6.2.3 Intermediate Pumping – Automatic Operation

The intermediate pumps take flow from the primary effluent channel and pumps it to the channel in front of the fine screens. The pumping rate of the intermediate pump station determines the rate of flow to the MBR treatment system.

Intermediate Pump Station Control Screens

The intermediate pumps are controlled through SCADA from two screens. The access to these screens is discussed in the following sections.

Intermediate Pump Station Main Screen

The automatic operation of the intermediate pumps is controlled through the SCADA system on the Intermediate Pump Main Screen (***Figure 6.2.3-1***). The screen is accessed by clicking on the **Interm. Pumps button <1>** on the top of the screen. The individual pump controls are accessed by clicking on the **pump icon <2>**. The pump can then be placed into AUTO mode by selecting the **AUTO button <3>.** There are two additional settings for the pump alarm system in this control box. These are the Run Fail and Stop Fail timer settings. These settings provide a delay that allows the pump controls to bring the pump up to a minimum speed before a failure alarm is activated.

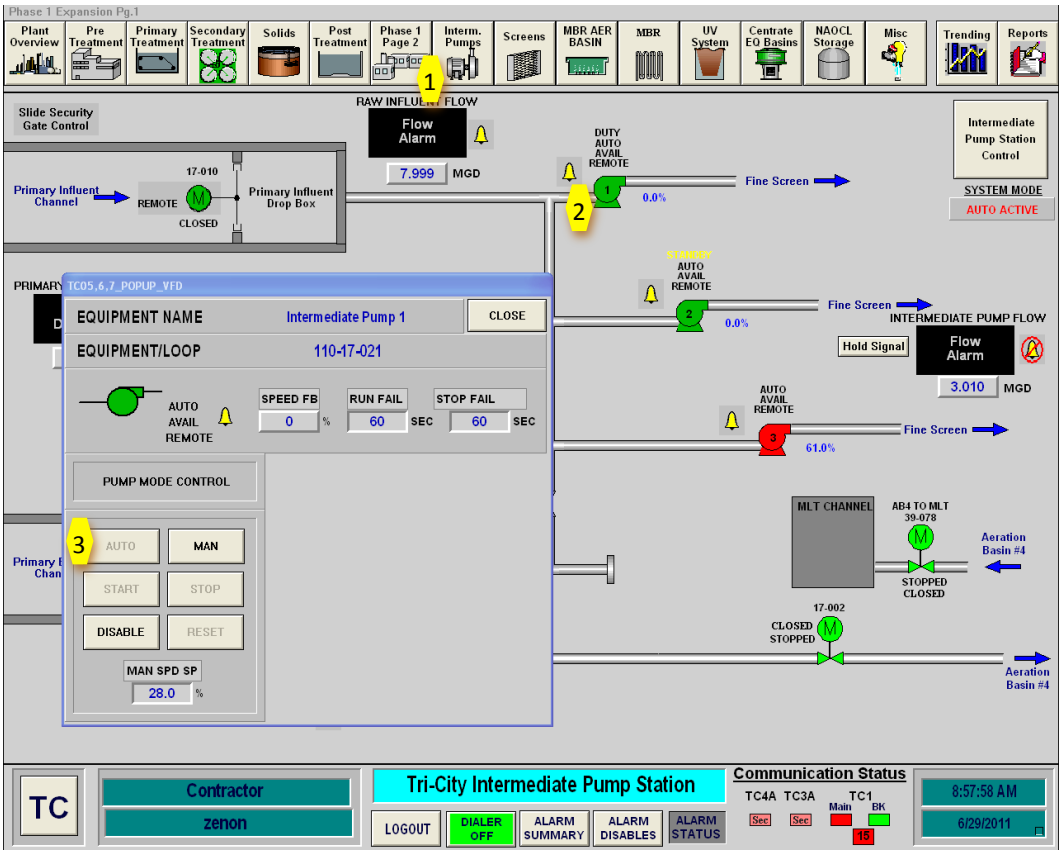

Figure 6.2.3-1 – Intermediate Pump Control Screen and Popup Control Box

Intermediate Pump Station Control Screen

The automatic operation of the intermediate pump station is startup up through the SCADA system on the Intermediate Pump Main Screen as shown on Figure 6.2.3-2. The

screen is accessed by clicking on the **Interm. Pumps** button **<1>** on the top of the screen. The Intermediate Pump Station Control Screen is accessed by clicking on the **Intermediate Pump Station Control** button **<2>** on the upper right corner of the screen. This brings up the Intermediate Pump Control Box. The Intermediate Pumps are started in Automatic mode by clicking on the **Intermediate Pumps System Start** button **<3>.**

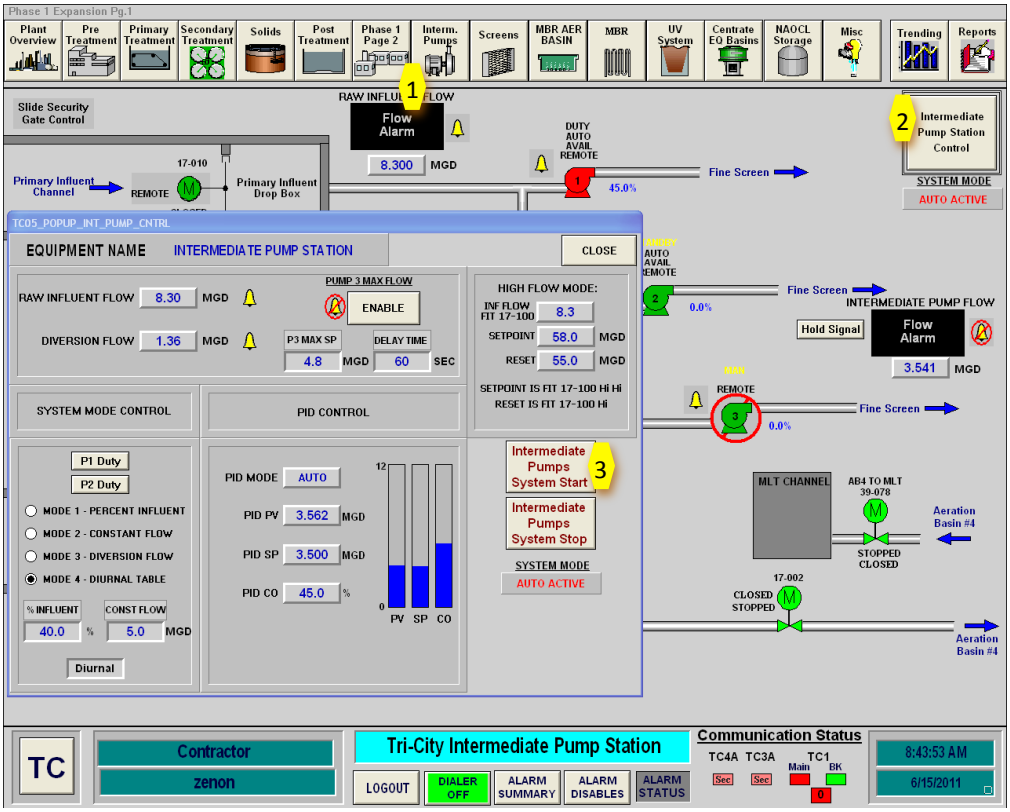

Figure 6.2.3-2 – Intermediate Pump Station Control Screen

All of the pumps must be in auto and the System Auto must be on in order for the pumps to automatically determine which pump will run. If any of the pumps are in manual, those pumps will simply be ignored when the system determines which pump is to run automatically. When the system is started, if the flow set point is less than the Pump 3 max set point, then Pump 3 will automatically start. If the set point is above the Pump 3 maximum set point, Pump 1 or 2 will start depending on which one is the duty pump. If the duty pump fails or is put in manual, the standby pump will automatically start. No matter which pump is running, the system will control the pump speed to meet the desired flow set point. Because there is a large lag time between when you see a change in flow after making a pump speed adjustment, the system is configured to wait 30 seconds between each adjustment.

Automatic Station Startup Sequence

To start up the intermediate pump station in Automatic Mode, follow the following sequence.

Step	Action	Location
	Confirm Equipment is in Off	

1	Confirm Pumps are in Off Position in SCADA	SCADA Main Screen
2	Confirm Pumps are in OFF Position at VFD Panel	Fine Screen Electrical Room
	Ready Equipment	
3	Confirm Seal Water on Intermediate Pump No. 3 is ON	Intermediate Pump Station
	Confirm Primary Effluent Drop Box Gate (510-21-001) is in AUTO. Should show OPEN/REMOTE status on SCADA screen.	Primary Effluent Drop Box
	Confirm Primary Influent Drop Box Gate (510-21-010) is in AUTO. Should show OPEN/REMOTE status on SCADA screen	Primary Influent Drop Box
	Confirm AB# 4 Isolation Valve (530-17-002) is CLOSED. Should show CLOSED status on SCADA Screen.	Valve Box in Maintenance Road on South Side of AB#4
	Confirm Primary Effluent Channel Isolation Valve is OPEN. Should show OPEN/REMOTE status on SCADA.	Intermediate Pump Station
4	Confirm Suction and Discharge Valves are Open on each pump	Intermediate Pump Station
	Confirm AB# 4 Isolation Valve (540-17-041) is Closed.	Intermediate Pump Station
	Power Up Equipment	
5	Close Breaker at MCC for Each Intermediate Pump	Fine Screen Electrical Room 170-MCC-1, 170-MCC-2
6	Place On-Off-Auto switch on each VFD to AUTO	VFD Panels in Fine Screen Electrical Room
7	Place Each Pump in AUTO on SCADA	MBR Control Room
	Start Intermediate Pump Station in AUTO	
	Select Mode of Flow Control Mode 1 – Percent Influent Flow Mode 2 – Percent Diversion Flow Mode 3 – Constant Flow Mode 4 – Diurnal Flow Table	SCADA Intermediate Pump Station Control Screen
	Select Intermediate Pump System Start Button to start pumps opeating in AUTO	SCADA Intermediate Pump Station Control Screen