

Rev Date: 6/5/2019	Written/Updated by: Kurt Ibarreta #5668	Wastewater O&M Manual
	Checked by: Luke Treadway #5667	
	Approved by: Takeshi Ezaki #5700	
	EHS Approver: Doris Gonzalez #5846	

UNCONTROLLED

Wastewater O&M manual

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I. References

- A. Epson Portland Inc. Wastewater permit # ST 6185
- B. Epson Portland Inc. Storm water CNE
- C. Epson Portland Inc. Spill Prevention Plan
- D. Epson Portland Inc. Hazardous Material Management Plan
- E. Wastewater Systems Operation Manual from EC Company
- F. Product MSDS's
- G. Epson Portland Inc. pH meter calibration Procedure

II. Perquisites

- A. Read and understand operating procedures prior to operating equipment.
Insure pH Meter has been calibrated quarterly. Check monthly plant maintenance form.

III. Precautions and Safety

- A. Read and understand the SDS HCl. Wear proper PPE when handling Acid or Caustic Solutions.
- B. Use Caution when operating electrical equipment in a wet environment.
- C. Use proper PPE when working on system equipment, including fall protection if working on top of the tanks.
- D. Insure Acid Tank Valve is locked closed when not in use.

IV. Overview

All water that is produced during the production, cleaning and maintenance process of the Autoclave is transferred to the wastewater collection tank. All sources of water on the 5th floor (the stage) of the plant drain to the wastewater collection tank these include the autoclaves, 3 sinks, Ultrasonic cleaners, Mix Tanks, Floor drains, and the demineralized water system drain.

The water from the Wastewater Collection Tank is then transferred to the Wastewater Treatment Tank where it is diluted with domestic water. The wastewater is diluted due to the silica content of the wastewater,

normal dilution is 1000 gallons of wastewater to 5000 gallons of city water. The dilution is performed to prevent gelling of the wastewater upon neutralization. The PH of the solution is adjusted using Hydrochloric acid, to a PH between 5 and 10. The waste is sampled and released to the Longview city sewer system. Periodic maintenance is performed on the wastewater system as required by the plant maintenance schedule. Rain water that is collected in the containment area is checked for pH. If the pH level is too high or low the rain water is pumped into the wastewater mix tank to be used in the neutralizing process and to keep this water out of the storm water runoff.

V. Wastewater Treatment Control System.

The wastewater system operates in automatic or manual with the exception of the discharge phase. The controller is located at the wastewater containment area and controls the mixers, wastewater pump, and the city dilution water valve. The automatic function for the collection tank inlet valve has been disabled. The control panel is a touch screen system consisting of several different screens (See Appendix 1).

VI. System Operation, Wastewater Discharge

Read and Understand the Product SDS. There are copies of the SDS in the office and by the plant chemical storage room.

- A. Insure that there is no wastewater being discharged from the plant.
- B. Apply seal water to both mixers.
- C. Insure That Treatment Tank outlet valve is shut.
- D. Open Collection Tank outlet Valve and Pump discharge valve.
- E. Open Acid Tank Valve.
- F. On the touch screen at the wastewater control station press Cycle Start from the main Menu.
- G. Check Preset values for the following: The preset values are the tank level change in gallons and minutes on for the Mixers. (Nominal values are listed)
 - 1. Collection Tank (1000)
 - 2. Waste water Tank (Treatment Tank) (5000)
 - 3. Mixer 1(15)
 - 4. Mixer 2(70)

- H. Press Start Cycle, note that the Collection Tank and Treatment Tank mixers start. The system will automatically pump the preset amount of wastewater to the Treatment Tank and dilute the Treatment Tank with the preset amount of dilution water. After dilution the acid pump will neutralize the contents of the tank to the preset value.
- I. After the Tank is diluted and mixed for at least 20 Minutes, the acid pump will adjust the pH of the Treatment Tank, to the desired set point (setup option on the main menu) using the Hydrochloric acid, if necessary. The Acid pump can also be used manually in the manual controls screen, to neutralize the solution, periodically check the pH of the solution after mixing. The pH should be between 5 and 10, attempt to achieve a pH of about 9.5. pH tape can be used to insure the pH is at the targeted level. Mix Treatment Tank for an additional 30 minutes and resample to verify pH. If pH not within range readjust using acid or caustic. To add caustic use manual controls screen. Mix an additional 30 minutes if adjusted and re-verify.
- J. Note flow meter Totalizer reading and acid tank level, Close Collection Tank Outlet and acid tank Valves.
- K. Open Treatment Tank outlet valve, It may be necessary to stop the flow and drain the effluent line at the Y strainer then restart the discharge.
- L. Record the information in the Wastewater Plant folder Discharge log.
- M. After Discharge is complete shut the tank Discharge valve and record the Totalizer reading.

VII. Ph meter operation

A. Reading pH

- 1. Remove the probe from the tank.
- 2. Rinse the probe in tap water and blot dry.
- 3. Apply a drop of pH 4.0 buffer to the probe tip.
- 4. Measure sample pH by placing a single drop on the probe tip or dipping the probe tip into the solution.
- 5. Repeat step 5 for further samples
- 6. Replace the probe to the tank.

B. Calibration

- 1. Calibration Frequency

- a. The pH meter will be calibrated quarterly to pH units using pH 4 and 10 buffers.
- 2. Calibration Procedure
 - a. Apply in drop of pH 4.0 buffer to the probe tip.
 - b. Depress the CAL 1 button.
 - c. The CAL icon will flash. When the CAL disappears, calibration is complete.
 - d. Rinse the probe in tap water and blot dry. For two point calibration continue to the next step.
 - e. Apply a drop of 10.00 buffer to the probe tip. Be sure to cover both the reference junction and the pH sensor.
 - f. Depress CAL 2 button. The meter will automatically identify the buffer value.
 - g. When the CAL disappears, calibration of the 2nd point is complete.
 - h. Rinse the probe in tap water and blot dry.
 - i. If measuring samples use step 8, A
 - j. Record calibration on the Monthly Plant Maintenance form, under the quarterly section.
 - k. Record calibration data in the Wastewater pH meter calibration Log found in the Plant folder > Wastewater plant.

VIII. Compositor operation (WS700 Sampler)

- A. The compositor must be used for the required TSS and Molybdenum monthly samples.
- B. A sample should be taken for one discharge per month, it must be analyzed by the local lab, the results should then be sent to Ecology by the 15th of the following month via web DMR (See Web DMR procedure located in the plant; state; waste water file). This sample should be taken with the compositor.
- C. Compositor Operation
 - 1. Bring compositor from storage to Wastewater treatment area and connect to the discharge sample connection.
 - 2. Open sample connection valve.
 - 3. Insure that sample bottle is attached to pump outlet.

4. Check that the settings on the compositor are correct (Start Delay = 0, Sample interval = 5 min., Sample size = 200ml).
5. Upon starting discharge, turn the compositor on.
6. Insure that the compositor runs and is pumping sample.
7. Upon completion of the Discharge turn the compositor off, close the sample connection valve and disconnect the compositor from the sample connection line.
8. Wearing latex gloves, take the sample bottle out of compositor and transfer the sample to the appropriate sample bottles for analysis. Clean the sample collection bottle and return to the compositor.
9. Return the compositor to the storage area

Appendix 1

Waste Water Organization

State Signatory: Primary: Kurt Ibarreta

Site Contact: Primary: Kurt Ibarreta
Alternate: Luke Treadway

Operator: Primary: Kurt Ibarreta

Harrington Industrial Plastics
7051 Southwest Sandburg Street
Tigard OR 97223
503-684-0990
503-684-5150 Fax

Quotation# 00959551
Written: JRM
Quote Date 02/28/12
Expire Date 03/29/12
Page 1 OF 1

Quotation

075769
CASH SALES-TERRITORY 092

TIGARD, OR 97223

Ship To:
EPSON TOYOCOM
1850 PRUDENTIAL BLVD
LONGVIEW, WA 98632

Job: RFQ# EPSON TOYOCOM

=====
Contact: KURT IDARRETA Ship Via: UPS GROUND
Phone#: 360-577-8900 FOB / Delivery ARO: SHIPPING POINT
Fax: 503-684-5150 Frt-Terms: CHRG INBOUND & OUTBOUND
=====

Product/Description	Quantity	Price	U/M	Extension
*4102 FTI PUMPS & PARTS PUMP HORIZ CNTRFGL MAG PP CARB VIT 3.88" IMP 3/4HP 1PH PRODUCT IS NON-RETURNABLE ITEMS MAY NOT BE CANCELLED	1	850.50	EA	850.50

Finish Thompson part#
DB6HP-8P-M204

Merchandise	Tax	Est.Freight / Handling	Net Quote Total
850.50	67.19	0.00	917.69

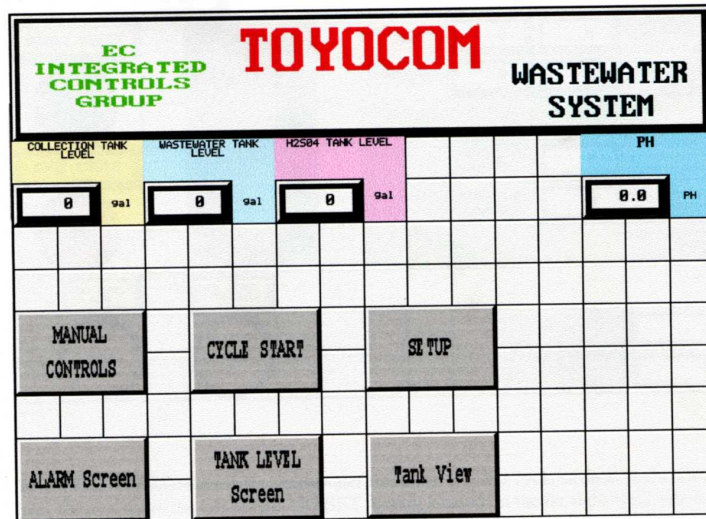
Thanks For Thinking Harrington.
Respectfully J.R. Marsh
All Quotations are subject to review upon placement of order.
Freight/Handling and applicable taxes if not listed above will be added.
Harrington standard terms and conditions apply to this quote.

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Appendix 2

The Following are the Operational Screens as they appear on the Operator Interface Unit:

1. MAIN SCREEN:



The MAIN SCREEN shows the real time levels for the Collection tank, Wastewater tank, H2SO4 tank, and the PH level.

The MAIN SCREEN also provides push buttons that will navigate you to other screens in the system. The other screens are as listed below:

1. MANUAL CONTROLS SCREEN
2. CYCLE START SCREEN
3. SET-UP SCREEN
4. ALARM SCREEN
5. TANK LEVEL SCREEN
6. TANK OVERVIEW SCREEN

2. CYCLE SCREEN

COLLECTION TANK LEVEL		WASTEWATER TANK LEVEL		H2SO4 TANK LEVEL		CYCLE SCREEN		PH	
0 gal		0 gal		0 gal				0.0	
CYCLE ON						ACTUAL		Target	CHANGE PRESET
START CYCLE		CYCLE ON	On			COLLECTION TANK	0	0	0
Push START		MIXER 1	On			WASTEWATER TANK	0	0	0
		ADD Wastewater (PUMP 1)	On						
STOP CYCLE		ADD WATER (valve 2)	On			MIXER 1 ON TIME (MINUTES)	0	0	0
Push STOP		H2SO4 PUMP 2	On			MIXER 2 ON TIME (MINUTES)	0	0	0
		MIXER 2	On						0
ADD MORE H2O		ADD MORE WASTEWATER							
ADD		ADD							
						Main Screen			

The CYCLE SCREEN starts the wastewater treatment transfer cycle as described earlier. Enter the amount in the CHANGE PRESET section located on the far right-hand side of the screen. Enter the amount of wastewater to transfer from the collection tank to the wastewater tank (1000 gallons), the amount of city water to be mixed with the wastewater in the wastewater tank (5000 gallons), Mixer 1 ON time (15 min.), and Mixer 2 ON time (70 min.).

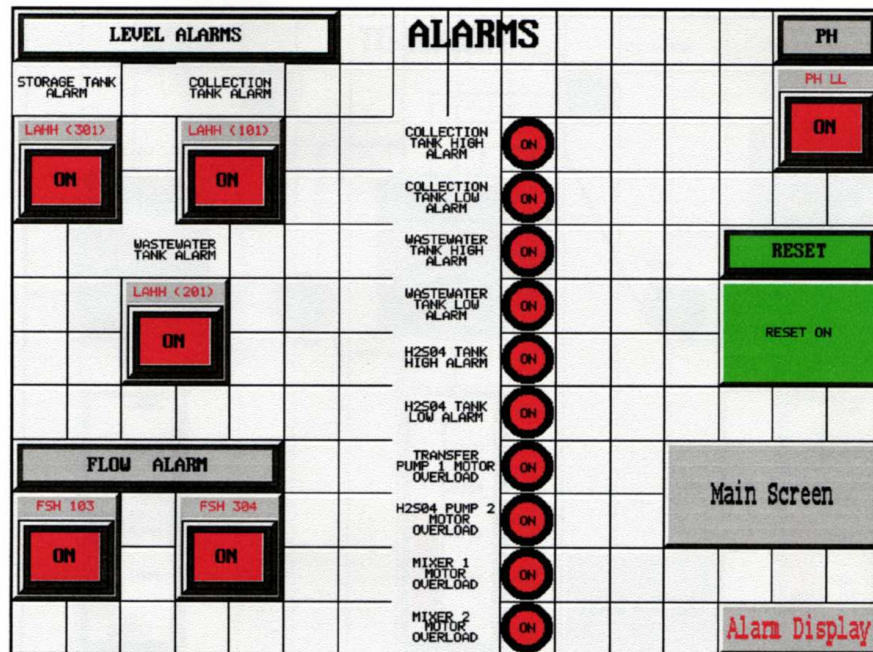
Push the "Start Cycle" button and the system will automatically run a batch of wastewater.

3. MANUAL CONTROLS SCREEN:

MANUAL CONTROLS									
COLLECTION TANK LEVEL		WASTEWATER TANK LEVEL		H2S04 TANK LEVEL				PH	
0 gal		0 gal		0 gal				0.0	
H2S04 PUMP		WASTEWATER TRANSFER PUMP		MIXER MOTOR #1		MIXER MOTOR #2			
PUMP ON		PUMP ON		MIXER 1 ON		MIXER 2 ON			
Push On		Push On		Push On		Push On			
VALVE 1 WASTEWATER				VALVE 2 H2O					
VALUE1 ON		Push On		VALUE2 ON		Push On		Main Screen	

The above Manual Control Screen gives complete manual controls of all the motors and solenoid valves in the system.

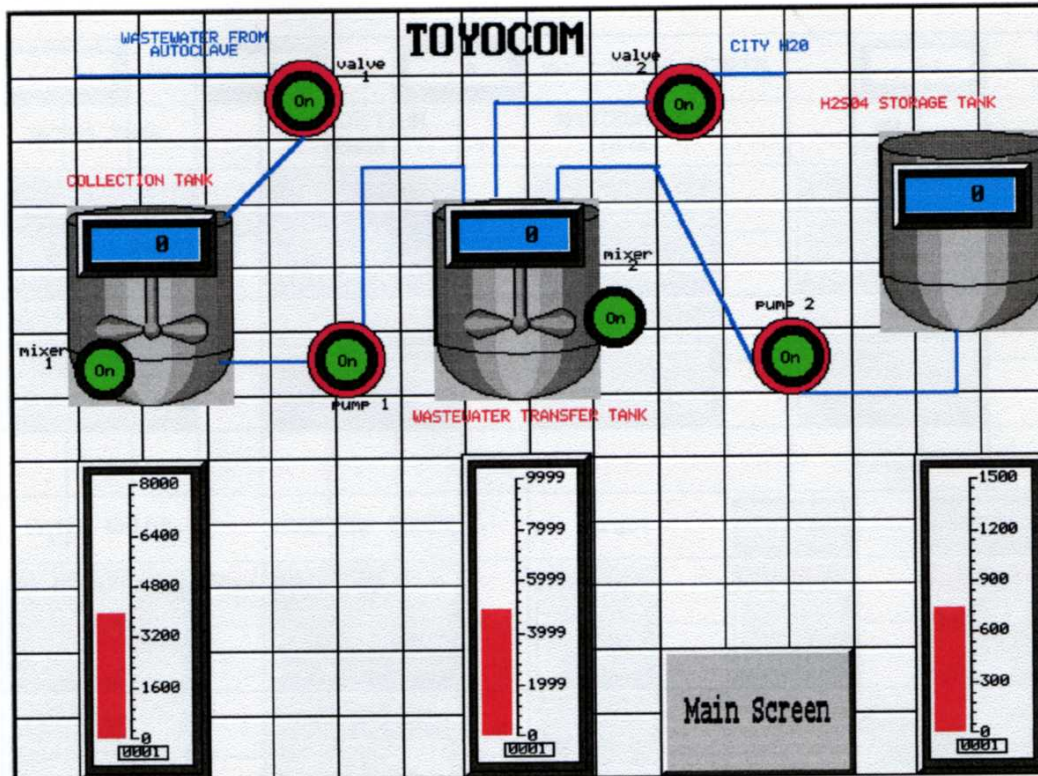
5. ALARM SCREEN:



The ALARM SCREEN displays all the alarm conditions that are present at that point in time. The reset push button will reset all alarms if the condition no longer exist.

The remote alarm panel located, in the control room, will display an illuminated red light, and sound a Sonalert horn, alerting outside in the Wastewater Treatment System. A reset button also located on the remote alarm panel in the control room will be available to reset the alarm if the condition no longer exist.

6. TANK SYSTEM OVERVIEW SCREEN:



The TOYOCOM TANK OVERVIEW SCREEN gives a graphic representation of the entire wastewater system. It displays which motors and valves are on or off and displays all tank levels both numerically and graphically.

7. SETUP #1 SCREEN:

0 gal		0 gal		0 gal		SETUP SCREEN		0.0 PH	
H2S04 TANK		COLLECTION TANK		WASTEWATER TANK		PH			
HIGH SETPOINT		HIGH SETPOINT		HIGH SETPOINT		HIGH SETPOINT			
0		0		0		0			
LOW SETPOINT		LOW SETPOINT		LOW SETPOINT		LOW SETPOINT			
0		0		0		0			
WATER VALVE		TRANSFER PUMP1		ph Target		TIME FILL		ALARMS	
ON DELAY TIME		ON DELAY TIME		shut off		ENABLE TIME		ENABLE	
0		0		0.0		ENABLED		ENABLED	
OFF DELAY		OFF DELAY		SETUP 2				Main Screen	
0		0							

The SETUP Screen allows for the set-up of tank level alarm and shutdown parameters, PH target parameter, city water valve delay times, and transfer pump delay times. The following are the setup parameter for each item and each value should be entered at the appropriate entry cell.

For Nominal set point values see Reference E

8. SETUP #2 SCREEN:

SETUP #2 SCREEN										HEATER MANUAL	
										ENABLE HEATER	
										HEATER ON	
H2SO4 PUMP											
PUMP ON TIME					PUMP OFF TIME					ENABLE LIGHTING	
0					0					ENABLE LIGHTS	
Enter Time in 0.1 sec. increments										ENABLED	
										Main Screen	

The SETUP #2 Screen is a continuation of the setup procedure.

1. The H2SO4 Pump on and off time setup is for the automatic cycle time when pump is adding acid into the wastewater tank to try to lower the PH to between 6 and 9.

Pump On Time: **4.5** seconds
Pump Off Time: **1** minute

2. Heater Enable: as needed
3. Lighting Enable: as needed

Revision History

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Rev. Date	Author/Originator	Checker	Approver	EHS Approver if Applicable	Revision Details
3/29/16	Kurt Ibarreta	Luke Treadway #5667	<i>Shin Hashimoto #5665</i>	Kimberley Sackman #5231	Changed company to EPI, updated to include required header and footer, requirement for environmental staff to review and sign as needed.
11/21/16	Kurt Ibarreta	Luke Treadway #5667	<i>Shin Hashimoto #5665</i>	<i>Sovann K. Chin #1943</i>	Changed pH meter calibration from monthly to quarterly.
6/5/19	Kurt Ibarreta	Luke Treadway	Takeshi Ezaki #5700	Doris Gonzalez #5846	Moved into eDMS