric Containment Sump Pump	CHB	CHB-FCL-SP01	Vanton, Sethco, SG-1000, UDS-100, 100 gpm	none	no	2011	Excellent	20-30	Long-term	Wear / Electrical	If one of the storage tanks had a significant leak, the room would fill with Ferric	
Caustic Strainer	CHB	CHB-NAOH-STR01	Spears, Asahi-America, PVC Y Strainer, 4"	none	no	2011	Excellent	20-30	Long-term	Wear, Corrosion		
Ferric Strainer (2)	CHB	CHB-FCL-STR01, 02	Spears, Asahi-America, PVC Y Strainer, 4"	100%	yes	2011	Excellent	20-30	Long-term	Wear, Corrosion		
Chemical Handling Building Sump Pump (2)	CHB	CHB-SP-01, 02	Weil, 1619, 1.5", 30 gpm	none	no	2011	Excellent	20-30	Long-term	Wear / Electrical		
Chemical Handling Building Tankless Water Heater (2)	CHB	CHB-WCW-TWH01, 02	Takagi, T-M 50, 380,000 BTU/h	none		2011	Excellent	20-30	Long-term	Corrosion		
Emergency Eyewash/Shower - NAOH Pump Room	CHB	CHB-WT-EES01	Haws, 8336			2011	Excellent	20-30	Long-term	Corrosion		
Emergency Eyewash/Shower - NAOH Tank Room	CHB	CHB-WT-EES02	Haws, 8336			2011	Excellent	20-30	Long-term	Corrosion		
Emergency Eyewash/Shower - Unloading Area	CHB	CHB-WT-EES03	Bradley, S19-310TW			2011	Excellent	20-30	Long-term	Corrosion		
Emergency Eyewash/Shower - FCL Pump Room	CHB	CHB-WT-EES04	Haws, 8336			2011	Excellent	20-30	Long-term	Corrosion		
Final Stabilization Facility (FSF)												
Building Components												
Structure (Precast Concrete Panel)	Final Stabilization Facility	N/A		-	-	1999	Good	50-100	Long-term	Cracks		
Roofing	Final Stabilization Facility	N/A	Built Up Roof	-	-	1999	Good	40-80	Long-term	Leaks		Partial parapet mounted guardrail
HVAC	Final Stabilization Facility	FSF-AHU301	3,000 CFM, 90 MBH Cooling, 140 MBH Heating	none	no	2016	Excellent	15-20	Long-term	Wear/Corrosion		
HVAC	Final Stabilization Facility	FSF-AHU302	420 CFM, 24 MBH Cooling, 2.4 MBH Heating	none	no	2001	Good	15-20	Short-term	Wear/Corrosion		
HVAC	Final Stabilization Facility	FSF-AHU303	3,200 CFM, 120 MBH Cooling, 68 MBH Heating	none	no	2016	Excellent	15-20	Long-term	Wear/Corrosion		
HVAC	Final Stabilization Facility	FSF-ACC301	AHU302 Condensing Unit, 24 MBH Cooling	none	no	2015	Excellent	10-20	Long-term	Wear/Corrosion		
HVAC	Final Stabilization Facility	FSF-MAU101	18,629 CFM, 1,596 MBH Heating	none	no	2001	Good	15-20	Long-term	Wear/Corrosion		
HVAC	Final Stabilization Facility	FSF-EF301,-307	Xetex, XAH-600, 600 CFM	none	no	2001	Good	20-30	Short-term	Wear/Corrosion		