WASTEWATER OPERATION & MAINTENANCE MANUAL

Westlake US 2, LLC
Westlake Corporation
Longview, Washington

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Reviewed and made changes as per a review letter sent by the DOE. All recommended changes can be found in the current Permit folder on the technical driver DOE subsection. Basic Summary of changes: confirmed ORP levels and curves are still current and unchanged, Some items have been removed (brine mud direct to Nippon). Set point clarifications, TRC sampling clarification, Lab waste clarification, TOC updated, updated GPD normal and averages to reflect current flows. Added new Appendices	Michael Loree	5/28/2020
Added Appendix G and H. **Appendix G holds the slug discharge plan components and references.** **Appendix H is the Solid waste plan components.**	Michael Loree	8/14/2020
Added Stormwater information for treat on outfall 002. Included Stormwater Filter O&M Manual.	Adriana Lopez	10/29/2021
Long sleeves are no longer a requirement	Adriana Lopez	10/29/2021
Added frequency of calibration of continuous meters and field measuring devices.	Adriana Lopez	12/19/2022
Minor format changes.	Adriana Lopez	1/8/2024

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Facility Contacts and Staffing

General Facility Identification Information:

Facility Name: Westlake US 2, LLC

Owner / Operator / Agent: Westlake Corporation
Physical Address:

Facility Address:	3541 Industrial Way		
City, State, Zip:	Longview WA 98632		
County:	Cowlitz County		
Latitude:	+46°	07m	48.0s
Longitude:	-122°	59m	02.0s

Mailing Address: PO Box 865
Longview WA 98632

Other Identifying Information:

SIC Code:	2812
EPA Identification Number:	WAH000042579
Dun and Bradstreet:	001344803
Number of Employees:	64

Key Contacts for Plan Development and Maintenance

Facility Contact Information:

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Facility Fax Number:	360-363-4302

Facility Contact:

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Title:	Site Manager
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City, State Zip	Longview WA 98632
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Cellular Number:	(225) 678-1266
Environmental Contact:	
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Lease Owner Contact:	
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Safety

Break-In Outline

When this section of the break-in training has been completed, you will know the safety hazards of utilities, hazardous chemical handling procedures, safety responsibilities, location of showers and eye washes, and location and use of fire extinguishers.

I. Area safety hazards
II. Use of protective equipment
III. Shower and eye wash locations
IV. Fire extinguisher locations
V. Lockout/tag out procedures
VI. Hazardous materials handling procedures

General Safety Rules

General PPE Requirements

1. Safety related dress code requirements for entrance to the Westlake general plant (inside the gate) production area include the following:
    a. Long sleeves Fire resistant clothing
    b. Long pants
    c. Closed-toed footwear required in to enter the plant
    d. Safety toed footwear is required in all process areas
    e. Hard Hat
        i. Exception – Hard hats do not have to be worn while working in the cell room (no overhead work, including crane usage), the maintenance shop, or while switching railcars.
    f. Protective eyewear

g. Safety goggles (or accepted alternative, i.e. face shield) where posted
h. Gloves are required for personnel when performing work

2. Escape respirator
   a. Escape respirators must be within arm's reach at all times, including while in the admin areas, maintenance building, control room, and in the plant.
   b. It is to be used only to escape contaminated air and not be used as a work mask.
3. A variety of respirators, including half-masks, full-face masks, self-contained breathing apparatus, and Cl_2 respirators are available for use when working in contaminated areas.
   a. SCBA's are the only accepted respiratory protection when entering an area of unknown concentration.

Fire Extinguishers

There are two types of fire extinguishers throughout the plant. They are shown in Appendix D. They are ABC and CO_2. It is important to know and follow the procedures for using each type of extinguisher and on what type of fires they should be used.

When an extinguisher is used, it must be notified to the the lead operator to schedule a refill. Replace as soon as possible.

Safety Data Sheets

For each potentially hazardous substance in use at Westlake, there is a Safety Data Sheet (SDS) detailing hazards, handling procedures, and first aid treatment for the substance. A copy of the SDS can be found on any computer with access to the intranet and the control room cell operator's computer. Obtain a copy of the SDS for each substance or chemical that is used or presents an exposure. Be familiar with the hazards of these substances and the protective measures to take when working around them.

Process Wastewater

The process wastewater is segregated into acidic/basic streams and chlorinated streams. The pH of the acidic and basic streams is adjusted by addition of 22% caustic and 18% HCl to achieve a pH in the range of 5 to 12. The pH adjustment is performed in two 30,000 gallon batch treatment tanks using an eductor located in the tank for mixing and recycle pumps to recirculate the stream through the tanks. One of the tanks receives wastewater that could contain residual chlorine. The oxidation reduction potential (ORP), an indirect measure of residual chlorine, in this tank is monitored and residual chlorine is removed, if necessary, by the addition of sodium bisulfite. Once the pH and ORP are properly adjusted, the wastewater is pumped to Nippon. The discharge to Nippon is continuously monitored for flow, pH and ORP.

Wastewater primarily comes from the Ion Exchange regeneration, the DI regeneration, brine mud from the Mud Clarifier and any process drain water throughout the plant. Waste water changes and varies from neutral water to strong acids, strong bases or highly chlorinated waste. To accommodate the fluctuations in composition, the wastewater tanks are FRP (fiber-glass reinforced plastic).

ORP is used to measure residual chlorine. When chlorine gas is added to water, hypochlorous acid (HOCl) and hypochlorite ions (OCl) are formed, which is referred to as residual or free chlorine. ORP, oxidation-reduction potential, measures the potential at which oxidation occurs at the anode and reduction occurs at the cathode of an electrochemical cell. When free chlorine is present, the ORP of water increases. The pH of the fluid affects the ORP reading: as the pH increases, the ORP reading decreases. Calibration curves relating ORP to

free chlorine at different pH levels are used to obtain meaningful data from the ORP readings.

pH Range	ORP
11.1 – 12.0	ORP > 250
10.1 – 11.0	ORP > 320
9.1 – 10.0	ORP > 420
8.1 – 9.0	ORP > 500
7.1 – 8.0	ORP> 600
6.1 – 7.0	ORP > 620
5.1 – 6.0	ORP > 650

Due to the batch nature of treating the waste water, it is important to monitor the tank levels during regeneration of the Brine Ion Exchange and DI Unit. The Brine Ion Exchange regenerates manually based upon gallons. The DI unit is regenerated based upon hardness and must be manually initiated. Before the DI unit is regenerated or during an Ion Exchange regeneration, the level of the waste water tank must be monitored. It is important to not overflow the tanks.

All process equipment, chemical storage tanks, and chemical transfer stations are provided with secondary containment to prevent chemical leaks or spills from entering the storm water system. Small spills or leaks are treated in the treatment system and then pumped to Nippon for secondary treatment and discharge. Large spills are contained in the secondary containment area, treated and then discharged to wastewater.

Depending upon the volume and quality of the spilled chemical, it is pumped into a storage tank for use at the plant or pumped into totes/trucks and sent off-site for reuse or disposal. For example, most caustic soda, hydrochloric acid and sulfuric acid spills can be pumped into an existing storage tank and reused or sold as product by the plant. Sodium hypochlorite spills can be pumped into totes/trucks and sent to HASA for reuse.

The Caustic Tank Farm Sump receives rainwater, wash down liquids and spills from the caustic storage area and the dock. At the dock, rain water, spills and line flush water is drained to the dock rain collection tank and pumped to the Caustic Tank Farm Sump. From the Caustic Tank Farm Sump, material can be pumped into either to the Nippon wastewater system or back to wastewater treatment tank for additional treatment to meet the permit limits.

Drain Trench

The drain trench runs the length of the cell room on the north side. It collects wastewater from the cell room, the Fuji pad, vent handling, and the catholyte heater pad. The catholyte sump pump sends this collected wastewater to wastewater storage for treatment.

Caustic Tank Farm Sump

There are three sumps in the caustic system: one in the tank farm, one at the dock and one from rail loading. The tank farm sump located in the tank farm receives rainwater, wash down liquids and spills from the caustic

storage area, the dock and rail loading station. The sump material can be pumped into either the line to Nippon wastewater treatment system or back into the wastewater storage tanks for further treatment.

The caustic rail loading/unloading area at the dock is equipped with spill collection pans, which drains any spilled caustic to the rail-loading sump. A pump is used to transfer wash water and spilled caustic to the caustic tank farm sump.

Sanitary Sewer

Sanitary sewer collection pipes flow to two lift stations on the property, (1) west of the caustic evaporation platform and (2) at the southeast corner of the caustic tank farm. The sanitary waste is pumped from the administrative office and HASA to the 2nd lift station. The other buildings on site are gravity drained to lift station 1. The sanitary sewer sump pumps are activated by sump level to automatically start on high level and turn off on low level. The collected sewage at both stations is pumped to the Nippon Sanitary Sewage Treatment facility.

Stormwater

Outfall 002

Drainage Basin #2 drains the plant parking lot and is discharged through a 6 inch diameter storm sewer to Nippon's 001/002 Ditch, which drains to the Columbia River. A Stormwater Treatment System is in place to treat Stormwater to improve water quality parameters. The filter was put in place in effort to decrease Zinc and Copper concentration in Stormwater.
There are no moving parts and no chemicals used in the filter system, which allows for safe and simple operation. The Environmental Engineer inspects the equipment once a month, during the SWPPP monthly Inspection. The type of filter media maintenance required depends on the sediment accumulation within the filter bed and can be determined during regularly scheduled inspections. Spent media is not considered hazardous material and can be disposed of in a subtitle D landfill.

Outfall 003

Stormwater from the plant's stormwater drains flow into the Caustic Sump as shown in Appendix D. Stormwater that flow here is treated and sent to Nippon Treatment plant through the Caustic Sump. During heavy rainfall, the Clean Water Sump can be diverted to the river once the Caustic Sump is proven to not be able to keep up in the incoming water.

The clean water sump pumps are activated by sump level to automatically start on high level and turn off on low level. In the event of high or low pH readings in the storm water or high ORP, the valve to the river will close. The contaminated effluent is diverted to the caustic tank farm sump, where it can be treated and sent to Nippon's wastewater treatment facility.

Basin #4

Drainage Basin #4 includes the Administrative Building and HASA's building, plus the surrounding landscaped area. All rainfall from this area percolates into the grass surrounding the buildings.

Storm water collected in any of the chemical containment areas is presumed to be contaminated and is pumped to the waste water treatment tanks.

Figure 1 in Appendix D shows the collection area for the Clean Water Sump.

Wastewater Characterization

Wastewater

All Chlor-Alkali plant wastewater and potentially contaminated storm water is collected, pretreated if necessary, and pumped to Nippon's wastewater treatment facility for final treatment prior to discharge through Nippon's NPDES Outfall 001/002. The Chlor-Alkali plant is designed to maximize water recycle and reuse, and minimize the volume of wastewater. There are 16 sources of wastewater in the Chlor-Alkali plant. The volume and quality of these sources are shown in Table 1. The total wastewater volume is 69 gpm which includes 61 gpm from continuous sources plus an average of 8 gpm from intermittent sources such as ion exchange system regeneration and periodic wash downs. As indicated in Table 1, intermittent flows could be as high as 75 gpm, for short periods of time.

The principle contaminants contained in wastewater produced by the Chlor-Alkali plant is low pH and high acidity from hydrochloric acid and sulfuric acid, high pH and high alkalinity from caustic soda, dissolved solids primarily sodium chloride, and high suspended solids primarily calcium carbonate and magnesium hydroxide, other pollutants of concern are Total Dissolved Solids, Total suspended Solids, and Chloroform. Table 1 identifies the approximate level of contamination in each wastewater stream.

Table 1. Characteristics of Process Wastewater

Source	Frequency	Total Vol (gals)	Flow Rate (gpm)	Temp (°F)	pH	TDS	TSS (PPM)
Cooling Tower Blowdown	Continuous	-	25	85	7	100 ppm	10
Pump Seal Water	Continuous	-	26	70	8	300 ppm	50
Sulfate Removal System Purge	Continuous	-	2	150	5	23%	25
HCl Scrubber Overflow	Continuous	-	2	60	1	0.4%	25
Caustic Storage Tank Steam Cond.	Continuous	-	4	212	7	10 ppm	0
Caustic Evap. Hot Well Steam Cond.	Continuous	-	1	212	7	10 ppm	0
Air Compressor Drain	Continuous	-	0.5	90	7	10 ppm	0
Brine Ion Exchange Back Wash	2/week	21,000	40-75	80	9 (1)	9%	25
DI Water System Backwash	2/week	5,100	14-75	80	7 (1)	1%	25
Water Softener Backwash	2/week	2,000	17	60	7	5%	100
Lab Sink Drains (2)	Intermittent	Varies	1-3	60	Varies	Varies	Varies
Catholyte Heater Steam Cond.	1/month	4,000	8	212	7	10 ppm	0
Brine Heater Steam Cond.	1/month	4,000	8	212	7	10 ppm	0

1. The backwash water from the brine ion exchanger and DI water systems include a series of HCl and NaOH washes and clean water rinses. The backwash pH varies from 1 to 14 throughout the cycle. Since near stoichiometric quantities of HCl and NaOH are used, the combined waste is near neutral.
2. Lab sink drains can contain small quantities of caustic soda, sulfuric and hydrochloric acid, sodium hypochlorite and reagents used in the test procedures including methyl red, methyl orange, phenolphthalein, acetic acid, nitric acid, potassium iodide, potassium dichromate, EDTA, sodium sulfide and ammonium compounds. No lab waste is collected for dangerous waste disposal. Any new chemicals to be used in the lab must be approved prior to use.
3. Total Residual Chlorine samples are taken daily from the Caustic Sump. The PLC and operational staff utilize ORP to make corrections to the system and operating phases.

Storm Water

Outfalls #1 and #3 have a total area of 262,000 ft^2 paved or under roof. During a design storm of 1.4 inches of rainfall per hour the runoff from this area is 3,800 gpm which flows to the clean water sump and is pumped to Nippon's NPDES Outfall 001/002.

Outfall #2, which drains the plant parking lot, has a total area of 31,000 ft^2 which is 100 percent paved. Runoff from this area during a design storm is 450 gpm. This runoff is collected in a single catch basin and discharged through a 6 inch diameter storm sewer to Nippon's 001/002 Ditch which drains to the Columbia River.

Drainage Basin #4 includes the Office Building and Locker Room plus the surrounding landscaped area. This basin has a total area of 8,000 ft^2 under roof and 24,800 ft^2 of grass and unpaved landscape. All rainfall from this area percolates into the grass surrounding the buildings.

Storm water collected in the chemical containment areas is presumed to be contaminated and pumped to the Chlor-Alkali plant treatment system where it is treated if necessary prior to pumping to Nippon's treatment system. The storm water flow from these containment areas during a one-hour design storm event is 1,949 gpm. The surface area and flow from each of the containment areas is shown in Table 2.

Table 2. Storm Water Drainage Basins and Flows Excluding Containment Areas

Drainage Basins	Impervious Area (ft^2)	Peak Runoff (1) (gpm)	Annual Runoff (2) (gals)
Drainage Basin #1	221,000	3,205	6,395,000
Drainage Basin #2	31,000	450	897,000
Drainage Basin #3	8,000	0	0
Drainage Basin #4	41,000	595	1,186,000
Total Drainage Basins	**301,000**	**4,250**	**8,478,000**
Containment Areas	**Impervious Area (ft^2)**	**Peak Runoff (3) (gpm)**	**Annual Runoff (2) (gals)**
Acid Storage Containment	5,700	81	160,000
Acid Truck Loading Containment	1,300	17	35,000
Caustic Evap Containment	9,100	133	264,000
Catholyte Recycle Containment	5,200	73	145,000
Chlorine Drying Containment	1,700	24	48,000
Emergency Vent System Containment	2,600	37	74,000
Liquefaction Platform Containment	1,300	19	38,000
Caustic Tank Farm Containment	40,000	582	1,152,000
New Caustic Tanks Containment	20,000	291	576,000
Hypochlorite Storage	1,700	27	53,000
Caustic Truck Loading Containment	3,900	56	110,000
Dock Containment	42,000	608	1,205,000
Total Containment Areas	**134,500**	**1,949**	**3,860,000**

1. Based on a one-hour design storm event of 1.4 inches per hour
2. Based on an annual average rainfall of 46.4 inches.
3. Assumed this is contained in containment basins and discharged uniformly over 24 hours.

Sanitary Waste

The Chlor-Alkali plant employs 64 people. It is estimated that the average daily water consumption per employee is 20 gallons per day. The total sanitary waste is 1000 gallons per day. This waste is pumped with two sanitary lift stations to Nippon's sanitary treatment system.

Plant-Wide Hydraulic Balance

The plant-wide hydraulic balance is located in Appendix D, Figures 2 and 3, and shows the average water balance for the Chlor-Alkali plant.

Discharge Water Quality Criteria

Two criteria were used to define water quality acceptable for discharge to Nippon's wastewater treatment plant. These criteria are as follows.

- The wastewater must be compatible with Nippon's wastewater treatment system.
- The wastewater cannot be a dangerous waste as defined in WAC 173-303.

The principle contaminants in the Chlor-Alkali plant wastewater are high and low pH, sodium chloride, suspended solids and residual chlorine. Since Nippon's treatment system is designed to neutralize wastewater, remove suspended solids by settling, and control bacterial growth by the addition of sodium hypochlorite, the treatment system is fully compatible with Chlor-Alkali plant wastewater. This is further demonstrated by the fact that the existing Nippon treatment system successfully treated Chlor-Alkali wastewater from Nippon's former Chlor-Alkali plant from the mid 1950's until it was shut down in 1999.

The Chlor-Alkali plant wastewater has the potential of being a characteristic dangerous waste. It could be a corrosive dangerous waste with a pH either lower than 2.0 or higher than 12.5. It could also be a toxic dangerous waste because of potentially high concentrations of residual chlorine. Using the book toxicity designation procedure in WAC 173-303-100(5)(6), a waste with greater than 100 mg/l of any chemical that exhibits an LC_{50} to fish of 0.01 mg/l to <0.1 mg/l is a toxic dangerous waste. According to bioassays performed by Bosch and Truckan in 1976, residual chlorine has a 96 hr LC_{50} to Brown Trout of 0.02 mg/l to 0.05 mg/l. Since residual chlorine in Chlor-Alkali wastewater could be present at concentrations greater than 100 mg/l, the waste has the potential of being a toxic dangerous waste.

By preventing the discharge of major spills of acid, caustic soda or sodium hypochlorite in containment areas, and providing a treatment system and a residual chlorine removal system, no wastewater discharged to Nippon's treatment system will be designated as corrosive or toxic dangerous waste. The pH is controlled, as necessary, between 5 and 12 by the addition of sodium hydroxide or hydrochloric acid. The residual chlorine concentration is controlled, as necessary, to less than 100 mg/l by addition of sodium bisulfite.

Process Wastewater Collection and Treatment

Process Wastewater Treatment Overview

Chlor-Alkali plant process wastewater includes all wastewater from the chemical process, pump seal water, steam condensate which is not returned to the boiler, cooling tower blowdown, and potentially contaminated storm water from containment areas. The process wastewater is collected, neutralized, as necessary, to achieve a pH of 5 to 12, treated to remove residual chlorine to less than 100 mg/l and pumped to Nippon's process wastewater treatment system. Process wastewater flows averages about 110,000- 300,000 gpd with peak flows sometimes exceeding 450,000 gpd during rainfall events. This wastewater is treated in Nippon's

45,000,000 gpd wastewater treatment system. Figure 3 (Appendix D) is a Process Flow Diagram for the collection and treatment system. Figures 4 and 5 (Appendix D) is a Piping and Instrumentation Drawing (P&ID) for the system.

Acid Wastewater

Chlor-Alkali process wastewater is segregated into acid streams, chlorinated wastewater streams, basic streams, and high suspended solids streams. The acid streams are pumped to a covered 30,000 gallon FRP, vertical, cylindrical collection tank. The acid wastewater collection tank is equipped with a 300 gpm, chemical resistant, centrifugal recycle/discharge pump, a level indicator controller and a pH indicator controller. The tank is operated on a batch basis. Wastewater is collected until the tank is full. The wastewater is mixed with the recycle pump to obtain a uniform wastewater pH. Normally the pH is between 5 and 12, and the discharge valve is opened and the recycle valve closed to route the wastewater to Nippon. In the event the pH is outside the pH range of 5 to 12, the pH control system automatically adjusts the pH by opening the metering control valve for 22% caustic soda or 18% hydrochloric acid prior to pumping to Nippon.

Chlorinated Wastewater

Potentially chlorinated wastewater is collected in a covered, 25,000 gallon, FRP, vertical, cylindrical, collection tank where the pH is adjusted, as necessary, to achieve a pH of 5 to 12. The contents of the collection tank is monitored for residual chlorine concentration using an ORP meter. An ORP to residual chlorine concentration curve is developed to correlate ORP readings with residual chlorine concentration. If the ORP indicates the presence of residual chlorine sodium bisulfite is added to reduce the residual chlorine concentration to less than 100 mg/l. The chlorinated wastewater collection tank is equipped with a 300 gpm, chemical resistant, centrifugal recycle/discharge pump, a level indicator controller, a pH indicator controller and an ORP indicator controller. The tank is operated on a batch fill and draw basis in a manner identical with the acid wastewater collection tank previously described. Normally the pH and ORP are within an acceptable range and pH or ORP adjustment will not be necessary. If necessary, the pH and/or ORP is automatically adjusted with the pH control system.

Basic Wastewater

Basic wastewater is collected in the existing Caustic Tank Farm sump equipped with one 380 gpm and one 80 gpm centrifugal sump pumps. The sump is equipped with a level control system that starts and stops the pumps on high and low level and pH and ORP meters that continuously monitors the wastewater and automatically controls two discharge valves capable of directing the pump discharge to either the acid or chlorinated wastewater collection tanks or to Nippon. If the wastewater is within specification, the wastewater is pumped directly to Nippon. If the pH or ORP is out of specification, the discharge valve automatically closes to pump the wastewater to the wastewater collection tanks for treatment. Out of specification does not mean outside of the permitted limits necessarily. For example, pH specification sees a lo pH at 5.05, while a low low (immediate closure of valve before dropping out of permitted limits) at a pH of 5. Hi alarm Orp would be above 650, based upon pH, a 20 second trigger exist before closure of valve during hi/lo alarms, while a 30 second in spec reset timer exist to get back in spec.

High Solids Wastewater

The high suspended solids wastewater (brine mud) with 30 to 35 percent solids can be collected in the brine clarifiers (used to be named Brine Mud thickening Tanks)at an average rate of 5000 gallons per week. The brine mud is pumped to the suction side of the wastewater recycle/discharge pump where it is diluted to with

wastewater from the wastewater collection tanks. This dilute slurry is discharged to Nippon without the risk of plugging Nippon's discharge lines or sewer.

Acid Wastewater Collection System

The acid wastewater system collects backwash water from two ion exchange systems, laboratory sink drains, hydrochloric acid scrubber overflow, and chemical leaks and storm water collected in four containment areas with acid bearing storage tanks and equipment. Those wastes are pumped to the acid wastewater collection tank as shown in the P&IDs (Appendix D). The individual wastewater sources and containment areas are described below.

DI Water Ion Exchange Backwash

Twice each week, the DI water ion exchanger is backwashed with hydrochloric acid, caustic soda and rinse water. During the 3-hour backwash cycle, a total of 5100 gallons of wastewater is produced. The ion exchanger is backwashed under pressure. All backwash wastewater is conveyed through a PVC pipeline to the acid wastewater collection tank. At any given time in the backwash cycle, the wastewater may have a high or low pH but once mixed in the acid wastewater collection tank, the combined wastewater has a near neutral pH. Therefore, the acid tank should always be at a low level prior to initiating a regen to allow room for both acid and caustic backwash to self-neutralize the tank.

Brine Ion Exchanger Backwash

Twice each week the brine ion exchanger is backwashed with hydrochloric acid, caustic soda and rinse water. During the 5-hour backwash cycle, a total of 21,000 gallons of wastewater is produced. The ion exchanger is backwashed under pressure. All backwash wastewater is conveyed through a FRP pipeline to the acid wastewater collection tank. At any given time in the backwash cycle, the wastewater may have a high pH or low pH, but once mixed in the collection tank the combined wastewater will have a near neutral pH. Therefore, the acid tank should always be at a low level prior to initiating a regen to allow room for both acid and caustic backwash to self-neutralize the tank.

Chlorine Drying Containment Area

The chlorine drying containment area is designed to collect leaks and spills of sulfuric acid from 3-drying towers, acid pumps, heat exchangers and other ancillary equipment. The containment is reinforced concrete construction with an acid resistant liner. A small sump in the containment area is provided with a 25 gpm chemical resistant sump pump to transfer wastewater and storm water through a PVC pipeline to the acid wastewater collection tank. The pump is started and stopped automatically on high and low water level.

The containment area continuously receives 3 gpm of pump seal water, periodic leaks and spills of sulfuric acid and storm water. Seal water and minor acid leaks are pumped periodically to the acid wastewater collection tank. Storm water and major spills in this sump and other similar containment sumps are handled by a standard control procedure used throughout the Chlor-Alkali plant. Storm water is held in the sump until there is sufficient capacity available in the collection tank. Major spills are assessed on a case by case basis. If the quality of the spilled acid is satisfactory, it is pumped into an available acid storage tank for reuse. If the acid is not suitable for reuse, it is hauled offsite for disposal.

Acid Storage Tank Containment Area

The acid storage tank containment area is designed to collect leaks and spills of acid from two sulfuric acid storage tanks for hydrochloric acid storage tanks, acid pumps and truck loading/unloading pad. The containment is reinforced concrete construction lined with acid resistant material. A small sump is provided with a 25 gpm chemical resistant sump pump to transfer wastewater and storm water through a PVC pipeline to the acid wastewater collection tank. The pump is started automatically on sump level.

The containment continuously receives about 2 gpm of HCl scrubber water, leaks and spills of acid and storm water. The seal water, scrubber water and minor leaks are periodically pumped to the collection tank. The storm water and major acid spills are managed consistent with the standard procedure previously described.

Chlorine Liquefaction Containment Area

This containment area is designed to collect leaks and spills from the Chlorine liquefaction equipment and laboratory sink drains. The containment is reinforced concrete construction. The wastewater collected flow via underground pipe to the catholyte area. Storm water and spills are managed consistent with Westlake's standard procedures.

Chlorinated Wastewater Collection System

This system collects wastewater that contains sodium hypochlorite (hypo) or dissolved chlorine. There are no continuous sources of chlorinated wastewater. However, leaks or spills in the catholyte recycle area, emergency vent system (EVS) and cell room could contain chlorinated water. Wastewater and storm water collected in these three containment areas are combined and pumped to the chlorinated wastewater collection tank as show in the P&IDs (Appendix D). The following is a description of the three individual containment areas.

Catholyte Recycle System Containment Area

This containment has reinforced concrete construction around the catholyte recycle and dechlorinated brine handling equipment. The containment area receives about .5 gpm of pump seal water continuously. Periodically, the area receives 8 gpm of steam condensate from brine and catholyte heaters which are only operated during the first 16 to 24 hours of a cell line startup. The containment also receives periodic leaks and spills of catholyte and dechlorinated brine plus storm water. The containment gravity drains to the catholyte pit sump. The drain has a normally closed manual drain valve which is periodically opened to drain the contents of the sump to the catholyte pit sump.

EVS Containment Area

This containment is reinforced concrete construction around the hypo scrubber system which includes a 20 percent caustic storage tank, three caustic scrubbers and recirculation scrubber pumps. The containment receives about 5 gpm of pump seal water continuously. Periodically, the containment receives leaks and spills of caustic and hypo plus storm water. A small containment sump gravity drains to the cell room sump.

Catholyte Pit Sump

The floor is sloped to a reinforced concrete collection sump to collect periodic leaks, spills and wash down water from the cell room. The sump continuously receives 10-20 gpm wastewater, storm water, and condensate from the Catholyte and EVS containment areas. The sump is

equipped with a 50 gpm chemical resistant sump pump with an automatic level control system to pump wastewater to the chlorinated wastewater collection tank.

Caustic Evaporation Containment Area

This containment is reinforced concrete construction around the catholyte storage tank and caustic evaporator system. The containment receives approximately 10 gpm of condensate, 10 gpm of pump seal water, and 30 gpm of cooling tower blowdown continuously. Periodically, the containment receives leaks and spills of caustic plus storm water. A small containment sump is equipped with a 75 gpm sump pump to transfer wastewater and storm water. The pump automatically controls sump by level.

Caustic Wastewater Collection System

This system collects wastewater containing caustic soda from loading/unloading areas, storage tank containment areas and a number of individual wastewater streams. All of the wastewater is collected in the existing Caustic Tank Farm containment area and either pumped directly to Nippon or pumped to the chlorinated wastewater collection tank for treatment. The Caustic Tank Farm containment area will receive wastewater, storm water, or condensate from five containment areas and three individual wastewater sources as shown in P&IDs (Appendix D). The following is a description of the containment areas and wastewater sources that discharge to the Caustic Tank Farm containment.

Water Softener Backwash

The zeolite water softener is backwashed twice each week generating a total of 2,000 gallons per backwash. This wastewater is discharged directly to the Caustic Tank Farm sump.

Condensate from Caustic Soda Heaters

Condensate from Caustic soda steam heaters in the Caustic Tank Farm is discharged to the Tank Farm sump at a rate of 10 gpm depending upon ambient temperatures.

Rail Yard Sump

This concrete sump collects wash down, leaks and spills from the caustic soda rail car loading station. The sump is equipped with a 25gpm chemical resistant sump pump which is automatically controlled on level. The wastewater is periodically pumped to the Caustic Tank Farm sump.

Caustic Soda Truck Loading Station

Common concrete containment pads are provided for loading 25 percent and 50 percent caustic trucks. The containment receives caustic soda and bleach leaks and spills plus rain water. The containment provides sumps that drain to the Caustic Tank Farm containment. The drain line has a normally closed manual valve to drain accumulated wastewater and rain water into the tank farm as necessary.

Dock Area Drains

Nippon's dock is constructed as a containment area for any leaks and spills of caustic soda during ship/barge loading/unloading operations. Any storm water that falls on the asphalt dock flows to catch basins and then to the rain water tank. The rain water tank is provided with a 75 gpm pump and a level control system that automatically pumps storm water to the Caustic Tank Farm.

High Suspended Solids Collection System

Brine mud from chemically treating brine is thickened in brine clarifier and pumped to Nippon directly. Periodically, an auto-valve opens to drain a few hundred gallons of brine mud to the clarifier sump. The sump is equipped with pump and level control to automatically pump mud to Nippon. Water is used to dilute brine mud as needed to assure transfer.

Appendix A – Operating Instructions

Reference Material

Refer to the most up-to-date controlled documents in the EDMS.

300-OPS-WW-001V Clean Water Sumps Valve Line-up

300-OPS-WW-002 – Response to Oil Sheen Alarms

300-OPS-WW-003 Obtaining TSS Sample

300-OPS-WW-004 Wastewater Treatment Operations Procedure

300-OPS-WW-004V Wastewater Treatment Operations Valve Line-Up

300-OPS-WW-005V Sending Mud from Clarifiers to Weyco Valve Line-Up

300-OPS-WW-006V Caustic Sump Operation Valve Line-Up

300-OPS-UT-017 DI Skid Operation

Appendix B – Maintenance Procedures

Frequency of maintenance of Continuous meters.

Reference Material

Refer to the most up-to-date controlled documents in the EDMS.

300-MNT-005 Process Pump Complete Rebuild, Milton Roy MLI Pumps

300-MNT-015 Process Pump Complete Rebuild, Durco Pumps

300-MNT-045 pH Calibration Procedure

300-MNT-046 pH Calibration Procedure – Buffers

300-MNT-047 pH Calibration Procedure – Transmitter

300-MNT-048 pH 450 Calibration Procedure - Buffers

300-MNT-050 Transmitter ORP Calibration Procedure

300-MNY-053 Foxboro Transmitter pH Cali Procedure

Appendix C – Laboratory Procedures

Reference Material

Refer to the most up-to-date controlled documents in the EDMS.

300-LAB-GN-001 - pH

300-LAB-GN-002 Chlorine Free DPD Method

300-LAB-GN-003 Total Suspended Solids (TSS)

Discharge Monitoring Report (DMR)

Appendix D – Drawings

Reference Material

Refer to the most up-to-date controlled documents in the EDMS.

Clean Water Sump Collection Area

7500-P-001-PFD Wastewater Treatment Flowsheet and Balance

7500-P-002-PFD Wastewater Treatment Flowsheet and Balance

7500-P-001-PID Utilities Wastewater Treatment P&ID

7500-P-002-PID Utilities Wastewater Treatment P&ID (continued)

000-G-009 Secondary Containment Areas

000-G-007 Area Designation Map

7500-P-003-PID Stormwater Utilities Treatment P&ID

775-M-101 Wastewater Storage Area Discharge Piping Plan and Sections

Appendix E – Equipment Specifications

Reference Material

Refer to the most up-to-date controlled documents in the Equipment Database.

Tank Reactor Specifications

Pump Specifications

Instrument Specifications

100-CTR-003 Controls Descriptions (on EDMS)

Appendix F – Frequency and Maintenance of continuous meters

Meter ID	Location	Flow/pH/ORP	Maintenance frequency	Task
AIT-7599 A/B	Outfall 003	pH/ORP	28 days	Inspection and calibration
AIT-7502A/ B	Outfall 001	pH	1 month	Inspection and calibration
AIT-7502, AIT-7502B, AIT-7503 A, AIT-1703B	Outfall 001	pH	weekly	Clean the probes
AIT-7503 A/B	Outfall 001	ORP	1 month	Inspection and calibration
Lab pH meter	Laboratory	pH	Once a year	3rd party Calibration
Lab TRC meter	Laboratory	ORP	Once a year	3rd party Calibration

Appendix G – Slug Discharge

Slug Discharge Components by section

AS per permit section S12.B

1. A description of a reporting system the Permittee will use to immediately notify facility management, the privately owned treatment plant operator, and appropriate state, federal, and local authorities of any slug discharges, and provisions to provide a written follow-up report within five days.
    a. Emergency contact numbers will be found in out other control plans, SPCC, SWPPP, and emergency response plan.
    b. External NPD POTW will be the control center at
        i. 360-636-6500 this number goes to the NPD comm center
            1. From this number a request will be made to contact the Environmental person on duty, this will be the
                a. Kraft Mill Foreman or the Effluent Treatment control room
    c. All events will be recorded in our Tracking system within 24 hours, a letter will be put to the file and regulator within the stated limit.
2. A description of operator training, equipment, and facilities (including overall facility plan) for preventing, containing, or treating slug discharges.
    a. These are included as attachments and listed appendix items from the Waste Water O&M
3. Procedures to prevent adverse impact from accidental spills including
    a. These are found in the Waste Water O&M, SWPPP and SPCC
4. A list of all raw materials, products, chemicals, and hazardous materials used, processed, or stored at the facility; the normal quantity maintained on the premises for each listed material; and a map showing where they are located.
    a. These are found in the SWPPP and the SPCC
5. A description of discharge practices for batch and continuous processes under normal and non-routine circumstances.
    a. These are found in the operations procedures referenced in the Waste Water O&M
6. A brief description of any unauthorized discharges which occurred during the 36- month period preceding the effective date of this permit and subsequent measures taken by Permittee to prevent or to reduce the possibility of further unauthorized discharges.
    a. These are found in the SPCC
7. An implementation schedule including additional operator training and procurement and installation of equipment or facilities required to properly implement the plan.
    a. These are posted in our capital plans when necessary. This is not public information.

Appendix H – Solid Waste Plan

Waste Stream	Handling Process
Municipal Solid Waste 80-90% of total waste	- Collected at the East Pad in covered bins - Hauled to the Cowlitz County Landfill
Construction related debris & excavation debris 5-10% of total wastes	- collected in bins & tested for mercury contamination - hauled off to landfill for negative test results - hauled through hazardous waste company if positive mercury results
Other Wastes 5-10% of total wastes	- Waste loaded by generator (Westlake or assigned contractor on special projects) into drop boxes, tubs or carts and hauled to respective third party handling treatment, disposal or hazardous landfills.

Appendix I – Stormwater Filter O&M

Stormwater O&M Manual is found on Equipment Database (F-7800)