Berth 7 Industrial Wastewater Treatment Plant – Operations Procedure

Revision: 1
Revision Date: 1/18/2024

Purpose

This procedure describes day to day operations of the Berth 7 Industrial Wastewater Treatment Plant under normal operations, and alternate treatment train operations.

Safety

- Safety glasses are required within the treatment plant building.
- Review SDS for chemicals used during optional chemical treatment operations.

PPE Required	
Safety glasses	Gloves (when handling chemicals)

Chemicals	
Sodium hydroxide, 50%	Sulfuric acid, 93%
Aluminum sulfate (Alum)	Nalco 71257

Procedure – Normal Operations Treatment Train 1	Notes
1. Begin a new daily log sheet	Include date, pond level, tank levels, areas being collected, commodities contributing to waste, treatment train in use, flow meter readings, etc.
2. Record Tank levels.	Tank levels are found on the PLC. Press the Tank Levels button on the Treatment Train screen. Note: The system will not run if the tank levels of T170/T175 are at or above 80%. If tanks are full, need to discharge for a bit before starting. See Figure 1
3. Obtain flow meter reading from meter located near T170/T175.	
4. Record flow meter reading on the daily log sheet.	Also record meter reading on previous day's log sheet as the ending reading and calculate flow for the previous 24 hours.
5. Note the treatment train components, ie. Inlet tank(s), Clean tank(s), clarifier, pumps to be used.	Typical treatment train collects to the pond, pumps from the pond through P-210 to the large clarifier, collects to T-142, then to T-

	170/175 before discharge. P-190 is used as needed to control tank levels. Note: P-210 has a manual flow setting at the pump. The setting can vary and optimally is set at a point that feeds through the clarifier to T-142 at a rate that keeps P-142 running without overflowing T-142.
6. On the PLC, select the Treatment Train 1 tab.	Treatment train 1 utilizes T-125, large clarifier
7. Select the desired inlet tank, i.e. Pond or Tank.	
8. Select the clarifier to use.	Large clarifier, T-125, is used for Treatment Train 1, it is the only clarifier option, but still must be selected.
9. Select the clarifier accepts tank/pump.	Typically, T-142/P-142 are used, though T-145/P145 may be used as well.
10. Select to use or bypass bag filters.	Bag filters are bypassed, piping is currently disconnected. If bag filters are needed, will need to be reconnected to the system.
11. Select the output tank.	On the PLC, only one tank can be selected, either T-170 or T-175. The tanks are usually run using both tanks (they can filled at the same time). They can be isolated to use just one tank if needed. If one tank is isolated to be used, it must be selected on the PLC. If not, the low level/high level sensors will not trigger alarms and will not shut down the system if necessary.
12. Once, the treatment train has been defined, walk the flow path to ensure valve positions are set as needed for the selected options. (Initially, leave the valve at the inlet to the clarifier, BV-125A, closed. Will open in a subsequent step.)	Valves to check include: BVOP-5, BVOP-6, BVOP-7, BVOP-8, BVOP-9, BVOP-10, THV-210, THV-220, BV-100B, BV-110B, BV-100D, BV-115C, BVOP-11, BVOP-12 (and red valve below it), BV-125G, BV-125B, BV-125F, BV-142-OL, BV-145-OL, BV-142A/B, Blue and green valves near BV-142A/B, BV-125A, Outlet valves from T170, T175. NOTE: Additional valves in line may apply, walk the full line and verify all valves.
13. After verifying valves, return to the PLC and press the Stopped button, then press the Start button. Should hear the relays click.	See Figure 2
14. After the pumps start, open the valve at the inlet to the clarifier.	BV-125A

15. Visually verify flow coming out of the clarifier and into T-142 or T-145.	
16. Check the clarity of the water entering the clarifier by opening the sample valve at the inlet of the clarifier. Let it run for a few seconds, then collect a sample in a clean clear jar.	Record any observations on the daily log sheet. If no flow is observed from the sample valve, that indicates there is no flow to the clarifier. Recheck valving, Treatment Train configuration and pump operation to determine why there is no flow.
17. At the end of a treatment run, or every 24 hours, whichever is shorter, record the flow meter reading and calculate the volume of water discharged during that period.	Note: The maximum discharge permitted is 100,000 gallons per day.
Procedure – Normal Operations Treatment Train 2	**Notes**
The procedure for running Treatment Train 2 is very similar to the Treatment Train 1 procedure. The differences are noted below.	
1. Follow steps 1 – 5 in TT1 procedure.	
2. On the PLC, select the Treatment Train 2 tab.	Treatment train 2 utilizes T-140, small clarifier
3. Follow steps 7 – 11 in TT1 procedure.	Small clarifier, T-140, is used for Treatment Train 2, it is the only clarifier option, but still must be selected.
4. Once, the treatment train has been defined, walk the flow path to ensure valve positions are set as needed for the selected options. (Initially, leave the valve at the inlet to the clarifier, BV-140A, closed. Will open in a subsequent step.)	BVOP-5, BVOP-6, BVOP-7, BVOP-8, BVOP-9, BVOP-10, THV-210, THV-220, BVOP-12 (and red valve below it), BV-140F, BV-140B, BV-145-OL, BV-142-OL, BV-142A/B, Blue and green valves near BV-142A/B, BV-140A, Outlet valves from T170, T175.
5. After verifying valves, return to the PLC and press the Stopped button, then press the Start button. Should hear the relays click.	See Figure 3
6. After the pumps start, open the valve at the inlet to the clarifier.	BV-140A
7. Follow steps 15 – 17 in TT1 procedure.	
Procedure – Discharge Scheme	**Notes**
Typically, the discharge is gravity fed from tanks 170/175. In times when the discharge cannot keep up with the treatment rate, Pump 190 can be used to discharge quicker (higher flow rate). The daily maximum discharge must not exceed 100,000 gallons per day	
8. On the PLC, select the Disch. Sch1 Tab.	
9. Select one of the outlet tanks, T170 or T175	Discharge can still be from both tanks, but one must be selected in the Discharge Scheme.
10. Select P-190	

11. Change the Set Value to the time (in minutes) desired for discharging.	The maximum set value is 1440 minutes, if discharge is to go for 24 hours. After the defined Set Value time, the pump will stop running.
12. Press the reset button to set the Running Value to zero.	If discharging for multiple days in a row, the Running Value will need to be reset each day to continue discharging.
13. Press the Run PB button to start P-190.	Should hear a relay click and can also walk out to the pump to confirm it is running. If the pump does not start, try pressing the Stopped button, then press the Run PB again. See Figure 4
14. Verify P-190 started.	P-190 is located between T-170 and T-175.

Additional Notes:

NOTE: Treatment Train 1 and 2 can be run simultaneously if needed. In this case, they must be fed by different sources, ie. one from the pond and one from a tank. They must also process through separate clean tanks(T-142 or T-145 and T-170 or T-175). Piping must be set accordingly.

Figures:

Figure 1

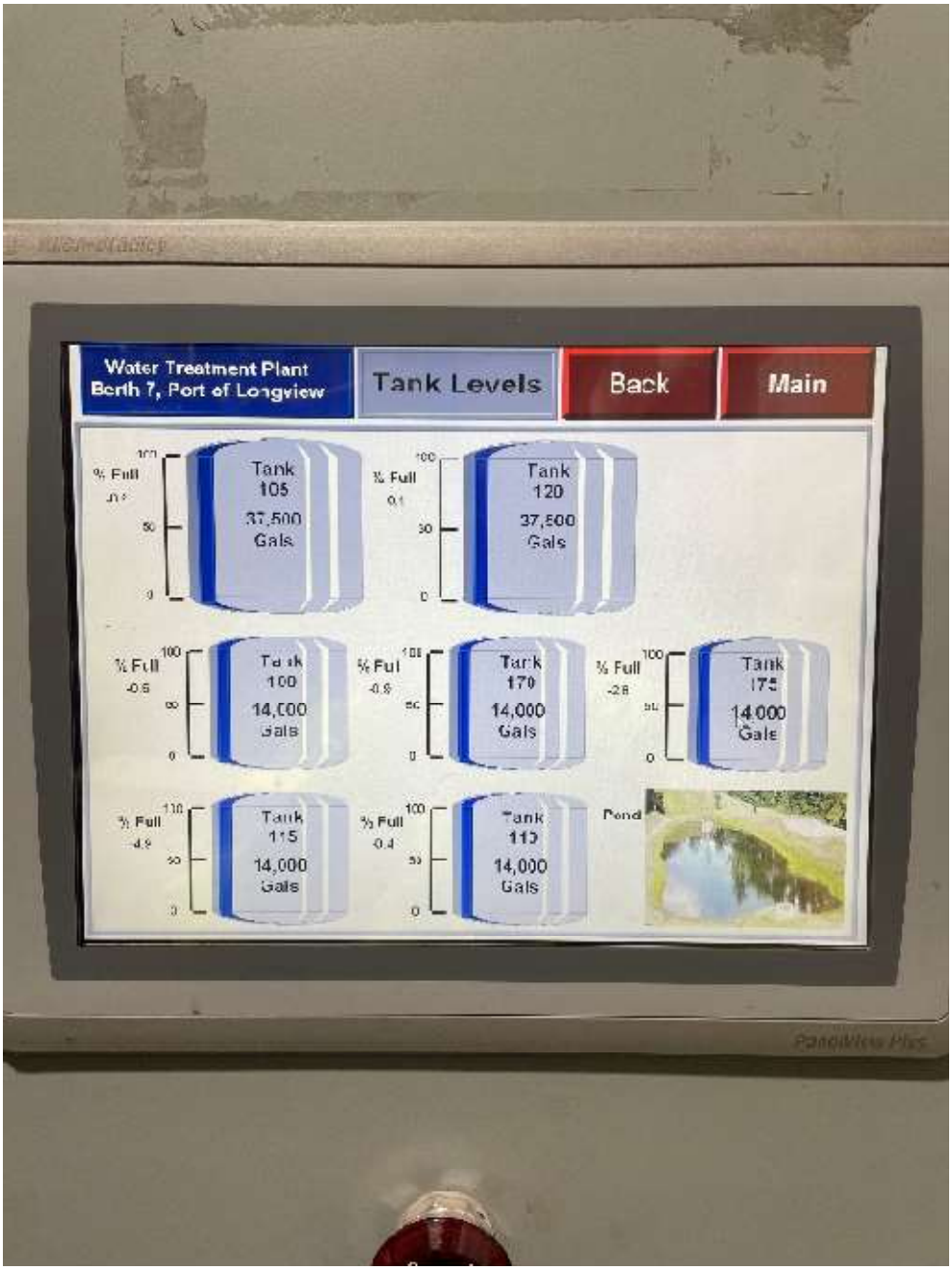


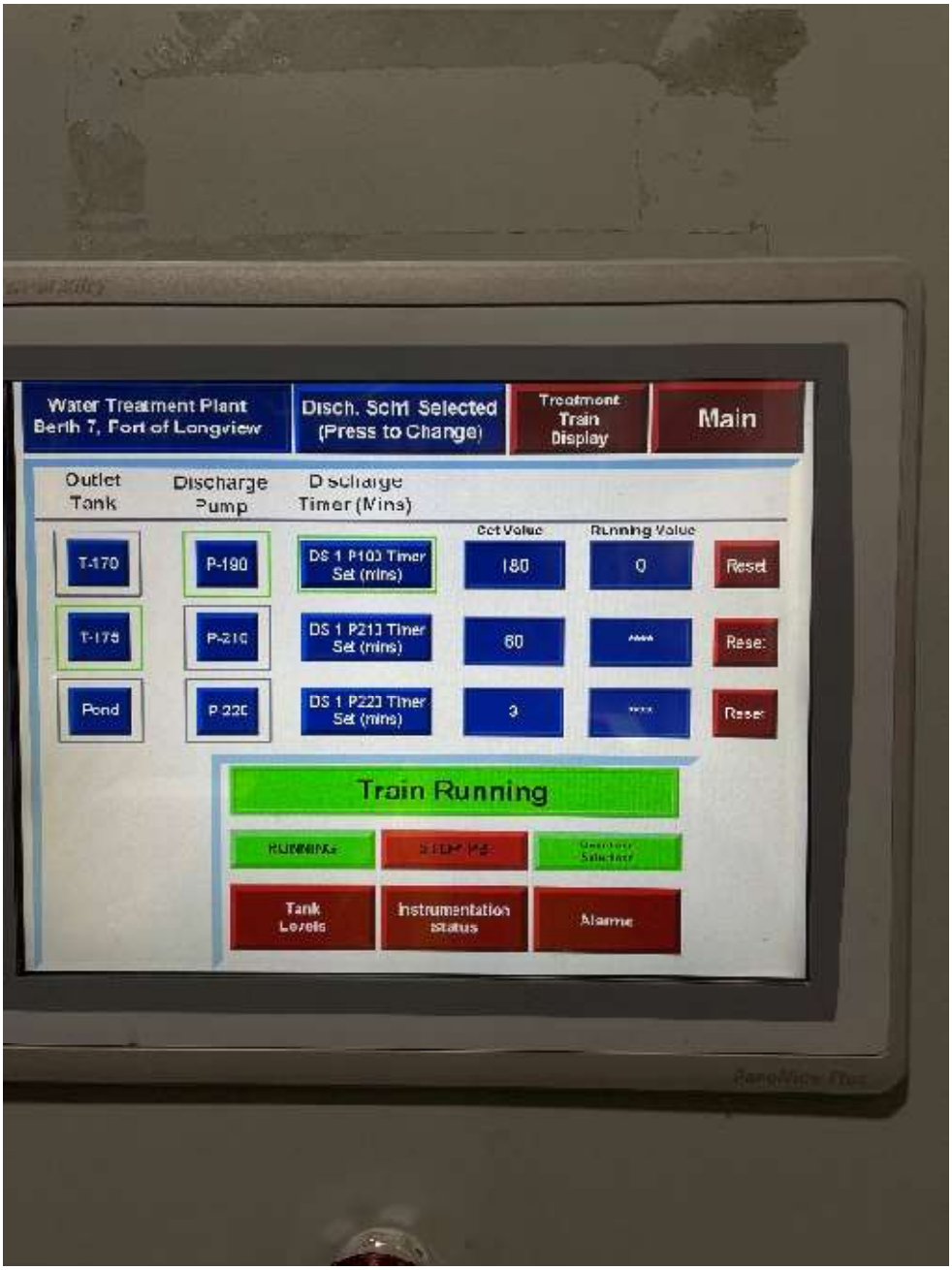
Figure 2


Water Treatment Plant
Berth 7, Port of Longview
TT1 Selected
(Press to Change)
Discharge
Scheme
Display
Main
Inlet
Tank
Clarifier
Feed/Pump
Clarifier
Clarifier
Accepts
Filters
Outlet
Tank
T-100
P-120
T-125
T-142
P-142
Yes
OnLine
T-170
T-105
P 130
T-145
P-145
No
Bypass
T-175
T-110
P-210
T-115
P-220
T-120
Pond
Train Running
RUNNING
STOP PB
Tank
Levels
Instrumentation
Status
Alarms

Figure 3


Water Treatment Plant
Berth 7, Port of Longview
TT2 Selected
(Press to Change)
Discharge
Scheme
Display
Main
Inlet
Tank
Clarifier
Feed/Pmp
Clarifier
Clarifier
Accepts
Filters
Outlet
Tank
T-100
T-105
T-110
T-120
Pond
P-120
P-130
P-210
T-140
T-142
P-142
T-146
P-145
Yes
OnLine
No
Bypass
T-170
Train Stopped
RUN PB
STOPPED
Tank
Levels
Instrumentation
Status
Alarms
E-STOP
E-STOP

Figure 4


Water Treatment Plant
Berth 7, Port of Longview
Disch. Schl Selected
(Press to Change)
Treatment
Train
Display
Main
Outlet
Tank
Discharge
Pump
Discharge
Timer (Mins)
Set Value
Running Value
T-170
P-190
DS 1 P190 Timer
Set (mins)
180
0
Reset
T-175
P-210
DS 1 P210 Timer
Set (mins)
60
Reset
Pond
P-220
DS 1 P220 Timer
Set (mins)
3
Reset
Train Running
Tank
Levels
Instrumentation
status
Alarms