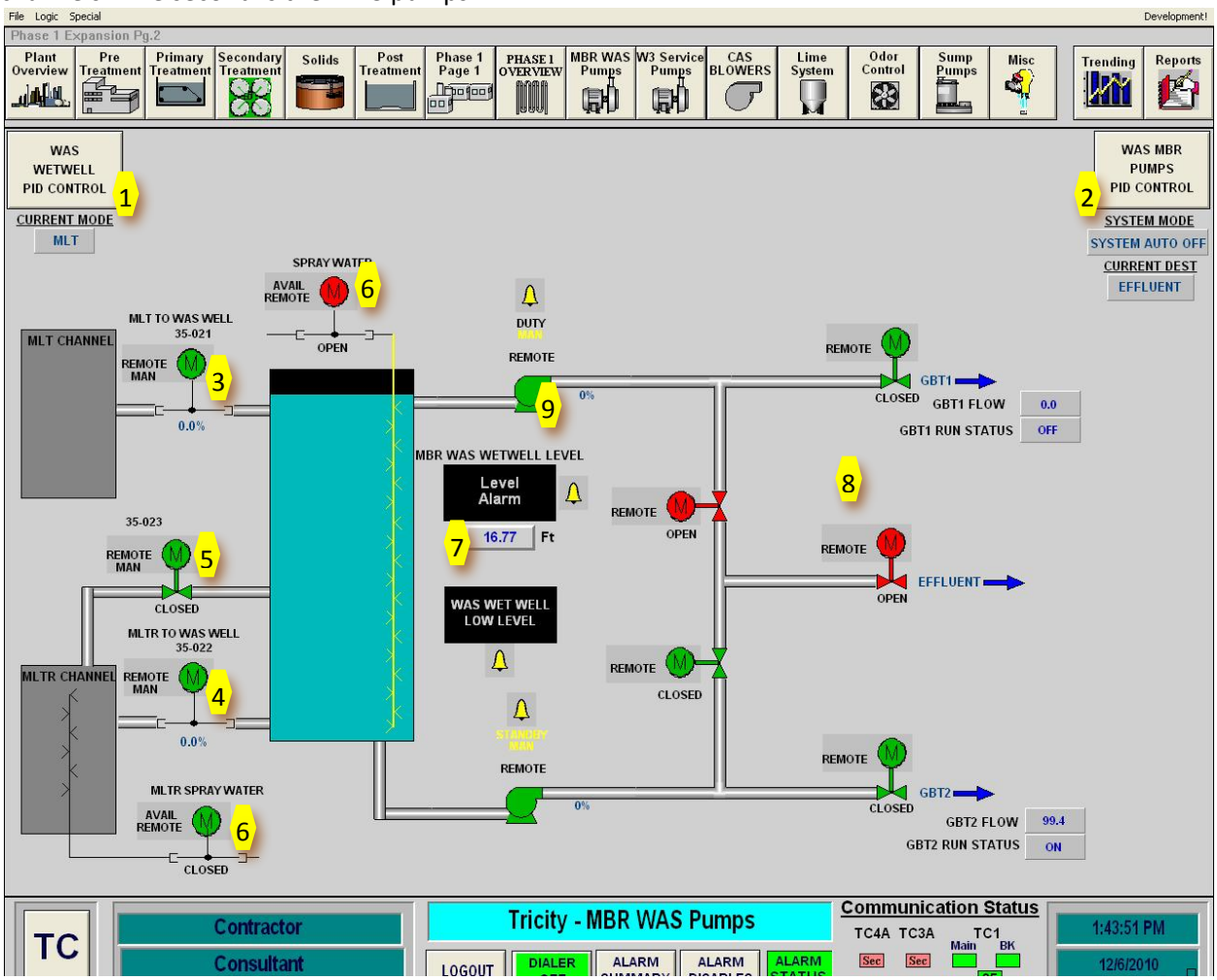
6.5.3.9 MBR WAS Pumping Operation

The graphic below shows the screen for the WAS System. This system has two main parts; the first is the WAS Level control that allows wasting from either the MLT or MLTR channels. The second is the WAS pumps.

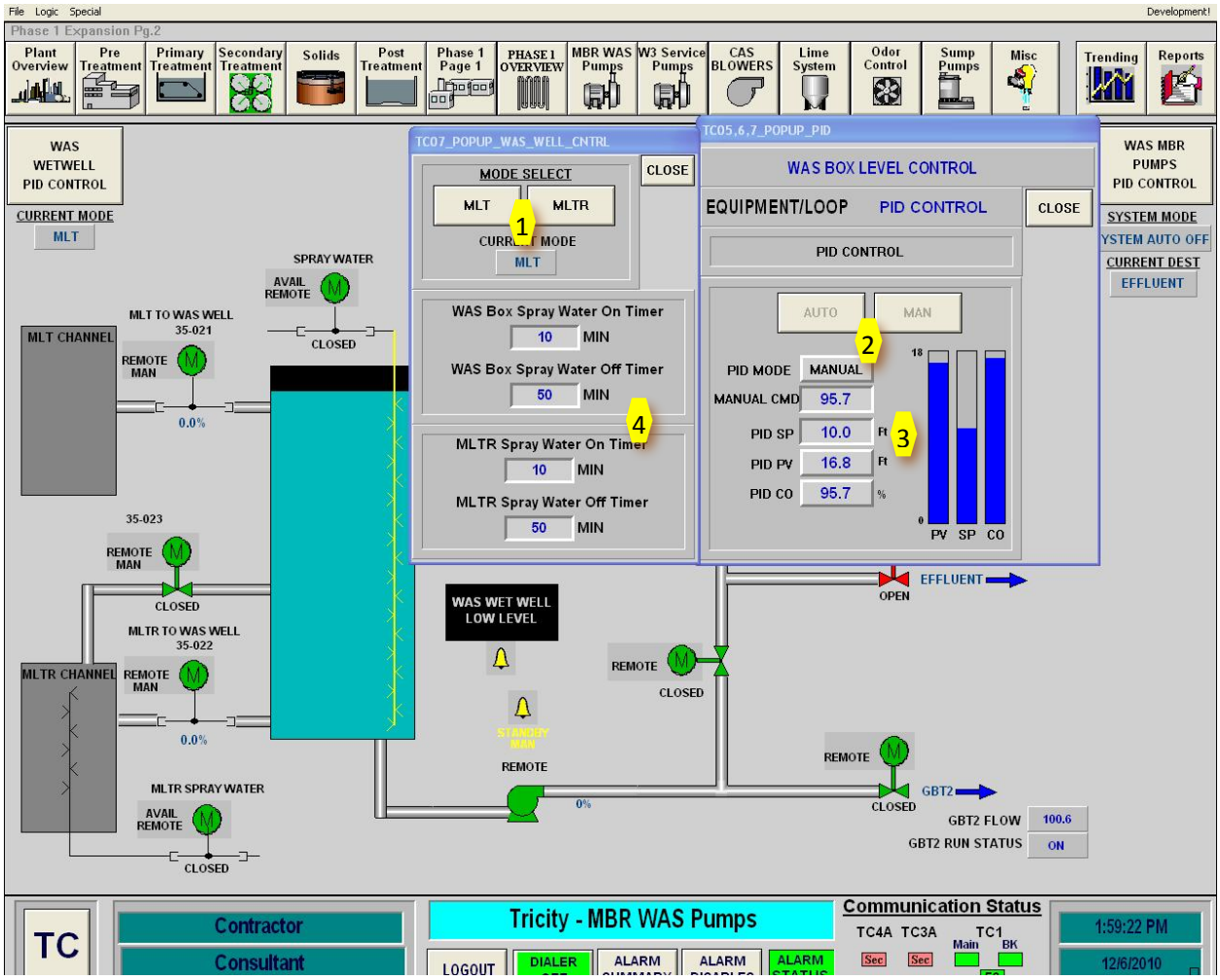


The numbered list below corresponds to the yellow numbers on the figure above. Each feature of the screen is described below.

1. WAS wet well PID Control: Click this button to display the control screen for automatic level control in the WAS wet well. See below for a description of the WAS level control functionality. The WAS wet well can be fed from either the MLT or MLTR channel.
2. WAS Pump Control: Click this button to display the control screen for automatic pump control for the WAS pumps. See below for a description of the WAS Pump control functionality.
3. MLT Gate: Click on this gate to display the gate control screen. Use the gate controls to set the gate mode (Auto when feeding from MLT channel, Manual for manual operation).

4. MLTR Gate: Click on this gate to display the gate control screen. Use the gate controls to set the gate mode (Auto when feeding from MLT channel, Manual for manual operation).
5. MLTR Equalization Valve: Click on this valve to display the valve control screen. Use the controls to manually operate the valve. There is no automatic function for this gate. Opening this valve will allow the level in the WAS wet well and the MLTR channel to equalize.
6. Spray Water Valves: Click on either valve to display the valve control screen. In auto mode the valves cycle on and off according to a timing sequence set up on the WAS wet well level control screen. See below for a discussion on these settings.
7. WAS wet well Level Indication and Low Float Alarm: The WAS level is displayed here. The low low alarm from this device interlocks the WAS pumps and prevents them from running. The level must rise above the low alarm set point in order for the pump interlock to be removed. The low float alarm also interlocks the pumps and must be reset by the operator before the WAS pumps can run. Click on either black box to access the analog and discrete alarm configuration screens.
8. WAS Discharge Valves: These five valves are used to control the flow of WAS to the desired destination. In auto mode, these valves will automatically sequence to create a flow path to the selected destination. See below for a discussion of the WAS Pump controls. Click on any of the valves to display the valve control screen. The operator uses these controls to set the valve mode or manually operate the valve.
9. WAS Pump: Click on the pump to display the standard Pump VFD face plate. Use these controls to set the pump mode, manually run the pump, and reset pump faults.

A. WAS Wet Well Level Control: The controls shown below are used to configure the system to automatically control the level in the WAS wet well. To configure this system the operator must select which channel to feed from, put the selected channel gate in auto, and enter a level set point. See below for details on making these settings.

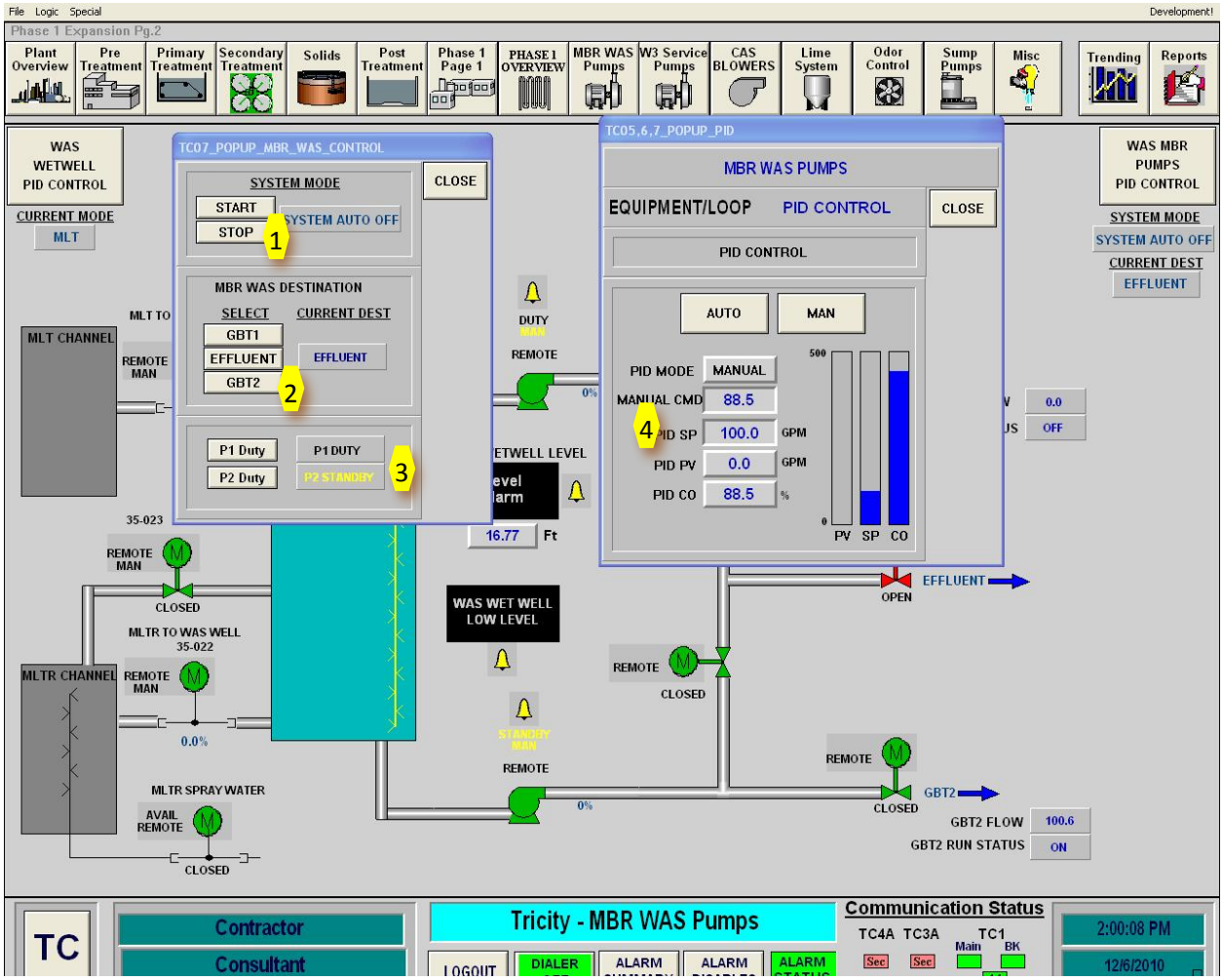


The numbered list below corresponds to the yellow numbers on the figure above. Each feature of the screen is described below.

1. WAS Wet Well Mode Control: Use these buttons to select which channel will be used to feed the WAS wet well. The graphic above shows the MLT channel selected. This means that when the gate between the MLT channel and the WAS box is put in Auto, the gate will modulate to control the level in the WAS wet well.
2. PID Mode Control: This area shows the mode of the PID controller. Note that the Auto and Manual buttons are grayed out (not available). This is because the PID mode is controlled by the mode of the gate that is selected to feed the WAS wetwell. In the above graphic, the PID will switch to auto mode when the gate from the MLT channel is put in auto mode.
3. Wet well Level Set Point: Enter the level set point (in feet) that you want to maintain in the wet well.

4. Spray Water Timer Settings: Use this area to enter the on time and off time for the sprayers in the WAS wet well and the MLTR channel. When the spray valves are in auto they will open for the on time and then close for the off time duration.

B. WAS Pump Control: The WAS pumps are used to pump WAS from the wet well to three different locations, GBT1, GBT2 or effluent. To configure this system the operator must select the pump destination, select the duty pump, enter a flow set point, put the pumps in auto and finally turn on the system auto mode. See below for details on making these settings.



The numbered list below corresponds to the yellow numbers on the figure above. Each feature of the screen is described below.

1. WAS Pumps System Control Mode: These buttons turn on/off the system automatic mode. The system automatic mode must be on in order for any of the pumps to run in automatic mode. These buttons provide a convenient way to shut down or start the pumps without putting the pumps in manual.
2. WAS Pumping Destination: Use these buttons to select the destination for the WAS pumps. The pumping destination is used to automatically open/close the necessary valves to open the desired flow path.

3. WAS Pump Duty/Standby Select: Use these buttons select which pump is the Duty pump. When one pump is selected as duty, the other is automatically standby. The System Auto mode must be off to change the duty selection.
4. WAS Pump Flow Set Point: Enter the flow set point for the duty WAS pump. The flow set point is only used when pumping to GBT1 or GBT2. When pumping to the Primary Effluent, there is no flow meter to measure flow sothe WAS pump will run at 100% speed.

Operational Note: When the setting the WAS pumps to run in automatic mode, all the control valves must be in auto. In addition, the Duty pump must be in auto mode. When all of these conditions are met, the System Auto mode can be turned on. When the system auto mode is turned on, the valves will begin to open/close as needed to connect the Duty WAS pump with the selected destination. When all of the valves are in position, the pump will automatically start.

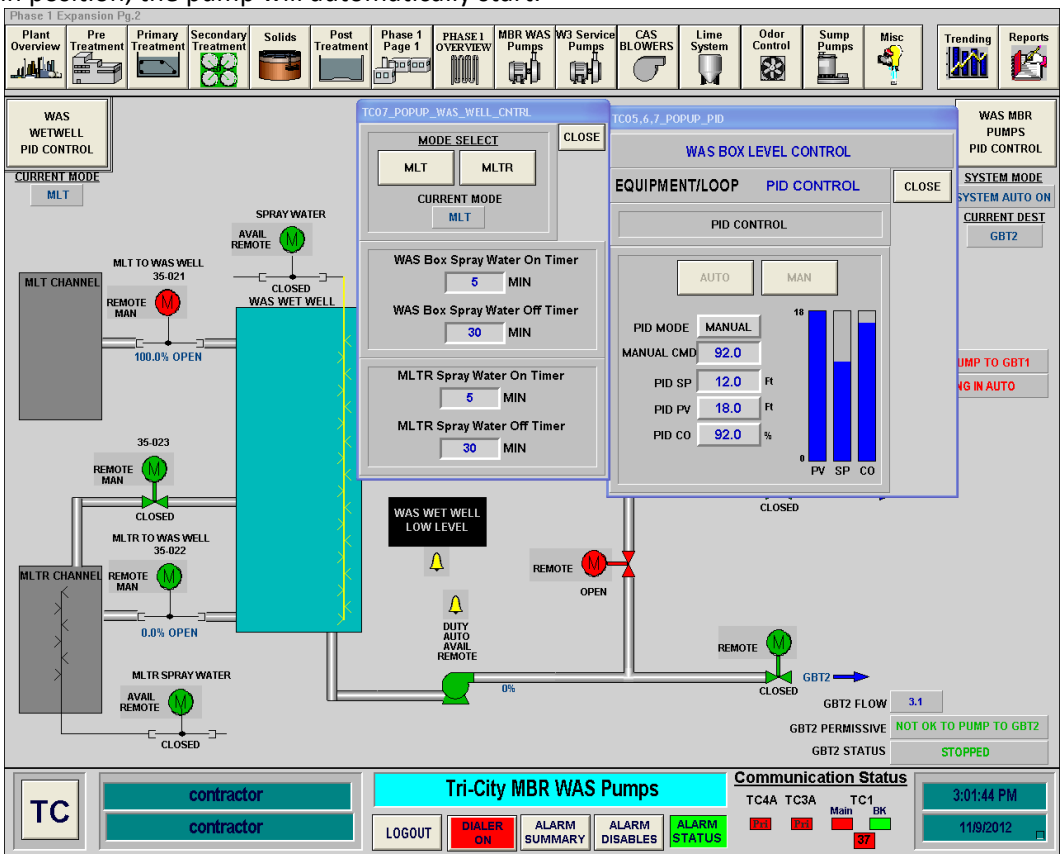


Figure x - WAS Wet Well PID Control

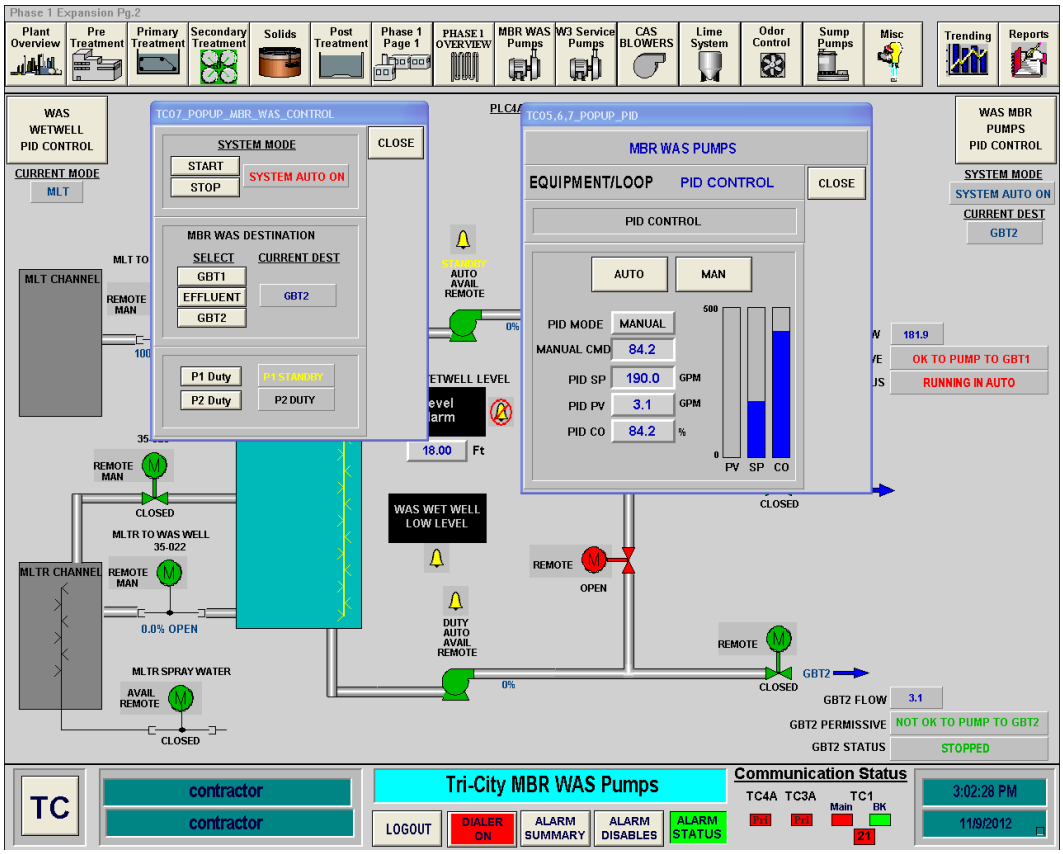


Figure x - WAS Pump PID Control

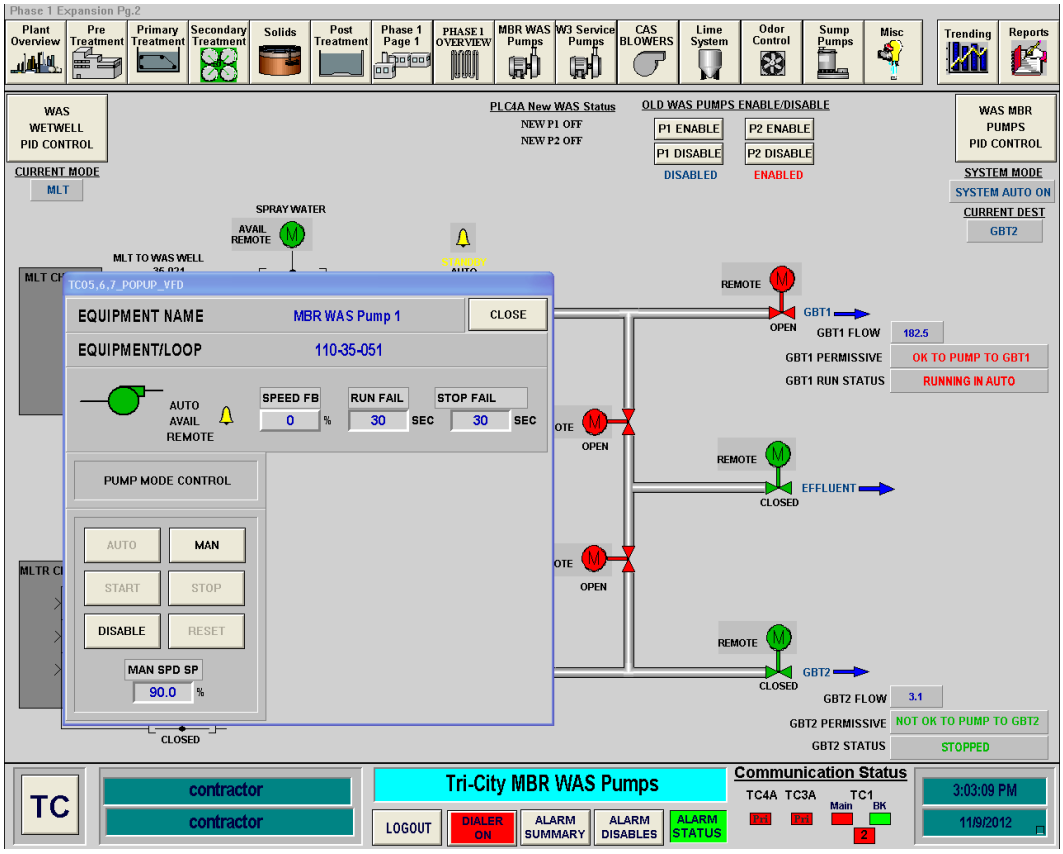


Figure x - WAS Pump Control

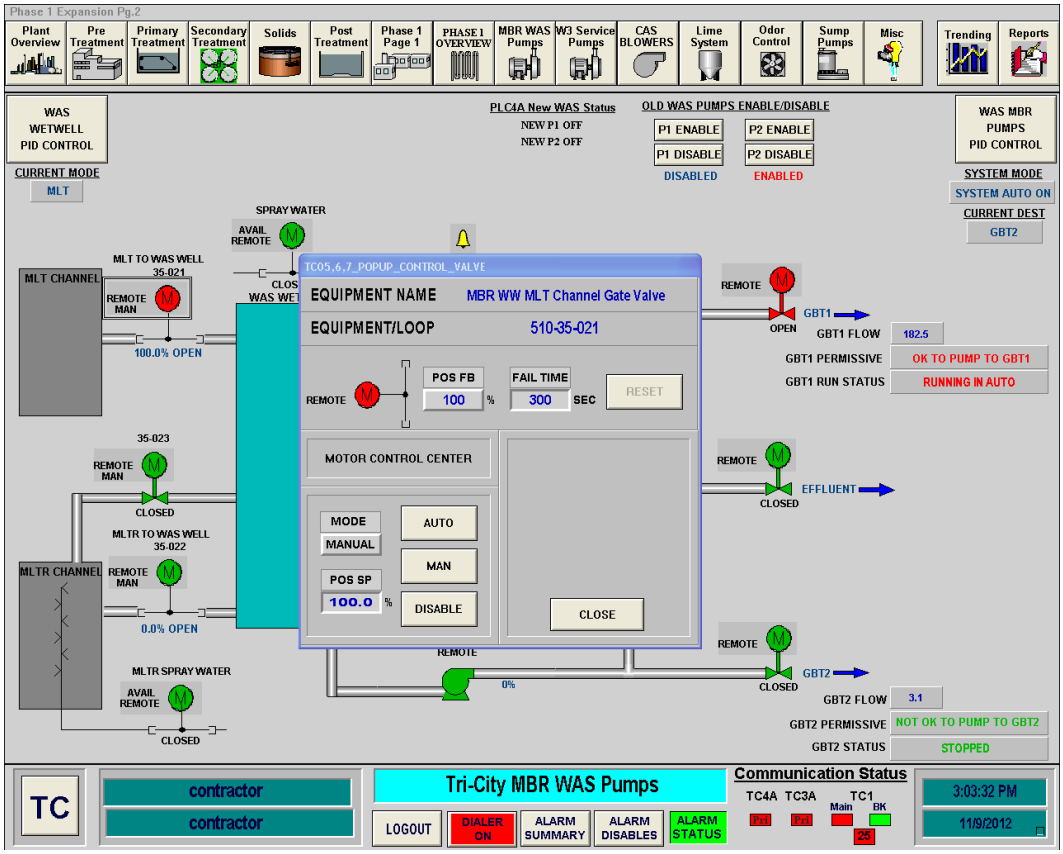


Figure x – MBR WW MLTR Channel Gate Valve Control

MBR WAS Pumping Process Startup Sequence

To start up the MBR WAS Pumping Process in Automatic Mode, follow the following sequence. This sequence is for a cold startup of the system. If the system is operating, confirmation that the equipment is off may not be necessary.

Step	Action	Location
	Confirm Equipment is in Off	
1	Confirm Intermediate Pumps are OFF	SCADA Main Screen
2	Confirm Fine Screen Influent and Effluent Gates are Closed	SCADA Main Screen
3	Confirm Fine Screens are in Off Position in SCADA	SCADA Main Screen
4	Confirm Fine Screens are in OFF Position at Local Control Panel	Next to Fine Screens
5	Confirm Drum Screens are in Off Position in SCADA	SCADA Main Screen
6	Confirm Drum Screens are in Off Position at Local	Fine Screen Electrical Room

	Control Panel	
	Ready Equipment	
NOTE	Confirm Aeration Basin influent gate is open	AB#5 or AB#4
1	Close Breaker on MCC for Gates	Fine Screen MCC
2	Close Breaker in MCC for Fine Screens	Fine Screen MCC
3	Close Breaker in MCC for Drum Screens	Fine Screen MCC
4	Select Fine Screen Channel to be placed into operation	
5	Place Fine Screen Channel Influent Gate into Remote	Fine Screen Influent Channel
6	Place Fine Screen Channel Effluent Gate into Remote	Fine Screen EFfluent Channel
NOTE	Confirm that a LOCK appears at above each gate on SCADA. This confirms both gates are open and will allow Intermediate Pumps to operate	
7	Place Fine Screen in Remote at Local Control Panel	Next to Fine Screen