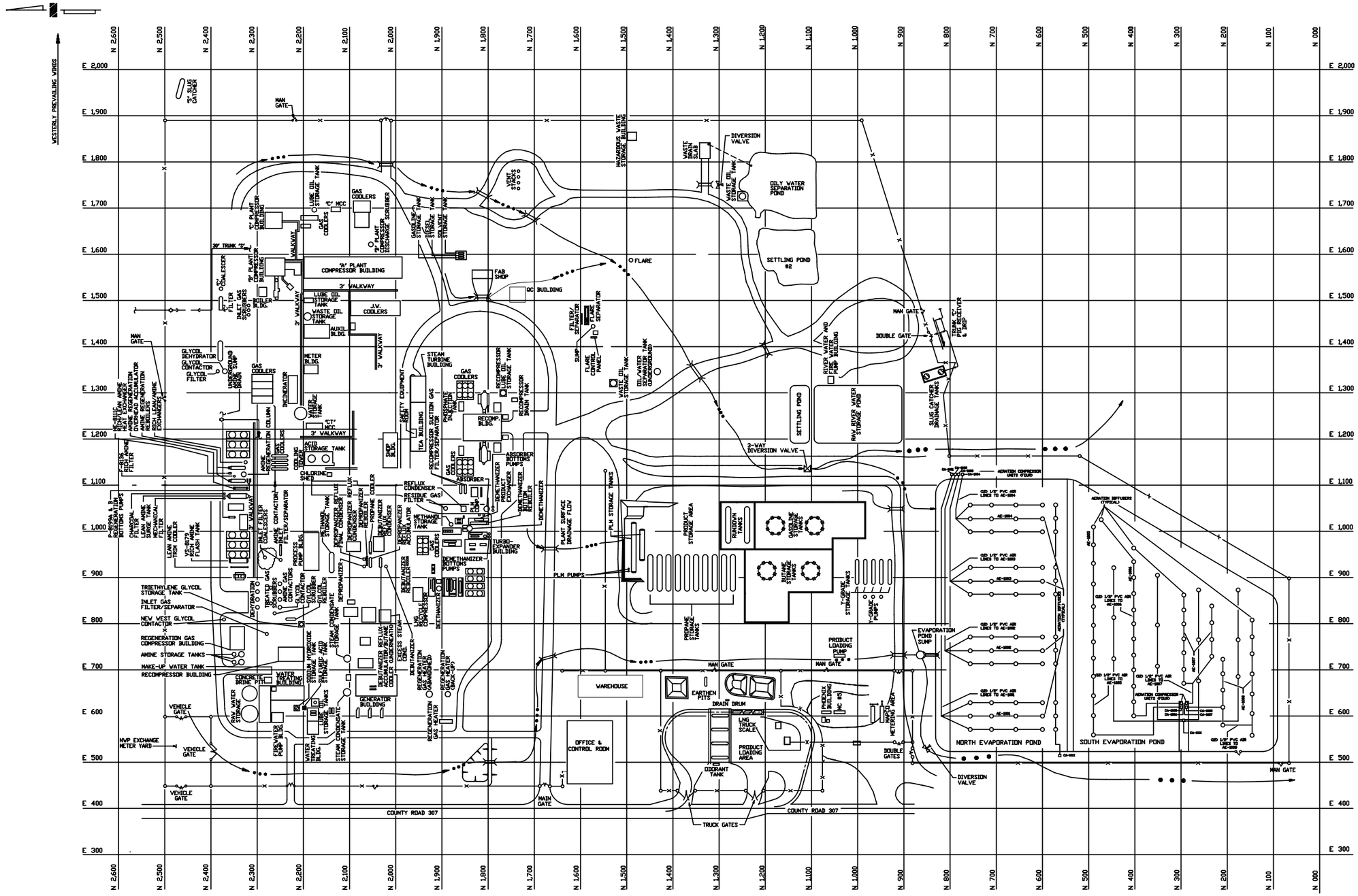

REVISED
JUNE 14, 2010
DESTROY ALL PREVIOUS REV'S.

NOTES:

DRAWING NO.	TITLE
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REFERENCE DRAWINGS

REV	DRAWN BY	DATE REVISED	CHECKED BY	PROJECT ENG.	APPROVED BY
12	P. HENDERSON	6/14/2010			
11	P.HENDERSON	6/10/2010		C. DEAN	

REVISIONS

REV	DRAWN BY	DATE REVISED	CHECKED BY	PROJECT ENG.	APPROVED BY
10	P. HENDERSON	9/8/09			
9	HENDERSON	7/24/09			
8	PWH	1/22/07	PH		
7	CAW	6/14/00	EH		EH
6	BES	2/11/99			

ADDED NEW FLARE & FLARE CONTROL PANEL
ADDED QC BLDG, OFFICE & WAREHOUSE & PLM STORAGE TANK
REVISED PER FIELD REDLINE
ADD NEW EQUIPMENT
ADDED ORTLOFF EXPANSION VESSELS AND PUMPS

REVISIONS

WILLIAMS MIDSTREAM GAS & LIQUIDS

IGNACIO PLANT
PLOT PLAN

LA PLATA COUNTY — COLORADO

DRAWN BY	CFP	SCALE: 1"= 100'	A.F.E.:
CHECKED BY			
PROJECT ENG.			
APPROVED BY			
DATE ISSUED	9/22/93		

5N1-1-P123

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

System Integrity Plan Change Log

Date	Change Location	Brief Description of Change
11/30/93	Ignacio Plant	The original date of creation of this procedure
12/3/97	Ignacio Plant	?
9/18/06	Ignacio Plant	?
9/1/08	Ignacio Plant	Updated & Changed Procedure Format
9/1/08	Ignacio Plant	MOCR Updates
2/1/09	CH2M HILL	Updated & Changed Procedure Format
4/1/09	Ignacio Plant	Yearly review and update.
9/13/09	Ignacio Plant	Corrected format & grammatical errors

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE WASTE WATER SYSTEM

Table of Contents

List of Attachments

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE WASTE WATER SYSTEM

1.0 INTRODUCTION

1.1 Scope

In accordance to complying with OSHA performance guidelines (29 CFR 1910.119) and the Williams Site Specific Administrative System Integrity Plans (9.01-ADM-012 and 9.01-ADM-013), the following operating procedure documents the operating guidelines for the Ignacio Waste Water system.

1.2 Content

To provide a safe method of operating the Ignacio Plant Waste Water System and associated equipment.

1.3 References and Related Procedures

1.3.1 Regulatory

- 29 CFR 1910.119

1.3.2 Williams Policies/Procedures

- Ignacio Plant Emergency Response Plan 12.01-ADM-002
- Ignacio Plant SPCC Plan
- A-Plant & Auxiliary System IGN-OPR-003
- West Glycol Dehydration IGN-OPR-006
- Turbo Expander IGN-OPR-008
- Fractionation IGN-OPR-12
- Steam System IGN-OPR-017
- Thermal Oxidizer IGN-OPR-018
- Steam Boilers IGN-OPR-019
- Steam Turbine Generator IGN-OPR-020
- Flare & Closed Drain System IGN-OPR-21
- Starting & Instrument Air Systems IGN-OPR-22
- Water Treat, RO, & Domestic Water Systems IGN-OPR-023
- Cooling Water System IGN-OPR-024
- Fire/Utility Water System IGN-OPR-025

- Individual Lab Procedures & Instructions
- Ignacio Plant Storm Water Plan & Procedures

1.4 Safety and Health Considerations

1.4.1 Minimum PPE required

- Hardhat (non-metallic)
- Safety glasses
- Ear protection
- Flame Retardant Clothing (FRC)
- Sturdy, leather, steel toed work shoes

NOTE: *Consult the Williams Site Safety Manual for additional requirements. For further clarification, consult your supervisor. Safety must be "built in" to all company operations. Fire retardant clothing should be worn during all hydrocarbon gas blowdown operations.*

A Material Safety Data Sheet (MSDS) is required for each chemical used at the plant. The MSDS contains important safety information on the handling, exposure and fire precautions for a particular chemical. A review of all applicable MSDS information should be made before implementing this procedure.

Before opening a vessel ensure that it has been tested for NORM (Naturally Occurring Radioactive Material). If the system has been identified as containing NORM, take the appropriate precautions.

All plant permitting systems (hot work, lock out/tag out, vessel entry, etc.) must be strictly enforced.

Prior to implementing any of the procedures in this document, verify that all plant work (company or contractor) is completed on the systems to be operated.

All sources of ignition must be identified and strictly controlled. No cutting, burning, or welding will be done while the plant is being started up, shut down, or in emergency operations. At all other times, these activities shall be strictly enforced per company procedures.

Before implementation, a visual inspection must be performed on the system to determine the following:

- All vessels and piping are in proper condition for operation.
- Blinds have been removed.

- All drains have been closed and blocked, and valves are in the proper position for vents, bleeds, and sight glasses.
- All control and shutdown loops are functional.
- All pressure safety valves (PSVs) are lined up and locked open.
- All affected personnel are aware of the procedure and management approval has been received to proceed.

During implementation of this operating procedure in this document, all vessel and piping temperatures and pressures should be carefully monitored to ensure that the maximum and minimum design limits are not exceeded.

1.4.2 Plant Siren Activation

CAUTION: *Sounding of the one minute Emergency Siren: At 12:00 Noon, every Wednesday, a test will be performed to establish working acceptance of the plant Alarm system and to familiarize plant personnel of the audible awareness. This Alarm is simply a test and will be largely ignored by WFS Employees and Contractors unless advised otherwise.*

CAUTION: *Sounding of the continuous Emergency Siren: Requires all WFS contract and contractor personnel report to the designated emergency meeting point for head count and assignments. (The emergency meeting point is in front of the rock house on CR 307 North of the Plant when the wind direction is from North to South. When the wind direction is from the South to the North, the meeting point is on CR 307 at the MAPCO pump facility.*

1.4.3 Properties and Chemical Hazards

Refer to the chemical inventory list referenced in this procedure, the site specific WHA, and the appropriate MSDS for detailed information. If an MSDS can not be obtained, contact 3E for the MSDS information needed. The 3E phone number is: 1-888-677-2370.

1.4.4 Exposure Prevention Methods

The proper PPE should be used in accordance with the MSDS when working around chemicals associated with the Waste Water System.

Refer to site-specific WHA and MSDSs for further detailed information.

1.4.5 Personnel Eye Wash and Safety Showers

There is a portable Eye Wash/Safety Shower located in the High Pressure Amine Pump Building. There are also permanent eye wash and safety showers located throughout the facility (Cooling Tower & Water Treat building). If contacted with a chemical, these showers should be used.

When adding chemicals to the Waste Water or Evaporation Ponds, the portable eye wash & safety shower should be transported to the area that the chemicals are being added.

Inventory Level Control And Quality Control For Raw Materials

Pond Stimulus and Microbes are stored in a metal CONEX storage container east of the Clear Water Pond Pump Building. These chemicals are labeled and separated.

1.4.6 Special or Unique Hazards

Benzene has previously been detected in Sump #1, Sump #2, and the Waste Water Separator at the Waste Water Ponds. A full face respirator may be necessary when working in certain areas. These areas have been previously identified by the Company Hygiene department and signs are posted to identify them. Since the areas were posted a segregation of the Flare System and Waste Water System was performed and has reduced this hazard.

The Evaporation and Waste Water Ponds present a drowning hazard and caution should be taken when driving or working in this area. The proper PPE should be utilized including a floatation devise if within 10 feet from a pond.

The water in the Evaporation and Waste Water Ponds are a health hazard and should not be ingested. Please refer to the site WHA and MSDS's for proper direction.

1.4.7 Safety Systems And Their Functions

A complete equipment and PSV list and the associated Piping & Instrumentation Diagram (P&ID) that the piece of equipment can be found on, is listed in Attachment "A" "Equipment, PSV, and P&ID List".

Signs have been post near open drains to help prevent hydrocarbons from being placed in the Waste Water System and all known sources have been eliminated from entering the open drain system automatically.

Signs, safety ropes, and floatation devises have been posted around the Evaporation and Waste Water Ponds.

1.5 Environmental Precautions

CAUTION: *Do not drain liquids or other waste onto the ground. If the proper drain system is not available, collect the liquid or other waste in an approved container and reference company procedures or contact the local Environmental Specialist for the correct disposal methods. Hydrocarbons or flammable materials should never be vented or drained to the open drain system.*

CAUTION: *Do not drain or vent Hydrocarbon liquid or vapor in to the open drains. The open drains are not part of the Flare System. These drains are part of the Waste Water system and are not designed to handle hydrocarbons of any kind.*

Under normal operating conditions, gas should not be vented to the atmosphere. When possible, all depressurization, venting, etc. should be directed to the flare/closed drain system. Hydrocarbons or flammable materials should never be vented or drained to the open drain system.

2.0 PROCESS DESCRIPTION

This section presents the Process Description. It includes descriptions of the equipment, the process flows, the process operating conditions, and the following components and functions of each part of the Waste Water System.

2.1 Scope

The Waste Water System collects waste water throughout the plant, gathers the water through a series of open drains, sumps, manholes, and a mostly underground piping network. The water is then distributed to a separation system that segregates any residual oil or hydrocarbons that has entered the collection system inadvertently. After as many contaminants as possible are removed, the water flows to the evaporation system where it is evaporated.

This procedure includes descriptions of the process equipment, the process flows and the process operating conditions and variables for each part of the Waste Water System.

- Waste Water Collection System
- Waste Water Separation
- Waste Water Ponds
- Evaporation Ponds

2.2 Process Overview

This system is designed to collect and store water which is a byproduct of some of the process equipment. In the event that oil would inadvertently enter into the system, there are provisions to separate the oil from the water and store it. Some of the systems that dump

water to the Waste Water or open drain system is the Cooling Water System, Reverse Osmosis (R.O.) System, boiler blow downs, Water Treatment System. There are also floor drains in a lot of the buildings such as the A- Plant, A-Plant Auxiliary Building, Process Pump Building, TXP Building, old Warehouse/Break Room/Control Room/Lab, Old Recompressor/Storage Building Auxiliary Generator Building, and Water Treatment & Fire Water Pump Buildings. There are also open drains positioned in the following process areas: Fractionation, West Dehy, Package Boilers & Auxiliary Generator, Calcium Chloride Dehy, A-Plant & A-Plant Auxiliary. These pieces of equipment drain water to an underground piping system that represents part the collection portion of the waste water system.

2.2.1 Waste Water Collection System

Unwanted water that is placed in the drains outside the Package Boilers, outside of the Auxiliary Generator Building, the Condensate Tanks overflow drains, the line from the old Wash Down Area, the old Recompressor/Storage Building, Fractionation Area, the old Oil Plant process area, all flow to the Declassifier Sump T-8132A through a 6” buried line. At the point in which this drain line enters the Declassifier Sump a 6" valve was installed inside of a 36" culvert at the Northwest corner of the Declassifier Pit. Closing this valve during heavy run off will prevent overflowing of the sumps. There is also a manual bucket drain valve in the top of the Declassifier Pit that can be opened to drain excess water to the Declassifier Sump. All of the liquid that has accumulated in the Declassifier Sump flows to the Cooling Tower Sump, located at the Southeast corner of the Cooling Tower, through a 4” buried line. It can also be pumped to the Cooling Tower Sump through the same 4” line by means of the Declassifier Sump Pump P-8185. If in the Auto position, the pump is automatically turned on by a local high level switch LSH-81393 and shut off by low level switch LSL-81393.

The Package Boiler Blowdown Tank flows through a 3” buried line to the Package Boiler Sump T-6127. This sump operates similar to the Declassifier Sump in that the pump is turned on and shut down by high and low level switches. When the level in the sump gets high enough, high level switch LSH-81394 turns on the Package Boiler Sump Pump P-6137 and lowers the level until the low level switch LSL-81394 shuts the pump off. The discharge of the sump pump flows through a 2” buried line directly to the Cooling Tower Sump.

The cooling tower basin can be drained through a 4” line that flows directly to the Cooling Tower Sump.

The Cooling Tower Sand Filter has a designated basin and drain which flows through a 2” buried line to the cooling tower sump.

B-Plant and C-Plant evaporative coolers flow through 1" lines from the discharge of each evaporative cooler pump when the flow over the media is reduced or shut off. This line starts at the C-Plant pump, runs along an overhead pipe rack, and combines with the B-Plant evap. pump drain line into a 2" line next to the B-Plant W.H.B. Blowdown Tank. B-Plant W.H.B. Blowdown Tank drain also ties in to this 2" line under ground. The 2" buried line gravity flows to the Cooling Tower Sump.

Liquid that accumulates in the Cooling Tower Sump gravity flows through a buried 6" line to Manhole #5 which is located just east of the Cooling Tower Sump. There is also a 2" open drain line that flows from a small sump at the base of the Calcium Chloride Dehydrator directly to Manhole #5. A 4" PVC line flows from the concrete pad where the old warehouse stood to Manhole #5.

The buried line from Manhole #5 flows eastward and then changes direction to flow in a southern direction passing by the east end of the Turbine Generator Building. The drains in the Steam Turbine Generator Building combine and flow out of the south side of the building to a cleanout. This buried 4" drain line then takes a turn to the east to join with the 6" drain line from Manhole #5 and continues in a southward direction until it ends by flowing in to Waste Water Sump #1.

The floor drains from the A-Plant Auxiliary building flow through a buried 2" line and combines with the drain line from the A-Plant Oil & Jacket Water Sand Filter drain which connects to a buried 6" line. This 6" line begins near the B-Plant inlet air filters and flows southward on the west of the A- Plant compressor building until it drains in to Manhole #6 which is located outside of A-Plant, just east of unit #7. The floor drains from A-plant building also flow in to Manhole #6.

> **NOTE:** *The floor drains in the basement of A-Plant have all been plugged and should remain plugged so that the basement can be used as a secondary containment for the liquids used in the A-Plant/Clark units.*

From Manhole #5 the buried 6" line flows south and then east to combine with the drain line coming from Manhole #6 before entering Waste Water Sump #1.

Although there has been a skillet installed in this 2" line and it is no longer in service, there is a buried pipe flowing from the flare system Hydrop Separator to Waste Water Sump #1.

The contents of Sump #1 can either gravity flow to Waste Water Sump #2 through an 8" buried line or the water can be pumped by means of Waste Water Sump #1 Pump P-8131. If the pump HOA switch is in the auto position and the high level switch LSH-81238 is made, #1 Sump Pump will start and flow water through a 1" line to the top of Waste Water Sump #2 Tank T-8107. When the low level switch LSL-81238 is made the pump is shut off.

After entering the ground, the 8" East Raw Water Storage Tank drain line flows south from the tank toward the Auxiliary Generator Building. The cooling Tower Blend Tank overflows into a small sump in the floor of the Water Treatment Building. The drain from this small sump and the floor drains in the Water Treatment Building combine with an alternate 6" Multimedia Sand Filter backwash drain line that is no longer in service. This 6" buried line combines with the floor drains in the North Fire Water Pump Building and joins the 8" drain line from the East Raw Water Tank. This 8" buried line flows in an eastward direction, combines with a 2" drain from a small sump on the west side of the West Glycol unit, and then drains in to Manhole #1 located just south of the West Glycol regeneration unit. There is also a 4" PVC drain line that starts at ground level just east of the West Glycol Unit and flows in to Manhole #1. (The drain lines flowing in to and out of Manholes #1 & #2, and the Aux. Bldg. drains, need to be investigated further to ensure the accuracy of the flow path.)

> **NOTE:** *The floor drains in the Reverse Osmosis (R/O) Building do not flow to the Waste Water System. The drain line flows near the High Pressure Boiler Feed Pump Building and then changes direction to the north to dump in to the on site drainage ditch that flows in to the Gosney Pond.*

The floor drains in the Auxiliary Building and a 1" line from an old drinking fountain in the Auxiliary Building both flow in to Manhole #2. The outlet line from Manhole #2 flows in an eastward direction and combines with the outlet line from Manhole #1 which is flowing in a southward direction. The Turbo Expander area Open Drains flow in to a buried 4" line that connects to the 8" drain line from Manhole #1 before entering Manhole #3. This manhole is located in the gravel area southwest of the Refrigeration Condenser Fans at a lower grade. After leaving Manhole #3, the liquid flows south through an 8" buried line crossing under the main plant inlet road. The line changes direction to the east and at that point there is a 6" clean out protruding from the ground. The buried 8" line then continues until draining in to Manhole #4. This manhole is located on the south side of the main entrance road, next to the overhead pipe rack, north of the LNG tanks.

Any liquid entering the LaPlata Boiler Blowdown Tanks T-6125 & T-6126 are pumped via four Blowdown pumps P-6135A & B and P-6136A & B. Both sets of tanks and pumps operate in the same manner for each respective LaPlata boiler. Water enters the blowdown tank and when the level reaches the high level switch (LSH-6184 or LSH-6185) the first blowdown pump is automatically turned on to lower the level in the tank. If the level in the tank continues to increase the High High Level switch (LSHH-6184 or LSHH- 6185) will close which automatically turns on the second pump. When the level decreases and the high level switch opens it shuts off the second pump and when the tank is empty and the low level switch (LSL-6184 or LSL- 6185) is closed, the first pump shut down. The discharge line of these pumps combines in to a 2" buried line that flows in an easterly direction under County Road 307. After crossing the road, the line comes out of the ground where it is heat traced

and insulated and travels along the above ground pipe rack before reentering the ground just south of the main plant entrance road. It travels east until it dumps in to the south side of Manhole #4.

Liquid that accumulates in the Recompressor Waste Heat Boilers Blowdown Tank T-6112 gravity flows through a normally open 1" valve on the bottom of the tank connected to the suction line to the out of service Blowdown Tank Bottoms Pump P-6120. From the 1" valve, the water flows in to an open 2" drain line which flows underground in a southern direction, crossing the main plant entrance road, and then dumps in to the north side of Manhole #4.

The liquids that have accumulated in Manhole #4 gravity flow through an 8" buried line which dumps directly in to Sump #2. All of the water collected in the Plant Waste Water System flows to Waste Water Sump #2. The 8" line from Sump #1, the 8" line from Manhole #4, and the overflow and 2" drain lines from Waste Water Sump #2 Tank T-8107. At this point the Collection System ends and the Separation System starts. The Hydrocarbon drain line from the tank farm needs to be investigated to confirm that it ties in to the flare header and not the waste water system.

2.2.2 Waste Water Separation

Although it is not desired, it is possible for small amounts of oil to enter the Waste Water System through leaking seals, air compressor blow downs, etc. The separation portion of the system is in place to capture this residual oil before the water reaches the Evaporation Ponds. The first place hydrocarbons can be separated is in #2 Sump Tank T-8107. This is an atmospheric tank that sets in a concrete secondary containment located south of the main entrance road and west of the flare stack, next to Sump #2. Liquid can be pumped from #1 Sump to the top of the tank and allowed to settle over time to ensure the water separates from any hydrocarbons. The level in the tank is monitored by reading the local level indicator LI-81237. Under normal conditions the level in the tank should not be allowed to reach the overflow line or hydrocarbons may enter Sump #2. After allowing the water and hydrocarbons to separate, the 2" tank drain can be manually opened to drain water in to Sump #2. The hydrocarbon liquid can then be removed from the tank by means of waste oil truck connection. The waste product is then hauled off site to an appropriate waste disposal facility.

All liquids entering Sump #2 gravity flow through an 8" buried plastic line to the Waste Water Separator which is located next to Waste Water Ponds #1 (East) & #2 (West). These are all located south of the flare stack. The 8" plastic line transitions to steel before coming out of the ground, reducing to a 6" pipe, and entering the north end of the Waste Water Separator S-8121. There is a 6" bypass line around the Waste Water Separator directly to the lined tub to enable work to be performed on the separator. The water spills in to the inlet chamber of the separator where it is heated to break the emulsion of water and hydrocarbon and oil. The temperature of

the water in the separator is controlled by local temperature controller TIC-82039 and steam valve TV-82039. There is a partial weir between the inlet and outlet chambers of the separator that allows the water to flow to the outlet chamber of the vessel and the oil to flow over the top of the weir and remain on the surface of the outlet chamber. Any oil settling on top of the water in the outlet chamber of the separator is removed with a Floating Drum Skimmer ME-8108 or manual valve which flows to the Waste Oil Tank to the east of the separator. The Waste Oil Tank is equipped with a high level switch LSH- 81236 that opens the air solenoid LV-81236 to an air operated pump P- 81236. When the pump comes on, it transfers the liquid from the bottom of the Waste Oil Tank to Surface Oil Storage Tank T-8133. When the level in the Waste Oil Tank decreases to the low low level switch LSLL-81236 the air is shut off to the pump and the pump stops. If there is a malfunction in the automatic level control system, P-8125 can be operated manually with hand switches HS-81229A & HS-81229B. The tank is also equipped with a mechanical level indicator to help ensure the tank is not overfilled. If necessary waste oil from T-8133 can be transferred to Surface Oil Storage Tank T-8132 with the use of an air operated pump P-8134. When needed, either of these surface oil storage tanks can be offloaded to a truck to be hauled to an appropriate disposal facility. Raw hydrocarbon condensate and pigging liquids accumulate in the North and South Rundown Tanks which are part of the flare system. It is necessary to allow the process water in the Rundown Tanks to settle and be removed by truck to the two 1000 Bbl water condensate tanks T-9403A & T-9403B located east of the Waste Water Separator. After the water has been allowed to settle and the hydrocarbons separated, the water from either T-9403A or T-9403B can be pumped using P-9403 back to the inlet chamber of the Waste Water Separator. The water that remains under the oil film in the bottom of the second chamber of the separator flows through an 8” siphon tube extends toward the bottom of that chamber and dumps into a flow weir. The flow is measured by Waste Water flow transmitter FT-81447 and is read in the control room from FI81447. It then drains in to a lined tub next to the separator. A portable floating drum skimmer ME-8107 and portable air operated pump P-8196 can be used to remove any oil that has made it past the separator to the tub and pump it back to the separator or the Waste Oil Tank. A 6” line flows from the bottom of the tub to a concrete basin on the north edge of each Waste Water Pond #1 (East) and #2 (West). There are 6” valves provided to allow the flow to be diverted to either pond or both. If by some chance there is still a small amount of oil sheen on the water contained in the concrete basins, The portable skimmer ME-8107 and pump P-8186 can be used to remove the oil and transfer it back to the separator or Waste Oil Tank. After entering the concrete basin the water drains to its respective Waste Water Pond (#1 or #2) through a 6” line which protrudes through the bank of the basin and into the pond. If oil happens to flow from the concrete basin to either of the Waste Water Ponds, the portable drum skimmer ME-8107 and portable pump P- 8196 can be placed in either pond to pump oil back to the separator or to the Waste Oil Tank.

2.2.3 Waste Water Ponds

After completing the water separation process the water in the bottom portion of the Waste Water Ponds should be free of any hydrocarbons or oils. An 8" line which protrudes through the west bank of the east (#1) pond allows the water from Pond #1 to flow to Pond #2 or directly to the Evaporation Ponds. The east (#1) pond is plastic and clay lined to prevent waste water from seeping in to the ground water system and is equipped with a leak detection tube that sets between the plastic and clay linings. If there is any water present in this tube it is pumped out, sampled, and then tested to determine the integrity of the plastic lining. Pond #1 is also equipped with a level transmitter LI-81447 to ensure the level does not get too high. This level can be read on the DCS group #102. The west pond (#2) is clay lined, normally empty, and typically used as an over flow for Pond #1 or can be used if maintenance is being performed on the liner in Pond #1. Pond #2 can also flow directly to the Evaporation ponds by opening the 8" valve on the catwalk inside the south bank of Pond #2. Chemicals are added to the Waste Water ponds on a daily basis to maintain the pH and promote microbial growth in the water. Keeping the pH between 6 and 9 will enable the addition of microbes to the ponds. This will help control odor and solids by keeping the H2S producing biological activity to a minimum. If the pH exceeds 9, acid will have to be manually added to the ponds to lower it within acceptable parameters. If the Ph falls below 6, caustic will have to be manually added to raise it with in acceptable parameters. The desired parameters can be found in "Normal Operating Conditions" table. When the Ph is within normal ranges, Microbes can be added to develop and maintain proper biological growth in the ponds. Pond #1 is equipped with a water aeration unit CA-1009. This system is in place to promote microbial growth and reduce H2S bacterial growth. The aeration cabinet, located just west of the Waste Water Separator, consists of four small Aeration Compressors CA-1009A, B, C, & D with PSV's each flowing to a valve manifold equipped with a pressure gauge. The cabinet is equipped with a timer and temperature switch to shut the unit down and a ventilation fan FN- 1009 to keep the cabinet cool and ventilated. Each compressor discharge manifold has three 1/2" hoses connected to it which flow air from the compressor to the Aeration Diffusers AE-1009 located on top of the liner at the bottom of Pond #1. There are a total of twelve hoses from the compressor cabinet and there is a can at the end of each hose which disperses air up through the pond water. The cans are spaced evenly throughout the floor of the pond. This aeration process also reduces the amount of H2S bacterial growth which decreases the undesirable odor created from that growth.

2.2.4 Evaporation Ponds

After leaving the Waste Water Ponds, the 6" line gravity flows toward the southwest until reaching the concrete catch basin at the north east corner of the North Evaporation Pond. There are atmospheric vents on this line to prevent vapor lock and promote continuous flow. The water falls in to the concrete basin and after a

sufficient level it will flow out of the 3" outlet line. The outlet line comes out of the south side of the basin to a valve can where the flow can be diverted to the North or South Evaporation Ponds. Both Evaporation Ponds are plastic lined and equipped with a local level gauge (South Pond LI-2132 and North Pond LI-XXXX), and leak Detection tubes. The North Evap. Pond is equipped with 5 Aeration Compressor units CA- 1001, CA-1002, CA-1003, CA-1004, & CA-1010. Each cabinet has three compressors, each with a valve manifold and four distribution air lines that lead to diffuser cans that set on the floor of the north pond. These diffusers are distributed evenly throughout the pond. The South Evap. Pond is also equipped with 5 Aeration cabinets CA-1005, CA-1006, CA-1007, CA-1008, & CA-1011. The South pond Aeration system is set up in the same configuration as the North Pond. The pH and microbes are handled in the same manner as the Waste Water Ponds as described in section 2.2.3.

3.0 NORMAL OPERATIONS

3.1 Scope

This section represents how to operate the Waste Water System during normal plant process conditions.

Monitor all sources of water entering the waste water system to ensure there is no more than necessary flowing in to the open drains. Some examples are:

- Cooling Tower Blend Tank overflow to drain.
- Cooling Tower Conductivity Blowdown.
- Leaking manual valves into open drains or to boiler blowdown tanks.

Continuous boiler blowdown valves are maintained by the person or contractor responsible for maintaining boiler water quality and should notify the control room operator any time that a change is made. Ensure that the position of these valves is open to the correct output as direct by that person or persons. Keeping theses valves at the minimum position and still maintain boiler quality will reduce the amount of water flowing to the Waste Water System.

3.2 Taking samples & Testing Waste Water & Evaporation pond water

A sample of water should be taken from Waste Water Pond #1 (east) and both Evaporation Ponds on a daily basis between the hours of 10:00 and 12:00. The time the samples are taken should be consistent from day to day. The sample should be taken from the middle portion of each pond by use of a pump or a bucket on a rope but should be taken in the same manner every time. When samples are taken to test for DO, Ammonia, Phosphorus, or TOC a clean sample bottle will be needed for each pond, labeled for the appropriate pond. A pH meter, which is located in the Lab, will also be needed to take pH & temperature

readings when pulling the samples from the ponds. The pH & temperature samples are taken on a daily basis.

After collecting the water from the pond, poor it into the sample bottle until it is full. After a sample has been taken from each pond, transport the three samples to the Lab for testing and try not to expose the sample to the air or agitate it as this may contaminate the sample. Testing should start no later than 30 minutes after the sample was removed from the pond.

The water samples are tested on a weekly basis for Dissolved Oxygen (DO), Ammonia, Phosphorus, and Total Organic Compounds (TOC). The following are instruction to conduct each test.

3.2.1 Dissolved Oxygen (DO) test (once per week)

If the dissolved oxygen in any of the ponds drops below .5 ppm the odor from that pond could increase significantly. A drop in the DO can create an anaerobic situation promoting the growth of sulfur reducing bacteria which create a foul odor. The cause of this is because the oxygen demand increased either from a slug of organics or a chemical oxygen demand (COD) increase. There are no quick and easy ways to increase the DO levels back to an acceptable range. It takes time to satisfy the oxygen demand once it is out of balance. Some things that can be done are to make sure the ponds are clear of floating debris, ensure there is adequate aeration, and keep slugs of biological oxygen demand (BOD) and (COD) out of the ponds. The following is a test to check the amount of DO in the pond water.

- After properly transporting the samples to the Lab, locate the proper test kit. There are several test kits for dissolved oxygen, all with different ranges. The test kit that should be used for the pond samples is the “K-7512”. This kit measures dissolved oxygen between 1ppm and 10ppm.
- Refer to the individual Lab Procedure that outlines how to conduct a standard dissolved oxygen test to test the pond water sample.
- If the dissolved oxygen does not show up on the 1ppm to 10ppm kit, retest the pond water using a “K-7501” test kit which measures between .1ppm and 1ppm.
- To ensure that there are an adequate amount of lab supplies, the ampulets found in the test kits will have to be reordered when there are approximately 15 remaining.
- The dissolved oxygen level for each pond sample should then be recorded on the provided spreadsheet located in the Ignacio I-Drive using the following path, I:\Evironmental\Pond Readings\Pond Odor Control Tables.xls.

- After all testing has been performed on the sample, the remaining water can be poured into the waste bucket located in the lab. This bucket should be disposed of in an appropriate manner.

3.2.2 pH and Temperature Test (once per day)

If the pH falls below 9 the odor from that pond could increase significantly. H2S can gasify emitting rotten egg type odor. A low pH can be caused by the feed in to that pond is between 6 and 7 so the pond being fed will always have a decreased pH. Rain and snow storms will also cause a decrease in pH. Caustic Soda can be added to the pond to increase the pH to above 9. While performing this task the proper PPE and procedure should be used. Add caustic as per the caustic excel work sheet any time that a pond reaches a pH of 9.1. (This work sheet will need to be found and implemented into this or some other procedure).

If the pH rises above 10 the dissolved oxygen increases significantly which causes all of the solids to drop out of the water and the ammonia levels to drop drastically. After this happens, all biological activity stops and organics stop breaking down. The BOD and COD begin to stockpile. The main cause for a high pH is that too much caustic soda was added while trying to increase the pH. The pH can be lowered by adding phosphoric acid to the pond using a calculated ratio. (This ratio needs to be found and implemented into this or some other procedure).

If the pH rises above 12 the dissolved oxygen increases significantly which causes all of the solids to drop out of the water and the ammonia levels to drop drastically. The water will also turn a bright green color. After this happens, all biological activity stops and organics stop breaking down. The BOD and COD begin to stockpile. At this point the pond will be in violation of EPA standards. The main cause for a high pH is that too much caustic soda was added while trying to increase the pH. The pH can be lowered by adding phosphoric acid to the pond using a calculated ratio. (This ratio needs to be found and implemented into this or some other procedure). The following is the test to check the pH and Temperature of the pond water.

- Before transferring the pond water sample from the bucket or pump to the sample bottle, it will be necessary to conduct a pH and Temperature test. The pH meter that was taken from the Lab will be necessary for this test.
- Remove the rubber probe cap located at the top of the instrument and scoop water from the bucket with it. Dump the sample from the instrument and repeat this process 4 times. This will clean any residual water from the probe so that only the sample water is being measured. After obtaining the fifth sample, press the pH button on the meter and wait for 20 seconds for the reading to equalize.

- The pH and Temperature levels for each pond sample should then be recorded on the provided spreadsheet located in the Ignacio I-Drive using the following path, I:\Evironmental\Pond Readings\Pond Odor Control Tables.xls.
- After the pH & Temperature tests are complete, flush the meter probe with distilled or fresh water and then ensure the probe is wet before placing the rubber cap back over it. If the sensor is allowed to dry out the unit may be damaged.

3.2.3 Ammonia Test (once per week)

If the ammonia decreases to almost nothing the biological activity will decrease which will cause the pond odor to increase. The bacteria in the water feed on nitrogen which is measured by ammonia levels and in this case the bacterial growth is retarded. This can be caused if the pH rises above 10 or if a large slug of BOD was introduced to the pond. The problem can be corrected by adding Urea or Amine to the pond as directed by the dosing spreadsheet. (This dosing spreadsheet needs to be found and implemented into this or some other procedure). The following is the test to check the ammonia levels in the pond water.

- From the lab, locate the Ammonia test kit “K-1510”. Use this kit and the same format for ammonia as is used the dissolved oxygen test.
- Refer to the individual Lab Procedure that outlines how to conduct an ammonia test to test the pond water sample.
- Using the 1 ml syringe that is supplied in the kit as an aid, the sample should be diluted because the amount of ammonia is greater than the scale for testing. Carefully use one of the ampulets to mix the stabilizer and dilution. Mix 1 part sample with 4 parts DI water for the Waste Water Pond sample then multiply the results of the test 5. For the North & South Evaporation Ponds, use 20 parts DI water to 1 part sample and then multiply the results by 21.
- The ammonia levels for each pond sample should then be recorded on the provided spreadsheet located in the Ignacio I-Drive using the following path, I:\Evironmental\Pond Readings\Pond Odor Control Tables.xls.
- After all testing has been performed on the sample, the remaining water can be poured into the waste bucket located in the lab. This bucket should be disposed of in an appropriate manner.

3.2.4 Phosphorus Test (once per week)

If the Phosphorus in the pond water decreases, biological activity decreases which will cause an increase in pond odor. The bacterial growth is retarded which is caused by a large slug of BOD being introduced in to the pond. The following is the test to check for phosphorus levels in the pond water.

- From the lab, locate the spectrophotometer and the phosphorus test kit. These will be needed to perform the phosphorus test.
- Refer to the individual Lab Procedure that outlines how to conduct a phosphorus test to test the pond water sample.
- After all testing has been performed on the sample, the remaining water can be poured into the waste bucket located in the lab. This bucket should be disposed of in an appropriate manner.

3.2.5 Total Organic Carbon (TOC) Test (once per week)

If the Total Organic Carbon (TOC) increases significantly there will be a significant decrease in dissolved oxygen, the water may develop an oil sheen on it, and the pond odor will increase. All biological activity stops and organics do not break down, the BOD and COD begin to stockpile, and the ponds may become in violation of EPA standards. The main cause for these conditions is that too much caustic was added to the pond. Phosphoric acid can be added to the pond to reverse the situation. The following is the test to check the level of TOC in the pond water.

- From the lab, locate the following equipment:
  - TOC direct method high range Test N Tube reagent set.
  - 100 ml graduated cylinder.
  - DRB200 reactor.
  - Light shield.
  - pH paper.
  - 50 ml Erlenmeyer flask.
  - Magnetic stirrer.
  - Digital pipette.
  - Test tube rack.
  - DI water.
- Refer to the individual Lab Procedure that outlines how to conduct the Total Organic Carbon (TOC) test to test the pond water sample.

- The sample must be diluted using 4 parts DI water to 1 part sample.
- After all testing has been performed on the sample, the remaining water can be poured into the waste bucket located in the lab. This bucket should be disposed of in an appropriate manner.

3.3 Adding Chemicals to Control pH in Waste Water & Evaporation Ponds

At times the pH in the ponds may start to drift outside of the parameters. When this happens, chemicals will have to be added to one or more of the ponds to adjust the pH.

Adding Caustic Soda to increase the pH in the Evaporation or Waste Water Ponds:

- After testing the pH level in the pond and determining that caustic soda is needed, determine the amount of caustic soda to be added. This can be done by reviewing the caustic excel work sheet (This work sheet will need to be found and implemented into this or some other procedure) or by consulting the Plant Engineer to determine the amount of water in the pond and calculate the amount of caustic based on the initial pH test results.
- After the amount of caustic is determined, follow proper lab procedures and review the MSDS before handling the caustic soda. If possible add the required dose of chemical to the center of the pond and allow the aeration system to agitate the mixture.
- After the caustic has been allowed to mix with the pond water, resample the pond water for pH and repeat this process if needed.
- Do not add more caustic than is needed as this may raise the pH above the recommended range. This will stop the bacterial growth needed to minimize odor in the pond.
- Any time that chemicals are add ensure that the amount added is properly recorded on the odor control spreadsheet in the Ignacio I-Drive at the following address: I:\Evironmental\Pond Readings\Pond Odor Control Tables.xls.

3.4 Adding Phosphoric Acid to Decrease the pH in the Evaporation or Waste Water Ponds

After testing the pH level in the pond and determining that phosphoric acid is needed, determine the amount of acid to be added. This can be done by using the calculated ratio (This ratio needs to be found and implemented into this or some other procedure). or by consulting with the Plant Engineer to determine the amount of water in the pond and calculate the amount of phosphoric acid based on the initial pH test results.

After the amount of acid is determined, follow proper lab procedures and review the MSDS before handling the phosphoric acid. If possible add the required dose of chemical to the center of the pond and allow the aeration system to agitate the mixture.

After the acid has been allowed to mix with the pond water, resample the pond water for pH and repeat this process if needed.

Do not add more acid than is needed as this may lower the pH below the recommended range. This will allow H2S to gasify and create odor from the pond.

Any time that chemicals are add ensure that the amount added is properly recorded on the odor control spreadsheet in the Ignacio I-Drive at the following address: I:\Evironmental\Pond Readings\Pond Odor Control Tables.xls.

3.5 Adding Microbes to Waste Water Ponds & Evaporation Ponds

During the summer months, after the pond water temperature has risen above 50°F, microbes should be added to both Evaporation ponds and the East Waste Water Pond #1 on a daily basis. This will maintain the proper biological growth needed to reduce pond odor and improve evaporation.

Adding NALCO Inoc Stimulus to the Evaporation and Waste Water Ponds:

- Based on pond water analysis, the chemical vender determines the amount of stimulus added to each pond and communicates that information to the Plant Engineer or the Williams employee responsible for maintaining the ponds.
- The Inoc Stimulus is store in a metal storage container just east of the Clear Water Pond Pump Building. The Stimulus is packaged in a biodegradable bag that will dissolve when placed in to the pond water and has the appearance of black pepper.
- After it is determined how much stimulus to add, throw the biodegradable bag in the appropriate pond between 08:00 and 10:00. The location of the pond that the bag is placed should be rotated from day to day. If it was added on the north side of a pond one day, it should be added to the east side the next, and then south, etc. Rotating in a clockwise direction each day.
- Do not add the stimulus unless the pond water pH is within the proper parameters.
- Any time that the stimulus is added ensure that it is properly recorded on the odor control spreadsheet in the Ignacio I-Drive at the following address: I:\Evironmental\Pond Readings\Pond Odor Control Tables.xls.

3.6 Adding NALCO Inoc 7161 (microbes) to the Evaporation and Waste Water Ponds:

Based on pond water analysis, the chemical vender determines the amount of microbes added to each pond and communicates that information to the Plant Engineer or the Williams employee responsible for maintaining the ponds.

The Inoc 7161 is store in a metal storage container just east of the Clear Water Pond Pump Building. The microbes are packaged in a biodegradable bag that will dissolve when placed in to the pond water and has the appearance of sand.

After it is determined how much of the microbes are to be add, throw the biodegradable bag in the appropriate pond between 08:00 and 10:00. The location of the pond that the bag is placed should be rotated from day to day. If it was added on the north side of a pond one day, it should be added to the east side the next, and then south, etc. Rotating in a clockwise direction each day.

Do not add microbes unless the pond water pH is within the proper parameters.

Any time that the microbes are added ensure that it is properly recorded on the odor control spreadsheet in the Ignacio I-Drive at the following address: I:\Evironmental\Pond Readings\Pond Odor Control Tables.xls.

3.7 Operation of Pond Aeration Units

The units are designed to run 24 hours per day, 7 days per week with little to no assistance. Each Unit is equipped with a 24 hour timer that can be set to turn on and shut off the Unit as desired. The mode switch is normally in the “Manual” position so the timers have not been set. The Units should run 24/7.

The Diffusers in the ponds can handle CFM of air flow but the compressors only supply 4.4 CFM and the hose from the compressor to the diffuser has a pressure rating of 150 psi. The out put gauge of the compressors should read from 1 to 5 PSIG and if it is higher than that, there may be something plugging the hose or diffuser.

There is a cooling fan inside of the cabinet to keep the compressors cool and if the temperature exceeds 160°F, the temperature switch will shut the Unit down. The only indication that this has occurred is that there will be no air flow to the diffusers associated with that Unit. Follow the steps below after this has happened:

- Disconnect power to the Unit.
- Ensure all air filters are not plugged or blocked.
- Check each compressor vent for blockage.
- Check to ensure the cooling fan is operational.
- After the problem has been repaired, an electrically qualified person can complete the next step.
- Remove the front cover of the junction box and depress the reset button located on the back side of the cover and then securely replace the junction box cover.

NOTE: *Do not attempt to perform this step unless you are an electrically qualified person!*

- After the cover has been replaced, re-energize the unit and ensure all components are working correctly.

There is a place for oil on each cooling fan but the fan manufacturer recommends that no oil be added as this may shorten the life of the fan. There is no need to add oil to ant portion of the Aeration Units. The life expectancy of the compressors is approximately 5 years so these pieces of equipment may need to be replaced at that time.

3.8 Monthly Check & Replacement of Pond Aeration Unit Filter and Air Vent

The following procedure should be performed each calendar month for every compressor (34 Compressors total) and recorded in the appropriate log that the task was performed and the results of the findings.

It is not necessary to shut the unit down to inspect or change the air filters but be careful not to allow any contaminants to enter the compressor while the filter is removed and the compressor is running.

Lift the lid on the Compressor Unit cabinet and locate all of the compressors and their inlet air filters. The Evaporation Pond Cabinets each have 3 compressors and the Waste Water Pond Cabinet has 4 compressors.

After locating the filter, unscrew it and inspect it for excessive buildup of debris. If the filter is clean, reinstall it. If the filter is plugged to the point that it will not work until the next inspection, discard it and install a new filter.

After the filters have been inspected and replaced as needed, inspect underneath each compressor to ensure the air vent is not plugged. Immediately remove any blockage from the air vent. If the blockage cannot be removed, shut down the compressor until the obstruction can be removed.

When all inspections have been completed, restart the unit if needed and ensure that the cabinet lid is securely closed.

3.9 Inspecting and Testing for Water in Pond Liner Leak Detection Tubes

NOTE: *When working on or around any of the pond liners, take care to use tools and materials in a manner that will not puncture or tear the plastic liner.*

Because the plastic lining inside of the ponds is slick, it is required to wear floatation protection when working within 10 feet from the edge of any of the ponds.

All equipment used for the following procedure should be clean and free of any contaminants (pump & hoses, bucket, 2 sample bottles).

Ensure that the pump suction hose is long enough and small enough to extend to the bottom of the Leak Detection tube (approximately 25 ft.) and the discharge line should be equipped with a small diameter connection & valve to enable the sample to be removed.

Remove the cap from the Leak Detection Tube and visually check to see if there is a water level inside of the tube. If you can not see a water level, place the leak detection rod, with chain attached, as far down the tube as possible. Remove the rod and inspect it for evidence of liquid. If no water is detect, replace the cap and log the results on the appropriate spreadsheet in the S:/Drive.

If water is visually detected or detected on the rod, obtain a water sample from the pond being inspected.

Extend the pump suction hose to the bottom of the Leak Detection Tube and the discharge hose back in to the pond and then start the pump.

As soon as water is detected at the end of the discharge hose, fill the other sample bottle from the sample valve and then continue to pumping the tube into the pond until it is empty.

After the detection tube is empty, shut down the pump, remove the suction hose from the tube and allow excess water to drain into the pond, and replace the cap on the detection tube.

Take the water samples to the lab and check both the pond and tube samples for pH and conductivity.

Record the results on the appropriate spreadsheet in the S:/Drive. After comparing the results and if they are very similar, the liner may be leaking.

If it is determined that the liner is leaking, the pond in question will have to be drained by transferring to another pond or loaded into trucks and removed to a proper disposal site, and the liner repaired.

3.10 Transferring Water from One Evaporation Pond to the Other

With the use of the electric operated Evaporation Pond Transfer Pump P-2113 (this pump was previously the south pond sprayer pump which was taken out of service), water can be transferred from one pond to another by ensuring the suction and discharge hoses are in the appropriate ponds and starting the pump with the HOA switch located on the West Evaporator Panel on the west side of the Evaporation Ponds.

After the desired amount of water has been transferred the pump can be shut down with the same switch.

At times it may be necessary to use a portable pump to perform this operation. If a portable pump is used, the specific operation of the unit will be supplied by the vender but the general operation of transferring water will be the same.

The representative Waste Water equipment, PSV's, and corresponding P&ID's are listed in the following table.

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

EQUIPMENT, PSV & P&ID LIST		
Tag	**P&ID #**	**Service**
N/A	5N1-1-P606 sht 1, 634 sht 2, 643, 731, 733, 802, 804, 805, 807, 811 sht 1, 813, 830, 841, 846, 848, 850 sht 1, 851, 856, 873 sht2, 880	Open Drains
Manhole #1	5N1-1-P873 sht 1	Waste water manhole and cleanout
Manhole #2	5N1-1-P873 sht 1	Waste water manhole and cleanout
Manhole #3	5N1-1-P873 sht 1	Waste water manhole and cleanout
Manhole #4	5N1-1-P873 sht 1	Waste water manhole and cleanout
Manhole #5	5N1-1-P873 sht 3	Waste water manhole and cleanout
Manhole #6	5N1-1-P873 sht 2	Waste water manhole and cleanout
T-8107	5N1-1-P873 sht 3	Waste Water Sump #2 Tank
T-8132A	5N1-1-P873 sht 3	Declassifier Sump
P-8185	5N1-1-P873 sht 3	Declassifier Pit Sump Pump
T-8132B	5N1-1-P873 sht 3	Cooling Tower Sump
T-6127	5N1-1-P873 sht 3	Package Boiler Blowdown Sump
P-6137	5N1-1-P873 sht 3	Package Boiler Blowdown Sump Pump
T-8121	5N1-1-P873 sht 3	Waste Water Sump #1
P-8131	5N1-1-P873 sht 3	Waste Water Sump #1 Pump
T-8106	5N1-1-P873 sht 3	Waste Water Sump #2
P-8134	5N1-1-P873 sht 3	Surface Oil Tank Pump
T-8132	5N1-1-P873 sht 3	Surface Oil Storage Tank (East)
T-8133	5N1-1-P873 sht 3	Surface Oil Storage Tank (West)
S-8121	5N1-1-P940 sht1	Waste Water Separator
H-8106, 8107, 8108, 8109	5N1-1-P940 sht1	Waste Water Separator Steam Bayonet Heaters
ME-8108	5N1-1-P940 sht1	Floating Drum Skimmer
ME-8107	5N1-1-P940 sht1	Portable Floating Drum Skimmer

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

EQUIPMENT, PSV & P&ID LIST		
Tag	**P&ID #**	**Service**
P-8196	5N1-1-P940 sht1	Portable Floating Drum Skimmer Pump
T-8135	5N1-1-P940 sht1	Waste Oil Tank
P-8125	5N1-1-P940 sht1	Waste Oil Tank Pump
P-8144	5N1-1-P940 sht2	Portable Floating Drum Skimmer Pump
T-9403-1	5N1-1-P940 sht2	Condensate Tank
T-9403-2	5N1-1-P940 sht2	Condensate Tank
P-9403	5N1-1-P940 sht2	Condensate Tank Pump
Pond #1	5N1-1-P940 sht2	East Lined Waste Water/Excess Water Pond
Pond #2	5N1-1-P940 sht2	West Waste Water/Excess Water Pond
CA-1009	5N1-1-P943	Aeration Compressor Unit (Pond #1)
FN-1009	5N1-1-P943	Aeration Compressor Unit Fan (Pond #1)
CA-1009A	5N1-1-P943	Aeration Compressor (Pond #1)
CA-1009B	5N1-1-P943	Aeration Compressor (Pond #1)
CA-1009C	5N1-1-P943	Aeration Compressor (Pond #1)
CA-1009D	5N1-1-P943	Aeration Compressor (Pond #1)
AE-1009	5N1-1-P943	Aeration Diffusers 1 through 12 (Pond #1)
CA-1001	5N1-1-P941	Aeration Compressor Unit (North Evap Pond)
FN-1001	5N1-1-P941	Aeration Compressor Unit Fan (North Evap Pond)
CA-1001A	5N1-1-P941	Aeration Compressor (North Evap Pond)
CA-1001B	5N1-1-P941	Aeration Compressor (North Evap Pond)
CA-1001C	5N1-1-P941	Aeration Compressor (North Evap Pond)
AE-1001	5N1-1-P941	Aeration Diffusers 1 through 12 (North Evap Pond)
CA-1002	5N1-1-P941	Aeration Compressor Unit (North Evap Pond)
FN-1002	5N1-1-P941	Aeration Compressor Unit Fan (North Evap Pond)
CA-1002A	5N1-1-P941	Aeration Compressor (North Evap Pond)
CA-1002B	5N1-1-P941	Aeration Compressor (North Evap Pond)
CA-1002C	5N1-1-P941	Aeration Compressor (North Evap Pond)

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

EQUIPMENT, PSV & P&ID LIST		
Tag	**P&ID #**	**Service**
AE-1002	5N1-1-P941	Aeration Diffusers 1 through 12 (North Evap Pond)
CA-1003	5N1-1-P941	Aeration Compressor Unit (North Evap Pond)
FN-1003	5N1-1-P941	Aeration Compressor Unit Fan (North Evap Pond)
CA-1003A	5N1-1-P941	Aeration Compressor (North Evap Pond)
CA-1003B	5N1-1-P941	Aeration Compressor (North Evap Pond)
CA-1003C	5N1-1-P941	Aeration Compressor (North Evap Pond)
AE-1003	5N1-1-P941	Aeration Diffusers 1 through 12 (North Evap Pond)
CA-1004	5N1-1-P941	Aeration Compressor Unit (North Evap Pond)
FN-1004	5N1-1-P941	Aeration Compressor Unit Fan (North Evap Pond)
CA-1004A	5N1-1-P941	Aeration Compressor (North Evap Pond)
CA-1004B	5N1-1-P941	Aeration Compressor (North Evap Pond)
CA-1004C	5N1-1-P941	Aeration Compressor (North Evap Pond)
AE-1004	5N1-1-P941	Aeration Diffusers 1 through 12 (North Evap Pond)
CA-1010	5N1-1-P941	Aeration Compressor Unit (North Evap Pond)
FN-1010	5N1-1-P941	Aeration Compressor Unit Fan (North Evap Pond)
CA-1010A	5N1-1-P941	Aeration Compressor (North Evap Pond)
CA-1010B	5N1-1-P941	Aeration Compressor (North Evap Pond)
CA-1010C	5N1-1-P941	Aeration Compressor (North Evap Pond)
AE-1010	5N1-1-P941	Aeration Diffusers 1 through 12 (North Evap Pond)
CA-1005	5N1-1-P942	Aeration Compressor Unit (South Evap Pond)
FN-1005	5N1-1-P942	Aeration Compressor Unit Fan (South Evap Pond)
CA-1005A	5N1-1-P942	Aeration Compressor (South Evap Pond)
CA-1005B	5N1-1-P942	Aeration Compressor (South Evap Pond)
CA-1005C	5N1-1-P942	Aeration Compressor (South Evap Pond)
AE-1005	5N1-1-P942	Aeration Diffusers 1 through 12 (South Evap Pond)
CA-1006	5N1-1-P942	Aeration Compressor Unit (South Evap Pond)
FN-1006	5N1-1-P942	Aeration Compressor Unit Fan (South Evap Pond)

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

EQUIPMENT, PSV & P&ID LIST		
Tag	**P&ID #**	**Service**
CA-1006A	5N1-1-P942	Aeration Compressor (South Evap Pond)
CA-1006B	5N1-1-P942	Aeration Compressor (South Evap Pond)
CA-1006C	5N1-1-P942	Aeration Compressor (South Evap Pond)
AE-1006	5N1-1-P942	Aeration Diffusers 1 through 12 (South Evap Pond)
CA-1007	5N1-1-P942	Aeration Compressor Unit (South Evap Pond)
FN-1007	5N1-1-P942	Aeration Compressor Unit Fan (South Evap Pond)
CA-1007A	5N1-1-P942	Aeration Compressor (South Evap Pond)
CA-1007B	5N1-1-P942	Aeration Compressor (South Evap Pond)
CA-1007C	5N1-1-P942	Aeration Compressor (South Evap Pond)
AE-1007	5N1-1-P942	Aeration Diffusers 1 through 12 (South Evap Pond)
CA-1008	5N1-1-P942	Aeration Compressor Unit (South Evap Pond)
FN-1008	5N1-1-P942	Aeration Compressor Unit Fan (South Evap Pond)
CA-1008A	5N1-1-P942	Aeration Compressor (South Evap Pond)
CA-1008B	5N1-1-P942	Aeration Compressor (South Evap Pond)
CA-1008C	5N1-1-P942	Aeration Compressor (South Evap Pond)
AE-1008	5N1-1-P942	Aeration Diffusers 1 through 12 (South Evap Pond)
CA-1011	5N1-1-P942	Aeration Compressor Unit (South Evap Pond)
FN-1011	5N1-1-P942	Aeration Compressor Unit Fan (South Evap Pond)
CA-1011A	5N1-1-P942	Aeration Compressor (South Evap Pond)
CA-1011B	5N1-1-P942	Aeration Compressor (South Evap Pond)
CA-1011C	5N1-1-P942	Aeration Compressor (South Evap Pond)
AE-1011	5N1-1-P942	Aeration Diffusers 1 through 12 (South Evap Pond)
North Pond	5N1-1-P875	North Lined Evaporation Pond
North Pond	Not Shown	North Evaporation Pond Holding Pond
South Pond	5N1-1-P875	South Lined Evaporation Pond
SPR-2113	5N1-1-P875	South Pond Sprayer (Out Of Service)
SPR-XXXX	5N1-1-P875	North Pond Sprayer (Out Of Service)

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

EQUIPMENT, PSV & P&ID LIST		
Tag	**P&ID #**	**Service**
P-2113	5N1-1-P875	South Pond Sprayer Pump (Out Of Service)
P-2111	5N1-1-P875	Evaporation Pond Transfer Pump
PSV-1001A	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1001B	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1001C	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1002A	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1002B	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1002C	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1003A	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1003B	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1003C	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1004A	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1004B	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1004C	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1010A	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1010B	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1010C	5N1-1-P941	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1005A	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1005B	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1005C	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1006A	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1006B	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1006C	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1007A	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1007B	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1007C	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1008A	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

EQUIPMENT, PSV & P&ID LIST		
Tag	**P&ID #**	**Service**
PSV-1008B	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1008C	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1011A	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1011B	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1011C	5N1-1-P942	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1009A	5N1-1-P943	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1009B	5N1-1-P943	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1009C	5N1-1-P943	Aeration Compressor PSV Set @ 28 – 30 psi
PSV-1009D	5N1-1-P943	Aeration Compressor PSV Set @ 28 – 30 psi

The representative Waste Water equipment is inspected on a daily basis in accordance with the following identified tasks listed below.

DAILY INSPECTION SCHEDULE	
Item	**Task**
1	Ensure plumber's plugs are installed and tight in every open drain in the basement of A-Plant.
2	Visually check to ensure no unnecessary water is flowing in to any open drains.
3	Check Waste Water Ponds #1 & #2 level, dike & liner condition.
4	Check North & South Evaporation Pond level, dike & liner condition.
5	Check level in North Evaporation Pond Holding Pond
6	Check levels in surface oil storage tanks T-8132 & T-8133.
7	Check cooling tower sump level.
8	Check level in Sump #1, #2 & #2 Sump Tank.
9	Inspect Floating Drum Skimmer in oil-water separator.
10	Check for oil in Waste Water Separator.
11	Check Waste Water Separator & tank pumps.
12	Check to ensure Pond Aeration Units are working properly.
13	Check Waste Water Pond #1 level on DCS.

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

DAILY INSPECTION SCHEDULE	
Item	**Task**
14	Check Waste Water Pond flow on DCS.
15	Sample and test ponds for pH and Temperature and add Chemicals and/or microbes as needed.
16	Drain water from surface oil storage tanks as needed.
17	Check open drains to ensure no hydrocarbons are flowing into them.

The Lead & Outside Operators regularly monitor all operating conditions of the plant. The following table displays the major process variables in the Waste Water System that these Operators monitor closely, and a list of normal operating ranges of those values.

NORMAL OPERATING CONDITIONS		
Instrument Tag Number	**Service**	**Normal Range**
FI-81447	Waste Water Pond Flow	0 gpm to 19 gpm
LI-81447	Waste Water Pond #1 level	0% to 68%
LI-81237	Waste Water Sump #2 Tank level indication	1ft. to 8 ft.
LI-8132	Surface Oil Storage Tank T-8132 level indication	1ft. to 16 ft.
LI-8132	Surface Oil Storage Tank T-8133 level indication	1ft. to 10 ft.
LI-XXXX	1000 bbl Condensate Tank T-9403-1 level indication	1 ft. to 18 ft.
LI-XXXX	1000 bbl Condensate Tank T-9403-2 level indication	1 ft. to 18 ft.
LI-XXXX	North Evaporation Water Pond level indication	0 ft. to 8 ft.
LI-2132	South Evaporation Water Pond level indication	0 ft. to 8 ft.
Pond pH for optimal odor control	Both Evaporation & Waste Water Pond #1	9 to 10 pH
Pond Temperature for optimal odor control	Both Evaporation Ponds & Waste Water Pond #1	77 to 95°F
Pond Ammonia Residual for optimal odor control	Both Evaporation Ponds & Waste Water Pond #1	2 to 3 mg/l

NORMAL OPERATING CONDITIONS		
Instrument Tag Number	**Service**	**Normal Range**
Pond Ortho-Phosphate Residual for optimal odor control	Both Evaporation Ponds & Waste Water Pond #1	1 to 2 mg/l
Pond Dissolved Oxygen for optimal odor control	Both Evaporation Ponds & Waste Water Pond #1	1 to 2 mg/l
North Evaporation Pond Holding Pond	Storm water holding pond pH	4 to 8 pH
North Evaporation Pond Holding Pond	Storm water holding pond Appearance	No sheen

4.0 NORMAL STARTUP

4.1 Initial Startup

The following steps establish readiness of the Waste Water system to support plant operations.

PRE-STARTUP CHECKS		
Step	**Description**	**Action**
1	Check Electrical Power	✓ Following proper procedure to ensure power is restored to the Waste Water, Steam, and Instrument Air Systems before proceeding.
2	Check DCS/Control Room	✓ Ensure that all necessary alarms and control points can be viewed and controlled from the Control Room DCS. ✓ Ensure all alarms are enabled.
3	Check Instrument Air Compressors	✓ Ensure that there are an adequate number of instrument air compressors running and there is instrument air available to all Waste Water System equipment. Refer to IGN-OPR-022 Starting & Instrument Air Systems Operating Procedure.
4	Check Fire/Utility Water System	✓ Ensure that the Fire/Utility Water System is operating normally and that all Deluge Systems have been reset and placed in to normal operation. Refer to IGN-OPR-025 Fire/Utility Water System Operating Procedure.

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

PRE-STARTUP CHECKS		
Step	**Description**	**Action**
5	Check open drains	✓ Ensure no hydrocarbon sources can enter the Waste Water System by checking open drains. ✓ Check all drains for obstructions or excessive flow.
6	Check Lockout/Tagout	✓ Ensure that all locks and tags have been removed from all affected equipment (Electrical Breakers, Instrumentation, Block Valves, Local Hand Switches, etc.). **NOTE:** *Ensure proper Lockout/Tagout procedure is used.*
7	Check flow path	✓ Open or close all valves that may have been switched while the system was down. **NOTE:** *Ensure proper Lockout/Tagout procedure is used.*
8	Check all Waste Water Sumps	✓ Ensure power is available and that HOA switches are in the AUTO position where applicable. **CAUTION:** *If sump level is high, pump may start when switched to "AUTO."*
9	Check all Tanks	✓ Ensure that the Sump #2 Tank, Separator Waste Oil Tank, Both Condensate Tanks, and both Surface Oil Storage Tanks are as empty as possible but must be within their normal operating parameters. If necessary, a truck will have to offload liquid from a full tank or tanks, using proper procedure, before the Waste Water System is placed into service.
10	Check steam heated equipment	✓ Ensure that steam is available and turned on to the Waste Water Separator. ✓ Ensure that steam is available to Sump #2 Tank. ✓ Open all steam heat trace lines and check for leaks.
11	Check pond levels	✓ Ensure both Waste Water Ponds and both Evaporation Ponds are as empty as possible. It may be necessary to have a truck load water from the North Evaporation pond using the proper procedure.

PRE-STARTUP CHECKS		
Step	**Description**	**Action**
12	Check Waste Water Separator	✓ Ensure inlet valve to Waste Water Separator is open and the bypass valve is closed. ✓ Ensure there is adequate instrument air pressure. ✓ Ensure the Separator Floating Skimmer is in place and operational. ✓ Ensure that the steam is turned on to the Bayonet heaters and that the temperature controller is unblocked and in service. ✓ Ensure that the Portable Drum Skimmer & Pump are available.
13	Check Separator Waste Oil Tank	✓ Ensure Waste Oil Pump has air available, is unblocked, and is operational. ✓ Ensure level control system is operational.
14	Check Pond Valve Lineup	✓ Determine which Waste Water Pond should have water introduced to it and open or close the appropriate valves from the tub. ✓ Ensure the appropriate valves are open to the Evaporation Ponds. ✓ Determine which Evaporation Pond should have water introduced to it and open or close the appropriate valves from the concrete basin.
15	Check Aeration Compressor Units	✓ Ensure Power is available to all 11 Aeration Units. ✓ Determine which ponds will have an adequate water level to operate the unit. If the is not enough water in the pond, the aeration unit should not be started. ✓ Start each Aeration Unit as needed for the appropriate ponds and determine if sufficient is being delivered.
16	Check Holding Pond	✓ Ensure that the Holding pond north of the North evaporation pond is at as low of a level as possible. ✓ Test Holding Pond and drain offsite if test is acceptable.

4.1.1 Starting the Waste Water System

After the Pre-Startup Checks have been completed, water can now be introduced to the Waste Water System.

NOTE: *No plant processes should be started that dump water in to the Waste Water System before the Pre-Startup Check List has been completed and all abnormal issues have been addressed.*

5.0 TEMPORARY OPERATIONS

5.1 Scope

This section presents the temporary operating procedures for the Waste Water System.

Placing a Pond Aeration Unit in to service and taking a unit out of service. Because of unit malfunction or normal testing and inspections, it will be necessary to shut down one or more of the units and place it back in to service when the work is complete. The following steps outline how to complete this task.

STARTING & STOPPING A POND AERATION UNIT		
Step	**Description**	**Action**
1	Communication	✓ Use proper Plant policy to notify the control and inform the Operator that one or more of the Aeration Units will be taken out of service.
2	Shutting Down Unit	✓ Open the lid on the box that houses the compressors and controls. ✓ The normal mode of operation for the compressor controls is “Manual”. Open the control box and ensure the mode switch is in the Manual position. ✓ Depress the ON/OFF button and ensure all of the compressors shut down. Check the gauges if necessary. ✓ Locate the proper breaker for the unit and open it (shut it off).
5	Lockout/Tagout	✓ Use proper Company policy & procedure and ensure all energy sources are isolated, locked, and tagged before working on the unit.
6	Returning Unit to Normal Service	✓ Ensure all maintenance work is complete and inform the control room operator that the unit will be placed back in to normal operation and remove locks & tags as needed. ✓ Ensure all compressor manifold valves are in the proper position for operation (Open). ✓ Ensure power is available to the breaker panel feeding the unit. ✓ Close the breaker (turn it on) to the unit being started. ✓ Open the compressor control box and ensure the mode switch is in the manual position. ✓ Press the ON/OFF button and ensure that all of the compressors are running.

STARTING & STOPPING A POND AERATION UNIT		
Step	**Description**	**Action**
7	Check System Operation	✓ Before leaving the area, ensure all pressure gauges are operating within the proper ranges. ✓ Ensure all diffusers are producing an adequate amount of air through the pond water. ✓ Ensure the cooling fan in the unit box is operating correctly. ✓ Ensure the unit box lid is closed and secured.

5.2 Loading a Truck from the Surface Oil Storage Tanks or Condensate Tanks

It may be necessary to remove liquid from one of these tanks because it may be getting full or room may be needed for more liquid. Follow the procedure below when completing this task.

LOADING A TRUCK FROM THE SURFACE OIL STORAGE TANKS OR CONDENSATE TANKS		
Step	**Description**	**Action**
1	Driver Orientation and Training	✓ Ensure that the driver that will be unloading the water/condensate has received a Plant Contractor Safety Orientation and has had the proper training. ✓ Ensure that the truck is equipped with an adequate pump to load the liquid. ✓ After the truck is parked in the proper location, ensure that the truck parking brake is set and the wheels are chocked.
2	Bonding & Grounding	✓ Ensure that the grounding/bonding strap is securely fastened to the truck.
3	Connecting Hose	✓ After grounding/bonding, connect the hose from the truck pump to the fitting on the line coming from the appropriate Tank. ✓ Double check the hose connections to ensure they will not leak when the liquid is introduced.
4	Tank Gauging	✓ Before loading any liquid, write down the level reading from the tank that will be pulled from. ✓ Check the truck to ensure it is 100% empty.
5	Valves	✓ Open the valve to the desired tank. ✓ Open the valve at the hose connection. ✓ Instruct the driver to open any valves on the truck that will prevent liquid flow. Suction and discharge to pump.

LOADING A TRUCK FROM THE SURFACE OIL STORAGE TANKS OR CONDENSATE TANKS		
Step	**Description**	**Action**
6	Start Pumping Operation	✓ Instruct the driver to start the pump on the truck to begin transferring liquid from the desired tank to the truck. ✓ Check all tank, piping, hose, and truck connection to ensure no liquid is leaking on to the ground. ✓ At no time during the process should the area be left unattended. ✓ Keep checking truck level to ensure it does not overfill.
7	Shut Down	✓ After the desired amount of liquid is transferred or the truck is full, instruct the driver to shut off the pump. ✓ Close the valve on the pipe at the hose connection. ✓ Close the valve at the appropriate tank. ✓ Instruct the driver to close the necessary valves on the truck. ✓ Carefully disconnect the hose while draining any residual liquid in to a proper container. ✓ Ensure the hose, pump, and piping are properly drained before stowing. ✓ Ensure all piping and hose caps are in place and secured. ✓ Inspect all equipment to ensure there are no liquid leaks. ✓ Disconnect the grounding/bonding strap.
8	Tank Gauging	✓ After loading the liquid, write down the level reading from the tank.
9	Documentation	✓ Properly document the amount of liquid that was removed from the appropriate tank. ✓ Ensure this amount matches any documentation for the driver. ✓ Sign the driver's invoice and place the proper copy in the appropriate location. ✓ Ensure the proper manifest accompanies the load to the disposal site or destination.

5.3 Loading a truck from the North Evaporation Pond

It may be necessary to lower the level in the Evaporation ponds. Because this water cannot flow through the storm water drainage system it is necessary to haul by truck to an approved disposal site. The following steps can be taken to remove water from the pond to put it in a truck.

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

LOADING A TRUCK FROM THE NORTH EVAPORATION POND		
Step	**Description**	**Action**
1	Driver Orientation and Training	✓ Ensure that the driver that will be unloading the water/condensate has received a Plant Contractor Safety Orientation and has had the proper training. ✓ Ensure that the truck is equipped with an adequate pump to load the liquid. ✓ Ensure that the proper manifest has been filled out to accompany the load to the disposal site. ✓ Because the truck will not enter the main entrance gate, ensure the driver checks in and out of the administration office. ✓ Unlock and open the gate near the northwest corner of the North Evaporation Pond to allow the truck to back in to the loading area. ✓ After the truck is parked in the proper location at the northwest corner of the North Evaporation Pond, ensure that the truck parking brake is set and the wheels are butted against the parking curb.
2	Connecting Hose	✓ Connect the hose from the truck pump to the fitting on the line coming from the North Evaporation Pond. ✓ Double check the hose connections to ensure they will not leak when the liquid is introduced.
3	Check Truck Liquid Level	✓ Before loading any liquid, ensure the truck is 100% empty.
4	Valves	✓ Instruct the driver to open any valves on the truck that will prevent liquid flow. Suction and discharge to pump.
5	Start Pumping Operation	✓ Instruct the driver to start the pump on the truck to begin removing liquid from North Evaporation Pond. ✓ Check all connection to ensure no liquid is leaking on to the ground. ✓ At no time during the process should the area be left unattended. ✓ Keep checking truck level to ensure it does not overfill.

LOADING A TRUCK FROM THE NORTH EVAPORATION POND		
Step	**Description**	**Action**
6	Shut Down	✓ After the desired amount of liquid is loaded or the truck is full, instruct the driver to shut of the pump. ✓ Instruct the driver to close the necessary valves on the truck. ✓ Carefully disconnect the hose while draining any residual liquid back inside of the Evaporation Pond liner. ✓ Ensure the hose and pump is properly drained back into the pond before stowing. ✓ Ensure all piping and hose caps are in place and secured. ✓ Inspect all equipment to ensure there are no liquid leaks.
7	Documentation	Properly document the amount of liquid that was removed from the pond. Ensure this amount matches any documentation for the driver. Sign the driver's invoice and place the proper copy in the appropriate location. Ensure the proper manifest accompanies the load to the disposal site.

5.4 Loading a truck from Waste Water Sump #2 Tank

Although it does not happen often, the #2 Sump Tank can become contaminated with hydrocarbon or other process materials and it may be necessary to remove the liquid to a proper disposal site. Follow the steps below if this is necessary.

LOADING A TRUCK FROM WASTE WATER SUMP #2 TANK		
Step	**Description**	**Action**
1	Driver Orientation and Training	✓ Ensure that the driver that will be unloading the water/condensate has received a Plant Contractor Safety Orientation and has had the proper training. ✓ Ensure that the truck is equipped with an adequate pump to load the liquid. ✓ Ensure that the proper manifest has been filled out to accompany the load to the disposal site. ✓ After the truck is parked in the proper location on the west side of the #2 Sump Tank, ensure that the truck parking brake is set and the wheels are chocked.
2	Bonding & Grounding	✓ Ensure that the grounding/bonding strap is securely fastened to the truck.

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

LOADING A TRUCK FROM WASTE WATER SUMP #2 TANK		
Step	**Description**	**Action**
3	Connecting Hose	✓ After grounding/bonding, connect the hose from the truck pump to the fitting on the line coming from the #2 Sump Tank Tank. ✓ Double check the hose connections to ensure they will not leak when the liquid is introduced.
4	Tank Gauging	✓ Before offloading any liquid, write down the tank level reading.
5	Valves	✓ Open the valve to #2 Sump Tank. ✓ Open the valve at the hose connection. ✓ Instruct the driver to open any valves on the truck that will prevent liquid flow. Suction and discharge to pump.
6	Start Pumping Operation	✓ Instruct the driver to start the pump on the truck to begin transferring liquid from #2 Sump Tank to the truck. ✓ Check all tank, piping, hose, and truck connection to ensure no liquid is leaking on to the ground. ✓ At no time during the process should the area be left unattended. ✓ Keep checking truck level to ensure it does not overfill.
7	Shut Down	✓ After the desired amount of liquid is transferred or the truck is full, instruct the driver to shut of the pump. ✓ Close the valve on the pipe at the hose connection. ✓ Close the valve at #2 Sump Tank. ✓ Instruct the driver to close the necessary valves on the truck. ✓ Carefully disconnect the hose while draining any residual liquid in to a proper container. ✓ Ensure the hose, pump, and piping are properly drained before stowing. ✓ Ensure all piping and hose caps are in place and secured. ✓ Inspect all equipment to ensure there are no liquid leaks. ✓ Disconnect the grounding/bonding strap.
8	Tank Gauging	✓ After loading the liquid, write down the level reading from the tank.

LOADING A TRUCK FROM WASTE WATER SUMP #2 TANK		
Step	**Description**	**Action**
9	Transfer to Condensate Tanks	✓ Depending on what kind of contaminant is in the tank, there is a possibility that the liquid can be transferred to the Condensate Tanks or drained in to Sump #2 and allow it to flow through the Waste Water Separator. ✓ If transferring the liquid with a truck, use this procedure to load the truck and "Offloading a Truck in to the Condensate Tanks" to unload it.
10	Documentation	✓ Properly document the amount of liquid that was removed from #2 Sump Tank. ✓ Ensure this amount matches any documentation for the driver. ✓ Sign the driver's invoice and place the proper copy in the appropriate location. ✓ Ensure the proper manifest accompanies the load to the disposal site.

5.5 Offloading a Truck in to the Condensate Tanks

At times water from the flare system will need to be transferred, by truck, from the Rundown tanks to the Condensate Tanks. Refer to the Flare System Procedure for the proper method to load a truck from the Rundown Tanks.

OFFLOADING A TRUCK IN TO THE CONDENSATE TANKS		
Step	**Description**	**Action**
1	Driver Orientation and Training	✓ Ensure that the driver that will be unloading the water/condensate has received a Plant Contractor Safety Orientation and has had the proper training. ✓ Ensure that the truck is equipped with an adequate pump to offload the liquid. ✓ If the liquid in the truck is from another location, ensure that the proper manifest has accompanied the load. ✓ After the truck is parked in the proper location on the west side of the condensate tanks, ensure that the truck parking brake is set and the wheels are chocked.
2	Bonding & Grounding	✓ Ensure that the grounding/bonding strap is securely fastened to the truck.

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

OFFLOADING A TRUCK IN TO THE CONDENSATE TANKS		
Step	**Description**	**Action**
3	Connecting Hose	✓ After grounding/bonding, connect the hose from the truck pump to the fitting on the line coming from the Condensate Tanks. ✓ Double check the hose connections to ensure they will not leak when the liquid is introduced.
4	Tank Gauging	✓ Before offloading any liquid, write down the level reading from the tank that will be offloaded in to.
5	Valves	✓ Open the valve to the desired Condensate Tank. ✓ Open the valve at the hose connection. ✓ Instruct the driver to open any valves on the truck that will prevent liquid flow. Suction and discharge to pump.
6	Start Pumping Operation	✓ Instruct the driver to start the pump on the truck to begin transferring liquid from the truck to the Condensate Tank. ✓ Check all tank, piping, hose, and truck connection to ensure no liquid is leaking on to the ground. ✓ At no time during the process should the area be left unattended. ✓ Keep checking Condensate Tank level to ensure it does not overflow.
7	Shut Down	✓ After the desired amount of liquid is transferred or the truck is empty, instruct the driver to shut off the pump. ✓ Close the valve on the pipe at the hose connection. ✓ Close the valve at the Condensate Tank. ✓ Instruct the driver to close the necessary valves on the truck. ✓ Carefully disconnect the hose while draining any residual liquid in to a proper container. ✓ Ensure the hose, pump, and piping is properly drained before stowing. ✓ Ensure all piping and hose caps are in place and secured. ✓ Inspect all equipment to ensure there are no liquid leaks. ✓ Disconnect the grounding/bonding strap.
8	Tank Gauging	✓ After offloading the liquid, write down the level reading from the tank.

OFFLOADING A TRUCK IN TO THE CONDENSATE TANKS		
Step	**Description**	**Action**
9	Documentation	✓ Properly document the amount of liquid that was added to the Condensate Tank. ✓ Ensure this amount matches any documentation from the driver. ✓ Sign the driver's invoice and place the proper copy in the appropriate location.

5.6 Draining the North Evaporation Pond Holding Pond

The holding pond north of the North Evaporation pond collects runoff from the Storm Water System. When this holding pond gets full it will overflow in to the North Evaporation Pond. To prevent unnecessary water from entering the Evaporation Ponds the following steps should be performed before the water level in the holding pond reaches the height of the overflow. This holding pond should be maintained with as low of a level as possible to provide room for storm water during periods of heavy rain or snow.

DRAINING THE NORTH EVAPORATION POND HOLDING POND		
Step	**Description**	**Action**
1	Testing Holding Pond Water	✓ Using proper Lab Instructions/Procedures, remove a sample of water from the holding pond. ✓ Conduct a pH test on the sample. ✓ Conduct a Conductivity test on the sample. ✓ pH = 4 to 8 ✓ Appearance = No Sheen ✓ Please refer to the Ignacio Plant Storm Water Plan to ensure these values have not changed.
2	Valves	✓ If the above test results are within the proper range, the gate valve (Headgate) at the west end of the holding pond can be opened which will allow the water to flow offsite and to the drainage ditch on the east side of County Road 307. ✓ If the water test does not meet the necessary values, it will have to be treated or diluted until it does. It can also be transferred to the Evaporation Ponds. ✓ After the desired amount of water has been drained or the holding pond is empty, ensure that the gate valve is tightly closed.
3	Current Weather	✓ Do not attempt to allow water to flow offsite if there is water flowing into the holding pond. The water coming in could be contaminated and should not be allowed to flow offsite.

DRAINING THE NORTH EVAPORATION POND HOLDING POND		
Step	**Description**	**Action**
4	Documentation	✓ Ensure that all test results and findings are properly documented in the proper location.

5.7 Yearly Pond Aeration Compressor Performance Testing

The follow test should be performed on a yearly basis to ensure the Aeration Units are operating adequately.

YEARLY POND AERATION COMPRESSOR PERFORMANCE TEST		
Step	**Description**	**Action**
1	Aeration Unit Compressor	✓ Open the lid of the aeration unit and shut down all of the compressors except one. ✓ This can be done by unplugging the unneeded units at the electrical receptacles fastened inside the bottom of the box.
2	Valves	✓ Start closing the valve on the discharge of the compressor that is running.
3	Pressure	✓ While closing the discharge block valve, watch the discharge pressure gauge until the pressure increases to between 20 and 25 pounds. ✓ The compressors PSV's are set to relieve at 28 psi so do not allow the pressure to reach this point before reopening the block valve. ✓ If the pressure reaches 20 psig, open the discharge block valve which returns the compressor back to normal service. ✓ If the pressure does not reach 20 psig and the valve is 100% closed, the compressor is deficient and will need to be rebuilt or replaced.
4	Switch Compressors	✓ Turn on another compressor in the box and shut down the compressor that was just tested. ✓ Complete the above steps for this compressor and all other compressors in the box.
5	Placing Unit Back In Service	✓ After the test has been completed for every compressor in the box, place all of the compressors in that unit back in to normal service. Running with discharge block valves 100% open. ✓ Complete this procedure for all Aeration Compressor Units associated with all ponds.

YEARLY POND AERATION COMPRESSOR PERFORMANCE TEST		
Step	**Description**	**Action**
6	Document Results	✓ After the test has been completed document the results for every compressor tested and ensure all deficient findings will be repaired.

5.8 Removing Solid Waste (Sludge) from the Waste Water Separator

During normal operation of the Waste Water System, solids will accumulate in the Waste Water Separator. The following steps should be performed to remove and dispose of these solids.

CAUTION: *Because the Waste Water Separator was once known to contain Benzene, use the proper PPE and follow proper Company policy and procedure when working in this area!*

REMOVING SOLID WASTE (SLUDGE) FROM THE WASTE WATER SEPARATOR		
Step	**Description**	**Action**
1	Job Preparation	✓ Ensure that a proper vacuum truck has been ordered to remove the slurry that will be removed from the separator. ✓ Notify the Control Room to let the operator know when the work will take place. ✓ Notify the Four Corners Area Environmental Specialist, North Area Safety Representative, and the Tulsa Hygiene Department of the plan to remove and dispose of the waste material. ✓ Contact the local hazardous waste remediation and disposal company that is currently being utilized. At this time the company is Envirotech. ✓ Ensure all PPE is available and all personnel working in the area are trained to perform the work. ✓ Before scheduling the work, ensure all forms, manifests, and waste disposal site scheduling has been finalized.
2	Shut Down the Waste Water Separator	✓ When all job preparation is complete and the work is ready to begin, shut down the Waste Water Separator using the following steps. ✓ Ensure all personnel in the area of the separator are wearing the proper PPE. ✓ Minimize liquid flow to the Waste Water System or shut off all water flow if possible. ✓ After water flow is reduced at the separator, shut the steam off to the bayonet heaters.

REMOVING SOLID WASTE (SLUDGE) FROM THE WASTE WATER SEPARATOR		
Step	**Description**	**Action**
		✓ Open the 6" bypass valve around the separator and close the 6" inlet valve. ✓ Open the top inspection cover on the inlet chamber of the separator to prepare to remove the water, oil, and sediment.
3	Removing Waste Material form Separator	✓ Ensure all permitting has been completed. ✓ Position the vacuum truck so the suction hose will reach all areas of the separator. ✓ Inform vacuum truck operator that the waste material can now be removed from the separator. ✓ Do not leave this process unattended until the work has been completed.
4	Return Waste Water Separator Back to Normal Service	✓ After the separator has been sufficiently cleaned, open the 6" inlet valve to the separator and close the 6" bypass. ✓ Slowly open steam to the bayonet heaters and ensure proper steam flow. ✓ Slowly start introducing water back to the Waste Water System.
5	Documentation	✓ Ensure that a Certificate of Waste Status form has been completed and the driver has the correct signed copy to accompany the load to the waste disposal site. ✓ If applicable, sign the driver's invoice and place the proper copy in the appropriate location. ✓ Ensure all other manifests accompany the load to the disposal site. ✓ Currently the disposal site for this material is Envirotech Soil Remediation Facility.

5.9 Skimming Oil from Waste Water Separator or Waste Water Ponds

If an incident occurs that leaves an oil sheen on the water, it will be necessary to remove it as soon as it is discovered. The following steps can be performed to accomplish this task.

SKIMMING OPERATION		
Step	**Description**	**Action**
1	Skimmer	✓ Check condition of floating skimmer and pump.
2	Valves	✓ Line up valves between pump and Waste Oil Tank.
3	Air	✓ Ensure air to skimmer & pump is on.

SKIMMING OPERATION		
Step	**Description**	**Action**
4	Prime pump	✓ Use the valve at the "Y" strainer to ensure the pump is primed and clear debris from suction.
5	Skimming	✓ Slowly move skimmer around the water surface until all of the oil has been removed.
6	Shut Down	✓ Shut off air to pump & skimmer and clean up area.

6.0 EMERGENCY OPERATIONS

6.1 Emergency shutdown

In the event of an environmental emergency, shut off all liquid flow to the Waste Water System and perform a "Normal Shutdown" of the Waste Water System. Contact site supervision and the Environmental Specialist. Refer to the Storm Water and SPCC plans for specific details regarding a spill or release.

If the issue cannot be resolved within a reasonable time, it may be necessary to shut down other systems in the plant to prevent liquid from entering the Waste Water System. The proper procedure associated with each system should be followed during this shut down.

If the level in both Evaporation Ponds exceed the high limit it will be necessary to immediately start hauling water from the ponds to an approved disposal site. If this is needed, follow the above Temporary Operating Procedure (5.4 of this procedure).

7.0 NORMAL SHUTDOWN

7.1 Scope

Because there are other plant processes that are dependant on the Waste Water System it will be necessary to follow proper procedure and shut those systems down before a normal shutdown of the Waste Water System can be completed. Depending on the situation, it may be possible to make other provisions to collect and dispose of the waste water from some of these systems but an individual plan would be prepared for each system before implementation. The following steps for a Normal Shutdown are dependant on all of the systems feeding liquid to the Waste Water System have been properly shut down.

7.1.1 Waste Water Collection System

Ensure the following process systems have been properly shut down:

- Cooling Water System
- R/O & Water Treatment Systems
- All boilers
- Steam System
- Steam Turbine Generator
- Starting & Instrument Air Systems.

Check all open drains to ensure no liquids have the potential of entering the collection system. Plug drains if necessary.

Place the Package Boiler Sump Pump, Declassifier Sump Pump, and Sump #1 Pump in the “Off” position.

7.1.2 Waste Water Separation

Ensure the drain line from #2 Sump Tank is closed.

Shut down the Waste Water Separator:

- Ensure all personnel in the area of the separator are wearing the proper PPE.
- After water flow is reduced at the separator, shut the steam off to the bayonet heaters.
    - Open the 6” bypass valve around the separator and close the 6” inlet valve.

Ensure all skimming operations are shut down.

Shut off all tanks returning water to the Waste water Separator.

Discontinue all Waste Water System tank operations.

7.1.3 Waste Water Ponds

Shut down the Aeration Unit/Compressors.

If needed, shut down any pond skimming operations.

7.1.4 Evaporation Ponds

Shut down all Aeration Units/Compressors.

Discontinue all water transferring operations as needed.

If water tests are within range, divert all storm water off site according to the Storm Water Plan.

8.0 STARTUP FOLLOWING TURNAROUND OR ESD

8.1 Startup Following a Turnaround

NOTE: *A startup following a turnaround follows the same steps as outlined in Section 4.0: Initial Startup.*

8.2 Startup After an Emergency Shutdown

NOTE: *After investigating the cause of the emergency shutdown and returning the situation to a normal state, a startup after an emergency shutdown follows the same steps as outlined in Section 4.0: Initial Startup.*

8.3 Determine Cause of ESD Prior to Startup

NOTE: *The cause of an ESD can affect subsequent safe start up of facility operations based upon power requirements and lingering hydrocarbon vapor clouds.*

8.4 Operating Limits

NOTE: *Refer to Section 3.0 table of this procedure for a listing of Normal Operating Conditions.*

8.5 Consequences of Operating Limits Deviation

NOTE: *Refer to Attachment A of this procedure for the Consequences of Deviation.*

8.6 Steps to Correct or Avoid Operating Limits Deviation

NOTE: *Refer to Attachment A of this procedure for the steps to correct or avoid an Operating Limit Deviation.*

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

Attachment A: Consequences of Operating Limit Deviation

Tag Number	Safe Operating Limits	Deviation Description	Possible Causes	Consequences of Deviation	System Response to Correct the Deviation	Steps Taken By Operator to Correct or Avoid the Deviation
DCS Software Tag Number: FI-81447 High Alarm Limit: 65 gpm	Safe Limit: 0-60 gpm	Waste Water Pond flow High	✓ Excessive liquid flow into open drains. ✓ Cooling tower conductivity dump valve is open too far or stuck open. ✓ Malfunction of waste water flow indication.	Possible malfunction of one or more systems which flow water to the open drains. Abnormal cooling water chemistry or a malfunction of the cooling water control system. Sensor is dirty, dislodged, or needs calibration.	Audible alarm on Control Room DCS for tag # FI-81447.	✓ Determine the cause of the excessive flow and correct the situation if possible. ✓ If it is a normal condition, monitor the pond levels to ensure they do not overfill. ✓ Investigate the high flow from the cooling tower dump and repair the condition as needed. ✓ Investigate condition of flow sensor & weir and take necessary action to restore accurate flow indication.

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

Tag Number	Safe Operating Limits	Deviation Description	Possible Causes	Consequences of Deviation	System Response to Correct the Deviation	Steps Taken By Operator to Correct or Avoid the Deviation
DCS Software Tag Number: FI-81447 High High Alarm Limit: 100 gpm	Safe Limit: 0-60 gpm	Waste Water Pond flow High High	✓ Excessive liquid flow into open drains. ✓ Cooling tower conductivity dump valve is open too far or stuck open. ✓ Malfunction of waste water flow indication.	Possible malfunction of one or more systems which flow water to the open drains. Abnormal cooling water chemistry or a malfunction of the cooling water control system. Sensor is dirty, dislodged, or needs calibration.	Audible alarm on Control Room DCS for tag # FI-81447.	✓ Determine the cause of the excessive flow and correct the situation if possible. ✓ If it is a normal condition, monitor the pond levels to ensure they do not overfill. ✓ Investigate the high flow from the cooling tower dump and repair the condition as needed. ✓ Investigate condition of flow sensor & weir and take necessary action to restore accurate flow indication.
DCS Software Tag Number: LI-81447 High Alarm Limit: 70 gpm	Safe Limit: 0-68 gpm	Waste Water Pond #1 Level High	✓ Flow line from Waste Water Ponds to Evaporation Ponds is blocked. ✓ Malfunction of waste water pond level indication.	Sediment or debris is plugging the line or an incorrect valve lineup. Sensor is dirty, dislodged, or needs calibration.	Audible alarm on Control Room DCS for tag # LI-81447.	✓ Determine the cause of the blockage and reverse the condition. ✓ Investigate condition of flow sensor and take necessary action to restore accurate flow indication.

IGNACIO PLANT SITE SPECIFIC OPERATING PROCEDURE
WASTE WATER SYSTEM

Tag Number	Safe Operating Limits	Deviation Description	Possible Causes	Consequences of Deviation	System Response to Correct the Deviation	Steps Taken By Operator to Correct or Avoid the Deviation
DCS Software Tag Number: LI-81447 High Alarm Limit: 85 gpm	Safe Limit: 0-68 gpm	Waste Water Pond #1 Level High	✓ Flow line from Waste Water Ponds to Evaporation Ponds is blocked. ✓ Malfunction of waste water pond level indication.	Sediment or debris is plugging the line or an incorrect valve lineup. Sensor is dirty, dislodged, or needs calibration.	Audible alarm on Control Room DCS for tag # LI-81447.	✓ Determine the cause of the blockage and reverse the condition. ✓ If the condition cannot be repaired within a reasonable amount of time, line up valves to flow to Waste Water Pond #2, load water in to trucks and transfer it to the Evaporation Ponds, or shut down the Waste Water System. DO NOT allow the ponds to overflow. ✓ Investigate condition of flow sensor and take necessary action to restore accurate flow indication.

Attachment B: Chemical Inventory List

Name	MSDS Available	Cautions
Benzene	Yes	See MSDS for complete list of safety concerns.
Caustic Soda	Yes	See MSDS for complete list of safety concerns.
Phosphoric Acid	Yes	See MSDS for complete list of safety concerns.
NALCO Inoc 7161		See MSDS for complete list of safety concerns.
NALCO Inoc Stimulus		See MSDS for complete list of safety concerns.

Evaporation pond cause and effect matrix

The dissolved oxygen (DO) level drops below .5 ppm

Symptom:

The smell of the pond increases significantly.

Effect:

Drops in dissolved oxygen levels can create an anaerobic situation promoting the growth of sulfur reducing bacteria which create foul odors.

Cause:

The cause of this is the oxygen demand increased either from a slug of organics or a chemical oxygen demand (cod) increase.

Solution:

There is no easy and quick way to get the DO level back up, it takes time to satisfy the oxygen demand once out of balance. Make sure the ponds are cleared of floating debris, order more aerators, and keep slugs of biological oxygen demand (bod) and (cod) out of the ponds.

The ph drops below 9

Symptom:

The smell of the pond increases significantly.

Effect:

H2S gasifies emitting a raw egg type of odor.

Cause:

The feed into the ponds is between a ph of 6 and 7 so the pond being fed will always have a decreasing ph. During rain and snow storms all of the ponds will have a decreasing ph.

Solution:

Caustic soda should ordered and added as per the caustic excel work sheet when any of the ponds reach a ph of 9.1

The ph increases past 10

Symptom:

The dissolved oxygen level jumps up significantly, all of the solids start to drop out of the water, ammonia levels drop to nearly nothing.

Effect:

All biological activity stops and organics stop being broken down. The BOD and COD begin to stock pile.

Cause:

To much caustic was added to the ponds

Solution:

Add phosphoric acid to the pond using a calculated ratio.

The ph increases above 12

Symptom:

The dissolved oxygen level jumps up significantly, all of the solids start to drop out of the water, the water turns a bright green color

Effect:

All biological activity stops and organics stop being broken down, the BOD and COD begin to stock pile, the ponds are in violation of EPA standards

Cause:

To much caustic was added to the ponds

Solution:

Add phosphoric acid to the pond using a calculated ratio.

The TOC level increases significantly

Symptom:

The dissolved oxygen level decreases significantly, the water gets an oil sheen on it, odor increases

Effect:

All biological activity stops and organics stop being broken down, the BOD and COD begin to stock pile, the ponds are in violation of EPA standards

Cause:

To much caustic was added to the ponds

Solution:

Add phosphoric acid to the pond using

The ammonia decreases to almost nothing

Symptom:

The odor increases, the biological activity decreases

Effect:

The bacteria feed on nitrogen which is measured by ammonia levels and the bacteria growth is retarded.

Cause:

The ph increases past 10, a large slug of BOD was introduced into the pond

Solution:

Add urea or amine to the ponds per dosing spreadsheet

The phosphorus decreases

Symptom:

The odor increases, the biological activity decreases

Effect:

bacteria growth is retarded.

Cause:

a large slug of BOD was introduced into the pond

Solution:

Add phosphoric acid to the ponds per dosing spreadsheet