Phase I Environmental Site Assessment (ASTM E1527-05)

Freshwater Tissue Pulp Mill APN# 401-112-021, Humboldt County, California

February 1, 2013

Prepared For: Freshwater Tissue Company

Prepared By: LACO Associates, Inc. 21 W. 4th Street Eureka, California 95501 707 443-5054

LACO Project No. 7174.20

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John M. Wellik,

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1.0 EXECUTIVE SUMMARY

LACO Associates (LACO) performed a Phase I Environmental Site Assessment (Phase I ESA) on real property located at 1 TCF Drive, Samoa, California (Figure 1). This Phase I ESA was completed in general accordance with the scope and limitations contained in the United States Environmental Protection Agency's (US EPA's) Standards and Practices for All Appropriate Inquiries (AAI) regulations (40 CFR 312), ASTM E1527-05, and the Scope of Services described between LACO and County of Humboldt Community Development Department (CHCDD), dated December 26, 2012.

The purpose of this practice is to define good commercial and customary practice in the United States for conducting an environmental site assessment of a parcel of real estate with respect to the range of contaminants within the scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. 9601) and petroleum products. As such, this practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability (hereinafter, the "landowner liability protections," or "LLPs"): that is, the practice that constitutes "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined at 42 U.S.C. 9601 (35) (B).

According to AAI standards, the objective of the inquiry is to identify conditions indicative of releases or threatened releases of hazardous substances and petroleum products to the subject property. The results of this Phase I ESA represent an opinion of the environmental condition of the property based on observations made during the site field reconnoiter on January 18 and 21, 2013, interviews of persons knowledgeable about current and past activities on the property and vicinity, interviews with regulatory authorities, review of aerial photographs and other historical sources, review of information contained in Federal, State, and local records, and our professional opinion.

ASTM 1527-05 defines the goal of the ESA process as to identify "Recognized Environmental Conditions (RECs)", or conditions indicating the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

1.1 Property Description

The legal identification of the property is Assessor's Parcel Numbers (APN) 401-112-021, and the property is located on 1 TCF Drive, Samoa, California (Figure 1). The property is located on the North Spit of Humboldt Bay and covers approximately 71.8 acres (Figure 2). The property is partially developed with asphalt/concrete paved roads and lots; there are currently office facilities, plant operations facilities, shops and stores, two pulp warehouse structures, railroad tracks, multiple above ground storage tanks (ASTs) with a variety of contents, a black liquor recovery boiler and associated vats, pond, and exhaust system, most of the recausticizing plant, a water treatment plant with clarifying ponds, a paint shop, a fueling depot, a chemical lab, an electrical substation, a capped landfill, and multiple reinforced concrete foundations from demolished buildings on the subject property (Figure 3). Currently an estimated 1.42 million gallons of black liquor, 1.27 million gallons of green liquor, and 1.20 million gallons of white liquor, and 6,200 gallons of Sulfuric Acid are stored in onsite above ground storage tanks.



Property soils comprise fine sand with minor amounts of silt, and historical fill primarily comprising fine sand and bivalve shells. Property physical settings are consistent with an aeolian depositional environment, with surrounding area topography comprising dune peaks and inter-dune troughs. The property is generally flat lying; however, there are several retaining walls located along the southeastern property boundary, adjacent to Humboldt Bay where the ground surface elevation drops in stages to the shoreline of Humboldt Bay. Low mixed vegetation covers the portions of the property not currently paved or occupied by structures. A vacant, undeveloped property owned by Samoa Properties Inc. is located adjacent to the subject property to the northwest, properties owned by Freshwater Tissue Company (FTC) are located to the north and south of the subject property, and Humboldt Bay is located to the southeast. The town of Samoa, home to 258 residents (U. S. Census), is located approximately 4,700 feet northeasterly of the subject property.

Historical land use research and anecdotal sources indicated that the property was vacant until its initial development by Georgia Pacific Lumber Company (GP) as a 500-ton/day Kraft pulp mill between 1963 and 1965; the mill began operations as a pulp mill in 1965. GP operated the plant until 1972 when it was required to divest the property to Louisiana Pacific (LP). In 1994 LP converted the site to a totally chlorine-free pulp manufacturing system. LP sold the mill to Samoa Pacific Cellulose (SPC) in the late 1990's. SPC sold the mill to Stockton Pacific Enterprises in the 2000, and it was then sold to Lapointe Partners Inc. in 2001. Evergreen Pulp purchased the property in 2005, and closed the mill in 2008. FTC purchased the property in 2009, and despite efforts to reopen the mill, began to sell assets and demolish mill structures in 2012. The mill has been inactive since 2008, and portions of the site are currently being demolished.

The site has an established history of environmental impacts to soil and groundwater resulting from operations and practices that occurred over a period of more than 40 years of pulp production. Site environmental impacts result, in part, from black liquor, petroleum hydrocarbon, and sodium hydroxide releases, and there is abundant data describing chlorinated volatile organic compound impacts to soil and groundwater. Site environmental conditions are currently being investigated under the guidance of California's Regional Water Quality Control Board. Remedial activities, generally in the form of excavation of impacted soils, have occurred at several locations, leading to the awarding of remediation completion certificates for those specific environmental conditions.

Evidence of historical onsite hazardous substance and/or petroleum product impacts to the subject property were identified over the course of this assessment.



1.2 Findings

RECs, defined in the ASTM International E 1527-05 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property, were identified at the following locations (Figure 4):

- The Black Liquor Process and Recovery Area
- The Bleach Plant
- The Recausticizing Area
- The Hot Water Tank/Former Diesel Storage Tank
- The Process Chemical Storage Area
- The Leach Field
- The Water Treatment Plant
- The Boneyard
- VOC Area Southeast
- The Off-Loading Area
- The Petroleum Hydrocarbon Storage Area
- Oil Storage Area
- Industrial Wastewater Disposal System
- Chemical Parts Washer
- Substations C and GH
- A 250-gallon diesel AST
- A chemical secondary containment area in the Process Chemical Storage Area
- Petroleum Dispenser Island
- Waste Oil AST
- A hydraulic press in Warehouse 1
- Motor mounts stained by oil in Warehouse 1
- The Compressor Room in Warehouse 1
- The Hazardous Substances Storage Area in Warehouse 2
- The Machine Shop
- The Parts Room
- The Chemistry Laboratory
- A hydraulic hoist for an elevator located in the Offices/Shops/Stores Building
- Recovery Boiler #3
- AOI-1 Welding Shop
- AOI-3 Pump House
- The Sand Blasting Shop
- Pulp Storage Warehouse Number 1
- Pulp Storage Warehouse Number 2
- Railroad Tracks
- Landfill
- Fill Material



1.3 Adjoining Properties

- The Underground Storage Tank Area, located near the chip blower on the adjoining property to the north (APN 401-112-017) is classified as a Historical REC (HREC).
- The hydraulic hoists near the chip blower are not classified as a REC for the subject property.
- The diesel fuel above ground storage tank (AST) is not classified as a REC for the subject property.
- Fiberglass Shop is classified as a REC for the subject property.

1.4 Conclusions

Multiple onsite RECs and offsite HRECs were recognized during the Phase I ESA of the property identified as APN 401-112-021, and located on 1 TCF Drive, Samoa, California. LACO recommends preparation of a Phase II ESA workplan for determination of the presence, or lack of presence, of environmental impacts related to site RECs and HRECs that are not currently being addressed by environmental consultants.



2.0 INTRODUCTION

2.1 Purpose

The purpose of this practice is to define good commercial and customary practice in the United States of America for conducting an ESA of a parcel of commercial real estate with respect to the range of contaminants within the scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. 9601) and petroleum products. As such, this practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability (hereinafter, the "landowner liability protections," or "LLPs") that is the practice that constitutes "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined at 42 U.S.C. 9601(35) (B).

LACO's review was conducted under the ASTM E1527-05 standard which includes US EPA's Standards and Practices for AAI regulations (40 CFR 312). According to AAI standards, the objective of the inquiry is to identify conditions indicative of releases or threatened releases of hazardous substances, and petroleum products to the subject property.

The results of this Phase I ESA represent an opinion of the environmental condition of the property based on observations made during the site field review on January 18 and 21, 2013, interviews of persons knowledgeable about current and past activities on the property and vicinity, interviews with regulatory authorities, review of aerial photographs and other historical sources, review of information contained in Federal, State, and local records, and our professional judgment.

2.2 Detailed Scope of Services

A Phase I ESA is conducted to evaluate the potential risk of environmental impacts to a site due to the presence of significant environmental contamination from hazardous materials and petroleum products on the site or in the vicinity. The potential for significant environmental contamination is assessed based on reasonably, ascertainable, and practically reviewable public records, historical research, a thorough site inspection, analysis of the site's physical setting, and interviews with owners, occupants, and local officials. If a potential risk does exist, the report gives an opinion of the impact of each condition indicative of releases or threatened releases of hazardous substances on the subject property.

2.3 Significant Assumptions

The following assumptions about the ESA, property history, and information were made:

- Uncertainty is not eliminated Performance of ASTM E 1527-05 is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs in connection with the property.
- The ESA is not exhaustive One of the purposes of this practice is to identify a balance between the competing goals of cost limitation and time demands inherent in performing an ESA and the reduction of certainty about unknown conditions resulting from additional information.
- The appropriate level of ESA will be guided by the type of property subject to assessment, the
 expertise and risk tolerance of the report user, and the information developed in the course of
 inquiry.
- The ESA report is valid for one year.



- Use of information appearing in prior ESAs is permissible provided information was generated as a result of procedures that meet or exceed the requirements of ASTM E 1527-05.
- All known and relevant information, knowledge, and experience have been provided by the user.

2.4 Limitations and Exceptions

This Phase I ESA has been prepared in general conformance with the US EPA's Standards and Practices for AAI regulations (40 CFR 312). The investigation and information presented in this report represents a standard of care equal to the customary practice of other professional consulting firms in the area performing Phase I ESAs.

The industry standard for implementation of AAI is contained in ASTM E1527-05, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process." In defining standards of good commercial and customary practice for conducting an ESA, the goal of this inquiry is to identify RECs. The term REC means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term is not intended to include de minimis conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

No ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with a property. Performance of a Phase I ESA is intended to reduce, but not eliminate, uncertainty regarding environmental conditions in connection with a property, while recognizing reasonable limits of time and cost

This report is not an in-depth study of site contamination and should not be interpreted as such. No subsurface investigations of soil or groundwater conditions were performed, and no sampling or chemical analyses of any materials or waters on the site were conducted. This report does not offer any legal opinion, interpretation, or representation of any Federal, State, or local environmental law, rule, regulation, or policy.

Some information contained in this report has been obtained by LACO from publicly available sources and other secondary sources of information produced by outside entities other than LACO. Although care has been taken to ensure that the information contained in this report is current and accurate, LACO disclaims any and all liability for any errors, omissions, or inaccuracies in information and data produced by such outside entities, whether attributable to inadvertence or otherwise, and for any consequences arising therefrom. LACO makes no representation or warranty of any kind, express or implied, including, but not limited to, the warranties of fitness for a particular purpose or merchantability, with respect to the data furnished.

The required search of public agency records, and environmental liens was performed by Environmental Data Resources (EDR), a private firm specializing in research of publicly available environmental records. Inquiries into publicly available information at the Humboldt County Division of Environmental Health (HCDEH), Humboldt County Building and Planning Department, and Samoa Peninsula Fire Department were also made.



2.5 Special Terms and Conditions

This Phase I ESA report documents the results and conclusions regarding the potential for site impairment by hazardous substances generated, used, or stored on the subject property and immediate site vicinity. This report has been prepared on behalf of the sole user, The Humboldt Bay, Harbor, Recreation and Conservation District (HBHRCD) hereafter referred to as Client, and assumes no responsibility with respect to its client's use or its employees', clients', or customers' use thereof. LACO shall not be liable for any special, consequential, or exemplary damages resulting in whole or in part from the client's use of the data. This report is valid solely for the purpose, site, and project described in this document. Any alteration or deviation from this description will invalidate this report.

2.6 User Reliance

The Client engaged LACO to perform this Phase I ESA in accordance with an agreement governing the nature, scope and purpose of the work. All reports are for the sole use and benefit of the Client. LACO has prepared this report for the sole use of its Client (the user), and assumes no responsibility with respect to its client's use or its employees', clients', or customers' use thereof. LACO shall not be liable for any special, consequential, or exemplary damages resulting in whole or in part from the client's use of the data.

The findings presented in this report are based upon field observations during a single property visit, review of available data, and discussions with local regulatory and advisory agencies. Observations describe only the conditions present at the time of this investigation. The data reviewed and observations made are limited to accessible areas and currently available records researched. Additionally, in evaluating the property, LACO has relied in good faith upon the representations and information provided by the individuals or firms noted in the report with respect to present operations and existing property conditions, as well as the historic uses of the subject property. It must also be understood that changing circumstances in the property usage, proposed property usage, and changes in the environmental status of other nearby properties can alter the validity and conclusions contained in this report. Therefore, the data obtained are clear and accurate only to the degree implied by the sources and methods used.

This report is valid solely for the purpose, site, and project described in this document. Any alteration or deviation from this description will invalidate this report.



3.0 SITE DESCRIPTION

3.1 Location and Legal Description

The subject site is located in Humboldt County on the eastern side of the Samoa peninsula, Samoa, California. According to information provided by Kelly-O'Hern Associates, the site occupies approximately 71.78 acres. The legal identification of the property is APN 401-112-021, and is identified on the United States Geological Survey (USGS) Topographic Maps, Eureka Quadrangle (7.5-minute series) at Township 5 North, Range 1 West, Sections 21 and 22, Humboldt Meridian (Figure 2). According to information presented on Humboldt County's Geographical Information System Portal, a narrow strip of the property, ranging between 100 to nearly 300 feet wide, along the Humboldt Bay shoreline is located within the 100-year FEMA flood zone, and the property is identified as being located within the coastal zone. The property is zoned by Humboldt County as an Industrial/Coastal Dependent/Archaeological Resource Area. The property is located outside of the Alquist-Priolo Fault Hazard Zone.

3.2 Site and Vicinity General Characteristics

The subject property is defined by the boundaries of APN 401-112-021, is roughly trapezoidal shaped, and occupies a portion of the western shoreline and tidal flats of Humboldt Bay (Figure 2). The southern property boundary of parcel 401-112-021 is approximately 2,700 feet long, the eastern boundary along Humboldt Bay is approximately 760 feet long, the northern boundary, which is shared with parcel 401-112-017, is approximately 2,400 feet long, and the western boundary is approximately 1,900 feet long, and has an area of approximately 71.78 acres (Kelly-O'Hern Associates). As reported by SHN (SHN, 2011), the site has an elevation range between 18 to 22 feet relative to North American Vertical Datum 1988 (NAVD88). Topography of the adjacent properties is relatively flat, though depressions and dunes consistent with aeolian settings are locally present. The Pacific Ocean is located approximately 500 feet west of the western property boundary.

3.3 Local Geology and Soils

Based on a review of the site and published geologic maps (USGS, McLaughlin, R.J., et al, 2000), the site is underlain by undeformed marine shoreline and aeolian deposits. Soils observed onsite comprise fine to medium sand (SHN, 2011), sand and shell mixed fill (likely from Humboldt Bay), and imported gravel fill of unknown origin; boring logs describing soils encountered at the locations of borings DP-9 and DP-26 are included as Appendix A. There are no mapped faults or structural features within the vicinity of Samoa. The nearest mapped geologic structures include a concealed syncline axis beneath Arcata Bay, located approximately three miles north, the Freshwater Thrust Fault located approximately four miles east, the Little Salmon Thrust Fault located approximately nine miles south, and a queried splay of the Little Salmon Thrust located approximately six miles south of the subject property. A drainage swale was recognized in earlier aerial photographs near the northern extent of parcel 401-112-017, and currently appears as an eastwardly trending vegetated strip.

Surface topography of the subject parcel has been modified to a flat surface, primarily by the emplacement of fill over dune sands.



3.4 Local Hydrology

The property is situated on a northeast-southwest trending peninsula bordered by the Pacific Ocean on the west and Humboldt Bay on the east. Monitoring wells installed onsite record a southeasterly hydraulic gradient at a slope of less than 0.01 foot/foot, and a range in hydraulic head between 10 and 16 feet below ground surface, and five to nine feet NAVD88 (SHN, 2012). Hydraulic properties reported for the site include a reported hydraulic conductivity range 494 to 1440 feet/day, and an estimated groundwater velocity of 5.2 to 5.5 feet/day.

3.5 Current Use of the Property

Multiple structures are present on the subject property, including offices, plant operation shops and stores, portions of the Machine Building, two warehouses, a sand blasting shop, the water treatment plant, a black liquor recovery boiler, two transformer houses, and multiple ASTs. The property is currently idle, and buildings in Black Liquor Process and Recovery Area are in the process of being demolished. The site is an active environmental investigation and remediation site, with multiple monitoring wells located throughout the site for collection of groundwater samples used for assessing groundwater quality at the site. The locations of existing and historical structures are illustrated on the Existing Conditions Map (Figure 3). Multiple subsurface environmental explorations have been conducted at the subject property since 1997 in an effort to characterize hazardous material and petroleum hydrocarbon impacts to soil and groundwater at the subject property; a bibliography of reviewed reports is included as Appendix B. The subject property has been subdivided into 10 areas of interest (AOI) by environmental consultants hired to characterize site impacts, the AOI are based upon the process being conducted (i.e. recausticizing) or the function of the area (i.e. hazardous material storage). The established AOI will be used in this report in order to simplify descriptions of RECs, and to maintain consistency with previous reporting for the subject property; the AOI for the subject property are listed below:

- AOI 1 Black Liquor Process and Recovery Area
- AOI 2 Bleach Plant
- AOI 3 Recausticizing Area
- AOI 4 Hot Water Heater/Former Diesel Storage Tank
- AOI 5 Process Chemical Storage Area
- AOI 6 Leach Field
- AOI 7 The Boneyard
- AOI 8 VOC Area Southeast
- AOI 9 Off-Loading Area
- AOI 10 Petroleum Hydrocarbon Storage Area

The adjoining property to the north (APN 401-112-017), also owned by FTC, is the location of AOI 11 – Chip Blower Area.



A description of the physical characteristics, processes/uses, and known and potential constituents of concern (COC) for each AOI are presented herein. An inventory of chemicals stored on site between 1999 and 2003 with a map identifying the storage locations, and historical tables of Constituents of Potential Concern as determined by MFG (2004) are included as Appendix C. Metals presented as COCs are dissolved-phase, and only metals with concentrations greater than the North Coast Regional Water Quality Control Board (NCRWQCB) water quality objectives (WQO) are noted. A Key to COC Terms is presented below.

Key to COC Terms					
PCE: tetrachloroethene DCE: dichloroethene TCA: trichloroethai					
TCE: trichloroethene DCA: dichloroethane p-IPT: p-isopropyl toluen					
TPHg: Total Petroleum Hydrocarbons as gasoline					
TPHd: Total Petroleum Hydrocarbons as diesel					
TPHmo: Total Petroleum Hydrocarbons as motor oil					
MTBE: Methyl-tert Butyl Ether					

AOI 1 - Black Liquor Process and Recovery Area

The Black Liquor Process and Recovery area is located in the northern portion of the subject property. According to literature from the U.S. Environmental Protection Agency (US EPA, 1999) black liquor results from the chemical pulping of wood fibers, and often contains residual cooking chemicals which can be extracted from the black liquor for reuse. The US EPA identified leaks from seals on washers, pumps and valves, and intentional diversions during shutdowns, startup, grade changes and equipment maintenance as potential mechanisms for releases of black liquor to the environment. Additionally, the US EPA identified mechanical failure, human error, tank overfilling, and intentional diversions as the most likely causes of spills. Prior to demolition efforts, the Black Liquor Process and Recovery Area comprised three recovery boilers, eight black liquor storage vessels, water storage tanks, evaporators, turpentine storage and decanting, plumbing, a trench drainage system, a reclaim liquor pond, a smoke stack, an exhaust system, and a capacitor building. Monitoring wells MW-2, MW-5, MW-5D, and MW-6 are located on the perimeter of AOI-1. COCs reported for groundwater samples collected from AOI-1 monitoring wells and borings include: TPHg, TPHd, TPHmo, benzene, toluene, p-IPT, 1,1-DCA, naphthalene, acetone, chloroform, PCE, 1,1-DCE, 1,1,1-TCA, 2-butatone, Arsenic, Chromium, and Manganese. The US EPA identified potential water pollutants as spent black liquor, turpentine, and soap. Due to the presence of petroleum products, chlorinated hydrocarbons, and metals reported for water samples, and due to the presence of plumbing joints, seals and valves that may leak, in addition to the multiple containment vessels, the reclaim liquor pond, as well as historical releases of black liquor to the soil and groundwater, the Black Liquor Process and Recovery Area is classified as a REC.

AOI 2 - Bleach Plant

The Bleach Plant, located immediately southeast of AOI-1, was once the location of 34 ASTs and five buildings; as of the preparation of this report, the majority of the Bleach Plant has been destroyed and removed; currently five ASTs and two transformer buildings are present in the Bleach Plant. The Bleach Plant was used to digest wood chips at elevated temperature and pressure using alkaline pulping liquor typically containing sodium sulfide and sodium hydroxide (US EPA) and to decrease the color of the pulp, ultimately resulting in whiter paper. The US EPA describes the three steps of the bleaching stage as mixing of pulp and



bleaching chemical, reaction of the chemical with the pulp, and washing the chemical from the pulp. ASTs in AOI-2 stored a range of alkaline materials, from brown stock, black liquor, and oxidizers to hydrochloric acid. Monitoring wells MW-5, MW-5D, MW-8, and MW-14 are located on the perimeter of, and within, AOI-2. COCs reported for groundwater samples collected from AOI-2 monitoring wells and borings include: TPHg, TPHd, TPHmo, benzene, p-IPT, 1,1-DCA, naphthalene, acetone, 1,1,1-TCA, Arsenic, Chromium, and Manganese. The US EPA identified potential water pollutants resulting from the bleaching process as chlorinated dioxins and furans, chloroform, and 12 chlorinated phenolic compounds. Two PCB bearing transformer buildings, Substation C and Substation GH, are currently located in the Bleach Plant area; the PCB-bearing transformers were removed in 1989 (FES, 2011). Due to the presence of petroleum products, chlorinated hydrocarbons, and metals reported for water samples, and due to the presence of plumbing joints, valves and seals that may leak, in addition to the remnants of multiple containment vessels, the Bleach Plant Area is classified as a REC.

AOI 3 - Recausticizing Area

The Recausticizing Area is located immediately south of AOI-1, in the northwestern portion of the subject property. Prior to the initiation of demolition efforts, the Recausticizing Area comprised of a lime mud pond, a 280-gallon diesel AST, white and green liquor clarifiers and storage tanks, a two-million gallon water storage AST, a pump house, a lime mud washer, a lime kiln, causticizers, lime silos, and an electrical substation (Substation F1, 2, 4, G1). According to the US EPA, the Recausticizing Area is used to recover process chemicals for reuse. Black liquor combusted during energy generation results in sodium sulfide and sodium carbonate residue, which is dissolved to form green liquor. Green liquor is causticized with lime, precipitating calcium carbonate and resulting in a solution of sodium hydroxide and sodium sulfide, which is then reused. Calcium carbonate is converted to quick lime in a kiln for reuse in the recausticizing process (US EPA). The US EPA notes that the primary impacts to water associated with the recausticizing process have to do with the pH of water, and that potentially regulated solid waste results from slaker grits and green liquor dregs. Monitoring wells MW-1, MW-3, MW-4, MW-15, MW-15D and MW-21D are located within, or on the perimeter of, AOI-3. COCs reported for groundwater samples collected from AOI-3 monitoring wells and borings include: TPHg, TPHd, TPHmo, toluene, ethylbenzene, xylenes, p-IPT, IPB, bis-(2-ethyl-hexyl) phthalate, acetone, styrene, Arsenic, and Manganese. Due to the presence of petroleum products and metals reported for water samples, and due to the presence of diesel ASTs, plumbing joints, valves and seals that may leak, in addition to the potential for spills and overfilling of the ASTs, the Recausticizing Area is classified as a REC.

AOI 4 - Hot Water Heater/Former Diesel Storage Tank

A 50,000-gallon fuel oil/diesel AST was located between AOI-1 and AOI-3. The diesel AST was converted in 1995 into a hot water tank. Excavation of approximately 20 cubic yards of petroleum impacted soil occurred at the time of destruction of the secondary containment for the diesel tank; an estimated 20 cubic yards of impacted soil was left in place (SHN, 2011). Monitoring well MW-4 is located within AOI-4, south of the AST. COCs reported for groundwater samples collected from AOI-4 monitoring well MW-4 and borings include: TPHd, TPHmo, and bis-(2-ethyl-hexyl) phthalate. Due to the presence of petroleum products reported for water samples, approximately 20 cubic yards of impacted soil remaining in place, and due to the presence of plumbing joints, valves and seals that may have leaked, the former diesel AST located in AOI-4 is classified as a REC.

AOI 5 - Process Chemical Storage Area

The Process Chemical Storage Area is located south of AOI-2 and east of AOI-3. This area was the location of 18 ASTs and cylinders, and four buildings prior to demolition efforts; chlorine, liquid oxygen, caustic



material, sulfuric acid, diesel fuel and chemical totes were/are stored in AOI-5. Monitoring wells MW-7, MW-15, and MW-15D are located on the perimeter of, or within AOI-5. COCs reported for groundwater samples collected from AOI-5 monitoring wells and borings include: p-IPT, 1,1-DCA, acetone, chloroform, chloromethane, Arsenic, Chromium, Chromium VI, Mercury, and Manganese. Due to the presence of petroleum products, chlorinated hydrocarbons, and metals reported for water samples, and due to the presence of plumbing joints, valves and seals that may leak, in addition to the multiple containment vessels with unknown contents, the Process Chemical Storage Area is classified as a REC.

AOI 6 - Leach Field

The Leach Field is located southeast of the Water Treatment Plant, and south of AOI-5 and AOI-7. The Leach Field was used to dispose non-process water (i.e. domestic waste water). Monitoring wells MW-16 and MW-16D are located on the northern perimeter of AOI-6. COCs reported for groundwater samples collected from AOI-6 monitoring wells and borings include: p-IPT, 1,1-DCA, cis-1,2-DCE, 1,1-DCE, 1,1,1-TCA, Arsenic, and Manganese. Due to the presence of chlorinated hydrocarbons and metals reported for water samples, the Leach Field is classified as a REC.

AOI 7 - The Boneyard

The "Boneyard", located in the central portion of the property, was used for storage of parts, scrap metal, and more recently demolition debris. Monitoring wells MW-16D, MW-17, MW-18, and MW-19 record groundwater quality in and down gradient of the Boneyard. COCs recorded for groundwater samples collected from monitoring well MW-17 include 1,1-DCE, cis-1,2-DCE, 1,1-DCA, 1,2-DCA, 1,1,1-TCA, chloroethane, and p-IPT. Soil gas results reported in 2008 for samples collected in the Boneyard included 1,1-DCE, 1,1-DCA, 1,1,1-TCA, chloroethane, and ethylbenzene. Due to the presence of chlorinated volatile organic compounds in groundwater and soil vapor, the Boneyard area is classified as a REC.

AOI 8 - VOC Area Southeast

The VOC Area Southeast is located on the southernmost portion of the property, adjacent to Humboldt Bay. Impacts in this area are not related to any known releases. The historical record indicates that an LP employee reported drums being buried in the southeastern portion of AOI-7, located adjacent to AOI-8. Geophysical surveys conducted in the area identified potential buried metal; however, exploratory excavations discovered only scrap metal and no drums (SHN, 2011). An excavation of approximately 37 cubic yards occurred in 2003 in the vicinity of SB05. Monitoring wells MW-11, MW-11I, and MW-13D, are located within AOI-8, and MW-13, MW-13I, and MW-22I are located down hydraulic gradient of AOI-8. COCs reported for groundwater samples collected from AOI-8 monitoring wells and borings, and monitoring wells located down hydraulic gradient form AOI-8 include: TPHg, toluene, p-IPT, 1,1-DCA, PCE, TCE, cis-1,2-DCE, 1,1-DCE, 1,1,1-TCA, p-IPT, carbon tetrachloride, trans-1,2-DCE, Arsenic, and Manganese. Due to the presence of petroleum products, chlorinated hydrocarbons, and metals reported for water and soil samples, and due to the presence of buried metal and the report of buried drums adjacent to AOI-8, the VOC Area Southeast is classified as a REC.

AOI 9 - Off-Loading Area

This area, located at the northwestern end of Warehouse 1 in the central portion of the property, comprises a 20 foot wide by 80 foot long covered storage area. A manifest for chemicals stored in this location was requested from FTC on January 4, however, no manifest was provided; correspondence between Stockton Pacific Enterprises and Kasey Ashley of the NCRWQCB dated April, 12, 2004, indicates that this area was primarily used for storage of used batteries and florescent light bulbs prior to disposal. COCs recorded for groundwater samples collected from monitoring well MW-9 include PCE, TCE, 1,1-DCE, cis-1,2-DCE, 1,1-DCE, 1,1-DCE,



DCA, Chloroform, 1,1,1-TCA, Acetone, p-IPT, and Vinyl Chloride. Soil gas results reported in 2008 for samples collected in the Off-Loading Area included PCE, TCE, 1,1-DFA, 1,1-DCE, 1,1-DCA, 1,1,1-TCA, chloroethane, and ethylbenzene. No dissolved metals or petroleum hydrocarbons have been reported for AOI-9. Due to the storage of hazardous materials in this area, as well as the possibility of spills during transfer or leaks during storage, and the presence of chlorinated volatile organic compounds in groundwater, the off-loading area is classified as a REC.

AOI 10 - Petroleum Hydrocarbon Storage Area

Located north of AOI-9, near the northern property boundary, the petroleum hydrocarbon storage area comprised four ASTs and the associated dispenser plumbing. The ASTs include a 1,000-gallon unleaded gasoline, a 400-gallon unleaded gasoline, 1,000-gallon diesel, and a 1,000-gallon waste oil AST all set in concrete secondary containments. The dispensing area is present in the 1969 aerial photograph, providing evidence that the ASTs were present at that time. Product dispensing plumbing is susceptible to developing leaks, and surface spills at refueling locations are frequent occurrences. Groundwater monitoring results reported for monitoring well MW-10, located within AOI-10 and down hydraulic gradient from the UST cavity, reported PCE, TCE, 1,1-DCE, cis-1,2-DCE, 1,1-DCA, 1,1,1-TCA, chloroform, and p-IPT; samples collected from MW-10 have been reported below detection limits for petroleum products. Historical soil sample analytical results record low levels of diesel range petroleum hydrocarbons for samples collected from approximately 4 feet below ground surface; oil and grease, and gasoline-range material were reported below laboratory detection limits. Due to the potential for petroleum product releases through spills and leaks, the presence of multiple ASTs and the associated plumbing, and due to the reporting of chlorinated hydrocarbons in groundwater samples collected from MW-10, the Petroleum Hydrocarbon Storage Area is classified as a REC.

Non – Area of Interest RECs

Water Treatment Plant

The Water Treatment Plant is located south of AOI-3, near the southwestern extent of the subject property. The Water Treatment Plant comprises a building with offices and control panels, water filters, water softeners, and a sodium hypochlorite storage tank. Mr. Charles Benbow noted that the water treated at the pulp mill plant was pumped from the Mad River to the site to be processed in the water treatment plant, and then was used in the pulp production process. He indicated that water used for domestic purposes at the site is supplied by Humboldt Bay Municipal Utility District. There are no monitoring wells located at the Water Treatment Plant. Historical borings DP-13, located easterly of the Water Treatment Plant, and DP-29, located south of the open water clarifiers, are the most proximal data points to the Water Treatment Plant. Groundwater samples from DP-13 were analyzed for metals concentrations, and the results were reported below NCRWQCB WQO, and groundwater samples from DP-29 were analyzed for metals concentrations, and only Manganese was reported above WQO. The US EPA identified the following pollutants of concern as being associated with Kraft pulp mills: Biological Oxygen Demand, total suspended solids, color, chemical oxygen demand, chloroform, dioxins, furans, chlorinated phenolic compounds, and adsorbable organic halides. Though the Water Treatment Plant is not in of itself classified as a REC, elements observed within the Water Treatment Plant were classified as a REC, and are discussed in the Observations portion of the site reconnaissance section.

Industrial Wastewater Disposal System

Industrial wastewater, generated in the pulping process (pulping, bleaching, drying, chemical recovery, power generation, etc.) and during site maintenance, as well as storm water runoff, is disposed through a subsurface drainage system servicing the interior portions of the Black Liquor Process and Recovery Area



(AOI-1) and the Bleach Plant (AOI-2), and underlying the service roads around and between the Recausticizing Area, the Process Chemical Storage Area, between AOI-1 and AOI-2, and between the Bleach Plant and the Machine Building and the Offices/Shops/Stores Building. Industrial and storm water from the site passes through Manhole No. 5, located at the far northern portion of the pulp mill, near Monitoring Station 106, and is released to the water of the Pacific Ocean through a diffuser located approximately 1.5 miles offshore. A schematic of the drainage system was presented in a Technical Memorandum (SHN, 2011) dated August 30, 2011. The presence of detectable concentrations of regulated chemicals leads to the classification of the Industrial Wastewater Disposal System as a REC.

Fiberglass Shop

The Fiberglass Shop is located at the eastern end of Warehouse 1, between Warehouse 1 and Humboldt Bay. Mr. Charles Benbow indicated that the Fiberglass Shop is located on Humboldt Bay, Harbor, Recreation Conservation District property and not FTC property, and was used to fabricate fiberglass pipes, roofing, and walkway grates. "Activities at fiberglass fabrication operations include mold preparation, gel coating, laminating, equipment cleaning, systems operations, and finishing operations. Paints, thinners, solvents, and adhesives are frequently used in regular operations in fiberglass shops (US EPA). There is no historical analytical data for the Fiberglass Shop area. Based on the presence, storage and use of thinners, solvents, and adhesives, and based on the potential for releases by spilling, leaking or during use and transfer, the Fiberglass Shop is classified as a REC.

Sand Blasting Shop

The Sand Blasting Shop is located southwesterly of the Fiberglass Shop, between Warehouse 1 and Humboldt Bay. This location is currently being used to mill lumber on a small scale. "Abrasive blasting is the use of abrasive material to clean or texturize a material such as metal or masonry (US EPA)." Sand blasting at the property may have resulted in the release of particulate metals from paint or metallic surfaces, leading to potential metal (lead, chromium) impacts to soil quality. Due to the potential for impacts to soil quality the Sand Blasting Shop is classified as a REC.

Pulp Storage Warehouse 1

Located on the eastern portion of the property, Pulp Storage Warehouse 1 was used to store processed pulp prior to shipping. Pulp Warehouse 1 is currently being used to store mill related items such as vehicles, cabinets, industrial equipment, chemicals (i.e. spill kits). Mr. Charles Benbow noted that the southeastern end of Warehouse 1 contained railroad tracks below the grade of the warehouse floor for loading pulp on to rail cars, and that the area at one time contained abundant debris such as tires and other mill related garbage; the debris has been removed. Groundwater and soil samples collected from the perimeter of, and from within the building recorded chlorinated hydrocarbon impacts. Due to the presence of chlorinated hydrocarbons in groundwater beneath Warehouse 1, Warehouse 1 is classified as a REC.

Pulp Storage Warehouse 2

Located on the eastern portion of the property south of Pulp Warehouse 1, Pulp Storage Warehouse 2 was used to store processed pulp prior to shipping. A hazardous materials store room was observed at the western end of Warehouse 2. Groundwater and soil samples collected from the perimeter of, and from within the building recorded chlorinated hydrocarbon impacts. Due to the presence of chlorinated hydrocarbons in groundwater beneath Warehouse 2, Warehouse 2 is classified as a REC.



PG&E Inter-tie Substation AA

Aerial photographic evidence indicates that Substation AA, located northwesterly of AOI-1, was built sometime after 1969. There are no known environmental issues associated with Substation AA.

<u>Landfill</u>

A 36-acre unlined Class III landfill containing process waste (i.e. slaker grits, pulp rejects, and wood chips), construction debris, and ash from pulp mill operations, and capped by low-permeability bay dredge spoils, is located on the western extent of the property, between Vance Avenue and New Navy Base Road. The California State Water Resources Control Board identifies Class III landfills as locations suitable for storage of nonhazardous solid wastes (i.e. household wastes, construction and non-regulated demolition debris, etc.). The landfill was operational between 1970 and 1997. Sand dunes provide a topographic barrier between the landfill and the main pulp mill site, resulting in overland flow towards the west. Reported groundwater flow directions have been variable over the most recent annual reporting cycle (i.e. southeasterly, westerly, southwesterly, and south) and is interpreted to be seasonal (Dave Parson, personal communication). The landfill is monitored by the NCRWQCB under Waste Discharge Requirements Order Number R1-2003-0064 (ID No. 18730610HUM), included as Appendix D. Arsenic was reported at 100 µg/L for monitoring well MW-3 (LF) in May, 2012; this concentration exceeds the NCRWQCB WQO for arsenic, therefore the Landfill is classified as a REC.

Railroad Tracks

Tracks traverse a portion of the property. Product transfer to and from the rail cars provides opportunity to spill liquids, and hydraulic components on railcars have the potential to leak fluids. Due to the potential for spills and leaks the railroad tracks are classified as a REC.

Fill Material

Evidence, in the form of bivalve shells and retaining walls, was observed indicating that the ground surface of the subject property has historically been modified to a generally flat-lying surface which is elevated above the native ground surface by the emplacement of Humboldt Bay-derived fill material (dredge tailings). Due to the use of Humboldt Bay dredge tailings, which may be impacted by dioxins, heavy metals, and petroleum products, for fill material leads the fill being classified as a site wide REC.

3.6 Descriptions of Structures, Roads, Other Improvements on the Site

Structures – Nineteen structures, comprising eighteen buildings and one water tower, are currently present on the property. Descriptions of the structures, identified on Figure 3, and notes are presented below:

- 1) Pulp Warehouse 1 a 385-foot by 160-foot one-story structure located in the south-central portion of the property, used for pulp storage and shipping. Contains a pulp packaging area, electrical substations, and a compressor room at the western end of the building.
- 2) Pulp Warehouse 2 a 385-foot by 85-foot, and 345-foot by 85-foot one-story structure located in the south-central portion of the property, used for pulp storage and shipping. Hazardous material and electrical motor storage areas are located at the northwestern end of the building. The southwestern exterior of the building has storage sheds built on to it that are a combined 250-feet long by 30-feet wide.
- 3) Machine Building a 400-foot by 80-foot two-story building where raw pulp was compressed by rollers into finished product. Pools for collection of liquids and other materials generated by the pulp compression process are present in the floor of the Machine Building. Much of the interior of the structure has been dismantled.



- 4) Offices, Shops, and Stores a 335-foot by 115-foot two-story building located in the central portion of the property that served as the Plant Operations Building. This location housed the trades shops, tool storage, and chemistry lab.
- 5) Engineering Office attached to the Offices, Shops, and Stores Building, the Engineering Office is a one-story 85-foot by 40-foot structure that contained offices.
- 6) Bleach Plant Transformers Two 75-foot by 20-foot two-story structures that house PCB-bearing transformers.
- 7) Generator Building located easterly of the Recovery Boiler Building, the 85-foot by 50 –foot, three-story Generator Building houses a 25 Kilowatt General Electric generator and control panel.
- 8) Capacitor Building located northerly of the Generator Building.
- 9) Recovery Boiler #3 located in the northwestern portion of the property, the 95-foot by 85-foot, 13-story Recovery Boiler was used to burn organic matter from the black liquor in order to reclaim chemicals used in the digesting process, and to create steam for power generation.
- 10) AOI-1 Substation JJ located south of the Recovery Boiler, the 55-foot by 20-foot two-story tall structure contains electrical switching equipment.
- 11) Monitoring Station 106 located in the northwestern portion of the property, north of the Recovery Boiler, 11) Monitoring Station 106 is a 30-foot by 15-foot one-story structure.
- 12) PG&E Inter-tie Substation AA located westerly of the Recovery Boiler, the 100-foot by 60-foot fenced compound contains modern non-PCB bearing electrical equipment.
- 13) Pump House located adjacent to the 2-million gallon water storage tank, the 55-foot by 35 foot one-story structure houses water pumps and a generator.
- 14) Substation F1, 2, 4, G1– located on the northern side of AOI-3, the 50-foot by 20-foot two-story tall structure contains electrical switching equipment.
- 15) Water Treatment Plant located south of AOI-3, the 70-foot by 55-foot one-story building houses pumps, control panels, offices, and chemicals used for treatment of water extracted from the Mad River for industrial uses.
- 16) Off-Loading Area located on the northwestern end of the exterior of Pulp Warehouse 1, this 80-foot by 20-foot area reportedly was the storage location of hazardous materials.
- 17) Fuel Depot a 30-foot by 25-foot covered concrete containment of three 1,000-gallon ASTs and one 400-gallon AST; product plumbing to the dispensers is underground.
- 18) Sandblasting Shop located at the eastern end of Pulp Warehouse 1, the 55-foot by 27-foot one story structure was the location where sandblasting occurred. The structure is currently used as a small scale-lumber mill.
- 19) Black Liquor Sludge Sheds three small sheds located in the Process Chemical Storage Area, the Bleach Plant and the Recausticizing Area containing black liquor sludge. The previous uses of these sheds are unknown.

Roads – entry to the property from the north is by an asphalt road, TCF Drive, extending southeasterly from Vance Avenue, an asphalt-paved road. Multiple asphalt-paved service roads are present on the site. A large asphalt-paved surface is present south of the Machine Building in AOI-7. In an effort to minimize damage to road surfaces during building demolition, approximately two feet of road base was placed on top of the existing road surfaces near AOI-1.

Fire Water Tower – a steel water tower is located in the central portion of the property, near the personnel office building.



3.7 Heating/Cooling System

Heating systems observed during the January 2013 site reconnaissance were either electrical space heaters or natural gas-fueled furnaces. Cooling systems observed during the January 2013 site reconnaissance were electrically powered.

3.8 Wastewater Disposal

Sanitary wastes resulting from employee washrooms and restrooms is collected in a 10,000 gallon septic tank, located northerly of the Process Chemical Storage Area chemical secondary containment area, prior to discharge to a leach field. Industrial wastewater, generated in the pulping process (pulping, bleaching, drying, chemical recovery, power generation, etc.) and during site maintenance, as well as storm water runoff, is disposed through a subsurface drainage system servicing the interior portions of the Black Liquor Process and Recovery Area (AOI-1) and the Bleach Plant (AOI-2), and underlying the service roads around and between the Recausticizing Area, the Process Chemical Storage Area, between AOI-1 and AOI-2, and between the Bleach Plant and the Machine Building and the Offices/Shops/Stores Building. Industrial and storm water from the site passes through Manhole No. 5, located at the far northern portion of the pulp mill, near Monitoring Station 106, and is released to the water of the Pacific Ocean through a diffuser located approximately 1.5 miles offshore.

3.9 Potable Water Source

Potable water for domestic uses is provided by the Humboldt Bay Municipal Water District.

A water treatment plant is present onsite for treating water extracted from the Mad River for onsite industrial uses.

3.10 Area Radon Information

The Federal EPA Radon Zone classification for Humboldt County is Zone 3. Zone 3 counties have a predicted average indoor radon screening level of two picocuries per liter (pCi/L) to four pCi/L. Each zone designation reflects the average short-term radon measurement that can be expected to be measured in a building without the implementation of radon control methods. The radon zone designation of the highest priority is Zone 1, with Zone 3 being the lowest.

Radon records for the County reveal an average of greater than, or equal to, two pCi/L, and less than, or equal to, four pCi/L for average activity areas. On January 10, 2001, ASTM International approved the Standard Practice for Radon Mitigation Systems in Existing Low-Rise Residential Buildings (ASTM E2121-01, March 2001), as a voluntary standard of practice. EPA's Indoor Environments Division's Radon Program is proposing to incorporate ASTM E2121-01 by reference into its "Radon Mitigation Standards".

The County Zone 3 designation is below the established standards for Radon by both ASTM E2121-01 and those of the EPA (Appendix E).



4.0 CURRENT USES OF THE ADJOINING PROPERTIES

Current uses of the adjacent property are as follows:

North: idle chip dump related to subject property operations, owned by FTC

South: unoccupied open space, owned by FTC

East: Humboldt Bay

West: undeveloped open space, owned by Samoa Properties Inc.



5.0 USER PROVIDED INFORMATION

Interviews consisted of completing the ASTM E-1528 transaction screen questionnaire and the ASTM E-1528-05 user questionnaire. A copy of the transaction screen questionnaire is contained in Appendix F. Users supplied or authorized information is also presented below.

5.1 Title Records

The titleholder of the property was identified as the Freshwater Tissue Company, LLC. Documents indicate that title was received from the Evergreen Pulp, Inc. (Deed dated 01/15/2009). In February 2009, Samoa Acquisition Corp. acquired the Samoa pulp mill assets from Evergreen Pulp Inc., which had bought it in 2005 but shut it down when the pulp market declined. Samoa Acquisition intended to convert the operations into an integrated pulp and tissue mill. The company name was thus changed to Freshwater Tissue Co. Prior titleholders include Simpson Samoa Company acquired from Louisiana Pacific Samoa Inc. by the deed dated 06/11/1999. Louisiana Pacific Samoa Inc. acquired title from Louisiana Pacific Corporation by the deed dated 01/13/1998. A copy of these deeds are included as Appendix G.

5.2 Environmental Liens or Activity and Use Limitations

LACO obtained an EDR Environmental Lien Report (Appendix H). The EDR Environmental LienSearchTM Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls. A network of professional, trained researchers, following established procedures, uses client supplied address information to:

- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

Included in the Environmental Lien Report is the Grant Deed for the subject parcels. According to the EDR report, no environmental liens or other Activity and Use Limitations were found.

5.3 Specialized Knowledge

LACO staff relied on two specialized reports in the preparation of the assessment. They include SHN, 2012. Site Investigation and Second Half 2012 Groundwater Monitoring Report, Former Louisiana-Pacific Pulp Mill, One TCF Drive, Samoa, California and Conceptual Site Model, Former Louisiana-Pacific Pulp Mill, One TCF Drive, Samoa, California. The data in these reports constitute specialized knowledge as they involved environmental professionals as defined in §312.10 of 40 CFR 312. Mr. Jim Lund provided estimated 1.42 million gallons of black liquor, 1.27 million gallons of green liquor, and 1.20 million gallons of white liquor, and 6,200 gallons of Sulfuric Acid are currently stored in onsite above ground storage tanks.



5.4 Commonly Known or Reasonably Ascertainable Information

It is commonly known and therefore reasonably ascertainable that the subject site has been known to have discharged hazardous materials. This pretense is based on numerous local newspaper articles and other media reports.

5.5 Valuation Reduction for Environmental Issues

Based on interviews with the Owner and potential buyer a relationship of the purchase price to the fair market value of the property if it were not contaminated has not been established.

5.6 Owner, Property Manager, and Occupant Information

The property owner is Freshwater Tissue Company, LLC Co (FTC). Management of the site is performed by Mr. Charles Benbow. The site is currently in various stages of demolition and recycling of reclaimed materials.

5.7 Reason for Performing Phase 1

The County of Humboldt Community Development Department contracted this Phase I ESA to provide an assessment of the environmental condition of the subject property through the US EPA Brownfields Sustainability Pilots program.



6.0 RECORDS REVIEW

6.1 Standard Environmental Record Sources

ASTM E-1527-05 requires "All obvious uses of the property shall be identified from the present back to the property's obvious first developed use, or back to 1940, whichever is earlier. This task requires reviewing only as many of the standard historical sources as are necessary, and that are reasonably ascertainable and likely to be useful "(ASTM E-1527-05 Section 7.3.2 Page 11).

A search of Federal, State, and Tribal environmental records for the subject property and on properties within minimum search distances specified by USEPA AAI regulations and ASTM standards was compiled by EDR, dated December 18, 2012 (Appendix E). The following standard environmental record sources were reviewed using the approximate minimum search distance from the property as listed.

Table 1 – Federal, Tribal and State Record Sources

Agency	Database	List	Information on Database	Minimum Search Distance (in miles)
USEPA	National Priorities List	NPL	Federal Superfund sites	1.0
USEPA	Delisted NPL Site List	Delisted NPL	Sites deleted from the NPL	1.0
USEPA	Comprehensive Environmental Responsibility Compensation and Liability Information Systems	CERCLIS	Potential hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies, and persons, pursuant to Federal Superfund legislation. These sites include facilities in the screening and assessment phase for possible inclusion on the NPL.	0.5
USEPA	Comprehensive Environmental Responsibility Compensation and Liability Information Systems – No Further Remedial Action Planned	CERCLIS - NFRAP	CERCLIS sites where no further remedial action is planned.	0.5
USEPA	Resource Conservation and Recovery Act (RCRA) Corrective Action Report	RCRA CORRACTS	Hazardous waste handlers with corrective action activity under RCRA.	1.0
USEPA	RCRA Generators List	RCRIS	Sites which generate, store, treat, and/or dispose hazardous waste as defined under RCRA.	0.25
USEPA	Emergency Response Notification Systems	ERNS	Reported releases of oil and hazardous substances.	Property and adjoining property
Cal-EPA	Annual Workplan Sites (AWP)	State/Tribal equivalent	California Department of Toxic Substances Control (DTSC) workplan hazardous substances sites targeted	1.0



Agency	Database	List	Information on Database	Minimum Search Distance (in miles)
		to NPL	for cleanup.	
Cal-EPA	DTSC Properties Needing Further Evaluation (Cal-NFE)	State/Tribal equivalent to CERCLIS	Properties where contamination is suspected, but unconfirmed, and requiring further assessment.	0.25
California Integrated Waste Management Board	Solid Waste Information System (CA SWF/LF)	State/Tribal landfill and/or solid waste disposal	California active, closed, and inactive landfills.	0.5
CRWQCB – North Coast Region 1	Active Leaking Underground Storage Tanks List (CA_LUST REG 1)	State leaking USTs	LUSTs identified in Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, and Trinity counties.	0.5
State Water Resources Control Board	Active Underground Storage Tank Facilities (CA UST)	State registered USTs	Active UST facilities gathered from local regulatory agencies.	0.25
USEPA	Leaking Underground Storage Tanks on Indian Land	Indian LUST	LUST facilities on Indian land in California.	0.5
USEPA	Underground Storage Tanks (UST) on Indian Land	Indian UST	UST facilities on Indian land in California.	0.25
Cal-EPA	Voluntary Cleanup Program Properties	VCP	Low-level threat properties where project proponents have requested DTSC involvement.	0.5
USEPA	Engineering Controls Site List	US Eng Controls	List of sites with engineering controls in place.	0.5
USEPA	Institutional Controls Site List	US Inst Controls	List of sites with institutional controls in place.	0.5
USEPA	Brownfields Site List	US Brownfields	Listing of Brownfields properties.	0.5

These databases identify minimum environmental records searched. LACO has also reviewed the results of over 30 additional databases identified by EDR; the list of records, search distances, and results, which are included in their report and may be viewed upon request. Information received from EDR was checked by LACO for accuracy of location and geographic relationship to the subject property. Twenty seven listings in the EDR report were "orphans" having an undefined location and; therefore, could not be accurately mapped. These orphan listings were reviewed by LACO for location and relevance or risk to the subject property; of the orphaned sites, only two were located on the Samoa peninsula. See Pages one through four of the Executive Summary in the EDR report for a list of all acronyms and associated descriptions.



6.2 Record Listings for the Site

The subject property was listed in the following databases searched by EDR on December 18, 2012:

- Emergency Response Notification System (ERNS)
- California Hazardous Material Incident Report System (CHMIRS)
- Hazardous Waste Information System (HAZNET)
- Toxic Substances Control Act (TSCA)
- Above Ground Storage Tank (AST)
- Facility Index System/Facility Registry System (FINDS)
- Integrated Compliance Information System (ICIS)
- National Pollutant Discharge Elimination System (NPDES)
- Spills, Leaks, Investigations, and Cleanup Program (SLIC)
- Certified Unified Program Agencies (CUPA)
- Resource Conservation Recovery Act Large Quantity Generator (RCRA-LQG)
- CORTESE
- ENF
- EMI

6.3 Relevant Record Listings for Surrounding Properties

Twelve facilities were identified by EDR within the one-mile search radius, as specified in ASTM and AAI standards. However, four of the facilities were identified on the Samoa Peninsula, and eight of the identified facilities are located on the opposite side of Humboldt Bay from the Samoa Peninsula. Facilities located cross gradient or up gradient of the site may have the potential to impact subsurface site soils and groundwater. Facilities located on the opposite side of Humboldt Bay from the Samoa Peninsula are interpreted to present no risk to the subject property and are not discussed in this report. The facilities identified on the Samoa peninsula are listed below.

1. Samoa Processing Facility

A HAZNET case, the Samoa Processing Facility site is located at 555 Vance Avenue, approximately 3,200 feet west-southwest of the subject parcel. HAZNET identifies the constituent of concern as household waste. The site is an idle storage, bulking and transfer station for recyclable materials. No other actions or reporting have been identified for this site. Due to the nature of operations as a recycling center of household waste, the current idle status of the site, and the distance and orientation of the Samoa Processing Facility relative to the property, the Samoa Processing Facility is not classified as a REC for the subject property.

2. Louisiana Pacific/Samoa Pulp Mill Chip

A LUST case, the Louisiana Pacific/Samoa Pulp Mill Chip site is located north of the subject property, on a parcel owned by FTC. A gasoline Underground Storage Tank (UST) case, the UST and impacted soil were excavated and hauled offsite. The environmental site received a remedial action completion certificate in 2003. Reporting for the site noted that impacted soil was left in place. Due to closed regulatory status of the site, historical soil and groundwater impacts by petroleum products, the distance and orientation of the site relative to the subject property (approximately 400 feet north), and based on groundwater flow direction to the southeast, this site is considered a historical REC (HREC).

3. North Coast Export Company



The North Coast Export Company is listed in the following data bases: NPDES, CA FID UST, SLIC, SWEEPS UST, and CA WDS. The site is the location of three listed USTs, including one 10,000 gallon diesel, one 8,000 gallon diesel, and one 520 gallon leaded gasoline. The site is also listed for stormwater runoff impacts. Due to the orientation and distance of the site relative to the subject property (approximately 0.5 miles south and topographically lower), and the anticipated groundwater gradient to the southeast, the North Coast Export Company site is not classified as a REC for the subject property.

4. Simpson Paper Company – Fairhaven Pulp Mill

A Notify 65 site, no information was provided for this site. Due to the orientation and distance of the site relative to the subject property (approximately 0.7 miles south southwest), the Simpson Paper Company – Fairhaven Pulp Mill site is not classified as a REC for the subject property.

6.4 Orphaned Sites

EDR identified 27 "orphaned" sites during the standard environmental records search, of these only two were located on the Samoa Peninsula; sites not located on the Samoa Peninsula were disregarded due to the low probability of impacting the subject property. Typically, orphaned sites result from poor address controls, and are often duplicated in record searches. The following sites were reported as orphaned sites, and are located on the Samoa peninsula:

- Lorenzo's Shell, located on Vance Avenue, Samoa, California, identified by EDR in the SWEEPS UST database.
- Fairhaven Substation, 180 Vance Avenue, Samoa, California, identified by EDR in the AST database.

Due to the distance of the orphaned sites relative to the subject site, the local groundwater gradient, site regulatory status, and contaminant types, the orphaned sites are not anticipated to impact conditions on the subject property, and are not considered a REC for the subject property.



6.5 Aerial Photographs

Aerial Photographs

Historical Aerial Photographs provided by EDR were reviewed (Appendix I), as were aerial photographs from the Humboldt State University Library Humboldt Room Photograph Collection. The following table summarizes findings of the photograph review:

Table 2 – Historical Aerial Photographs

Date	l		
Photo Taken	Photo Scale	Photo Condition	Description
1940	1" = 500'	fair	The photograph captures the entire property, which at this time appears vacant and undeveloped. Vance Road and the railroad are visible. The southern portion of the Hammond Lumber Company is visible.
1954	1" = 500'	good	The property appears vacant and undeveloped in this photograph. Vance Road and the railroad are visible. The southern portion of the Hammond Lumber Company is visible. Dry stack storage has been developed on the adjoining property to the northeast. Bay Street and one structure have been developed south of the property.
1969	1" = 500'	good	The subject property appears fully developed. LP Drive, parking lots, office structures, chip blowers, conveyors, and silos, the bleach plant, black liquor processing area, recausticizing area, water treatment plant, chemical storage, ship dockage, and chip storage yard are present. Several indiscernible items are located in the "Boneyard" area, proximally to the warehouse. A lumber mill with dry stack areas has been developed on the adjoining property to the northeast. Vance Avenue is apparent.
1974	1" = 500'	poor, blurry image	Onsite changes from the 1969 photograph are not discernible. New Navy Base Road has been built. Chip dump area added along northeastern property boundary, and the pier has been extended. Several indiscernible items located in the "Boneyard" area, proximal to the warehouse. Poor image quality limits interpretation.
1982	1" = 500'	fair, dark	No discernible onsite changes from the 1974 photograph. Indiscernible items located in the "Boneyard" area, primarily near Warehouse 2. A chip dump and pier appear for the first time on the property two parcels south of the subject property.
1988	1" = 500'	fair	No discernible changes from the 1982 photograph. "Boneyard" area obscured.
1990	1" = 500'	fair	No discernible changes from the 1982 photograph. "Boneyard" area obscured.



Date Photo Taken	Photo Scale	Photo Condition	Description
2003	variable	excellent	No discernible changes in mill infrastructure, "Boneyard" area has multiple indiscernible items located throughout the area. Chip/pulp piles extend from southern extent of warehouses. Google Earth Image Date May 7, 2003.
2005	1" = 500'	good	No discernible changes in mill infrastructure, "Boneyard" area has multiple indiscernible items located throughout the area. Chip piles located south of the machine building.
2009	variable	good	Mill is idle in photograph. All wood chips are gone, site infrastructure appears unchanged from 2005 photograph. Multiple indiscernible items are located throughout the "Boneyard" area and the property. Google Earth Image Date May 24, 2009.
2012	variable	excellent	Site is in the process of being dismantled. Structures remaining include portions of the black liquor recovery area, the recausticizing area, the offices, shops and stores, the pulp storage warehouses, the water treatment plant; portions of the bleach plant and process chemical storage areas have been demolished. Google Earth Image Date August 23, 2012.

6.6 Humboldt State University Library - Special Collections

The Humboldt Room Photograph Collections of the Humboldt State University Library – Special Collections were accessed online on December 18, 2012. Database searches using key words Fairhaven, pulp mill, Samoa, Georgia, Louisiana and Pacific were conducted and the results were reviewed for relevant information. Photographs reviewed from the Boyle Collection were dated 1968 and included the fully constructed Georgia Pacific Pulp Mill. The subject property was identified in two photographs from the Shuster Collection dated 1948 and 1955, at which time the subject property was undeveloped.

The 1924 Belcher Abstract and Title Company Atlas of Humboldt County was reviewed. The property in 1924 was undeveloped sand dunes. According to the Belcher atlas, the subject property was owned by McClellan, Hammond Lumber Company, McCormack and Lucke.

6.7 Fire Insurance Maps

EDR certified that the complete holdings of the Sanborn library had been searched, and that fire insurance maps for the target property were not found. The Sanborn Search certification is included as Appendix J.



6.8 Property Tax Files

A Property Tax Map inquiry was performed by EDR on December 18, 2012. The Property Tax Map Report is included as Appendix G.

6.9 Recorded Land Title Records

The titleholder of the property was identified as the Freshwater Tissue Company, LLC. Documents indicate that title was received from the Evergreen Pulp, Inc. (Deed dated 01/15/2009). In February 2009, Samoa Acquisition Corp. acquired the Samoa pulp mill assets from Evergreen Pulp Inc. The company name was changed to Freshwater Tissue Co. Prior titleholders include Simpson Samoa Company acquired from Louisiana Pacific Samoa Inc. by the deed dated 06/11/1999. Louisiana Pacific Samoa Inc. acquired title from Louisiana Pacific Corporation by the deed dated 01/13/1998. A copy of these deeds are included as Appendix G.

6.10 USGS Topographic Maps

Historical Topographic Maps of the site and surrounding area were reviewed (Appendix K). The following table summarizes findings of the review:

Table 3 – Historic Topographic Maps

Table 0	This one Topographic Maps				
Map Year	USGS Quadrangle	Minute	Description		
1947	Eureka	15	The subject property is shown as undeveloped, much of the town of Samoa is observed including Vance Avenue and the Hammond Lumber Railroad. One structure is seen near the southern property extent.		
1951	Eureka	15	Subject property is shown as undeveloped. Bay Street has been built south of the subject property, and a structure has been built north of Bay Street. The New Navy Base Road has not been constructed.		
1958	Eureka	7.5	The subject property is depicted as undeveloped dune sands. Road construction and building development has occurred around Bay Street, south of the subject property.		
1959	Eureka	15	There are no discernible changes from the previous map.		
1972	Eureka	7.5	The subject property is observed as a fully developed industrial property. TCF Drive, tank farms, and various structures are present onsite. The New Navy Base Road and State Route 255 are present.		

6.11 City Directories

EDR conducted a review of city, cross-reference and telephone directories at five year intervals for the subject property and properties within 1,320 feet of the subject property. EDR reported that the subject property and adjoining properties were not identified in the research source (Appendix L). Based on the subject property being undeveloped prior to 1963, and the established site history since the initial development, the lack of city directory information is not considered a data gap.



6.12 Additional Environmental Sources

A search historical records pertaining to the property was requested from the following local environmental sources. The dates of the requests and search results are presented herein.

6.12.1 Humboldt County Division of Environmental Health

The Humboldt County Division of Environmental Health (HCDEH) was contacted by John Wellik via telephone on December 18, 2012, to provide a records search for the subject parcel. Office personnel at the HCDEH stated that the property was found in Community Right-to-Know, Underground Storage Tank, Hazardous Waste, Local Oversight Program, and Regional Water Quality Control Board (RWQCB) files. There were no other records for the site found on file with the HCDEH.

6.12.2 Samoa Peninsula Fire District

A file review request was made by John Wellik by electronic mail on December 18, 2012, to the Samoa Peninsula Fire District. The Samoa Peninsula Fire District reported on December 18, 2012, that the department's files contained no records for the subject property (Appendix M).

6.12.3 Humboldt County Planning and Building Department

The Humboldt County Planning and Building Department was contacted by L. Robert Ulibarri on January 28, 2013 to provide a records search for the subject parcel. A computer records search of files dating to 1990 found no records for this parcel. In the opinion of the environmental professional, a search to this date was reasonable due to the demolition of the property at the current time (indicating no new recent construction and that previously constructed buildings are in the process of demolition), and that the abundance of historical information for this site reduces potential data gaps.

6.13 Physical Setting Sources

The following physical setting sources were utilized to describe the site setting:

- U.S. Geological Survey 7.5 Minute Topographic Map of the Eureka Quadrangle (1972 photorevised).
- U.S. Geological Survey Miscellaneous Field Studies Map MF-2366 Geology of the Cape Mendocino, Eureka, Garberville, and Southwestern Part of the Hayfork 30x6- Minute Quadrangles and Adjacent Offshore Area, Northern California, 2000.
- 2011 Conceptual Site Model, One TCF Drive, Samoa, California RWQCB Case No. 1NHU892 (SHN, 2011)



6.14 Historical Use Information on the Property

Historical land use research, anecdotal sources, and interviews with stakeholders (Appendix E) indicate that the subject property was vacant and undeveloped until a 500-ton/day bleached Kraft pulp mill was constructed by GP between 1963 and 1965. The pulp mill was operational between 1965 and 1994, at which time the mill was converted to a total chlorine free process. The mill site underwent ownership change in 1973 when GP was forced to divest the mill site to LP. The property was under multiple ownership regimes between the late 1990's and 2009, when it was purchased by the current owner, FTC. FTC scuttled plans to reopen the mill in 2010, and began the process of dismantling the mill and liquidating mill assets. Buildings and features historically located on the subject property include office structures, pulp warehouses, shops, stores, a machine building, a sand blasting shop, petroleum product distribution and storage, a hazardous waste storage area, multiple diesel ASTs, a chemical storage farm, a water treatment plant and leach field, a recausticizing area, a black liquor processing area, a bleach plant, a chip conveyor, and an outdoor storage area referred to as the "boneyard". Locations of historical buildings noted above are presented on Figure 3. As noted previously, site structures are currently being demolished, and at the time of the preparation of this report, the bulk of the bleach plant, multiple above ASTs in the black liquor processing, recausticizing and chemical storage tank farm areas, and portions of the chip conveyor have been removed (Figure 3).

The following RECs were identified on the subject property (Figure 4):

- The Black Liquor Process and Recovery Area
- The Bleach Plant
- The Recausticizing Area
- The Hot Water Tank/Former Diesel Storage Tank
- The Process Chemical Storage Area
- The Leach Field
- The Water Treatment Plant
- The Boneyard
- VOC Area Southeast
- The Off-Loading Area
- The Petroleum Hydrocarbon Storage Area
- Oil Storage Area
- Industrial Wastewater Disposal System
- Chemical Parts Washer
- Substations C and GH
- A 250-gallon diesel AST
- A chemical secondary containment area in the Process Chemical Storage Area
- Petroleum Dispenser Island
- Waste Oil AST
- A hydraulic press in Warehouse 1
- Motor mounts stained by oil in Warehouse 1
- The Compressor Room in Warehouse 1
- The Hazardous Substances Storage Area in Warehouse 2
- The Machine Shop
- The Parts Room
- The Chemistry Laboratory
- A hydraulic hoist for an elevator located in the Offices/Shops/Stores Building



- Recovery Boiler #3
- AOI-1 Welding Shop
- AOI-3 Pump House
- The Sand Blasting Shop
- Pulp Storage Warehouse Number 1
- Pulp Storage Warehouse Number 2
- Railroad Tracks
- Landfill
- Fill Material

6.15 Historical Use Information on Adjoining Properties

Several adjoining properties have a shared history with the subject property dating back to the development of the pulp mill in the 1960's. Adjoining properties located to the north and west were part of the pulp mill operations, and the historical use of these properties includes wood chip transportation and storage, solid waste disposal, and fuel storage and distribution. The property to the north of the subject site (APN 401-112-017) was used for storing wood chips, and was the location of the chip blower, the chip screener, conveyors, a gasoline UST, a diesel AST, and hydraulic hoists. Based on review of historical aerial photographs and topographic maps, the property located to the south has historically been unoccupied and undeveloped.

The following Historical RECs (HREC) and RECs were identified on adjoining properties:

- Chip Blower Area UST located on the adjoining property (APN 401-112-017), approximately 450 feet northeast of the Main Office of the subject property. Petroleum impacts to soil and groundwater were reported in, remedial action in the form of UST removal and over-excavation of impacted soils, and the Chip Blower Area UST received a remedial action completion certificate in 2003. Due to the location of the former UST relative to the subject property, the mobility of gasoline-range material, and a historical groundwater gradient flowing from the Chip Blower Area UST area towards Humboldt Bay, the Chip Blower Area UST is classified as a HREC.
- Chip Blower Area Diesel AST located on the adjoining property (APN 401-112-017), approximately 570 feet northeast of the Main Office of the subject property. No petroleum impacts to soil and groundwater have been reported for the Chip Blower Area Diesel AST. Due to the location of the former AST relative to the subject property, the low mobility of diesel-range petroleum hydrocarbons, and a historical groundwater gradient flowing from the Chip Blower Area Diesel AST area towards Humboldt Bay, Chip Blower Area Diesel AST is not classified as a REC.
- The Fiberglass Shop is located at the eastern end of Warehouse 1, between Warehouse 1 and Humboldt Bay, Mr. Charles Benbow indicated that the Fiberglass Shop is located on Humboldt Bay, Harbor, Recreation Conservation District property and not FTC property, and was used to fabricate fiberglass pipes, roofing, and walkway grates. "Activities at fiberglass fabrication operations include mold preparation, gel coating, laminating, equipment cleaning, systems operations, and finishing operations. Paints, thinners, solvents, and adhesives" are frequently used in regular operations in fiberglass shops (US EPA). There is no historical analytical data for the Fiberglass Shop area. Based on the presence, storage and use of thinners, solvents, and adhesives, and based on the potential for releases by spilling, leaking or during use and transfer, the Fiberglass Shop is classified as a REC.



• Chip Blower Area Hydraulic Lifts – two hydraulic lifts, comprising four hydraulic cylinders, are located on the adjoining property (APN 401-112-017) adjacent to the former UST cavity noted above, approximately 450 feet northeast of the Main Office of the subject property. As hydraulic cylinders have the potential to leak hydraulic fluids, and based on elevated oil and grease analytical results reported for soil and groundwater samples collected proximally to the hoists, the potential for petroleum product impacts to soil and water is present. However, based on the location of the hydraulic lifts relative to the subject property, the low mobility of hydraulic fluid-range petroleum hydrocarbons, and a historical groundwater gradient flowing from the Chip Blower area towards Humboldt Bay, the chip blower area hydraulic lifts are not classified as a REC.



7.0 SITE RECONNAISSANCE

7.1 Methodology and Limiting Conditions

A site visit was conducted by Mr. John Wellik, Mr. Bob Ulibarri, and Mr. Frank Bickner on January 18 and 21, 2013. The property was reconnoitered using a thorough meander and perimeter survey to the areas accessible by vehicle and foot. Adjacent properties were viewed from public roads and through fences. Limiting conditions included heavy fog, wet ground surfaces (limiting surface staining observations), darkness, and limited access to multiple site structures due to building security (boarded up entry ways and windows, locked gates) or unsafe structures. Site photographs are included with this report as Appendix N.

Based upon visual inspection, the following summary of features were observed for the project area:

Table 4 - Summary of Site Reconnaissance		
Feature	Observed	Not Observed
Existing Structures	X	
Evidence of Past Uses (Saw Mill, Pulp Mill)	X	
Hazardous Substances and/or petroleum products (containers)	Х	
Aboveground Storage Tanks (AST's)	X	
Underground Storage Tanks (UST's) or evidence of UST's		Х
Strong, pungent, or noxious orders	Х	
Pools of liquid likely to be hazardous or petroleum materials	X	
Drums	Х	
Unidentified substance containers	X	
Potential polychlorinated biphenyl (PCB) containing equipment	X	
Subsurface hydraulic equipment	Х	
Stains or corrosion on floor, walls, or ceilings	X	
Floor drains and sumps	X	
Pits, ponds, or lagoons	X	
Stained soil or pavement	X	
Stressed Vegetation		Х
Waste or wastewater discharges to surface or surface waters		Х
Wells	X	
Septic Systems	X	



7.2 General Site Setting

The subject property and surrounding areas are situated on historical fill and aeolian dune sands of the north spit of Humboldt Bay. Due to the components observed within the historical fill (fine sand and clam shells), the fill was interpreted to be from Humboldt Bay dredge tailings. The property is trapezoidal shaped, occupies a portion of the western shoreline and tidal flats of Humboldt Bay and dune fields of the Samoa Peninsula, and has an area of approximately 71.8 acres (Figure 2). The property is partially developed with asphalt/concrete paved roads and lots; there are currently office facilities, two pulp warehouse structures, a black liquor recovery boiler and associated ASTs, most of the recausticizing plant, a water treatment plant with clarifying ponds, and multiple reinforced concrete foundations from demolished structures; areas not developed have a cover of low mixed vegetation. The property is generally flat lying, with topographic lows located along the eastern property boundary comprising the Humboldt Bay shoreline; elevations range from approximately 23 feet above mean sea level on the western property boundary (Google Earth) to sea level at the eastern margin along the shores of Humboldt Bay. There are no apparent natural depressions.

7.3 Exterior Observations

The following general and specific exterior observations were made by Mr. John Wellik, Mr. Bob Ulibarri, and Mr. Frank Bickner during the January 18 and 21, 2013 site reconnaissance:

- Evidence of hazardous materials and petroleum product misuse, use, or improper disposal was observed during the site reconnaissance. The use of secondary containments in many chemical and petroleum product storage areas was observed.
- Evidence of above ground storage tanks, piping and product distribution was observed. Evidence of underground storage tanks was not observed.
- Corrosion and rusting of metal components was observed.
- Evidence of pits or lagoons was not observed.
- No stressed vegetation was observed.
- Concrete staining resulting from chemicals and petroleum products was observed, however, soil staining was not.
- Odors indicative of petroleum product use and storage was observed during the reconnaissance.
 Petroleum hydrocarbon odors were observed at the fueling depot at AOI-10, and frequently at areas where evidence of oil leaks were observed (i.e. locations of motors, the compressor room, etc.).
- Oil staining resulting from leaks from multiple electrical motors and pumps located throughout the site
- Etching of concrete surfaces at chemical release locations occurs throughout the site, providing evidence of historical releases.
- Metal corrosion from exposure to chemicals is ubiquitous on non-stainless steel ASTs, valves, piping runs, and structural steel in areas where process chemicals were stored, used, and reclaimed (primarily AOI-1, AOI-3, and AOI-5). Corrosion may have led to releases of chemicals.
- Many valves were observed to have leaked or were currently leaking.
- Ubiquitous mineralization (very small crystals) of unknown origin and composition is present on surfaces near the Recovery Boiler in AOI-1.
- Multiple floor drains and trenches are located throughout AOI-1.
- Several ASTs located in AOI-1 contain black liquor; the quantity of black liquor currently stored on site is unknown.



- A 70 foot by 30 foot by three feet deep concrete-lined black liquor pond is located in AOI-1. The concrete pond liner appeared sound.
- An electrical substation (PG&E Inter-tie Substation AA) is located northwesterly of AOI-1; no PCB-bearing equipment was observed.
- Monitoring Station 106 is located northerly of AOI-1; three ASTs are present in fair condition, including a 6,500-gallon sulfuric acid AST and a 6,000-gallon sodium hydroxide AST.
- Two two-story tall concrete buildings (Substations C and GH) containing PCB-bearing transformers are located in AOI-2. Substations C and GH are classified as RECs.
- A large debris pile, comprising mixed demolition debris and a variety of items formerly found in use at the site (i.e. chemical containers, office equipment, and general domestic waste) was observed on the southern portion of AOI-2.
- Staining was observed emitting from grout joints of chemical ASTs in AOI-2 and near the Machine Building.
- Water observed in trenches in the vicinity of AOI-3 and AOI-5 has a tea-like coloration (brownish tint).
- Several piles of lime residue were randomly located in and near AOI-3.
- A 280-gallon diesel AST in a concrete secondary containment was observed at the northwestern
 end of the Pump House building located south of the Lime Mud Pond of AOI-3. The AST and
 plumbing exhibited rust, and minor sheen was observed on water within the secondary
 containment. The AST is estimated to have approximately 180 gallons remaining in the tank. This
 AST is classified as a REC.
- A 90 foot by 80 foot by 10 foot deep Lime Mud Pond was observed in the northwestern portion of AOI-3. The concrete pond liner appeared sound.
- Nine ASTs of various sizes, contents, construction materials, and states of condition are located in the Process Chemical Storage area (AOI-5).
- A concrete-lined storage pond is located on the southern side of AOI-5; water was present in the pond. No cracks were observed.
- AOI-5 has a concrete floor with a two-foot high perimeter wall for secondary containment; several
 cracks were present in the floor, providing a pathway for soil impacts in the event of a release. Due
 to the lack of integrity of the concrete slab and the presence of multiple chemicals and petroleum
 ASTs, this area is classified as a REC.
- Approximately twenty 270-gallon PVC chemical shipping totes are present in the secondary containment area of AOI-5, several containers have fluids in them. Contents of most containers were indeterminable due to weathering of the labels. Mr. Ulibarri noted that the containers appeared to be manifested and ready for shipping but appear to be stored for an extended period of time.
- A five-foot tall, 50-foot long, 24-foot wide cinder block shed on the northern side of AOI-5 was completely filled with black liquor sludge.
- A five-foot tall, 32 foot by 22 foot cinder block shed was observed completely filled with black liquor sludge between AOI-1 and AOI-2.
- A 20 foot by 20 foot, 10 foot tall wood shed located in AOI-3 was partially filled by black liquor sludge, a concrete barricade retains the sludge in the shed.
- A 60 foot by 19 foot, 10-feet high building located at the northwestern end of AOI-5 is currently used to store lime residue.
- A 6,800-gallon turpentine AST was observed in fair condition in AOI-7.
- Two ASTs of undetermined volume and contents were observed in fair to poor condition in AOI-7.



- An unlabeled 2,000-gallon horizontal trailer-mounted with liquid was observed in fair condition in AOI-7.
- Multiple full hydrogen sulfide, sulfur dioxide, argon and carbon dioxide gas cylinders are stored the area identified as a "fenced compound" located on the northern side of the Offices/Shops/Stores building. The containers exhibited signs of weathering (i.e. rust) and are classified as a REC..
- A fire suppression shed was observed along the northern property boundary; a truck, hoses and safety equipment were observed in the shed.
- Petroleum product dispensers at the fueling depot were inoperable due to damage, hydrocarbon odors were observed near the dispensers. The petroleum dispenser island is classified as a REC.
- The 1,000-gallon waste oil AST secondary containment contained water and several inches of
 waste oil. The gauge on the waste oil AST indicated that the container was overfilled. The Waste Oil
 AST and secondary containment are classified as a REC.
- A large sump and oil/water separator are located in the Oil Storage Area. Due to the presence of used motor oil, the sump, and the oil/water separator, the Oil Storage Area is classified as a REC.
- A chemical parts washer was observed in fair condition in the Oil Storage Area. The presence of a chemical parts washer, solvents, and the potential for a release through spills and leaks leads the parts washer to be classified as a REC.
- Minor surface oil staining of concrete was observed in the Oil Storage Area.
- A 1,400 gallon propane AST in a concrete secondary containment is located north of Warehouse 1; approximately 20 pounds of pressure is present in the tank.
- Multiple groundwater monitoring wells were observed onsite, however, no domestic water wells were observed.
- Two 150-foot diameter clarifying ponds are located southwest of the water treatment plant; used for treatment of water from the Mad River for use in industrial processes.
- A leach field, reportedly used for disposal of domestic wastewater, was observed in the southwestern portion of the property.
- Fiberglass pipe runs for the transfer of chemicals extend from the location of the dock on the shores of Humboldt Bay to the former ASTs at AOI-5; the integrity of the pipes has been compromised, as they are currently broken.

7.4 Interior Observations

Interior observations for site structures follow:

Pulp Warehouse 1 – Located on the eastern portion of the property, Pulp Storage Warehouse 1 was used to store processed pulp prior to shipping. Pulp Warehouse 1 is currently being used to store mill related items such as vehicles, cabinets, industrial equipment, and chemicals (i.e. spill kits); de minimis quantities of chemicals and petroleum products were observed being stored in Pulp Warehouse 1. Pulp Warehouse 1 has steel frame construction, plywood panel walls, and concrete floors. Electrical substations, hydraulic presses, and a compressor room are located at the western end of Warehouse 1. Evidence of hydraulic fluid staining was present on the concrete ground surface surrounding the presses. Hoses connected to hydraulic lines were cut and were dangling from the upper portion of the presses, and were emitting fluids. A one-gallon bucket was placed beneath one hose to catch fluids, fluid from another hose was dripping directly on the ground surface. Several locations near the hydraulic presses displayed evidence of mounting brackets for large machinery no longer in place; concrete staining interpreted to be related to oil was observed near the brackets beneath where the former machinery was located. Sumps are present in the floors at the western end of Warehouse 1. A compressor room is located at the southwestern corner of



Warehouse 1; strong petroleum odors are present in the room, as is petroleum hydrocarbon sheen on water in floor drains extending from the compressor room into Warehouse 1. A 270-gallon waste oil container, with approximately 200 gallons of used oil, was observed in the compressor room in decent shape (the container is oil stained from spills but appears structurally sound). The floor of the compressor room was slick from oils.

- 1) Pulp Warehouse 2 located near the southern extent of the property, near Humboldt Bay, the steel-framed, plywood-sided and concrete-floored structure was the location of pulp storage prior to export. The interior of the warehouse is currently used for storage of building materials for Myrtletown Lumber, storage of electrical waste (i.e. computer monitors) and other recyclable materials from the pulp mill, a hazardous substances storage room, and an electrical motor storage room. The hazardous substances storage room contains multiple drums and containers with various process chemicals all in apparent good shape; no odors, staining or corrosion was observed. Mr. Ulibarri noted that the contents of the hazardous substances storage room appeared to be in order, and was consistent with manifested chemical containers ready for shipment. The motor storage room contained several electrical motors stored on wooden pallets, some motors had minor oil staining. Multiple storage stalls were observed along the exterior southern wall of Warehouse 2. There was no evidence of previous uses observed, but, currently, several of the storage stalls contain 55-gallon Department of Transportation (DOT) waste drums with hazardous waste labels attached describing sandblasting waste containing lead and chromium, at least one 55-gallon DOT drum with resin and one with anti-freeze, multiple 55-gallon DOT drums containing phosphate ester fluids (fire-resistant hydraulic fluid), and various construction related supplies (bags of concrete, etc.). The presence of multiple 55-gallon DOT drums, some exhibiting rust, labeled as hazardous waste leads the exterior storage areas of Warehouse 2 to be classified as a REC.
- 2) Machine Building located south of the Offices/Shops/Stores building in the central portion of the property, the steel-framed and plywood-sided building was the location of the final stage of pulp production. The rollers once housed in the Machine Building have been removed. Several subsurface pools are located in the building; lime slag is present in one of the pools. Floor drains and trenches are present in the building. De minimis oil staining related to vacuum pumps was observed on concrete on the west end of the building. Several 12-volt automotive batteries attached in series were observed on a pallet in the former transformer room north of west end of the Machine Building. Darkness was a limiting factor in the transformer room. No petroleum product or chemical odors or staining were observed. The Machine Building is not classified as a REC.
- 3) Offices/Shops/Stores located north of the Machine Building, the Offices, Shops, and Stores building, a steel-framed building with plywood siding, housed the site plant operations. Offices included engineering, management of the chemical laboratory, and facilities management; several records storage rooms were inspected between the first and second floors of the building from the stair well access. Shops located in the building include the Machining, Electrical, Pump Repair, Millwrights, Tool Crib, General Trades (carpentry), Oilers, Parts, and Pipe Fitters; an elevator is also present in the building. A locker room with showers and a lunch room are located on the western end of the first floor of the building. Several offices are located on the second floor along with the chemistry lab. None of the offices contained materials that raised concern, and therefore



the offices are not classified as RECs. The various shops and stores encountered in the Offices/Shops/Stores building are described herein.

- a. Machine Shop located on the first floor in the main portion of the building, adjacent to the Machine Building. The machining equipment has been removed, but evidence of mounting brackets on concrete pads, and oil staining of concrete is present. A 25-ton crane remains in the building. Due to the presence of oil staining, and the likelihood that cutting oils were used for machining parts in this area for more than 40 years, the Machine Shop is classified as a REC.
- b. Electrical Shop located at the eastern end of the Machine Shop area on the first and second floors, the electrical shop had a locker room, offices, instrument repair rooms, and was used to store light fixtures, bulbs, conduit, and tooling used in the electrical trades. Gallon containers of ethanol were observed stored in the electrical shop area. AAI and ASTM 1527-05 do not classify ballasts or bulbs as hazardous materials. Darkness was a limiting condition in a portion of the Electrical Shop. De minimis paint staining was present at the far southwestern corner of the shop. The Electrical Shop is not classified as a REC.
- c. Pump Repair Shop located on the first floor near the middle of the building, along the northern wall. A small, office-like area with a linoleum tiled floor and cabinets along the walls, this area was used to repair pumps. De minimis quantities of oil were observed on counter top surfaces, no chemical or petroleum odors were observed, nor was evidence of petroleum product or chemical storage. The Pump Repair room is not classified as a REC.
- d. Millwrights Shop Located on the first floor of the main corridor of the building, the Millwrights Shop appeared to be used as a lunch room; additional or previous uses of the room were not apparent. The rear door to the shop accesses the Parts Storage Room; this door, when observed from the Parts Storage Room, is red and labeled Hazardous Material Storage. There was no evidence of hazardous substance storage observed in the room. The Millwrights Shop is not classified as a REC.
- e. Tool Crib located on the first floor of the main corridor, the gated and locked Tool Crib is the location of tool storage. Wrenches, drills, hammers, personal protective equipment, taps, dies, cutters, etc. were observed in the Tool Crib. A hazardous materials storage cabinet containing spray paint canisters and solvents was observed in good condition. No chemical or petroleum odors observed. Darkness was a limiting condition in this room. The Toll Crib is not classified as a REC.
- f. General Trades Shop located on the first floor at the eastern end of the building, this room is a former carpentry shop that previously contained several table mounted saws. No petroleum or chemical odors or staining observed, and no petroleum products or hazardous substances observed stored in this location. The General Trades Shop is not classified as a REC.
- g. Oilers Room located on the first floor at the eastern end of the building, this room appears to have been a locker room and office for personnel charged with lubricating site machinery. No petroleum or chemical odors or staining observed, and no petroleum products or hazardous substances observed stored in this location. The Oilers Room is not classified as a REC.
- h. Parts Room located on the first floor of the main corridor, the Parts Room housed multiple cabinets for storing a variety of parts for site maintenance. Mostly unstocked shelving is present in a portion of the room; the parts that were observed primarily comprised valve



- gaskets and plumbing parts. Other items observed included water coolers, a refrigerator, some tooling and cabinets. Oil staining was observed on the floor along the northern wall. Darkness was a severe limiting condition in this room. The presence of oil staining on the floor of the Parts Room leads this room to be classified as a REC.
- i. Pipe Fitters Shop located on the first floor at the western end of the building, the Pipe Fitters Shop primarily comprised an office (locked and inaccessible, observed through a window), a locker room, and a concrete-floored workspace. De minimis quantities of oil staining were observed on the floors and work benches, no petroleum or chemical odors observed. The Pipe Fitters Shop is not classified as a REC.
- The Chemistry Lab, located on the second floor of western end of the building, is a fullscale, operable laboratory with a mass spectrometer and gas chromatograph, lab stations, abundant glassware, and a fully stocked chemical stock room. A copy of the chemical stock room manifest is included as Appendix N. Acids, solvents and bases, in addition to a variety of other chemicals, were observed stored throughout the laboratory; in the opinion of the environmental professional, a complete inventory of the chemicals stored in the lab would be prudent, however, an inventory is not reasonably ascertainable due to the size of the subject property requiring inspection, the sheer volume of chemicals present in the laboratory, the distribution of chemical stores throughout the laboratory (not contained to one location), and safety concerns due to the observed fair to poor condition of many of the chemical containers. A puddle of chemicals was observed at one work station, and evidence of chemical degradation of workstation countertops attests to previous releases. Many chemical containers exhibited evidence of the effects of approximately five years of neglect in a humid, salty air environment. An unlocked hazardous substances storage closet is located outside of the doors of the lab; contents of the cabinet were non-Resource Conservation Recovery Act (RCRA) solids. The chemistry lab is classified as a REC.
- k. A hydraulically-operated elevator is located on the main corridor of the building, near the western end of the building; the adjoining room housing the hydraulic lift equipment had a strong petroleum odor and oil staining was observed.
- 4) Bleach Plant Transformers two 2-story concrete structures (Substations C, and GH) located in AOI-2. These buildings were locked and inaccessible, so they were not inspected. The presence of PCB-bearing transformers inside the buildings leads the structures to be classified as RECs.
- 5) Generator Building located on the southern side of AOI-1, this two-story building houses the electrical generator and generator control panel for the property; the equipment observed in the building was in good condition. No petroleum product or chemical odors or staining was observed, no petroleum products or chemicals were observed stored in the building. The Generator Building is not classified as a REC.
- 6) Capacitor Building located northerly of the Generator Building, the Capacitor Building houses electrical transmission equipment. No petroleum product or chemical odors or staining was observed, no petroleum products or chemicals were observed stored in the building. The Capacitor Building is not classified as a REC.
- 7) Recovery Boiler #3 located in AOI-1, at the northern portion of the main mill site, this building houses the Recovery Boiler, associated plumbing and exhaust systems, maintenance equipment and supplies, and accessories to the Recovery Boiler (i.e. expandable scaffolding for maintenance of the interior of the boiler). The steel-framed and metal sided structure has a concrete floor with drains and trenches on the ground floor, and metal grating comprises the walking surfaces of the



remaining 12 floors of the structure. Abundant corrosion and oxidation of metal (piping, steel Ibeams, galvanized grating and hand rails, etc.) and mineralization of surfaces was observed. Multiple leaking valves were observed, as stalactites and stalagmites of unknown material were observed emitting from valves. The expandable scaffolding comprises nested steel tubing with gear teeth and attached electric motors for extending the steel tubing into the boiler. Oil staining from the electric motors and gear lube was observed on multiple levels of the structure. Several hazardous substances cabinets were observed in the building, but they did not contain petroleum products or hazardous substances. A 2.5-gallon gasoline can was observed on the 3rd floor (the door to the floor was locked, the can was observed through the grate flooring on the 4th floor), contents and quantity unknown. Petroleum odors consistent with leaked lube oils were observed. A variety of chemical containers were observed throughout the building. Due to the presence of mineralization, leaking valves, abundant corrosion of steel and concrete, the presence of chemicals, petroleum odors and leaked oil, in addition to previously noted factors, Recovery Boiler #3 is classified as a REC. A welding shop was observed outside the southwestern stairwell to the Recovery Boiler; oil staining and a petroleum odor were observed in the shop. Due to the presence of oil staining and petroleum odors, the welding shop is classified as a REC.

- 8) AOI-1 Substation JJ electrical switching equipment and fuses are present inside this two-story concrete building. No petroleum product or chemical odors or staining was observed, no petroleum products or chemicals were observed stored in the building. Darkness was a limiting factor inside this building. AOI-1 Substation JJ is not classified as a REC.
- 9) Monitoring Station 106 located northerly of the Recovery Boiler included equipment and shelving. The monitoring station is not classified as a REC.
- 10) Pump House located in AOI-3, adjacent to the lime mud pond, this concrete structure houses pumps and a generator in fair condition. Floor drains are present in the building. Minor oil leaks observed at pumps, minor sheen observed at the generator. Due to the presence of a diesel-powered generator, the observation of oil leaks and sheen, and product plumbing that may have leaked due to rusting, pitting, or mechanical failure, the Pump House is classified as a REC.
- 11) Substation F1, 2, 4, G1 electrical switching equipment and fuses are present inside this two-story concrete building. No petroleum product or chemical odors or staining was observed, no petroleum products or chemicals were observed stored in the building. Darkness was a limiting factor inside this building. Substation F1, 2, 4, G1 is not classified as a REC.
- 12) Water Treatment Plant located southerly of AOI-3, the one-story concrete structure contained infrastructure for water treatment, including water filters and softeners, control panels and offices, concrete floors and has floor drains located throughout the building. Oil staining of concrete and the placement adsorbent materials were observed where a motor was previously mounted. A lube oil cabinet containing mason jars with unknown liquids was observed. Approximately ten 55-gallon plastic garbage cans containing a semi-solid material were observed inside the building. Due to the presence of oil staining of concrete, jars of unknown fluids, and multiple 55-gallon containers of a semi-solid material of unknown type and origin, the Water Treatment Plant is classified as a REC.
- 13) Off-Loading Area also known as AOI-9, this area comprises a shed attached to the western end of Warehouse 1 and an asphalt floor. Oil staining of the ground surface and minor staining of a wall from an unknown substance was observed. The Off-Loading Area is classified as a REC due to known impacts to soil and water, but not due to the de minimis quantities of staining observed.
- 14) Sandblasting Shop located at the eastern end of Warehouse 1, the metal constructed Sandblasting Shop has an asphalt ground surface thoroughly coated in paint. Sandblasting waste drums previously noted in this report were observed with hazardous waste material labels due to the presence of lead and chromium. Sandblasting waste was presumably generated at the



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Sandblasting Shop, therefore, the potential for lead and chromium impacts to soil in and around the Sandblasting Shop exists, leading to the classification of the Sandblasting Shop as a REC.



8.0 INTERVIEWS

This section satisfies AAI Section 312.28, requiring identification of specialized knowledge on the part of the defendant (owner or operator).

8.1 Interview with Owner

The property is currently owned by Freshwater Tissue Corporation. Mr. L. Robert Ulibarri interviewed Mr. Charles Benbow, partial owner of FTC, with the User Questionnaire (ASTM E1527-05) on January 18 and 23, 2013. Mr. Benbow's responses are included as Appendix P.

8.2 Interview with Site Manager

Mr. Charles Benbow, identified as FTC's Facility Maintenance Director, was interviewed by Mr. Ulibarri using the User Questionnaire (ASTM E1527-05). As both the Owner and Site Manager, the User Questionnaire only includes the response of the Owner to prevent redundancy.

8.3 Interviews with Occupants

The site is currently unoccupied, so no interviews with site occupants were conducted.

8.4 Interviews with Local Government Officials

An interview with a local government official was conducted by Mr. John Wellik on the date noted. The following individual was contacted by in person and was asked about specialized knowledge of the site:

• Mr. Dave Parsons of the NCRWQCB was contacted on January 15, 2013, and was questioned about the regulatory status of the former Louisiana-Pacific Pulp Mill environmental site (NCRWQCB Case No. 1NHU892). Mr. Parsons stated that characterization of the site is ongoing, that the approach to site characterization was to break the large industrial site down into areas by the manufacturing processes that occurred in each area, and that the main focus of characterization efforts thus far has been on impacts related to known or reported releases and manufacturing processes that occurred in each AOI. Mr. Parsons explained that little effort to date has been expended on non-AOI impacts thus far, and that efforts would be focused on non-AOI impacts as soon as the established AOI have been fully characterized. Mr. Parsons did not express concern when questioned about impacts to the site related to the capped landfill. Mr. Parsons was not aware of a source for chlorinated hydrocarbon impacts reported for AOI-7 (The Boneyard), or AOI-8 (VOC Area Southeast).



9.0 FINDINGS

- Records and interviews indicate the site was used for the manufacture of wood pulp for export;
- Evidence of hazardous substances and petroleum product use was observed during the site reconnaissance;
- Evidence of site hazardous substances or petroleum product impairment attributed to offsite sources was not found.

Sections 7.3 and 7.4 of this report describe known or suspect Recognized Environmental Conditions.

9.1 Subject Property

The subject property has and does contain known or suspect Recognized Environmental Conditions as outlined in Sections 7.3 and 7.4.

9.2 Adjoining Properties

- Chip Blower Area UST located on the adjoining property (APN 401-112-017), approximately 450 feet northeast of the Main Office building. Petroleum impacts to soil and groundwater were reported for the Chip Blower area, so remedial action in the form of UST removal and over-excavation of impacted soils was performed in 2002, and the Chip Blower Area UST received a remedial action completion certificate in 2003. Due to the location of the former UST relative to the subject property, the mobility of gasoline-range material, and a historical groundwater gradient flowing from the Chip Blower Area UST area towards Humboldt Bay, the Chip Blower Area UST is classified as a HREC.
- Chip Blower Area Diesel AST located on the adjoining property (APN 401-112-017), approximately 570 feet northeast of the Main Office of the subject property. No petroleum impacts to soil and groundwater have been reported for the Chip Blower Area Diesel AST. Due to the location of the former AST relative to the subject property, the low mobility of diesel-range petroleum hydrocarbons, and a historical groundwater gradient flowing from the Chip Blower Area Diesel AST area towards Humboldt Bay, Chip Blower Area Diesel AST is not classified as a REC.
- The Fiberglass Shop is located at the eastern end of Warehouse 1, between Warehouse 1 and Humboldt Bay. Mr. Charles Benbow indicated that the Fiberglass Shop is located on Humboldt Bay, Harbor, Recreation Conservation District property and not FTC property, and was used to fabricate fiberglass pipes, roofing, and walkway grates. "Activities at fiberglass fabrication operations include mold preparation, gel coating, laminating, equipment cleaning, systems operations, and finishing operations. Paints, thinners, solvents, and adhesives" are frequently used in regular operations in fiberglass shops (US EPA). There is no historical analytical data for the Fiberglass Shop area. Based on the presence, storage and use of thinners, solvents, and adhesives, and based on the potential for releases by spilling, leaking or during use and transfer, the Fiberglass Shop is classified as a REC.
- Chip Blower Area Hydraulic Lifts two hydraulic lifts, comprising four hydraulic cylinders, are located on the adjoining property (APN 401-112-017) adjacent to the former UST cavity noted above, approximately 450 feet northeast of the Main Office of the subject property. As hydraulic



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cylinders have the potential to leak hydraulic fluids, and based on elevated oil and grease analytical results reported for soil and groundwater samples collected proximally to the hoists, the potential for petroleum product impacts to soil and water is present. However, based on the location of the hydraulic lifts relative to the subject property, the low mobility of hydraulic fluid-range petroleum hydrocarbons, and a historical groundwater gradient flowing from the Chip Blower area towards Humboldt Bay, the chip blower area hydraulic lifts are not classified as a REC.



10.0 OPINION

The decision to classify a condition as a REC or HREC, or as not REC or HREC, was based upon the conclusion that known or suspected hazardous substance or petroleum product releases had occurred at a location, and a reasonable inference could be made that the hazardous substance or petroleum product had impacted soil and/or groundwater quality at greater than de minimis quantities on the subject property. REC and HREC classifications attributable to hydraulically upgradient offsite sources is based upon hydrologic, geologic and chemical/material specific factors that when combined lead to the opinion that offsite RECs may negatively impact onsite soil and groundwater conditions. Hydrologic and geologic factors include groundwater depth, flow rate, flow orientation, hydraulic gradient slope, soil hydraulic conductivity, permeability, and organic content. Chemical factors include retardation factors, decay rates, solubility, and diffusion/dispersion.

The professional opinion of the assessors conclusively identified RECs at the site.



11.0 CONCLUSIONS

The goal of the ASTM Standard is to identify "recognized environmental conditions" which the standard defines as: "The presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with the laws. The term is not intended to include de minimis conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate government agencies. Conditions determined to be de minimis are not recognized environmental conditions."

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527 of the property located at 1 TCF Drive, Samoa, California (APN 401-112-021), the property. Any exceptions to, or deletions from, this practice are described in Section 12 of this report. This assessment has revealed recognized environmental conditions in connection to the property including but not limited to the following:

11.1 Subject Property

- The Black Liquor Process and Recovery Area
- The Bleach Plant
- The Recausticizing Area
- The Hot Water Tank/Former Diesel Storage Tank
- The Process Chemical Storage Area
- The Leach Field
- The Water Treatment Plant
- The Boneyard
- VOC Area Southeast
- The Off-Loading Area
- The Petroleum Hydrocarbon Storage Area
- Oil Storage Area
- Industrial Wastewater Disposal System
- Chemical Parts Washer
- Substations C and GH
- A 250-gallon diesel AST
- A chemical secondary containment area in the Process Chemical Storage Area
- Petroleum Dispenser Island
- Waste Oil AST
- A hydraulic press in Warehouse 1
- Motor mounts stained by oil in Warehouse 1
- The Compressor Room in Warehouse 1
- The Hazardous Substances Storage Area in Warehouse 2
- The Machine Shop
- The Parts Room
- The Chemistry Laboratory
- A hydraulic hoist for an elevator located in the Offices/Shops/Stores Building
- Recovery Boiler #3



- AOI-1 Welding Shop
- AOI-3 Pump House
- The Sand Blasting Shop
- Pulp Storage Warehouse Number 1
- Pulp Storage Warehouse Number 2
- Railroad Tracks
- Landfill
- Fill Material

11.2 Adjoining Properties

- The UST Area, located near the chip blower on the adjoining property to the north (APN 401-112-017) is classified as a HREC.
- The Fiberglass Shop is classified as a REC.
- The hydraulic hoists near the chip blower are not classified as a REC.
- The diesel fuel AST is not classified as a REC.

Given multiple sources confirming general historical site use and known impacts to soil and groundwater resulting from site activities, the risk of an onsite hazardous material or petroleum product release or threatened release is high. Sources of environmental site impairment may result from processes including bleaching of wood products, recovery of process chemicals, transfer and storage of process chemicals, storage, maintenance, fueling and repair of vehicles and equipment, and releases from onsite USTs and ASTs and associated plumbing. Potential impacts related to site uses are chlorinated volatile organic compounds, solvents and breakdown byproducts impacts to soil and groundwater, petroleum product impacts to soil and groundwater.



12.0 DEVIATIONS

12.1 Data Gaps

AAI Section 312.20(g) states that "To the extent there are data gaps ... that affect the ability of persons conducting all appropriate inquiries to identify conditions indicative of releases or threatened releases in each area of inquiry under each standard and practice, such persons should identify such data gaps, identify the sources of information consulted to address such data gaps, and comment upon the significance of such data gaps with regard to the ability to identify conditions indicative of releases or threatened releases of hazardous substances, pollutants, contaminants, petroleum and petroleum products, and controlled substances."

The following information was not readily available: Historical site information prior to 1924 Building records prior to 1990

Site information attained follows a relatively consistent timeframe with factual consistencies. Due to the long and consistent history of pulp mill operations at the property and a lack of other historical uses of the property, there are no significant data gaps.



13.0 ADDITIONAL SERVICES

Information regarding contaminants and issues that are outside the scope of this assessment may be of concern to landowners and may be provided herein at the request of the user, although they are not within the scope of issues included in a Phase I Environmental Site Assessment. The most common of these constituents and issues that may be of concern include, but are not limited to, the following:

- Naturally occurring asbestiform minerals
- Asbestiform minerals in construction materials
- Lead based paint
- Lead in drinking water
- Wetlands delineation
- Regulatory compliance
- Cultural and historical resources
- Industrial hygiene
- Health and Safety
- Ecological resources
- Endangered species
- Indoor air quality
- Biological agents
- Mold
- Geologic hazards, and
- Geotechnical site conditions
- Environmental Permits

Extensive sampling and testing for contamination, subsurface investigations, and cleanup of hazardous materials are also not within the scope of this Phase I ESA.



14.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

Christopher J. Watt is LACO's Environmental Services Director. Mr. Watt has specialized in environmental investigations, subsurface hydrogeologic investigations, and environmental site assessments since he joined LACO in 1997. His resume is included as Appendix Q. John Wellik is a Staff Geologist with LACO Associates, and he has accrued six years of practical experience characterizing and modeling environmentally impacted sites while employed with LACO; Mr. Wellik's resumed is included in Appendix Q. L. Robert Ulibarri is an Environmental Scientist that has performed and completed over 500 Phase 1 ESA's since 1990. Mr. Ulibarri's resume is included in Appendix Q.

"I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. I have specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312."

The work and content of this Phase I Report was conducted in accordance with ASTM 1527-05 and generally accepted industry standards for environmental due diligence in place at the time of this report.

Christopher J. Watt California-Certified Engineering Geologist CEG 2415, Exp. 3/31/14 February 5, 2013



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PDP1.

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FIGURES

Figure 1 Site (Vicinity) Map

Figure 2 Site Plan

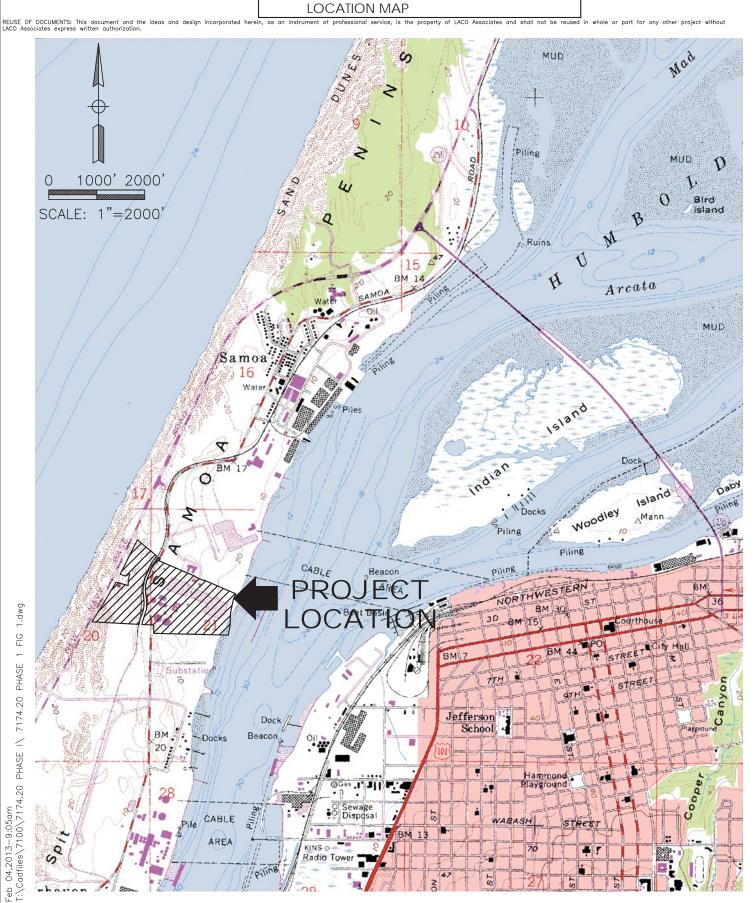
Figure 3 Existing Conditions Map

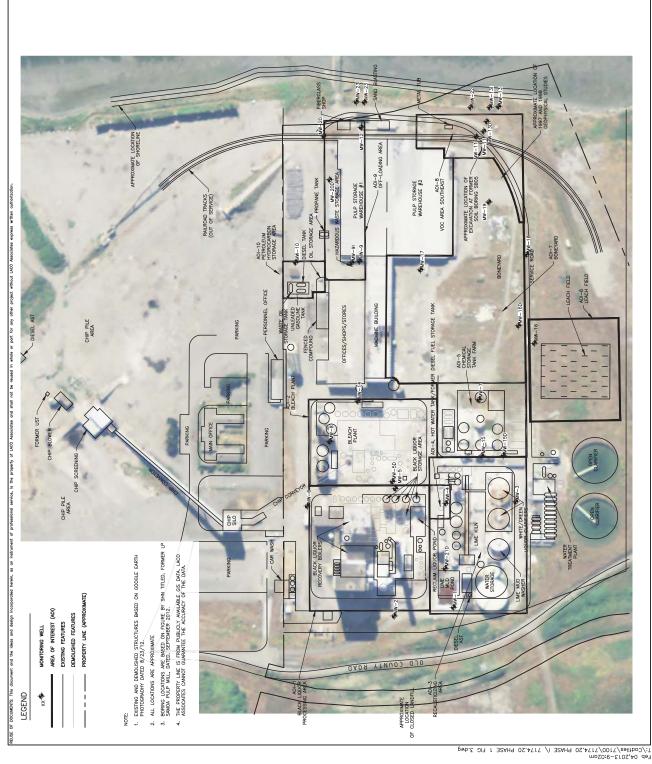
Figure 4 Recognized Environmental Conditions Map





PROJECT	PHASE I ESA	BY	JB/JDB	FIGURE
CLIENT	HUMBOLDT BAY, HARBOR, RECREATION	DATE	2/4/13	I
	AND CONSERVATION DISTRICT	CHECK	JMW	JOB NO.
LOCATION	1 TCF DRIVE, SAMOA, CA	SCALE	AS SHOWN	7174.20





PULP STORAGE WAREHOUSE

THE WATER TREATMENT PLANT

OIL STORAGE AREA

THE OFF-LOADING AREA

VOC AREA SOUTHEAST

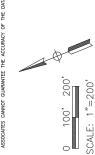
THE LEACH FIELD THE BONEYARD

LIST

CHEMICAL PARTS WASHER

SUBSTATIONS C AND GH





100,

BORING LOCATIONS ARE BASED ON FIGURE BY SHN TITLED, FORMER SAMOA PULP MILL, DATED, SEPTEMBER 2012. THE PROPERTY LINE IS FROM PUBLICLY AVAILABLE GIS DATA, LACO ASSOCAITES CANNOT GUARANTEE THE ACCURACY OF THE DATA. ALL LOCATIONS ARE APPROXIMATE

APPENDIX A

Historical Boring Logs



3	MFG, Inc.				LOC	OF BORING D)P-26
	consulting scientists and engineers						(Page 1 of 1)
	Pulp Mill Samoa, California	Drilling Agency Drilling Method Drill Bit Size Sampler Type	! :		Push nch O.E core dr	Logged E). Reviewe ve sampler	Sy : Stan Thiesen
	MFG Project No. 240099	Sampling Meth	od :	Clear	Polybut	yrate Liners	
Depth in Feet	DESCRIPTION		nscs	Samples	Recovery (inches)	REMARKS	Date Started: Sept. 12, 2006 Date Finished: Sept. 12, 2006
1-	SAND/GRAVEL: Apparent fill material.		SP	1	48		
3- 4- 5- 6- 7- 8-		/R 3/2),	SP	2	48		
10- 11- 12-	SAND, Peerly Graded, grey-brown (2.5Y fine to medium grained, moist.	/R 3/2),	SP	3	48		Hydrated Bentonite Chips
13- 14- 15-	SAND, Poorly Graded, grey-brown (2.5) fine to medium grained, wet.	/R 3/2),		4	48	Groundwater sample	
17-	No soil recovered below 16 feet bgl.					DP-26 collected from screened interval of 16-20 feet bgl; pH = 8.43	
19 — 20 — 21 — 22 — 23 — 24 — 25 — 26 — 27 — 28 — 29 — 29 — 29 — 29 — 29 — 29 — 29	NOTES: 1. pH measured using Myron L Ultramei 2. Boring completed to a depth of 20.0 f 3. Groundwater sample was collected u dedicated tubing equipped with a bottom valve.	eet bgl. sing					BOH = 20 feet bgl
28- 29- 30-							

	MFG, Inc.				LOC	G OF BORING D	1.00
Pulp Mill Samoa, California		Drilling Agency : Fisch Environmental Drilling Method : Direct Push Drill Bit Size : 2.25-inch O.D. Sampler Type : Macrocore drive samp		Logged B Reviewed ve sampler	y : Julie Mills		
	MFG Project No. 240066	Sampling Meth	od :	Clear F	Polybut	yrate Liners	
Depth in Feet	DESCRIPTION		nscs	Samples	Recovery (inches)	REMARKS	Date Started: January 23, 200 Date Finished: January 23, 200
0 1 2 3 4 5 6	SAND: very dark grayish brown (10YR medium sand.	3/2);		1	24	pH = 8.30 (4.5-5.0 feet bgl).	Concrete
8 - 9 - 10 - 11 - 12 - 13 - 13 - 13 - 13 - 13 - 13			sw	2	24	Collected soil sample DP-9-9.5-10.0 at 9.5-10.0 feet bgl. pH = 10.10.	
14 15 16 17				3	12	pH = 6.79 (14.5-15.0 feet bgl).	Hydrated Bentonite
19- 20- 21- 22-	SAND: black (7.5YR 2.5/1); medium sa		sw	4	12	pH = 7.51 (19.5-20.0 feet bgl). Collected groundwater	• · · · · · · · · · · · · · · · · ·
23 – 24 – 25 – 26 – 27 –	SAND: very dark gray (10YR 3/1), med	ium sand.		5	36	sample DP-9 from screened interval of 21-25 feet bgt. Collected soil sample DP-9-24.5-25' at 24.5-25.0 feet bgl. pH = 8.76.	
28 - 29 - 30 - 31 - 32 -			sw	6	12	pH = 7.44 (29.5-30.0 feet bgl).	
33 – 34 – 35 –	NOTES			7	12	Collected soil sample DP-9-34.5-35' at 34.5-35.0 feet bgl. pH = 7.92.	
36 – 37 – 38 – 39 –	NOTES: 1. pH field screen parameters measure Oakton® pH Testr™ 30. 2. Boring completed to a depth of 35.0 3. Groundwater sample was collected dedicated tubing equipped with a botton	feet bgl. using					

NOTES:
1. pH field screen parameters measured using Oakton® pH Testr™ 30.
2. Boring completed to a depth of 35.0 feet bgl.
3. Groundwater sample was collected using dedicated tubing equipped with a bottom check valve.

APPENDIX B

Bibliography of Reviewed Documents



Bibliography of Reviewed Reports and Correspondence

Reports

- SHN, 1998. Groundwater Investigation Samoa Pulp Mill, Louisiana Pacific Company, Samoa, CA.
- MFG, 2000. Groundwater Management Plan.
- MFG, 2002. Additional Soil Excavation and Groundwater Sampling Report Former Underground Storage Tank, Samoa Pulp Mill Chip Dump, Samoa, CA.
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- MFG, 2004. Site Characterization Summary Report.
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- PES Environmental, 2007. Data Gap Evaluation Workplan.
- PES Environmental Inc., 2008. Data Gap Evaluation Report.
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- SHN, 2010. AOI-8 Initial Feasibility Study and Site Investigation Workplan, Former Louisiana Pacific Pulp Mill, 1 TCF Dr., Samoa, CA.
- SHN, 2011. Additional Subsurface Investigation and Well Installation Report of Findings AOI-8.
- SHN, 2011. AOI-7 and AOI-9 Site Investigation and AOI-8 Monitoring Well Installation and Remedial Action Plan Study Workplan.
- SHN, 2011. Conceptual Site Model.
- Freshwater Environmental Services, 2011. Second Revised Concrete Sampling Plan for the Freshwater Tissue Company, Samoa Pulp Mill.
- Freshwater Environmental Services, 2011. Letter Report Concrete Sampling.
- Freshwater Environmental Services, 2012. Letter Report on Tank Footprint Sampling at Freshwater Tissue Company.
- SHN, 2012. AOI-7 and AOI-9 Site Investigation and AOI-8 Monitoring Well Installation and Remedial Action Plan Study Report of Findings.
- SHN, 2012. Blog Summary.

<u>Correspondence</u>

- History of Chemical Storage and Waste Streams at the Samoa Pulp Mill, dated 4/12/2004.
- Transformer Storage Location, dated 2/5/2007.
- Underground Caustic Spill, dated 1/5/2007.

Technical Memorandum Revised Concrete Sampling Plan, dated 2/7/2011. Technical Memorandum former LP Mill, dated 8/30/2011.

Phase 1 Environmental Site Assessment (ASTM E1527-05)
Former Louisiana Pacific Pulp Mill
APN# 401-112-021, Humboldt County, California

APPENDIX C

Site Chemical Inventory and Locations 1999-2003



RWQCB REGION 1

APR 1 3 2004

RLT

One TCF Drive, P.O. Box 218 Samoa, California 95564 (707) 443-7511

de 1

April 12, 2004

Kasey Ashley R.G.
Engineering Geologist
California Water Quality Control Board
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95403

Subject: History of Chemical Storage and Waste Streams at the Samoa Pulp Mill

Dear Ms. Ashley:

Enclosed please find a history of chemicals stored at the Samoa Pulp mill site since 1999. In late February, 2001 Samoa Pacific Cellulose, LLC. purchased the Samoa Pulp Mill from Louisiana-Pacific Samoa, Inc. On August 15, 2003 the mill assets were purchased in public auction by Stockton Pacific Enterprises, Inc. as part of the foreclosure proceeding against Samoa Pacific Cellulose, LLC.

Records of chemicals stored at the site prior to 1999 are not available. The locations of the chemicals stored at the site are keyed to a gridded site map that is also enclosed. MSDS sheets for black liquor, green liquor and white liquor are enclosed because they are the materials stored in the largest quantities at the mill. If you need any other MSDS sheets, I would be happy to send them to you.

High volume chemicals are transported from storage to use areas by piping systems. Low volume chemicals are stored in tote bins and transported by forklift.

An overview of the production process and a description of the waste streams generated by the plant are also enclosed and keyed to the gridded site map. The waste streams have not changed since the purchase of the plant in 2001. The gridded site map is based on a site plan that was produced prior to the January 1994 conversion from chlorine bleaching to totally chlorine free bleaching. A site map produced in October of 1994 and more closely representing the current process is also enclosed. This map is larger than the gridded map and the numbers and tank descriptions are more clearly visible.

Sincerely,

Brice Weyer Environmental Manager

Enclosures

cc: Pam Barker: Godfrey & Kahn

Process Overview

and

Site Maps

Samoa Pulp Mill Process Overview

The Samoa Mill produces approximately 700 tons kraft market pulp per day. The Totally Chlorine Free (TCF) process employed at the Samoa Mill uses hydrogen peroxide and oxygen as alternative bleaching agents to conventional bleaching chemicals, which are chlorine and chlorine dioxide.

Once produced, the kraft pulp can either be used directly as brown stock or bleached to produce bleached kraft pulp. Stockton Pacific markets finished pulp to customers worldwide. They in turn use it as the raw material for their own production of paper or paper products.

Regardless of the further processing that takes place, the kraft process involves certain steps that are common to all kraft pulp mills. In all kraft mills, the one feature that makes it economically viable is its chemical recovery process. Without the recovery and conversion of the pulping chemicals back to their original form, the kraft process would simply not be competitive.

The components of the Samoa Pulp Mill overall operation are shown schematically on the enclosed drawing and briefly discussed below. Locations of the processes on the gridded site map are in parenthesis.

a) Chip Piles (S-T7 to S-T18)

At the Samoa Pulp Mill, the wood comes cut into chips about the size of a half dollar. Wood is the basic raw material for making pulp and paper. Wood is a combination of cellulose and lignin. Cellulose is the portion that forms pulp, the lignin is an unwanted by-product, but is important for energy production at the mill. Before paper can be made, the cellulose must be removed from the surrounding matrix of lignin.

b) Digester (K8)

The objective of the pulping operation is to separate the cellulose fibers from the wood. Wood chips are fed from storage into a large pressure cooker called a digester. The purpose of the digester is to dissolve the lignin, which holds the cellulose fibers together in the chips. In the kraft process, this is accomplished by cooking the chips in a water solution of caustic soda (NaOH) and sodium sulfide (Na₂S).

Ideally, the cooking operation would remove all traces of lignin without destroying any fibrous material. In actual practice, some cellulose is destroyed and some lignin remains. The mixture of digested wood chips (now called "brown stock" and used cooking chemicals (now labeled "black liquor") are discharged from the digester into a blow tank (J8). Since they exit hot and under pressure, some of the liquid flashes. The energy liberated in this part of the process is recaptured by a heat recovery system.

c) Brown Stock Washing (K11)

After leaving the blow tank, the pulp is washed in a series of three vacuum filters (K11). The next filter uses wash water from the previous filter, and so on. This is the

point where the recovery of the spent cooking chemicals begins by capturing the used wash water ("weak black liquor")

Weak black liquor from washing systems usually exits at about 14 to 17% dry solids. In this state, the liquor contains too much moisture for it to burn and the heating value is not sufficient to evaporate the inherent moisture. Consequently, some of the water in the weak black liquor must be removed before it can be injected into the recovery boiler for burning. The liquor cycle will be discussed later.

First, let's talk about what happens to the brown stock after it has been washed. Most of the liquor and non-cellulose material was broken down and removed in the digesting operation but some still remains. To remove these impurities and whiten up the brown stock, the Samoa mill currently uses two oxidation processes in series. The first phase is called oxygen delignification. The second is bleaching. Both perform what chemists refer to as oxidation reactions but each uses a different method to accomplish it.

e) Oxygen Delignification (I-10)

The Overall scheme of the oxygen delignification is to blend the brown stock with a caustic soda solution then oxygenate this mixture under pressure and temperature. The result is more of an extended cooking operation than a bleaching phase. The reactants decompose some of the lignin residual, which is subsequently captured in a countercurrent washing process. The brown stock becomes somewhat brighter in color due to the removal of lignins.

After the oxygen delignification reaction is finished, the pulp is washed in two sets of washers. The water applied to the second post-oxygen washer is actually the wastewater generated by the bleaching process discussed below. From here, the water is then used on the first post-oxygen washer and then becomes the wash water applied to the final brown stock washer. This counter current washing results in maximum chemical recovery and minimum loss of lignins to the environment.

f) Bleaching (K-10)

After being washed, the somewhat whitened brown stock is bleached in a TCF bleach plant. The pulp is bleached in five stages with various combinations of oxygen, hydrogen peroxide, and sodium hydroxide. Under controlled conditions, this technique selectively attacks the remaining lignin without noticeable degradation of the cellulose fibers. The whitened pulp is now ready for its final processing. This includes refining and screening. Finally, the pulp is dried and baled for sale and shipment.

The main feature of TCF bleaching is that no chlorine dioxide, or other chlorinated species are used in the process. This allows the wastewater to be recycled through the oxygen delignification system and the brown stock washers to the digester. Ultimately, the wastewater components become part of the black liquor recovery cycle and incinerated in the recovery boiler.

g) Multiple Effect Evaporators and Concentrator (L-8)

Now let us return to trace the path of the weak liquor leaving the brown stock washers. With the weak liquor about 85% water; a substantial amount of water must be removed before it can be injected into the recovery furnace. Conventional multiple effect evaporator design limits them to producing solids of no more than 50 to 55% by weight. Delivering black liquor at these concentrations to a low-odor style recovery boiler is not practical. A high solids concentrator has been installed to take the liquor up to concentrations that can be fired economically in the recovery boiler.

h) Steam Stripping (H-7)

During the digesting operation, the reaction of caustic soda on some of the resins in the wood produces chemicals in the same family as common household soap. There are also turpentine, methanol and a few other liquid hydrocarbon compounds in black liquor. These latter compounds boil off with the water removed in the final one or two evaporator effects and are know as "foul condensates." They contain the majority of the substances that cause the effluent to have a characteristic odor. These "foul condensates" also contain methanol, which contributes to the mill's BOD. Stockton Pacific operates a steam stripping system to remove these substances from the condensates, allowing the water to be available for reuse. The products removed by steam stripping are incinerated.

i) Recovery Boiler (K-5)

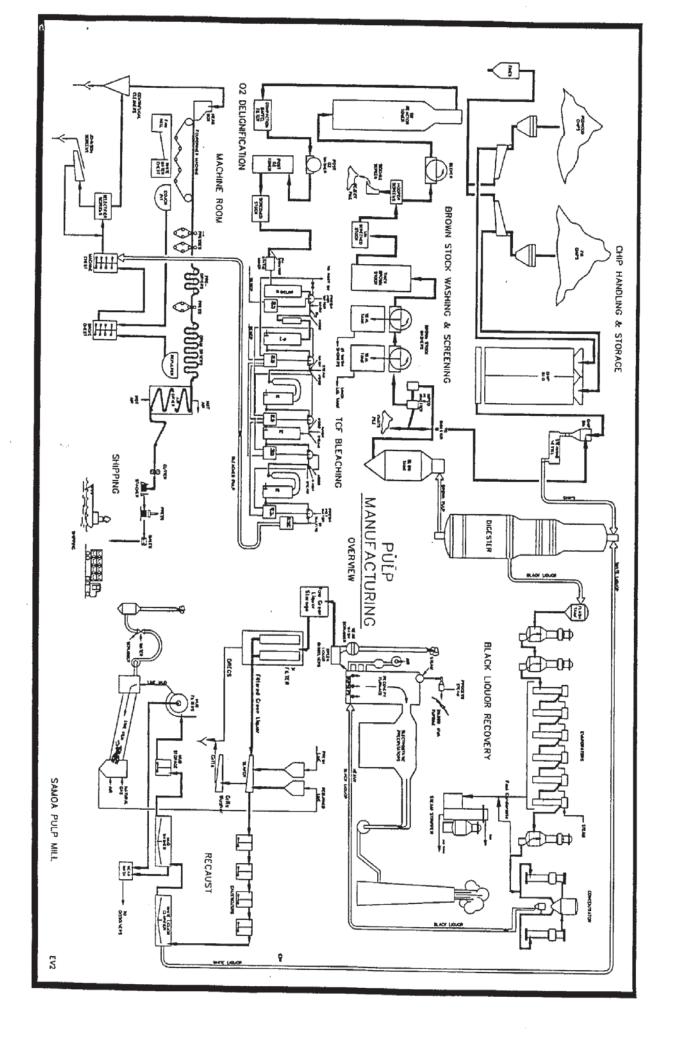
The recovery boiler is the first major step in regenerating the cooking liquor used in the digesting phase. This heavy black liquor is sprayed into the recovery furnace and the organic components burn. The heat produces steam, which is used to produce electricity. Finally, the steam is used throughout the process. The inorganic compounds, remnants of the original cooking liquor, melt and chemically react. The remnants of the sodium sulfide are reduced back to sodium sulfide. The remnants of the caustic (NaOH) are converted to sodium carbonate. These molten chemicals or "smelt" then pour out of the bottom of the recovery furnace where they are mixed with water or "weak wash" in the dissolving tank. The resulting solution is green in color and consequently is given the name "green liquor." The green liquor is pumped out of the dissolving tank to the causticizing area (F-6) for further processing.

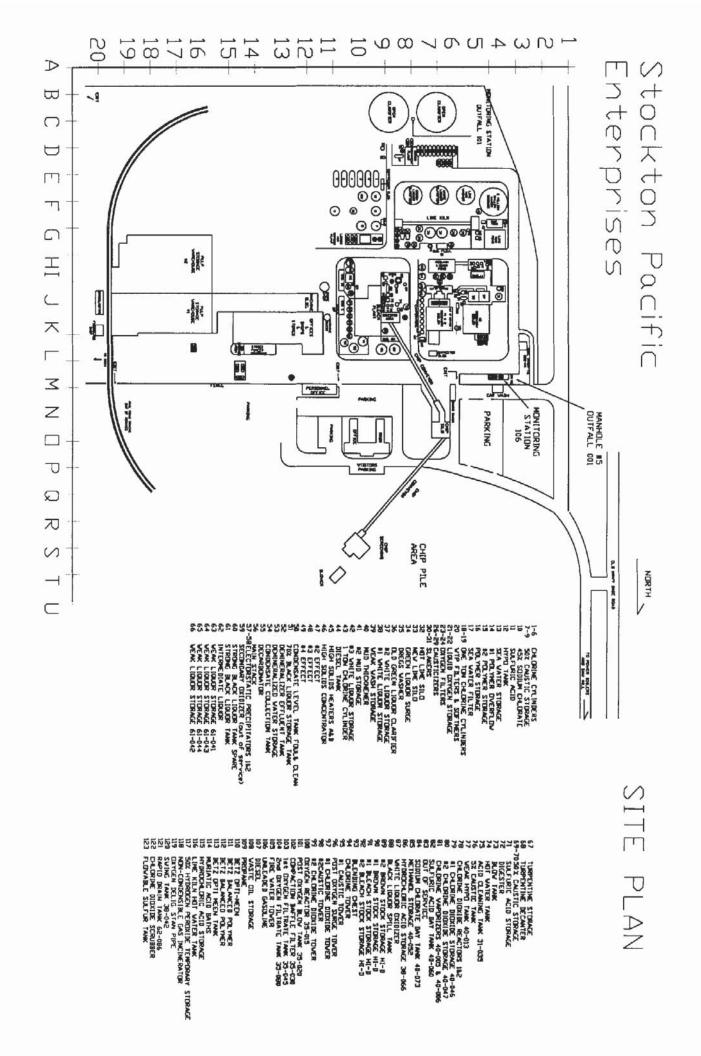
j) Causticizing Area (F-6)

The causticising area is a series of tanks where the green liquor is purified and the sodium carbonate in it is converted to sodium hydroxide. Lime (calcium hydroxide) is now added to the green liquor and the two ingredients react, producing the desired sodium hydroxide and an insoluble precipitate, calcium carbonate. Calcium carbonate found in nature is called limestone. At the mill, it is called "mud." A clarifier is used to separate the mud and a clear liquid is decanted off the top. This clear liquid, "referred to as white liquor" now has the active ingredients it needs to be sent to the digester to start the cycle over again and pulp more wood chips.

To help minimize the amount of chemicals lost from the overall pulping circuit, the calcium carbonate is washed to remove and dilute any white liquor in it. This rinse water, labeled "weak wash," is recycled by sending it back to the recovery area where it ultimately will be used to dissolve more smelt for the production of green liquor. The

calcium carbonate is then converted to calcium oxide or lime in a rotary kiln (G6-8) and the lime is then available for reuse.





Chemical Storage

CHEMICAL		AVC.	OTHER	CDIDA	CBIDA IL CONTIONIA	CBIDS	CBID3 I OCATION 3	Coins	CONTION 2	CBIRL	TO THE PARTY OF TH	COUR	CBIDE LOCATION S
ACETONE	55	55	GAL	L12	STORES/TECH LAB	J20	SHOP	0.00	1000	0,100	LOCATION	0	
ACETYLENE	3,778	2,602	CUFT	L12	STORES/TECH LAB	J12	MAINTENANCE					1	1.5
ACTIVATED CARBON	4,500	4500	LBS	J4	RECOVERY					100			
AMERCOAT 12	85	45	GAL	L12	STORES	J14	PAINT SHOP						
AMMONIA	UNK	UNK	LBS	L12	ENGINEERING								
AMMONIUM BIFLUORIDE	UNK	UNK	LBS	H18	WAREHOUSE								
ANTHRAQUINONE 50% LIQUID	8,300	8,300	GAL	K-8	DIGESTER								
ANTIFREEZE	75	75	GAL	J13	STORES	K14	AUTO SHOP						
ARGON	3,024	3024	CUFT	L12	STORES								
ASBESTOS	40	40	CU YDS	K-7	OLD RECOVERY	G15	SCRAP YARD						
ASPHALT EMULSION	220	220	GAL	119	WAREHOUSE								
ATLAC 580-05A VINYL ESTER RESIN STYRENE	UNK	UNK	GAL	L13	STORE	K20	FIBERGLASS SHOP						
BEAD GEL SPHERICAL SILICA GEL ABSORBENTS	800	800	LBS	L12	STORES	K 6	OLD RECOVERY						
BETZ BALANCED POLYMER 73302	2,500	2,500	GAL	K-4	RECOVERY				The second secon				
BETZ BALANCED POLYMER 73504	UNK	UNK	GAL	X-4	RECOVERY				The second secon				
BETZ BALANCED POLYMER 73612	2,500	1,250	GAL	4	RECOVERY								
BETZ CDP 90517	UNK	UNK	GAL	D-9	WATER TREATMENT	-7208					500		
BETZ CORROGEN	2,000	2000	LBS	X_4	RECOVERY BOILER		The second secon						
BETZ CORR-SHIELD 736	UNK	UNK	GAL	4	RECOVERY BOILER	- T. C.							
BETZ COR-TROL 778-P	UNK	UNK	GAL	X-4	RECOVERY								
BETZ CORTROL OS7700	400	400	GAL	K4	#3 RECOVERY								
BETZ COR-TROL OS7780	2,000	1064	GAL	X.A	RECOVERY								
BETZ KLARAID 1172	UNK	UNK	GAL	D-9	WATER TREATMENT								
BETZ KLARAID 1172P	21,400	16557	GAL	D-9	WATER TREATMENT								
BETZ OPTI-MEEN 80554	1,500	1082	GAL	Ā	#3 RECOVERY								
BETZ POLYMER AE 1115P	327	327	GAL	D-8	WATER TREATMENT	L12	STORES						
BETZ STEAMATE NF 2000	400	244	GAL	X-4	#3 RECOVERY	Ĵ		A NEW YORK	-20			20000	To and the second secon
BLACK LIQUOR	680,000	680,000	GAL	J-5	#3 RECOVERY	G-4	CONCENTRATOR	G-7	BLACK LIQUOR STORAGE	J-7	EVAPORATION		
CARBON DIOXIDE	500	500	LBS	L12	STORES	J-7	RECOVERY						
CARBON DIOXIDE AND ARGON IN HELIUM	291	291	CUFT	L12	STORES								
CARBON DIOXIDE IN ARGON	356	356	CUFT	L12	STORES								
CATION RESIN BEADS	11,559	11,559	LBS	K6	Old Recovery								
CEMENT (PORTLAND)	2,000	2000	LBS	L12		J20	SANDBLASLTING SHACK	H18	WAREHOUSE			424.24	
CHELANT	10,000	10000	GAL	J-9	BLEACH PLANT								
CITRIC ACID	1,500	1,500	LBS	L12	STORES								
COMPRESSED AIR	1,398	932	CU FT	L12	STORES								

TORRES J-9 REACH PLANT RECOVERY G17 WARCHOUSE G17 WARCHOUSE G17 WARCHOUSE G17 WARCHOUSE G17 WARCHOUSE G18 G18	CHEM STORAGE	WATER TREATMENT	D-9		10,000 7,	Control Control Control
J-9 BLEACH PLANT	CHEM STORAGE					SODIUM HYPOCHI ORITE SOLUTION
J-9 BLEACH PLANT	DANUBLAD TING SHA	RECOVERY F-		200,000 GAL	625,000 2	SODIUM HYDROXIDE SOLUTION 50%
J-9 BLEACH PLANT	SANDBLASTING STA	STORES	L12	1,500 LBS	1,500 1.	SODIUM CARBONATE
J-9 BLEACH PLANT SHACK G17 WAREHOUSE SHACK G17 WAREHOUSE 3 J-5 #3 RECOVERY L12 STORES L12 STORES T ANK FARM F4 RECAUST F4 RECAUST F4 RECAUST F4 WAREHOUSE 3 G18 WAREHOUSE J13 MACHINE ROOM L12 STORES ORAGE VARIOUS MILL SITES ORAGE J11 MACHINE ROOM L12 STORES J20 SANDBLASTING SHACK	SANDBLASTING SHA	BLEACH PLANT	. K-9	566 GAL	566 5	SODIUM BISULFITE
J-9 BLEACH PLANT SHACK G17 WAREHOUSE SHACK G17 WAREHOUSE 3 J-5 #3 RECOVERY L12 STORES L12 STORES T J-8 TANK FARM L12 RECAUST L13 WAREHOUSE H16 WAREHOUSE J13 MACHINE ROOM VARIOUS MILL SITES ORAGE U12 STORES VAREHOUSE J11 MACHINE ROOM L12 STORES	CANDO ACTINIO CHA	WAREHOUSE J2	G17	50000 LBS	50,000 5	SANDBLASTING SAND
ASS SHACK G17 WAREHOUSE RY RY NIZING J-5 #3 RECOVERY NIZING L12 STORES REP L12 STORES ROOM L12 STORES PLANT J-8 TANK FARM RY F4 RECAUSTICIZING K12 RY F4 RECAUST RY F4 RECAUST RY F4 RECAUST REP H16 WAREHOUSE NIZING G18 WAREHOUSE	STORES	WAREHOUSE L1	H16	1200 LBS	1,200 1:	REFRACTORIES
J-9 BLEACH PLANT G17 WAREHOUSE J-5 #3 RECOVERY L12 STORES G-5 CAUSTICIZING K12 L12 STORES J-8 TANK FARM F4 RECAUST G18 WAREHOUSE G18 WAREHOUSE J13 MACHINE ROOM VARIOUS MILL SITES VARIOUS MILL SITES		STORES J1	M12	11000 GAL	11,000 1	RAIFIX 120
ASS SHACK G17 WAREHOUSE RY RY IZING J-5 #3 RECOVERY JUSE L12 STORES REP G-5 CAUSTICIZING K12 ROOM L12 STORES PLANT J-8 TANK FARM RY F4 RECAUST L13 RY F4 RECAUST L13 REP H16 WAREHOUSE IZING G18 WAREHOUSE		NORTH OF WAREHOUSE	. L16	1,400 GAL	1,400 1,	PROPANE
ASS SHACK G17 WAREHOUSE RY RY IZING J-5 #3 RECOVERY JUSE L12 STORES REP G-5 CAUSTICIZING K12 ROOM L12 STORES PLANT J-8 TANK FARM RY F4 RECAUST L13 RY F4 RECAUST L13 REP H16 WAREHOUSE IZING G18 WAREHOUSE		PAINT SHOP	K15	0 GAL	50 50	PAINT OIL BASED
ASS SHACK G17 WAREHOUSE RY RY IZING J-5 #3 RECOVERY JUSE L12 STORES REP G-5 CAUSTICIZING K12 ROOM L12 STORES PLANT J-8 TANK FARM RY F4 RECAUST L13 RY F4 RECAUST L13 REP H16 WAREHOUSE IZING G18 WAREHOUSE		PAINT SHOP	K15	0 GAL	50 30	PAINT LATEX BASED
ASS SHACK G17 WAREHOUSE RY RY J.5 #3 RECOVERY JUSE L12 STORES REP G-5 CAUSTICIZING K12 STORES PLANT J-8 TANK FARM RY F4 RECAUST RY F4 RECAUST L13 RY RY F4 RECAUST L13 MACHINE ROOM L13 MACHINE ROOM ROOM ROOM ROOM VARIOUS MILL SITES VARIOUS MILL SITES VARIOUS MILL SITES		CHEMICAL STORAGE	G10	11,122 GAL	22,244 1	OXYGEN (USED FOR PULP PRODUCTION)
J-9 BLEACH PLANT JACK G17 WAREHOUSE J-5 #3 RECOVERY L12 STORES G-5 CAUSTICIZING K12 TANK FARM F4 RECAUST G18 WAREHOUSE H16 WAREHOUSE H16 WAREHOUSE J13 MACHINE ROOM END	VARIOUS MILL SITES	STORES	FT L12	3372 CU FT	3,372 3	OXYGEN (GAS CYLINDERS)
J-9 BLEACH PLANT J-5 WAREHOUSE J-5 #3 RECOVERY L12 STORES G-5 CAUSTICIZING K12 TANK FARM F4 RECAUST L13 F4 RECAUST L13 F4 WAREHOUSE H16 WAREHOUSE H16 WAREHOUSE J13 MACHINE ROOM		TECH LAB	FT L12	233 CU FT	233 2:	NITROUS OXIDE
J-9 BLEACH PLANT J-5 WAREHOUSE J-5 #3 RECOVERY L12 STORES G-5 CAUSTICIZING L12 STORES J-8 TANK FARM F4 RECAUST F4 RECAUST L13 F4 WAREHOUSE H16 WAREHOUSE H16 WAREHOUSE H16 WAREHOUSE H17 WAREHOUSE H18 WAREHOUSE H19 WAREHOUSE		STORES	FT L12	1530 CUFT	1,530	NITROGEN
J-9 BLEACH PLANT J-5 WAREHOUSE J-5 #3 RECOVERY L12 STORES L12 STORES L12 STORES TANK FARM J-8 TANK FARM F4 RECAUST F4 RECAUST L13 MACHINE ROOM L13 MACHINE ROOM		DIGESTER	L12	12000 LBS	12,000 1:	NITRIC ACID
J-9 BLEACH PLANT J-5 #3 RECOVERY L12 STORES G-5 CAUSTICIZING L12 STORES L12 STORES F4 RECAUST F4 RECAUST G18 WAREHOUSE H16 WAREHOUSE J13 MACHINE ROOM		MACHINE WET END	J13	800 GAL	800 8	NALCO NALKLEEN 2626
J-9 BLEACH PLANT J-5 WAREHOUSE J-5 #3 RECOVERY L12 STORES G-5 CAUSTICIZING L12 STORES TANK FARM J-8 TANK FARM F4 RECAUST G18 WAREHOUSE H16 WAREHOUSE J13 MACHINE ROOM		Machine Room	J12	400 GAL	400 4	NALCO NALCON 7648 MICROBIOCIDE
J-9 BLEACH PLANT J-5 WAREHOUSE J-5 #3 RECOVERY L12 STORES G-5 CAUSTICIZING K12 TANK FARM J-8 TANK FARM F4 RECAUST H16 WAREHOUSE H16 WAREHOUSE		STORES J1	_ L12	770 GAL	770 7	NALCO 7570 FELT CLEANER
J-9 BLEACH PLANT G17 WAREHOUSE		STORES H1	K12	200 LBS	500 2	MORTAR
J-9 BLEACH PLANT J-5 WAREHOUSE J-5 #3 RECOVERY L12 STORES G-5 CAUSTICIZING K12 L12 STORES J-8 TANK FARM F4 RECAUST G18 WAREHOUSE		CHEM PREP	1-8	10,298 GAL	10,298	MAGNESIUM SULFATE
J-9 BLEACH PLANT G17 WAREHOUSE		CAUSTICIZING	G-4	262489 LBS	262,489 2	LIME MUD
J-9 BLEACH PLANT G17 WAREHOUSE		CAUSTICIZING G	H-8	296000 LBS	296,000 2	LIME (FRESH LIME)
J-9 BLEACH PLANT J-5 WAREHOUSE J-5 #3 RECOVERY L12 STORES G-5 CAUSTICIZING K12 L12 STORES J-8 TANK FARM F4 RECAUST L13		STORES	K12	15,000 LBS	1,200 1	KLEEN BLAST ABRASIVE SANDBLASTING SAND
J-9 BLEACH PLANT J-6 WAREHOUSE J-5 #3 RECOVERY L12 STORES G-5 CAUSTICIZING K12 J-8 TANK FARM F4 RECAUST L13		STORES	L12	0 GAL	165 30	KEROSENE
J-9 BLEACH PLANT ACK G17 WAREHOUSE J-5 #3 RECOVERY L12 STORES A L12 STORES	RECAUST	RECOVERY F4	FT J5	288 CU FT	288 2	HYDROGEN SULFIDE IN NITROGEN
J-9 BLEACH PLANT ACK G17 WAREHOUSE J-5 #3 RECOVERY L12 STORES L12 STORES L12 STORES L12 STORES		BLEACH PLANT J-	K10	20,000 GAL	20,000 2	HYDROGEN PEROXIDE 50%
J-9 BLEACH PLANT ACK G17 WAREHOUSE J-5 #3 RECOVERY L12 STORES G-5 CAUSTICIZING K12		TURBINE ROOM L1	FT K-7	4,000 CU FT	4,000 4	HYDROGEN
J-9 4ACK G17 J-5 L12	CAUSTICIZING	CHEM PREP G-	9-L	40304 LBS	*	HYDROCHLORIC ACID (INHIBITED)
J-9 HACK G17 J-5		WAREHOUSE L1	H18	SB1 000,8	8,000 8	GROUT
J-9 HACK G17		NG	H-6	883,995 GAL	995	GREEN LIQUOR
J-9 1ACK G17		RECOVERY	K4	220 GAL	220 2	FYRQUEL EHC
J-9 HACK G17		RECOVERY	. 1-3	10800 GAL	10,800	FLOWABLE SULFUR MICROSUL 70
J-9		FIBERGLASS SHACK G1	K20	5 GAL	55 55	FIBER GLASS RESINS
		STORES J-9	M13	1800 GAL	1,800 1	DIACHEM 611
ILEACH PLANT		BLEACH PLANT	. J-9	12,700 GAL	12,700 1:	DEFOAMER
OCATION 1 GRID2 LOCATION 2 GRID3 LOCATION 3 GRID4 LOCATION 4 GRID5 LOCATION 5		GRID1 LOCATION 1 GF		AVG UNITS	MAX A	CHEMICAL

CHEMICAL	MAY	TAVIC	OTHER	2010	I CONTINUE	1	1	1				1	
CHEMICAL CHEMICAL	T AND A	200	OINIO	GKIDI	GRIDI LOCATION	GKIDZ	GRIDZ LOCATION Z	GRID	GRID3 LOCATION 3	GRID	GRID4 LOCATION 4	GRID5	GRID5 LOCATION 5
SULFAMIC ACID	5,000	5000	LBS	28	DIGESTER	G-4	RECAUST	X-6	OLD RECOVERY	-			
SULFURIO ACID 93%	106 000	3000	CALL	5	SUB AA	5	Cura	+	1	+			
TALC	129,000	129,000	LBS	H18	WAREHOUSE	2-9	BLEACH PLANT	6	TOTAL POLICE	2	MANHOLE #5	T	
TURPENTINE	400	200	GAL	K-7	RECOVERY	1		+		+		1	
UNOCAL 76 GUARDOL QLT 15W-40	495	550	GAL	L14	OIL RACK			1		+			
UNOCAL DIESEL # 2	1,000	1000	GAL	M14	NORTH OF WAREHOUSE	G-3	PUMP HOUSE	G-7	CAUSTICIZING	S-9	CHIP DUMP	V16	POWER BOILER
UNOCAL EXTRA DUTY NL GEAR LUBE 5EP	820	820	LBS	L14	LUBE RACK/OIL SHACK	J12	MACHINE WET END	1				1	
UNOCAL EXTRA DUTY NL GEAR LUBE 7EP	615	605	GAL	J-9	BLEACH PLANT	L14		ရှ	KILV	+			
UNOCAL GUARDOL MOTOR OIL 10W	55	55	GAL	K14	AUTO SHOP	S-9				+			
UNOCAL HT/4 FLUID 30	385	385	GAL	S-9	CHIP DUMP			1					22000
UNOCAL HYDRAULIC TRACTOR FLUID	165	165	GAL	L14	OIL RACK	K14	AUTO SHOP	1		1			
UNOCAL MULTIPURPOSE ATF	440	440	GAL	K14	AUTO SHOP	4	#3 RECOVERY	L14	OIL RACK	J15	MACHINE DRY END		
UNOCAL PM OIL 150	1,300	1300	GAL	L14	OIL RACK	J-4	#3 RECOVERY						
UNOCAL TRITION SYNTHETIC OIL 32	55	55	GAL	J15	MACHINE ROOM			1		1			
UNOCAL TRITON SYN LUBE 80W-140	410	410	LBS	J-4	RECOVERY					1			
UNOCAL TURBINE OIL 32	495	495	GAL	L14	OIL RACK	У -6	TURBINE BASEMENT	J-4	#3 RECOVERY	J15	MACHINE ROOM		
UNOCAL TURBINE OIL HD 68	175	175	GAL	L14	OIL RACK/ OIL SHOP	J-4	#3 RECOVERY			1			
UNOCAL UNAX AW 100	720	720	GAL	J15	MACHINE DRY END	9-9	KILN	L14	OIL RACK	J-9	BLEACH PLANT		
UNOCAL UNAX AW 150	55	55	GAL	J13	MACHINE ROOOM			1					
UNOCAL UNAX AW 220	725	725	GAL	L14	OIL RACK	S-9	CHIP DUMP	J-9	BLEACH PLANT	4	RECOVERY		
UNOCAL UNAX AW 46	715	715	GAL	S-9	CHIP DUMP	K14	AUTO SHOP	9-0	CHIP SILO	L14	OIL RACK		
UNOCAL UNLEADED GASOLINE	1,000	1000	GAL	L14	NORTH OF AUTO SHOP					1			
UNOCAL UNOBA EP GREASE 2	1,350	1350	LBS	L14	OIL SHACK	9-0	CHIP SILO	J-9	BLEACH PLANT	<u>ရ</u>	KILN		
UNOCAL UNOBA MOLY XD GREASE 2	1,080	1080	LBS	L14	OIL SHACK	S-9	CHIP DUMP	Ž.	RECOVERY	<u>ရှ</u>	KILV		
USED OIL FILTERS	5	2	DRUMS	J16	HAZ WASTE STORAGE					1			
WASTE OIL	2,122	2,122	GAL	M15	WASTE OIL STORAGE	J13	MACHINE ROOM	X-5	RECOVERY	K-9	BLEACH PLANT	E-7	LIME KILN
WASTE PAINT	50	50	Gal	K15	Paint Shed			1					
WASTE SOLVENT	130	130	GAL	K15	AUTO SHOP	K13	MACHINE SHOP			1			
WHITE LIQUOR	1,009,393	1009393	GAL	G-6	CAUSTICIZING	F-6	CAUSTICIZING	-	CHEM PREP	1			

							KINARFA	0	OA.	no no	430	ICHEVRON MOLY GREASE EP NIGIO 1 2
			BL. PLANT BASEMENT	J9	BL. PLANT3rd FLOOR	9	OIL RACK	L14	GAL	440	440	CHEVRON MACHINE OIL AW ISO 100
					BL. PLANT3rd FLOOR	J9	OIL RACK	L14	GAL	220	220	CHEVRON MACHINE OIL AW 220
					OLD RECOVERY FLOOR	K6	OIL RACK	L14	GAL	330	220	CHEVRON MACHINE OIL AW 150
	MACHINE DRY END	J15	CHIP DUMP	S9	CHIP SILO	06	OIL RACK	L14	GAL	385	385	CHEVRON HYDRAULIC OIL 46
					TURBINE BASEMENT	K6	OIL RACK	L14	GAL	165	165	CHEVRON GST OILS ISO 32
					MACHINE DRY END	J15	MACHINE WET END	J12	GAL	240	240	CHEVRON DURA-LITH GREASE EP NLGI 2
							OIL RACK	L14	GAL	55	55	CHEVRON DRIVE TRAIN FLUID HD SAE 50
					AUTO SHOP OUTSIDE	K14	OIL RACK	L14	GAL	165	220	CHEVRON DRIVE TRAIN FLUID HD SAE 30
							OIL RACK	L14	GAL	55	55	CHEVRON CYLINDER OIL W ISO 680
							BLEACH PLANT	9-F	GAL	10000	10,000	CHELANT
		1	WAREHOUSE	H18	SANDBLASLTING SHACK	J20	STORES	L12	LBS	6,500	9,502	CEMENT (PORTLAND)
							Old Recovery	K6	LBS	11,559	11,559	CATION RESIN BEADS
							STORES	L12	CUFT	356	356	CARBON DIOXIDE IN ARGON
				٦			STORES	L12	CUFT	291	291	CARBON DIOXIDE AND ARGON IN HELIUM
					RECOVERY	J-7	STORES	L12	LBS	500	500	CARBON DIOXIDE
	EVAPORATION	E J-7	BLACK LIQUOR STORAGE	G-7	CONCENTRATOR	64	#3 RECOVERY	J-5	GAL	680,000	680,000	BLACK LIQUOR
		1					#3 RECOVERY	X-4	GAL	244	400	BETZ STEAMATE NF 2000
		1			STORES	L12	WATER TREATMENT	D-8	GAL	327	327	BETZ POLYMER AE 1115P
		1					#3 RECOVERY	4	GAL	1082	1,500	BETZ OPTI-MEEN 80554
		1					WATER TREATMENT	D-9	GAL	8,000	11,400	BETZ KLARAID 1172P
		1					RECOVERY	4	GAL	1064	2,000	BETZ COR-TROL OS7780
							#3 RECOVERY	X-A	GAL	400	400	BETZ CORTROL OS7700
							RECOVERY BOILER	4	LBS	2000	1,500	BETZ CORROGEN
		1		٦			RECOVERY	4	GAL	1.250	2,500	BETZ BALANCED POLYMER 73612
				1			RECOVERY	K-4	GAL	2,500	2,500	BETZ BALANCED POLYMER 73302
		1		1	OLD RECOVERY	К6	STORES	L12	LBS	800	1,000	BEAD GEL SPHERICAL SILICA GEL ABSORBENTS
		1		1			WAREHOUSE	119	GAL	220	220	ASPHALT EMULSION
		1		1	SCRAP YARD	G15	OLD RECOVERY	K-7	CU YDS	40	40	ASBESTOS
		+		1			STORES	L12	CUFT	3024	2,016	ARGON
		1		7	AUTO SHOP	X14	STORES	J13	GAL	75	75	ANTIFREEZE
		1					DIGESTER	K-8	GAL	8,300	14,718	ANTHRAQUINONE 50% LIQUID
		+		7	PAINT SHOP	J14	STORES	L12	GAL	45	100	AMERCOAT 12
		1		7			RECOVERY	J4	LBS	4500	4,500	ACTIVATED CARBON
		1		7	MAINTENANCE	J12	STORES/TECH LAB	L12	CUFT	2,602	3,778	ACETYLENE
				1	FIBERGLASS SHOP	J20	STORES/TECH LAB	L12	GAL	55	357	ACETONE
GRIDS LOCATION 5	GRIDA I OCATION 4	GRID	GRID3 LOCATION 3	GRID	GRID2 LOCATION 2	GRID	GRID1 LOCATION 1	GRID1	STINU	AVG	MAX	CHEMICAL

		MACHINE ROOM	J11	STORES	M12	GAL	10,000	10,000	RAIFIX 120
				NORTH OF WAREHOUSE	L16	GAL	1,400	1,400	PROPANE
SANDBLASTING SHACK	J20	WAREHOUSE	Н16	PAINT SHOP	K15	GAL	600	000	PAINT OIL BASED
SANDBLASTING SHACK	J20	WAREHOUSE	H16	PAINT SHOP	K15	GAL	170	170	PAINT LATEX BASED
				CHEMICAL STORAGE	G10	GAL	11,122	22,244	OXYGEN (USED FOR PULP PRODUCTION)
		VARIOUS MILL SITES		STORES	L12	CUFT	3,372	3,372	OXYGEN (GAS CYLINDERS)
			Г	TECH LAB	L12	CUFT		233	NITROUS OXIDE
				STORES	L12	CUFT	400	450	NITROGEN
				DIGESTER	L12	LBS	12000	3,600	NITRIC ACID
				WATER TREATMENT	D9	LBS	3500	11,400	NALCO ULTRION 7157 COAGULANT
			Г	MACHINE WET END	J13	GAL	800	1,200	NALCO NALKLEEN 2626
				Machine Room	J12	GAL	400	600	NALCO NALCON 7648 MICROBIOCIDE
		MACHINE ROOM	J13	STORES	L12	GAL	770	770	NALCO 7570 FELT CLEANER
SANDBLASTING SHED	J20	WAREHOUSE	H16	STORES	K12	LBS	6,000	6,750	MORTAR
				CHEM PREP	-8 -	GAL	10,298	14,238	MAGNESIUM SULFATE
				CAUSTICIZING	G-4	LBS	262489	262,489	LIME MUD
OLD RECOVERY	<u>Κ</u> 6	WAREHOUSE	G18	CAUSTICIZING	H-8	LBS	296000	296,000	LIME (FRESH LIME)
3 (3)		OLD RECOVERY	6	STORES	K12	LBS	2,500	3,200	KLEEN BLAST ABRASIVE SANDBLASTING SAND
2000			Г	STORES	L12	GAL	30	165	KEROSENE
STORES	L13	RECAUST	F4	RECOVERY	J5	CUFT	288	900	HYDROGEN SULFIDE IN NITROGEN
		TANK FARM	J-8	BLEACH PLANT	K10	GAL	20,000	20,000	HYDROGEN PEROXIDE 50%
1000		STORES	L12	TURBINE ROOM	K-7	CUFT	4,000	4,000	HYDROGEN
STORES	K12	CAUSTICIZING	G-5	CHEM PREP	J-8	LBS	10,000	35,000	HYDROCHLORIC ACID (INHIBITED)
		STORES	L12	WAREHOUSE	H18	LBS	8,000	4,000	GROUT
		#3 RECOVERY	J-5	CAUSTICIZING	9-H	GAL	883,995	883,995	GREEN LIQUOR
				RECOVERY	X-4	GAL	275	275	FYRQUEL EHC
				RECOVERY	1-3	GAL	10800	10,800	FLOWABLE SULFUR MICROSUL 70
		WAREHOUSE	G17	FIBERGLASS SHACK	K20	GAL	55	110	FIBER GLASS RESINS
		BLEACH PLANT	J-9	STORES	M13	GAL	1800	1,000	DIACHEM 611
				BLEACH PLANT	J-9	GAL	12,700	12,700	DEFOAMER
				STORES	L12	CUFT	932	450	COMPRESSED AIR
				STORES	L12	LBS	1,500	1,450	CITRIC ACID
		MACHINE WET END	J12	BL. PLANT3rd FLOOR	9	GAL	240	240	CHEVRON ULTI-PLEX GREASE EP 2
			Г	AUTO SHOP OUTSIDE	K14	GAL	55	55	CHEVRON TRACTOR HYDRAULIC FLUID
			66	RECOVERY 9th FLOOR	J4	GAL		55	CHEVRON SYNTHETIC GL TEGRA SAE 80W-140
				AUTO SHOP INSIDE	K14	GAL		330	CHEVRON SUPREME AUTOMATIC TRANSMISSION FLUID
AUTO SHOP OUTSIDE	K14	AUTO SHOP INSIDE	K14	OIL RACK	L14	GAL	275	275	CHEVRON RPM HEAVY DUTY MOTOR OILS SAE 15W-40

			L		CHEM PREP	1-8	CAUSTICIZING	F-6	CAUSTICIZING	G-6	GAL	1009393	1,009,393	WHITE LIQUOR
							MACHINE SHOP	K13	AUTO SHOP	K15	GAL	625	652	WASTE SOLVENT
									Paint Shed	K15	Gal	50	100	WASTE PAINT
LIME KILN	E-7	BLEACH PLANT		K-9	RECOVERY	K-5	MACHINE ROOM	J13	WASTE OIL STORAGE	M15	GAL	2,122	2,122	WASTE OIL
					200				HAZ WASTE STORAGE	J16	DRUMS	6	6	USED OIL FILTERS
		KILN		G-6	RECOVERY	4	CHIP DUMP	S-9	BLEACH PLANT	9	LBS	720	960	UNOCAL UNOBA MOLY XD GREASE 2
		12			BLEACH PLANT	J-9	KILN	G-6	CHIP DUMP	89	LBS	820	820	UNOCAL UNOBA EP GREASE 2
			L						NORTH OF AUTO SHOP	L14	GAL	1000	1,000	UNOCAL UNLEADED GASOLINE
					e local				CHIP DUMP	S-9	GAL	165	275	UNOCAL UNAX AW 46
					BLEACH PLANT	J-9	KILN AREA	G6	OIL RACK	L14	GAL	110	110	UNOCAL UNAX AW 220
		No.							MACHINE ROOM	J13	GAL	110	110	UNOCAL UNAX AW 150
					OIL RACK	L14	KILN	9-6	CHIP DUMP	S9	GAL	220	385	UNOCAL UNAX AW 100
							#3 RECOVERY	J-4	OIL RACK/ OIL SHOP	L14	GAL	175	175	UNOCAL TURBINE OIL HD 68
							MACHINE ROOM	J15	OIL RACK	L14	GAL	165	220	UNOCAL TURBINE OIL 32
									RECOVERY	4	LBS	410	410	UNOCAL TRITON SYN LUBE 80W-140
									MACHINE ROOM	J15	GAL	55	55	UNOCAL TRITION SYNTHETIC OIL 32
							#3 RECOVERY	J-4	OIL RACK	L14	GAL	220	220	UNOCAL PM OIL 150
		MACHINE DRY END		J15	OIL RACK	L14	#3 RECOVERY	4	AUTO SHOP	K14	GAL	110	110	UNOCAL MULTIPURPOSE ATF
							AUTO SHOP	K14	OIL RACK	L14	GAL	165	165	UNOCAL HYDRAULIC TRACTOR FLUID
					20				CHIP DUMP	S-9	GAL	385	385	UNOCAL HT/4 FLUID 30
						200	CHIP DUMP	S-9	AUTO SHOP	K14	GAL	55	55	UNOCAL GUARDOL MOTOR OIL 10W
					KILN	6-6	OIL SHACK/OIL RACK	L14	BLEACH PLANT	J-9	GAL	220	220	UNOCAL EXTRA DUTY NL GEAR LUBE 7EP
		115					PUMP HOUSE	G-3	NORTH OF WAREHOUSE	M14	GAL	1000	1,000	UNOCAL DIESEL # 2
									OIL RACK	L14	GAL	55	55	UNOCAL 76 HT/4 FLUID 50
									CHIP DUMP OIL SHACK	89	GAL	55	110	UNOCAL 76 GUARDOL QLT 15W-40
									RECOVERY	K-7	GAL	200	400	TURPENTINE
							BLEACH PLANT	J-9	WAREHOUSE	H18	LBS	312,550	312,550	TALC
		MANHOLE #5		L-3	TANK FARM	J-8	CHEM PREP	F-9	RECOVERY	J-5	GAL	48000	106,000	SULFURIC ACID 93%
									SUB AA	L-3	Cu Ft	300	440	SULFUR HEXAFLUORIDE
					OLD RECOVERY	K-6	RECAUST	G-4	DIGESTER	J-8	LBS	5000	5,000	SULFAMIC ACID
							Recovery Spill Pond	G-7	HAZ. WASTE STORAGE	J16	CU YD	80	92.5	SOLID HAZARDOUS WASTE
									WATER TREATMENT	D-9	GAL	7.000	10,000	SODIUM HYPOCHLORITE SOLUTION
		MANHOLE #5		L-3	CHEM PREP	J-8	CHEM STORAGE	F-9	RECOVERY	J-5	GAL	200,000	357,901	SODIUM HYDROXIDE SOLUTION 50%
								200	STORES	L12	LBS	1,500	1,500	SODIUM CARBONATE
									BLEACH PLANT	K-9	GAL	566	566	SODIUM BISULFITE
							SANDBLASTING SHACK	J20	WAREHOUSE		LBS	70000	70,000	SAND
					OLD RECOVERY	К6	STORES	L12	WAREHOUSE	H16	LBS	25,700	25,700	REFRACTORIES

CHEMICAL	MAX	AVG	STINU	GRID1	GRID1 LOCATION 1	GRID2	GRID2 LOCATION 2	GRID3	GRID3 LOCATION 3	GRID4	GRID4 LOCATION 4	GRID5	GRID5 LOCATION 5
ACETONE	357	55	GAL	L12	STORES/TECH LAB	J20	FIBERGLASS SHOP						
ACETYLENE	3,778	2,602	CUFT	L12	STORES/TECH LAB	J12	MAINTENANCE						
ACTIVATED CARBON	4,500	4500	LBS	J4	RECOVERY								
AMERCOAT 12	100	45	GAL	L12	STORES	J14	PAINT SHOP						
ANTHRAQUINONE 50% LIQUID	14,718	8,300	GAL	K-8	DIGESTER								
ANTIFREEZE	75	75	GAL	J13	STORES	K14	AUTO SHOP			1			
ARGON	2,016	3024	CUFT	L12	STORES								
ASBESTOS	40	40	CU YDS	K-7	OLD RECOVERY	G15	SCRAP YARD						
ASPHALT EMULSION	220	220	GAL	119	WAREHOUSE								
BEAD GEL SPHERICAL SILICA GEL ABSORBENTS	1,000	800	LBS	L12	STORES	K6	OLD RECOVERY						
BETZ CORROGEN	1,500	2000	LBS	K-4	RECOVERY BOILER								
BETZ CORTROL OS5300	400	400	LBS	Z.	#3 RECOVERY								
BETZ COR-TROL OS7780	2,000	1064	LBS	4	RECOVERY								
BETZ KLARAID 1C1172P	11,400	8,000	LBS	D-9	WATER TREATMENT								
BETZ OPTI-MEEN 80554	1,500	1082	GAL	4	#3 RECOVERY								
Betz Optisperse HTP73303	2,500	2,500	LBS	4	RECOVERY								
Betz Optisperse HTP73613	2,500	1,250	LBS	X-4	RECOVERY								
Betz Polyfloc AE1128P	327	327	GAL	D-8	WATER TREATMENT	L12	STORES						
Betz Steamate NA2460	2250	2250	LBS	18	Chem Prep	2000							
BLACK LIQUOR	680,000	680,000	GAL	J-5	#3 RECOVERY	G-4	CONCENTRATOR	G-7	BLACK LIQUOR STORAGE	J-7	EVAPORATION		
CARBON DIOXIDE	500	500	LBS	L12	STORES	J-7	RECOVERY						
CARBON DIOXIDE AND ARGON IN HELIUM	291	291	CUFT	L12	STORES								
CARBON DIOXIDE IN ARGON	356	356	CUFT	L12	STORES								
CATION RESIN BEADS	11,559	11,559	LBS	K6	Old Recovery								
CEMENT (PORTLAND)	9,502	6,500	LBS	L12	STORES	J20	SANDBLASLTING SHACK	H18	WAREHOUSE				
CHELANT	10,000	10000	GAL	J-9	BLEACH PLANT								
Chevro Gear Compound EP ISO 460	220	220	GAL	L15	Oil Rack	S. S. S. S. S. S.							
CHEVRON CYLINDER OIL W ISO 680	55	55	GAL	L14	OIL RACK								
CHEVRON DRIVE TRAIN FLUID HD SAE 30	220	165	GAL	L14	OIL RACK	K14	AUTO SHOP OUTSIDE			2000			
CHEVRON DRIVE TRAIN FLUID HD SAE 50	55	55	GAL	L14	OIL RACK	117.54							
CHEVRON DURA-LITH GREASE EP NLGI 2	240	240	GAL	J12	MACHINE WET END	J15	MACHINE DRY END	2 6					
CHEVRON GST OILS ISO 32	165	165	GAL	L14	OIL RACK	K6	TURBINE BASEMENT						
CHEVRON HYDRAULIC OIL 46	385	385	GAL	L14	OIL RACK	06		68	CHIP DUMP	J15	MACHINE DRY END		
CHEVRON MACHINE OIL AW 150	220	330	GAL	L14	OIL RACK	K6	OLD RECOVERY FLOOR						
CHEVRON MACHINE OIL AW 220	220	220	GAL	L14	OIL RACK	J9	BL. PLANT3rd FLOOR						
CHEVRON MACHINE OIL AW ISO 100	440	440	GAL	L14	OIL RACK	9	BL PLANT3rd FLOOR	9E	BL. PLANT BASEMENT				

CHEMICAL	MAX	AVG	STINU	GRID1	LOCATION 1	GRID2	GRID2 LOCATION 2	GRID3	GRID3 LOCATION 3	GRID4	GRID4 LOCATION 4	GRIDS	GRID5 LOCATION 5
CHEVRON MOLY GREASE EP NLGI 0,1,2	120		GAL	99	KILN AREA								
CHEVRON RPM HEAVY DUTY MOTOR OILS SAE 15W-40	275	275	GAL	L14	OIL RACK	K14	AUTO SHOP INSIDE	K14	AUTO SHOP OUTSIDE				
Chevron RPM Universal Gear Lubricant	55	55	GAL	L15	Oil Rack								
RANSMISSION FLUID	330	330	GAL		AUTO SHOP							1	
CHEVRON SYNTHETIC GL TEGRA SAE 80W-140	55	55	GAL		RECOVERY 9th FLOOR	200000000000000000000000000000000000000							
CHEVRON TRACTOR HYDRAULIC FLUID	55	55	GAL	4	AUTO SHOP OUTSIDE	Samuel S							
CHEVRON ULTI-PLEX GREASE EP 2	240	240	GAL		BL. PLANT3rd FLOOR	J12	MACHINE WET END						
CITRIC ACID	1,450	1,500	LBS	L12	STORES							1	
COMPRESSED AIR	450	932	CUFT	L12	STORES	2000							
DEFOAMER	12,700	12,700	GAL	J-9	BLEACH PLANT								
FIBER GLASS RESINS	110	55	GAL	K20	FIBERGLASS SHACK	G17	WAREHOUSE						
FLOWABLE SULFUR MICROSUL 70	10,800	10800	GAL		RECOVERY								
FYRQUEL EHC	275	275	GAL	X-4	RECOVERY		Committee of the Commit				-08-16		
GREEN LIQUOR	883,995	883,995	GAL	뫈	CAUSTICIZING	J-5	#3 RECOVERY						
GROUT	4,000		LBS		WAREHOUSE	L12	STORES						
HYDROCHLORIC ACID (INHIBITED)	35,000	10,000	LBS	J-8		6-5	CAUSTICIZING	K12	STORES				
HYDROGEN	4,000	4,000	CUFT	K-7	TURBINE ROOM	L12	STORES						
HYDROGEN PEROXIDE 50%	20,000	20,000	GAL	K10	BLEACH PLANT	J-8	TANK FARM						
HYDROGEN SULFIDE IN NITROGEN	006	288	CUFT	9F	RECOVERY	F4	RECAUST	L13	STORES				
KLEEN BLAST ABRASIVE SANDBLASTING SAND	3,200	2,500	LBS	K12		K6	OLD RECOVERY		The second secon				
LIME (FRESH LIME)	296,000	296000	LBS	8-H	CAUSTICIZING	G18	WAREHOUSE	K6	OLD RECOVERY				
LIME MUD	262,489	262489	SBT	G-4	CAUSTICIZING		Control of the contro						
MAGNESIUM SULFATE	14,238	10,298	GAL	8-1	CHEM PREP								
MORTAR	6,750	6,000	LBS	K12	STORES	H16	WAREHOUSE	J20	SANDBLASTING SHED				
Naico BT-1811	1172	1172	LBS	K5	Recovery Boiler				- 1				
EAR 7744	1,200	800	GAL	J13	MACHINE WET END		255.0						
NALCO NALCON 7648 MICROBIOCIDE	600	400	GAL	J12	Machine Room								
	265	265	GAL	J16	Pulp Machine								
	400	244	GAL	K-4	#3 RECOVERY								
NALCO ULTRION 7157 COAGULANT	11,400	3500	LBS	۱ 6d	WATER TREATMENT								
NITRIC ACID	3,600	12000	LBS	L12	DIGESTER								
	450	400	CUFT	L12 S	STORES			2					
NITROUS OXIDE	233	233	CUFT	L12 T	TECH LAB			0 1					
OXYGEN (GAS CYLINDERS)	3,372	3,372	CUFT	L12 S	STORES		VARIOUS MILL SITES						
OXYGEN (USED FOR PULP PRODUCTION)	22,244	11,122	GAL	G10 (CHEMICAL STORAGE								
PAINT LATEX BASED	170	170	GAL	K15 F	PAINT SHOP	H16	WAREHOUSE	J20	SANDBLASTING SHACK				

DECENTION 50% 500				0	0110	CINCI FOCKLICK	20110	GRIDZ LOCATION Z	GRUDS	GRID3 LOCATION 3	GRID4	GRID4 ILOCATION 4	GRID5	GRID5 LOCATION 5
1,000	PAINT OIL BASED	600	600	GAL	K15	PAINT SHOP	H16	WAREHOUSE	J20	SANDBLASTING SHACK				
1,400 1,400 GAL L16 10,000 10,000 GAL M12 25,700 25,700 LBS H16 70,000 70000 LBS H16 70,000 70000 GAL J-5 1,500 1,500 LBS L12 357,901 200,000 GAL J-5 100,000 4800 CU-YD J16 5,000 3000 Cu-F1 L-3 106,000 48000 GAL J-5 100,000 200 GAL J-5 110 55 GAL K-7 110 55 GAL M14 220 220 GAL M14 220 220 GAL L14 255 55 GAL L14 275 165 GAL J-5 110 110 GAL L14 276 GAL J-5 2775 GAL J-5 2780 B20 LBS J-8 2780 GAL L14 2775 GAL S-9 100 B20 LBS J-9 6 G GRUMS J-9 6 G GAL M15 I-9 6 GAL M16	PEROXIDE STABILIZER	1,000	1800	GAL	M13	STORES	J-9	BLEACH PLANT						
10,000 10,000 GAL M12 25,700 25,700 LBS H16 70,000 70000 LBS G17 1,500 1,500 LBS L12 357,901 200,000 GAL J-5 100,000 7,000 GAL J-5 100,000 4800 CU YD J16 5,000 312,550 LBS H18 400 200 GAL J-5 110 55 GAL S9 110 110 GAL J-9 110 110 GAL J-9 110 110 GAL J-9 110 110 GAL J-9 110 110 GAL L14 385 220 GAL S9 110 GAL L14 385 GAL S9 385 GAL GAL S9 385 GAL	PROPANE	1,400	1,400	GAL	L16	NORTH OF WAREHOUSE								
25,700 25,700 LBS H16 70,000 70000 LBS G17 1,500 1,500 LBS L12 357,901 200,000 GAL J-5 10,000 7,000 GAL D-9 40 80 CU YD J16 5,000 48000 CU F1 1,500 120,000 GAL L-3 106,000 48000 GAL J-5 106,000 48000 GAL J-5 110 55 GAL K-7 110 55 GAL M14 220 23000 GAL M14 220 23000 GAL M14 220 23000 GAL J-9 110 110 GAL J-9 110 110 GAL L14 220 25 GAL J15 220 GAL L14 220 GAL J15 220 GAL J13 110 GAL L14 275 GAL S9 100 GAL L14 276 GAL S9 100 GAL L14 2775 GAL S9 100 GAL L14 278 GAL GAL S9 100 GAL GAL L14 279 GAL GAL GAL GAL 270 GAL GAL GAL 2712 GAL GAL 315 GAL GAL 316 320 GAL GAL 317 320 GAL 320 G	RAIFIX 120	10,000	10,000	GAL	M12	STORES	J11	MACHINE ROOM						
70,000 IBS G17 I,500 IBS I,500 I,500 IBS I,500 I,500 IBS I,500 I,500 I,500 IBS I,500 I	REFRACTORIES	25,700	25,700	LBS	H16	WAREHOUSE	L12	STORES	K6	OLD RECOVERY				
1,500 1,500 LBS L12 357,901 200,000 GAL J-5 10,000 7,000 GAL D-9 40 80 CU YD J16 5,000 5000 LBS J-8 440 3000 CU Ft L-3 106,000 312,550 LBS H18 400 2000 GAL K-7 110 55 GAL S9 110 110 GAL J-9 120 220 GAL J-9 120 220 GAL J-9 120 220 GAL J15 55 GAL J15 220 165 GAL J15 220 GAL L14 220 GAL J15 220 GAL J13 110 GAL L14 220 GAL J13 275 GAL S9 276 GAL S9 2776 GAL GAL S9 278 GAL GAL S9 279 GAL GAL GAL 279 GAL GAL 379 GAL 385 GAL GAL 379 GAL 385 GAL	SANDBLASTING SAND	70,000	70000	LBS	G17	WAREHOUSE	J20	SANDBLASTING SHACK						
357,901 200,000 GAL J-5 10,000 7,000 GAL D-9 40 80 CU YD J16 5,000 5000 LBS J-8 440 3000 CU Ft L-3 106,000 3000 GAL J-5 312,550 312,550 GAL S-9 110 55 GAL S-9 110 110 GAL J-9 220 220 GAL J-9 220 385 220 GAL S-9 110 110 GAL L-14 220 220 GAL J-15 220 165 GAL S-9 110 110 GAL L-14 275 GAL S-9 1,000 GAL J-13 110 110 GAL L-14 275 GAL S-9 276 GAL S-9 1,000 GAL S-9 1,000 GAL L-14 277 GAL S-9 1,000 GAL S-9 1,000 GAL S-9 1,000 GAL L-14 278 GAL S-9 1,000 GAL S-9 1,000 GAL GAL S-9 1,000 GAL GAL S-9 1,000 GAL GAL G-14 385 GAL	SODIUM CARBONATE	1,500	1,500	LBS	L12	STORES								
POCHLORITE SOLUTION 10,000 7,000 GAL D-9 ACID 40 80 CU YD J16 ACID 5000 5000 LBS J-8 XAFLUORIDE 440 300 Cu Ft L-3 ACID 93% 440 300 Cu Ft L-3 ACID 93% 400 20 GAL J-5 ACID 93% 400 20 GAL J-5 ACID 93% 400 20 GAL J-5 ACID 93% 400 20 GAL K-7 ACID 93% 400 20 GAL K-7 BE 400 20 200 GAL K-7 BE 23,000 23000 GAL K-7 BESEL # 2 220 220 GAL M-4 JUTPURPOSE ATTF 110 110 GAL L14 ACITRA DUTYNIL GEAR LUBE 7EP 220 220 GAL L14 AX AW 100 385	SODIUM HYDROXIDE SOLUTION 50%	357,901	200,000	GAL	J-5	RECOVERY	F-9	CHEM STORAGE	J-8	CHEM PREP	L-3	MANHOLE #5		
ARDOUS WASTE 40 80 CU YD J16 ACID 3ACID 5000 LBS J-8 XAFLUORIDE 440 300 Cu Ft L-3 XAFLUORIDE 106,000 48000 GAL J-5 XAFLUORIDE 106,000 48000 GAL J-5 XAFLUORIDE 106,000 48000 GAL J-5 GUARDOL QLT 15W-40 110 55 GAL S9 ESEL #2 220 220 GAL K-7 GUARDOL QLT 15W-40 110 110 GAL J-9 XAFLUORIDE 7EP 220 220 GAL M14 XAFLUBE 7EP 220 220 GAL L14 XAFLUORI 32 220 165 GAL L14 XAFLUBE 0IL 32 220 GAL L14 XAFLUORI 32 220 GAL L14 XAFLUBE 0IL 32 320 GAL L14 XAFLUBE 0IL 32	SODIUM HYPOCHLORITE SOLUTION	10,000	7,000	GAL	D-9	WATER TREATMENT			-8					
ACID ACID 5,000 5000 LBS J-8 XAFLUORIDE 440 300 Cu Ft L-3 ACID 93% 106,000 4800 GAL J-5 ACID 93% 106,000 48000 GAL J-5 BESEL#2 312,550 112,550 LBS H18 GUARDOL QLT 15W-40 110 200 GAL K-7 GUARDOL QLT 15W-40 2100 220 GAL K-7 GUARDOL QLT 15W-40 110 110 55 GAL K-7 GUARDOL QLT 15W-40 220 220 GAL K-7 GUARDOL QLT 15W-40 110 110 GAL K-7 GUARDOL QLT 15W-40 220 220 GAL M-14 LTIPURPOSE ATF 110 110 GAL K-14 A OIL 150 385 220 GAL L-14 ITION SYNTHETIC OIL 32 25 GAL L-14 IRBIN GOIL 32 385 220 GAL	SOLID HAZARDOUS WASTE	40	80	CU YD	J16	HAZ. WASTE STORAGE	G-7	Recovery Spill Pond						
XAFLUORIDE 440 300 Cu Ft L-3 ACID 93% 106,000 48000 GAL J-5 EE 312,550 312,550 LBS H18 GUARDOL QLT 15W-40 110 55 GAL K-7 GUARDOL QLT 15W-40 110 55 GAL K-7 GUARDOL QLT 15W-40 110 110 55 GAL K-7 GUARDOL QLT 15W-40 110 110 23000 GAL K-7 GUARDOL QLT 15W-40 110 110 110 GAL M14 ESEL #2 220 220 GAL M14 CITRA DUTY NL GEAR LUBE 7EP 220 220 GAL K14 M OIL 150 220 220 GAL K14 M OIL 150 385 220 GAL L14 ITRIBINE OIL 32 385 220 GAL L14 AXX AW 250 410 110 110 GAL L14 AXX AW 25 420	SULFAMIC ACID	5,000	5000	LBS	J-8	DIGESTER	G-4	RECAUST	K-6	OLD RECOVERY				
ACID 93% 106,000 48000 GAL J-5 GUARDOL OLT 15W-40 110 55 GAL S9 ESEL #2 23,000 2200 GAL K-7 ITRA DUTY NL GEAR LUBE 7EP 220 220 GAL M14 ITION SYNTHETIC OIL 32 220 165 GAL S9 IAX AW 160 220 In 10 In 10 GAL L14 IAX AW 170 110 110 GAL L14 IAX AW 170 110 In 10 GAL L14 IAX AW 170 110 In 10 GAL L14 IAX AW 170 110 In 10 GAL L14 IAX AW 170 In 10 GAL In 10 IN 10 GAL	SULFUR HEXAFLUORIDE	440	300	Cu Ft	L-3	AA BUS								
E 312.550 312.550 LBS H18 GUARDOL OLT 15W-40 400 200 GAL K-7 GUARDOL OLT 15W-40 110 55 GAL S9 ESEL #2 23.000 23000 GAL M14 M14 M14 M14 M14 M15	SULFURIC ACID 93%	106,000	48000	GAL	J-5	RECOVERY	F-9	CHEM PREP	J-8	TANK FARM	<u>-3</u>	MANHOLE #5		
E GUARDOL QLT 15W-40 400 200 GAL K-7 GUARDOL QLT 15W-40 110 55 GAL S9 ESEL #2 23,000 23000 GAL M14 S9 ESEL #2 23,000 23000 GAL M14 M14 M15	TALC	312,550	312,550	LBS	H18	WAREHOUSE	J-9	BLEACH PLANT						
GUARDOL QLT 15W-40 110 55 GAL 89 ESEL # 2 23,000 23000 GAL M14 ITRA DUTY NL GEAR LUBE 7EP 220 220 GAL J-9 JLTIPURPOSE ATF 110 110 GAL K14 A OIL 150 220 GAL L14 ITTON SYNTHETIC OIL 32 55 55 GAL L14 IRBINE OIL 32 220 GAL L14 IAX AW 100 385 220 GAL L14 IAX AW 220 110 110 GAL J13 IAX AW 220 110 110 GAL J13 IAX AW 220 110 110 GAL J13 IAX AW 220 110 110 GAL L14 IAX AW 220 110 100 GAL L14 IAX AW 220 110 100 GAL L14 IAX AW 36 66 GAL S-9 IAX AW 46 GAL S-9 IAX AW 46 GAL GAL S-9 IAX AW 46 GAL GAL GAL S-9 IAX AW 46 GAL	TURPENTINE	400	200	GAL	K-7	RECOVERY								
ESEL # 2 23,000 23000 GAL M14 ITRA DUTY NL GEAR LUBE 7EP 220 220 GAL J-9 JLTIPURPOSE ATF 110 110 110 GAL L14 A OIL 150 220 55 55 GAL L14 ITTON SYNTHETIC OIL 32 55 55 GAL L14 AX AW 100 385 220 GAL L14 AX AW 220 110 110 GAL L14 AX AW 220 110 100 GAL L14 AX AW 220 110 100 GAL L14 AX AW 26 275 I65 GAL L14 AX AW 27 100 I000 GAL L14 AX AW 27 1000 I000 GAL L14 AX AW 28 1000 I000 GAL L14 AX AW 38 1000 I000 GAL L14 AX AW 39 1000 I000 GAL L14 AX AW 30 1000 I000 GAL L14 AX AW 30 1000 GAL L14 AX AW 30 100	UNOCAL 76 GUARDOL QLT 15W-40	110	55	GAL	89	CHIP DUMP OIL SHACK								
TITRA DUTY NL GEAR LUBE 7EP 220 220 GAL J-9 JLTIPURPOSE ATF 110 110 GAL K14 A OIL 150 220 GAL L14 ITION SYNTHETIC OIL 32 55 55 GAL L14 IRBINE OIL 32 220 165 GAL L14 IAX AW 150 110 110 GAL L14 IAX AW 220 125 GAL K15 IAX AW 220 125 GAL K15 IAX AW 220 125 GAL K15	UNOCAL DIESEL # 2	23,000	23000	GAL	M14	NORTH OF WAREHOUSE	G-3	PUMP HOUSE	F-9	Tank Farm				
JLTIPURPOSE ATF 110 J10 GAL K14 A OIL 150 220 220 GAL L14 A OIL 150 220 220 GAL L14 ITION SYNTHETIC OIL 32 55 55 GAL J15 IRBINE OIL 32 220 165 GAL L14 AXA AW 150 110 110 GAL K14 AXA AW 220 110 110 GAL J13 AXA AW 220 110 110 GAL L14 AXA AW 220 110 110 GAL L14 AXA AW 220 120 GAL L14 AXA AW 220 GAL M15 AXA AW 220 GAL M15 AXA AW 220 GAL K15	UNOCAL EXTRA DUTY NL GEAR LUBE 7EP	220	220	GAL	J-9	BLEACH PLANT	L14	OIL SHACK/OIL RACK	9-9	KILN				
A OIL 150 220 220 GAL L14 UITION SYNTHETIC OIL 32 55 55 GAL J15 IRBINE OIL 32 220 165 GAL J15 IRBINE OIL 32 220 165 GAL L14 IAX AW 100 385 220 GAL S9 IAX AW 150 110 110 GAL J13 IAX AW 220 110 110 GAL L14 IAX AW 46 275 165 GAL L14 IAX AW 46 200 1000 GAL L14 IAX AW 46 200 EBS S9 IAX AW 46 200 LBS S9 <td>UNOCAL MULTIPURPOSE ATF</td> <td>110</td> <td>110</td> <td>GAL</td> <td>K14</td> <td>AUTO SHOP</td> <td>J-4</td> <td>#3 RECOVERY</td> <td>L14</td> <td>OIL RACK</td> <td>J15</td> <td>MACHINE DRY END</td> <td></td> <td></td>	UNOCAL MULTIPURPOSE ATF	110	110	GAL	K14	AUTO SHOP	J-4	#3 RECOVERY	L14	OIL RACK	J15	MACHINE DRY END		
TITION SYNTHETIC OIL 32 55 55 55 55 55 55 55	UNOCAL PM OIL 150	220	220	GAL	L14	OIL RACK	J-4	#3 RECOVERY						
RRBINE OIL 32 165 GAL L14 AX AWV 100 385 220 GAL S9 AX AWV 150 110 110 GAL J13 AX AWV 220 110 110 GAL L14 AX AWV 220 110 110 GAL L14 AX AWV 220 110 110 GAL L14 AX AWV 220 100 100 100 GAL L14 AX AWV 220 100 100 100 100 AX AWV 220 100 100 100 100 AX AWV 220 110 110 110 AX AWV 220 110	UNOCAL TRITION SYNTHETIC OIL 32	55	55	GAL	J15	MACHINE ROOM	0.000	Contraction of the contraction o						
JAX AWI 100 385 220 GAL S9 JAX AWI 150 110 110 GAL J13 JAX AWI 220 110 110 110 GAL L14 JAX AWI 46 275 165 GAL S-9 JLEADED GASOLINE 1,000 1000 GAL L14 JOBA EP GREASE 2 820 820 LBS S9 JOBA MOLY XD GREASE 2 960 720 LBS J9 ILTERS 6 6 DRUMS J16 NIT 100 50 GAL M15 VENT 652 G25 GAL K15	UNOCAL TURBINE OIL 32	220	165	GAL	L14	OIL RACK	31L	MACHINE ROOM						
JAX AW 150 110 110 GAL J13 JAX AW 220 110 110 GAL L14 JAX AW 46 275 165 GAL S-9 ILEADED GASOLINE 1,000 1000 GAL L14 JOBA EP GREASE 2 820 820 LBS S9 JOBA MOLY XD GREASE 2 960 720 LBS J9 ILTERS 6 6 DRUMS J16 NIT 100 50 Gal K15 VENT 652 625 GAL K15	UNOCAL UNAX AW 100	385	220	GAL	S9	IP	G-6	KILN	L14	OIL RACK				
JAX AW 220 110 110 GAL L14 JAX AW 46 275 165 GAL S-9 ILEADED GASOLINE 1,000 1000 GAL L14 JOBA EP GREASE 2 820 820 LBS S9 JOBA MOLY XD GREASE 2 960 720 LBS J9 ILTERS 6 6 DRUMS J16 NT 100 50 GAL M15 VENT 652 625 GAL K15	UNOCAL UNAX AW 150	110	110	GAL		MACHINE ROOM								
IAX AW 46 275 165 GAL S-9 ILEADED GASOLINE 1,000 1000 GAL L14 IOBA EP GREASE 2 820 820 LBS S9 IOBA MOLY XD GREASE 2 960 720 LBS J9 ILTERS 6 6 DRUMS J16 ILTERS 2,122 GAL M15 NIT 100 50 Gal K15 VENT 652 625 GAL K15	UNOCAL UNAX AW 220	110	110	GAL	L14	OIL RACK	99	KILN AREA	9-F	BLEACH PLANT				
ILEADED GASOLINE	UNOCAL UNAX AW 46	275	165	GAL	S-9	CHIP DUMP								
IOBA EP GREASE 2 820 820 LBS S9 IOBA MOLY XD GREASE 2 960 720 LBS J9 ILTERS 6 6 DRUMS J16 2,122 2,122 GAL M15 NIT 100 50 Gal K15 VENT 652 625 GAL K15	UNOCAL UNLEADED GASOLINE	1,000	1000	GAL	L14	NORTH OF AUTO SHOP								
ILTERS 960 720 LBS J9 ILTERS 6 6 DRUMS J16 2,122 2,122 GAL M15 NT 100 50 Gal K15 VENT 652 625 GAL K15	UNOCAL UNOBA EP GREASE 2	820	820	LBS	9	CHIP DUMP	G-6	KILN	6-f	BLEACH PLANT				
ILTERS 6 6 DRUMS J16 2,122 2,122 GAL M15	UNOCAL UNOBA MOLY XD GREASE 2	960	720	LBS	J9	BLEACH PLANT	8-9	CHIP DUMP		RECOVERY	9-9	KILN		
2,122 2,122 GAL M15	USED OIL FILTERS	6	6	DRUMS	J16	HAZ. WASTE STORAGE								
100 50 Gal K15 652 625 GAL K15	WASTE OIL	2,122	2,122	GAL			J13	MACHINE ROOM	K-5	RECOVERY	K-9	BLEACH PLANT	E-7 L	LIME KILN
652 625 GAL K15	WASTE PAINT	100	50	Gal		Paint Shed		1.5						
	WASTE SOLVENT	652	625	GAL	K15	AUTO SHOP	K13	MACHINE SHOP						
WHITE LIQUOR 1,009,393 1009393 GAL G-6 CAU	WHITE LIQUOR	1,009,393				CAUSTICIZING	F-6	CAUSTICIZING	8-	CHEM PREP				

		1				1	ACHO SHOP	1				CHEVRON SUBBEME AUTOMATIC TRANSMISSION ELLID
		1					Oil Rack	L15 (55	99	Chevron RPM Universal Gear Lubricant
			AUTO SHOP OUTSIDE	Ω.	AUTO SHOP INSIDE	K14	OIL RACK	L14 (GAL	275	275	CHEVRON RPM HEAVY DUTY MOTOR OILS SAE 15W-40
		1					KILN AREA	66	GAL	60	120	CHEVRON MOLY GREASE EP NLGI 0,1,2
			BL PLANT BASEMENT	9	BL. PLANT3rd FLOOR	9	OIL RACK	L14 (GAL	440	440	CHEVRON MACHINE OIL AW ISO 100
					BL. PLANT3rd FLOOR	9	OIL RACK	L14 (GAL	220	220	CHEVRON MACHINE OIL AW 220
					VERY FLOOR	K6	OIL RACK	L14 (GAL	330	220	CHEVRON MACHINE OIL AW 150
END	MACHINE DRY END	J15	CHIP DUMP	9		90	OIL RACK	L14	GAL	385	385	CHEVRON HYDRAULIC OIL 46
		1			TURBINE BASEMENT	K6	OIL RACK	L14	GAL	165	165	CHEVRON GST OILS ISO 32
		1					OIL RACK	L15	GAL	220	220	Chevron Gear Compound EP ISO 460
		1		1	MACHINE DRY END	J15	MACHINE WET END	J12	GAL	240	240	CHEVRON DURA-LITH GREASE EP NLGI 2
		1					OIL RACK	L14	GAL	55	55	CHEVRON DRIVE TRAIN FLUID HD SAE 50
		1		1	AUTO SHOP OUTSIDE	K14	OIL RACK	L14	GAL	165	220	CHEVRON DRIVE TRAIN FLUID HD SAE 30
1		1					OIL RACK	L14	GAL	55	55	CHEVRON CYLINDER OIL W ISO 680
1		1		1	- 1		BLEACH PLANT	J-9	GAL	10000	10,000	CHELANT
		1	WAREHOUSE	H18	SANDBLASLTING SHACK	J20	STORES	L12	LBS	6,500	9,502	CEMENT (PORTLAND)
		1					STORES	L12	CUFT	356	356	CARBON DIOXIDE IN ARGON
		1					STORES	L12	CUFT	291	291	CARBON DIOXIDE AND ARGON IN HELIUM
		_ 1			RECOVERY	J-7	STORES	L12	LBS	500	500	CARBON DIOXIDE
Ź	EVAPORATION	J-7	BLACK LIQUOR STORAGE	G-7	CONCENTRATOR	G-4	#3 RECOVERY	J-5	GAL	680,000	680,000	BLACK LIQUOR
-	1	1					CHEM PREP	18	LBS	2250	2250	Betz Steamate NA2460
		1			STORES	L12	WATER TREATMENT			327	327	Betz Polyfloc AE1128P
	+	+					RECOVERY	X-A	LBS	1,250	2,500	Betz Optisperse HTP73613
		+					RECOVERY	K-4	LBS	2,500	2,500	Betz Optisperse HTP73303
		1		1		1	WATER TREATMENT	D-9	GAL	8,000	11,400	BETZ KLARAID 1C1172P
		1				1	#3 RECOVERY	4	GAL	400	400	BETZ CORTROL OS5300
	+	+		1	OLD RECOVERY	X 6	STORES	L12	SBT	800	1,000	BEAD GEL SPHERICAL SILICA GEL ABSORBENTS
	+	+		1		1	WAREHOUSE	119	GAL	220	220	ASPHALT EMULSION
		1		1	SCRAP YARD	G15	OLD RECOVERY	K-7	CU YDS	40	40	ASBESTOS
		+		1		1	STORES	L12	CUFT	3024	2,016	ARGON
	1	1		1	AUTO SHOP	K14	STORES	J13	GAL	75	75	ANTIFREEZE
	1	+		1			DIGESTER	K-8	GAL	8,300	14,718	ANTHRAQUINONE 50% LIQUID
-	-	+			PAINT SHOP	J14	STORES	L12	GAL	45	100	AMERCOAT 12
	1	+		7		1	RECOVERY	J4	LBS	4500	4,500	ACTIVATED CARBON
	+	1		1	MAINTENANCE	J12	STORES/TECH LAB	L12	CUFT	2,602	3,778	ACETYLENE
	Localion			1	FIBERGLASS SHOP	J20	STORES/TECH LAB	L12	GAL	55	357	ACETONE
	A II OCATION A	GR		GAZ	Contract Con	011111						

SANDBLASTING SHACK	120	WAREHOUSE	H16	7 010					
	5			PAINT SHOP	K15	GAL	600	600	PAINT OIL BASED
SANDBLASTING SHACK	J20	WAREHOUSE	H16	PAINT SHOP	K15	GAL	170	170	PAINT LATEX BASED
				CHEMICAL STORAGE	G10	GAL	11,122	22,244	OXYGEN (USED FOR PULP PRODUCTION)
		VARIOUS MILL SITES		STORES	L12	CUFT	3,372	3,372	OXYGEN (GAS CYLINDERS)
				TECH LAB	L12	CU FT	233	233	NITROUS OXIDE
				STORES	L12	CUFT	400	450	NITROGEN
				DIGESTER	L12	LBS	12000	3,600	NITRIC ACID
				WATER TREATMENT	D9	LBS	3500	11,400	NALCO ULTRION 7157 COAGULANT
				#3 RECOVERY	4	GAL	244	400	Nalco Tri-Act 1820
				Pulp Machine	J16	GAL	265	265	Naico Naikieen 2626
				Machine Room	J12	GAL	400	600	NALCO NALCON 7648 MICROBIOCIDE
				MACHINE WET END	J13	GAL	800	1,200	NALCO NALCLEAR 7744
				Recovery Boiler	K5	LBS	1172	1172	Nalco BT-1811
			0.000	CHEM PREP	1-8	GAL	10,298	14,238	MAGNESIUM SULFATE
				CAUSTICIZING	G-4	LBS	262489	262,489	LIME MUD
OLD RECOVERY	K6	WAREHOUSE	G18	CAUSTICIZING	H-8	LBS	296000	296,000	LIME (FRESH LIME)
	_	OLD RECOVERY	K6	STORES	K12	LBS	2,500	3,200	KLEEN BLAST ABRASIVE SANDBLASTING SAND
				RECOVERY/RECAUST	16	LBS	6000	6000	INFINITY PS4701
	_			RECOVERY/RECAUST	16	LBS	6000	6000	INFINITY PS4309
				BLEACH PLANT	К9	LBS	3000	3000	INFINITY PK2726
	_			Digester	J8	LBS	6000	6000	Infinity DA 2718
STORES	L13	RECAUST	F4	RECOVERY	J5	CUFT	288	900	HYDROGEN SULFIDE IN NITROGEN
	_	TANK FARM	J-8	BLEACH PLANT	K10	GAL	20,000	20,000	HYDROGEN PEROXIDE 50%
	_	STORES	L12	TURBINE ROOM	K-7	CUFT	4,000	4,000	HYDROGEN
STORES	K12	CAUSTICIZING	G-5	CHEM PREP	J-8	LBS	10,000	35,000	HYDROCHLORIC ACID (INHIBITED)
		STORES	L12	WAREHOUSE	H18	LBS	8,000	4,000	GROUT
		#3 RECOVERY	J-5	CAUSTICIZING	9-H	GAL	883,995	883,995	GREEN LIQUOR
				RECOVERY	K-4	GAL	275	275	FYRQUEL EHC
				RECOVERY	1-3	GAL	10800	10,800	FLOWABLE SULFUR MICROSUL 70
		WAREHOUSE	G17	FIBERGLASS SHACK	K20	GAL	55	110	FIBER GLASS RESINS
				BLEACH PLANT	J-9	GAL	12,700	12,700	DEFOAMER
				STORES	L12	CUFT	932	450	COMPRESSED AIR
	1/1			STORES	L12	LBS	1,500	1,450	CITRIC ACID
		MACHINE WET END	J12	BL. PLANT3rd FLOOR	9	GAL	240	240	CHEVRON ULTI-PLEX GREASE EP 2
				AUTO SHOP OUTSIDE	K14	GAL	55	55	CHEVRON TRACTOR HYDRAULIC FLUID
				RECOVERY 9th FLOOR	J4	GAL	55	55	CHEVRON SYNTHETIC GL TEGRA SAE 80W-140

WHITE LIQUOR	WASTE SOLVENT	WASTE PAINT	WASTE OIL	USED OIL FILTERS	UNOCAL UNI	UNOCAL DIESEL # 2	TURPENTINE	TALC	SULFURIC ACID 93%	SULFUR HEXAFLUORIDE	SULFAMIC ACID	SPECTRUM RX3100	SOLID HAZA	SODIUM HYF	SODIUM HYD	SODIUM CARBONATE	SANDBLASTING SAND	REFRACTORIES	RAIFIX 120	PROPANE	Presstige F8580
OR	VENT	П		LTERS	JNOCAL UNLEADED GASOLINE	SEL#2			CID 93%	CAFLUORIDE	CID	RX3100	SOLID HAZARDOUS WASTE	SODIUM HYPOCHLORITE SOLUTION	SODIUM HYDROXIDE SOLUTION 50%	RONATE	NG SAND	IES			80
1,009,393	652	100	2,122	6	1,000	23,000	400	312,550	106,000	440	5,000	6000	40	10,000	357,901	1,500	70,000	25,700	10,000	1,400	6000
1009393	625	50	2,122	6	1000	23000	200	312,550	48000	300	5000	6000	80	7,000	200,000	1,500	70000	25,700	10,000	1,400	6000
GAL	GAL	Gal	GAL	DRUMS	GAL	GAL	GAL	LBS	GAL	Cu Ft	LBS	LBS	CUYD	GAL	GAL	LBS	LBS	LBS	GAL	GAL	LBS
9-9	K15	K15	M15	J16	L14	M14	K-7	H18	J-5	L-3	J-8	J14	J16	D-9	J-5	L12	G17	H16	M12	L16	J14
CAUSTICIZING	AUTO SHOP	Paint Shed	WASTE OIL STORAGE	HAZ. WASTE STORAGE	NORTH OF AUTO SHOP	NORTH OF WAREHOUSE	RECOVERY	WAREHOUSE	RECOVERY	SUB AA	DIGESTER	MACHINE ROOM	HAZ. WASTE STORAGE	WATER TREATMENT	RECOVERY	STORES	WAREHOUSE	WAREHOUSE	STORES	NORTH OF WAREHOUSE	Machine Room
F-6	K13		J13			G-3		J-9	F-9		G-4		G-7	Γ	F-9		J20	L12	J11		
CAUSTICIZING	MACHINE SHOP		MACHINE ROOM			PUMP HOUSE		BLEACH PLANT	CHEM PREP		RECAUST		Recovery Spill Pond		CHEM STORAGE		SANDBLASTING SHACK	STORES	MACHINE ROOM		
-8			X-5			F-9			J-8		Kδ				J-8			6			
CHEM PREP			RECOVERY			Tank Farm			TANK FARM		OLD RECOVERY				CHEM PREP			OLD RECOVERY			
	-		K-9		-	-			L-3		-			-	1-3	-					
			BLEACH PLANT						MANHOLE #5						MANHOLE #5						
			E-7																		T
			LIME KILN																		

2003 Chemical Storage from Hazardous Materials Business Plan

	2.0	WAREHOUSE	J16	STORES	L12	CUFT	1,398	1,398	COMPRESSED AIR
				STORES	L12	LBS	1,500	1,500	CITRIC ACID
		MACHINE	J12	RECOVERY	K4	GAL	240	240	CHEVRON ULTI-PLEX GREASE EP 2
				AUTO SHOP	K14	GAL	55	55	CHEVRON TRACTOR HYDRAULIC FLUID
				RECOVERY	K4	GAL	55	55	CHEVRON SYNTHETIC GL TEGRA SAE 80W-140
				AUTO SHOP	K14	GAL	330	330	CHEVRON SUPREME AUTOMATIC TRANSMISSION FLUID
	1		130	AUTO SHOP	K14	GAL	55	55	CHEVRON RPM UNIVERSAL GEAR LUBRICANT
				AUTO SHOP	K14	GAL	275	275	CHEVRON RPM HEAVY DUTY MOTOR OILS SAE 15W-40
				RECAUST	H6	GAL	60	120	CHEVRON MOLY GREASE EP NLGI 0,1,2
		RECOVERY	K5	AUTO SHOP	K14	GAL	660	660	CHEVRON MACHINE OIL
CHIP DUMP	89	CHIP SILO	8	AUTO SHOP	K14	GAL	385	385	CHEVRON HYDRAULIC OIL 46
		RECOVERY	J7	AUTO SHOP	K14	GAL	165	165	CHEVRON GST OILS
				AUTO SHOP	K14	GAL	220	220	CHEVRON GEAR COMPOUND EP ISO 460
		MACHINE	J15	AUTO SHOP	K14	GAL	240	240	CHEVRON DURA-LITH GREASE EP NLGI 2
				AUTO SHOP	K14	GAL	275	275	CHEVRON DRIVE TRAIN FLUID
		2		AUTO SHOP	K14	GAL	55	55	CHEVRON CYLINDER OIL
				STORES	L12	LBS	7,050	7,050	CEMENT (PORTLAND)
			0.00	STORES	L12	CUFT	356	356	CARBON DIOXIDE IN ARGON
			,	STORES	L12	CUFT	291	291	CARBON DIOXIDE AND ARGON IN HELIUM
		RECOVERY	J5	STORES	L12	LBS	500	500	CARBON DIOXIDE
BLACK LIQUOR STORAGE	G7	CONCENTRATOR	18	RECOVERY	Λ	GAL	680,000	680,000	BLACK LIQUOR
		CHEM PREP	18	RECOVERY	K4	LBS	1,250	2,500	BETZ/HERCULES OPTISPERSE HTP73613
		CHEM PREP	18	RECOVERY	K 4	LBS	2,250	2,500	BETZ/HERCULES OPTISPERSE HTP73303
	1			CHEM PREP	8L	LBS	2,250	2,250	BETZ STEAMATE NA2460
				WATER TREATMENT	D9	GAL	327	327	BETZ POLYFLOC AE1128P
	1			WATER TREATMENT	D9	GAL	8,000	11,400	BETZ KLARAID 1C1172P
	1			RECOVERY	K4	GAL	400	400	BETZ CORTROL OS5300
	1	OLD RECOVERY	K6	STORES	L12	LBS	1,000	1,000	BEAD GEL SPHERICAL SILICA GEL ABSORBENTS
	1	BONEYARD	G15	OLD RECOVERY	К6	CU YDS	40	40	ASBESTOS
				STORES	L12	CUFT	2,016	2,016	ARGON
	1	AUTO SHOP	K14	STORES	L12	GAL	75	75	ANTIFREEZE
		20 TO 10 TO	9	Bleach Plant	- 9	GAL	8,300	14,718	ANTHRAQUINONE 50% LIQUID
	1	PAINT SHOP	J14	STORES	L13	GAL	45	100	AMERCOAT 12
	1			RECOVERY	Κ4	LBS	4,500	4,500	ACTIVATED CARBON
	+	MAINTENANCE	J12	STORES/TECH LAB	L12	CUFT	2,602	3,778	ACETYLENE
	1	$\overline{}$	J20	TECH LAB	L12	GAL	55	357	ACETONE
GRID3 LOCATION 3	GRIE	LOCATION 2	GRID2	LOCATION 1	GRID1	UNITS	AVG	MAX	CHEMICAL

DEFOAMER DEFOAMER DEFOAMER DEFOAMER DECO-BRITE 1000 ECO-BRITE 1000 ECO-BRITE 1000 ECO-BRITE 510 ECO-	AVG IIII	INITS GR	E L	GRID1 LOCATION 1	GRID2	GRID2 LOCATION 2	GRID3 LOCATION 3	CATION 3
2,380 5,800 5,800 110 10,800 275 883,995 4,400 4,400 275 883,995 4,400 20,000 10,800 20,000 10,800 20,000 10,200 20,00	٥		BI	BLEACH PLANT				
SINS 5,800 SINS 110 JR MICROSUL 70 10,800 275 883,995 4,400 4,000 20,000 DE IN NITROGEN 6,000 RASIVE SANDBLASTING SAND 2,500 803 INHIBITOR 2,500 820 820 7157 COAGULANT 1,200 826,600 7157 COAGULANT 1,200 82744 72626 7,200 7,200				BLEACH PLANT			_	
SINS JR MICROSUL 70 JR MICROSUL 70 10,800 275 883,995 4,400 4,000 20,000 DE IN NITROGEN C,000 RASIVE SANDBLASTING SAND C,500 803 INHIBITOR 820 7157 COAGULANT				BLEACH PLANT		8		
JR MICROSUL 70 10,800 JR MICROSUL 70 275 883,995 4,400 4,000 20,000 IDE IN NITROGEN 6,000 RASIVE SANDBLASTING SAND 2,500 296,000 37744 29626 1,200 7157 COAGULANT 2,200 7157 COAGULANT 2,244	5 GAL	L K20		FIBERGLASS SHACK	G19	WAREHOUSE		
275 ACID (INHIBITED) 275 883,995 20,000 IDE IN NITROGEN 20,000 IDE IN NITROGEN 20,000	800			RECOVERY				
ACID (INHIBITED) ACID (INHIBI	75 GAL			RECOVERY			-	
ACID (INHIBITED) ACID (INHIBI	995			RECAUST	H6	RECOVERY		
ACID (INHIBITED) ACID (INHIBITED) XIDE 50% 20,000 20,000 20,000 3,000 6,000 3,000 6,000 1,200		S J16		WAREHOUSE	L12	STORES		
XIDE 50% 20,000 IDE IN NITROGEN 6,000 RASIVE SANDBLASTING SAND 2,500 PATE 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,400 1,200		S H6		RECAUST	18	CHEM PREP		
XIDE 50% 20,000 IDE IN NITROGEN 750 6,000 3,000 6,000 6,000 6,000 6,000 6,000 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,500 2,400 1,200 2,400 2,204 2,204 2,204	,000 CU FT			RECOVERY				
IDE IN NITROGEN 750 6,000 3,000 6000 6000 6,000 2,500 262,489 FATE 2,500 3,680 3,680 3,680 3,680 14,238 3,680 3,680 1,200 600 7157 COAGULANT 11,400 72626 7,200 7157 COAGULANT 11,400 72626 7,200 7157 COAGULANT 22,440 7,200	0,000 GAL		1	BLEACH PLANT	J8	TANK FARM		
FATE 2,500 3,000 RASIVE SANDBLASTING SAND 2,500 2,500 2,500 14,238 3,680 3,680 3,680 3,680 3,680 3,680 3,680 3,680 1,200 600 7157 COAGULANT 11,400 72526 7,200 1,000 233 LINDERS) 2,349 7,200 1,000 1,000 1,	50 CUFT) FT L13		Shops/Warehouse				
3,000 6000 RASIVE SANDBLASTING SAND 2,500 2,500 2,500 2,500 2,2489 FATE 3,680 3,680 3,680 3,680 3,690 648 MICROBIOCIDE 600 820 7157 COAGULANT 11,400 72626 7,200 1,200 1,200 1,200 1,200 1,200 2,474 7,200 1,200 1,000 2,33 1,000 2,33 1,000 2,347 4,2626 7,200 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 2,30 1,000 1,000 2,30 1,000 1,000 2,30 1,000 1,000 2,30 1,00	,000 LBS	S K10		BLEACH PLANT				
FATE 2,500 7,7744 1,200 820 820 821 14,238 3,600 14,238 3,600 14,238 3,600 1,200 262,489 1,200 263 1,100 11,400 12626 1,200 1,000 1,000 1,000 1,000 1,000 1,000 2,474 1,200 1,000 2,474 1,200 1,000 2,474 2,244 ED 170 600 600	.000 LBS	S K10		BLEACH PLANT				
RASIVE SANDBLASTING SAND 2,500 2,500 2,500 296,000 262,489 14,238 3,680 3,600 3,600 648 MICROBIOCIDE 600 820 7157 COAGULANT 11,400 12626 7,200 1,000 1,000 1,000 1,000 2,33 1,000 1,000 2,347 42626 7,224 600 3,497 0R PULP PRODUCTION) 22,244 ED 600	SB1 000	S J5		RECOVERY				
PASIVE SANDBLASTING SAND 2,500 296,000 296,000 262,489 262,489 262,489 3,680 3,690 3,690 648 MICROBIOCIDE 600 820 2,400 7157 COAGULANT 11,400 12626 7,200 1,000 1,000 2,33 1,000 2,33 1,000 2,347 4,2626 7,224 2627 0R PULP PRODUCTION) 22,244 ED 600	.000 LBS	S H6		RECAUST				
296,000 262,489 FATE 14,238 3,680 3,690 648 MICROBIOCIDE 600 820 7157 COAGULANT 17,200 7157 COAGULANT 17,200 7159 COAGULANT 17,200 7159 COAGULANT 17,200 7150 COAGULANT 17,200 71,200	500 LBS	S L12		STORES				
FATE 262,489 14,238 3,680 3,690 14,200 648 MICROBIOCIDE 600 820 2,400 7157 COAGULANT 7,200 12626 7,200 1,000 23,350 23,350 23,3497 OR PULP PRODUCTION) 22,244 ED 600	96,000 LBS			RECAUST				
FATE 14,238 3,680 3,690 87744 1,200 648 MICROBIOCIDE 600 820 2,400 820 2,400 8275 COAGULANT 11,400 42626 7,200 1,000 1,000 233 1,000 230 1,000 230 1,000 230 1,000 240 250 250 250 250 250 250 250 250 250 25	62,489 LBS			RECAUST				
3,680 3,600 3,600 648 MICROBIOCIDE 800 803 INHIBITOR 820 7157 COAGULANT 7157 COAGULANT 7157 COAGULANT 7,200 7,200 1,000 1,000 233 1,000 233 1,000 233 1,000 233 2344 ED 600	0,298 GAL	L IS		CHEM PREP				
3,600 87744 1,200 803 INHIBITOR 500 820 2,400 7157 COAGULANT 1,400 42626 7,200 1,000	,680 LBS	S J5		RECOVERY	18	CHEM PREP		
77744 1,200 648 MICROBIOCIDE 600 803 INHIBITOR 3,650 820 2,400 7157 COAGULANT 11,400 4 2626 7,200 1,000 1,000 233 233 LINDERS) 3,497 OR PULP PRODUCTION) 22,244 ED 170 600 600	,600 LBS			BLEACH PLANT				
648 MICROBIOCIDE 600 803 INHIBITOR 3,650 820 2,400 7157 COAGULANT 5,474 72626 7,200 1,000	00 GAL	NL 18		CHEM PREP				
803 INHIBITOR 3,650 820 2,400 7157 COAGULANT 11,400 7 2626 7,200 1,000 233 LINDERS) 23,497 OR PULP PRODUCTION) 22,244 ED 170 600	00 GAL	L J12		MACHINE				
820 2,400 7157 COAGULANT 11,400 12626 5,474 12626 7,200 1,000 233 1,497 OR PULP PRODUCTION) 22,244 ED 170 600	,650 LBS	S K5		RECOVERY	188	CHEM PREP		
7157 COAGULANT 11,400 1,2626 5,474 7,200 1,000 233 1,000 233 1,000 233 23,497 0R PULP PRODUCTION) 22,244 ED 170 600	,400 GAL			RECOVERY	18	CHEM PREP		
1,2626	,500 LBS	S D9		WATER TREATMENT				
7,200 1,000 233 237 27,244 27,244 27,000 27,244 27,000	,474 LBS	S L12		STORES				
1,000 233 237 237 237 237 22,244 250 2600 600	,200 LBS	S L12		STORES	9	BLEACH PLANT		
233		CUFT L12	L	STORES				
3,497		CUFT L12		STORES			-	
OR PULP PRODUCTION) 22,244 ED 170 600		CUFT	П	THROUGHOUT MILL				
ED 170	1,122 GAL	L G10		CHEMICAL STORAGE				
600		L K15		PAINT SHOP	H16	WAREHOUSE		
	70 GAL	L K15		PAINT SHOP	H16	WAREHOUSE		
PERGASOL BROWN SP 8800 8800			2 2	STORES	9 er	BLEACH PLANT		

CHEMICAL	MAX	AVG	STINU	GRID1	GRID1 LOCATION 1	GRID2	GRID2 LOCATION 2	GRID3	GRID3 LOCATION 3
PEROXIDE STABILIZER	1,000	1,800	GAL	M13	BLEACH PLANT				
PROPANE	1,400	1,400	GAL	H16	WAREHOUSE				
RAIFIX 120	10,000	10,000	GAL	J12	MACHINE	200			
REFRACTORY	25,700	25,700	LBS	Н16	WAREHOUSE	L12	STORES	K6	OLD RECOVERY
SANDBLASTING SAND	20,000	20,000	SBT	J20	SANDBLASTING SHACK	200			
SODIUM CARBONATE	1,250	1,250	SB1	L12	STORES	3.			
SODIUM HYDROXIDE SOLUTION 50%	357,901	357,901	GAL	9	BLEACH PLANT	M4	MANHOLE #5		
SODIUM HYPOCHLORITE SOLUTION	10,300	7,000	GAL	D9	Water Treatment				
SOLID HAZARDOUS WASTE	40	40	CU YD	J16	HAZ WASTE STORAGE	G7	RECOVERY SPILL POND		
SPECTRUM RX3100	6,000	6,000	LBS	J13	MACHINE ROOM				
SULFAMIC ACID	5,000	5,000	LBS	9 er	BLEACH PLANT	G4	RECAUST	K6	OLD RECOVERY
SULFUR HEXAFLUORIDE	440	440	CuFt	L3	SUB AA	L12	STORES		
SULFURIC ACID 93%	106,000	106,000	GAL	M4	MANHOLE #5	F9	TANK FARM		20 TO TO THE TOTAL THE TOTAL TO THE TOTAL TOTAL TO THE TO
TALC	312,550	312,550	LBS	9 er	BLEACH PLANT	H16	WAREHOUSE		
TURPENTINE	500	500	GAL	K5	RECOVERY	6			
UNOCAL DIESEL # 2	23,000	23,000	GAL	K14	AUTO SHOP	F9	TANK FARM		
UNOCAL UNLEADED GASOLINE	1,000	1,000	GAL	K14	AUTO SHOP	0 8			
USED OIL FILTERS	6	6	DRUMS	J16	HAZ WASTE STORAGE				
VESENEX 80 CHELATING AGENT	10,400	10,400	GAL	9F	BLEACH PLANT	J13	MACHINE		
WASTE OIL	2,122	2,122	GAL	K14	AUTO SHOP	J13	MACHINE	K5	RECOVERY
WASTE PAINT	100	50	GAL	K15	PAINT SHED	222			
WASTE SOLVENT	652	625	GAL	K14	AUTO SHOP		The second secon		
WHITE LIQUOR	1,009,393	1,009,393 GAL	GAL	G6	RECAUST				
St. 100 St. 10									

+				69011-19-4	Styrene Divinylbenzene	CATION RESIN BEADS
+		ARGON	8-25	124-38-9	CARBON DIOXIDE	CARBON DIOXIDE IN ARGON
+	1-10-0441	ARGON		124-38-9	CARBON DIOXIDE	CARBON DIOXIDE AND ARGON IN HELIUM
+	7140 37 4			124-38-9	CARBON DIOXIDE	CARBON DIOXIDE
+	17-17-10-1	SODIUM HYDROXIDE		66071-92-2	BLACK LIQUOR	BLACK LIQUOR
+	1310 73 2	SODIUM MOLYBUATE		1310-73-2	SODIUM HYDROXIDE	BETZ/HERCULES OPTISPERSE HTP73613
+	7634 05 0			7631-95-0	SODIUM MOLYBDATE	BETZ/HERCULES OPTISPERSE HTP73303
+	2332-73-0	METHOXYPROPYLAMINE			TRADE SECRET	BETZ STEAMATE NA2460
+	7200			8002-05-9	PETROLEUM DISTILLATES	BETZ POLYMER AE 1115P
+	8-04-0106	NONLYLPHENOOXYPOLY ETHANOL		8002-05-9	PETROLEUM DISTILLATES	BETZ POLYFLOC AE1128P
+	2015 15 0	METHOXYPROPYLAMINE		108-91-8	CYCLOHEXYLAMINE	BETZ OPTI-MEEN 80554
+	5200 720			12042-91-0	ALUMINUM CHLORHYDROXIDE	BETZ KLARAID 1C1172P
+				123-31-9	HYDROQUINONE	BETZ COR-TROL OS7780
20	7-21-111	DIETHANOLAMINE	5	123-31-9	HYDROQUINONE	BETZ CORTROL OS7700
3 6	7-74-111	DIETHYLHYDROXYLAMINE	5	123-31-9	HYDROQUINONE	BETZ CORTROL OS5300
3	444.455			123-31-9	HYDROQUINONE	BETZ COR-TROL 778-P
+	0-00-2001	SODIUM NITRITE		7631-95-0	SODIUM MOLYBDATE	BETZ CORR-SHIELD 736
+	7000			7757-83-7	SODIUM SULFITE	BETZ CORROGEN
+				10043-01-3	ALUMINUM SULFATE	BETZ CDP 90517
+	0-cs-1cg/	SODIUM MOLYBDATE		1310-73-2	SODIUM HYDROXIDE	BETZ BALANCED POLYMER 73612
\dagger	7631-95-0	SODIUM MOLYBDATE		1310-73-2	SODIUM HYDROXIDE	BETZ BALANCED POLYMER 73504
†	200			7631-95-0	SODIUM MOLYBDATE	BETZ BALANCED POLYMER 73302
1	-			63231-67-4	SILICA GEL	BEAD GEL SPHERICAL SILICA GEL ABSORBENTS
1	100-42-5	STYRENE 47%	53	N/A	VINYL ESTER RESIN 53%	ATLAC 580-05A VINYL ESTER RESIN STYRENE
1 0	1/32-10-5	WATER 39%	60	64741-56-6	PETROLEUM ASPHALT 60%	ASPHALT EMULSION
30	7 01 0077				ASBESTOS	ASBESTOS
+				7440-37-1	ARGON	ARGON
10	7/32-10-5	WATER	95	75-21-1	ETHYLENE GLYCOL	ANTIFREEZE
3 2	1/32-10-5	WATER	50	84-65-1	ANTHRAQUINONE	ANTHRAQUINONE 50% LIQUID
3	700 40 5			1341-49-7	AMMONIUM BIFLUORIDE	AMMONIUM BIFLUORIDE
+				7664-41-7	AMMONIA	AMMONIA
1	2-00-001	TOLUENE	49	67-64-1	ACETONE	AMERCOAT 12
3						ACTIVATED CARBON
1				74-86-2	ACETYLENE	ACETYLENE
T				67-64-1	ACETONE	ACETONE
/0110	CAOL	Chemical 2	%wt1	CAS1	CHEMICAL 1	NAME

CHEMICAL 3	CAS3	%wt3	CHEMICAL 3	CAS4	%wt4	NAME
						ACETONE
						ACETYLENE
						ACTIVATED CARBON
XYLENE	1330-48-9	13	VM & P NAPHTHA	6472-48-9	11	AMERCOAT 12
						AMMONIA
						AMMONIUM BIFLUORIDE
1,2-PROPANEDIOL	57-55-6	6				ANTHRAQUINONE 50% LIQUID
						ANTIFREEZE
	=					ARGON
						ASBESTOS
MINOR ADDITIVES 1%	MIXTURE	-				ASPHALT EMULSION
						ATLAC 580-05A VINYL ESTER RESIN STYRENE
						BEAD GEL SPHERICAL SILICA GEL ABSORBENTS
						BETZ BALANCED POLYMER 73302
						BETZ BALANCED POLYMER 73504
						BETZ BALANCED POLYMER 73612
						BETZ CDP 90517
						BETZ CORROGEN
						BETZ CORR-SHIELD 736
						BETZ COR-TROL 778-P
METHOXYPROPYLAMINE	5332-73-0					BETZ CORTROL OS5300
METHOXYPROPYLAMINE	5332-73-0					BETZ CORTROL OS7700
						BETZ COR-TROL OS7780
						BETZ KLARAID 1C1172P
						BETZ OPTI-MEEN 80554
						BETZ POLYFLOC AE1128P
						BETZ POLYMER AE 1115P
						BETZ STEAMATE NA2460
						BETZ/HERCULES OPTISPERSE HTP73303
						BETZ/HERCULES OPTISPERSE HTP73613
SODIUM SULFIDE	1313-84-4		WATER	7732-18-5		BLACKLIQUOR
						CARBON DIOXIDE
HELIUM	7440-59-7					CARBON DIOXIDE AND ARGON IN HELIUM
						CARBON DIOXIDE IN ARGON
		1000				CATION RESIN BEADS
						CEMENT (PORTLAND)

						KLEEN BLAST ARRASIVE SANDRI ASTING SAND
1			0.01	64742-47-8	HYDROTREATED DISTILLATE, LIGHT 100 ppm	KEROSENE
1	0-10-100	AMMONIUM ACETATE		64742-47-8	ISOPARAFFINIC PETROLEUM DISTILLATE	INFINITY PS4701
1	624 64 0			64742-95-6	LIGHT AROMATIC NAPHTHA	NFINITY PS4309
1	20-00-00-0	SODIUM DODECYLBENZENESULFONATE		68551-12-2	ALCOHOLS, C12-16, ETHOXYLATED	NFINITY PK2726
1	263630	SODIUM DODECYLBENZENESULTNATE		68551-12-1	ALCHOHOLS, C12-16 ETHOXYLATED	NFINITY DA 2718
00.00	25155 20 0	NITROGEN	0.01	7783-06-4	HYDROGEN SULFIDE	HYDROGEN SULFIDE IN NITROGEN
99 99	7727-37-9	WATER	50	7722-84-1	HYDROGEN PEROXIDE 50%	HYDROGEN PEROXIDE 50%
1	7732-18-5			1333-74-0	HYDROGEN	HYDROGEN
1	100	WATER	32 - 37	7647-01-0	HYDROCHLORIC ACID	HYDROCHLORIC ACID (INHIBITED)
1	7772.18.5			14808-60-7	SILICA	GROUT
T	1010-04-4	SODIUM SULFIDE		497-19-8	SODIUM CARBONATE	GREEN LIQUOR
40-00		BUTYLATED TRIPHENYL PHOSPHAIE MIXIURE 40 - 50%	7-13	115-86-6	TRIPHENYL PHOSPHATE 7 - 13%	FYRQUEL EHC
20 50	1		70	7704-34-9	SULFUR	FLOWABLE SULFUR MICROSUL 70
4000	7-61-62406	VINYL ESTER RESIN 40-67%	25-60	100-42-5	STYRENE MONOMER 25-60%	FIBER GLASS RESINS
70 67		HYDROCHLORIC ACID	-	5064-31-3	NITRILOTIACETIC ACID, TRISODIUM SALT	ECO-BRITE 510
1	7647 01 0	NITRILOTRIACETIC ACID, TRISODIUM SALT	.9	1310-73-2	SODUM HYDROXIDE	ECO-BRITE 1000
n S	1º	DIETHYLENETRIAMINEPENTAKIS ACID SODIUM SALT 15-40%	15 to 40	15827-60-8	DIETHYLENETRIAMINEPENTAKIS ACID 15 TO 40%	DIACHEM 611
15.45			70-100	64742-54-7	HYDROTREATED HEAVY PARAFFINIC DISTILLATES	DEFOAMER
1				N/A	COMPRESSED AIR	COMPRESSED AIR
				77-92-9	CITRIC ACID	CITRIC ACID
ANTONICO	0-70-74740	HYDROTREATED HEAVY NAPHTENIC	VARIES	64742-65-0	SOLVENT DEWAXED HEAVY PARAFFINIC	CHEVRON ULTI-PLEX GREASE EP 2
VADIO I		NIC	85	MIXTURE	LUBRICATING BASE OIL	CHEVRON TRACTOR HYDRAULIC FLUID
7 2			55	68037-01-4	SYNTHETIC HYDROCARBON BASE OIL	CHEVRON SYNTHETIC GL TEGRA SAE 80W-140
AVINED	1	DEWAXED HEAVY PARAFFINIC	VARIES	64742-54-7	HYDROTREATED HEAVY PARAFFINIC DISTILLATE	CHEVRON SUPREME AUTOMATIC TRANSMISSION FLUID
VADIE			>90	64741884	SEVERELY REFINED PETROLEUM DISTILLATE	CHEVRON RPM UNIVERSAL GEAR LUBRICANT
30	MIXTORE	SEVERELY REFINED PETROLEUM DISTILLATE	2	MIXTURE	LUBRICATING BASE OIL	CHEVRON RPM HEAVY DUTY MOTOR OILS SAE 15W-40
3 2			85	MIXTURE	SEVERELY REFINED PETROLEUM DISTILLATE	CHEVRON MOLY GREASE EP NLGI 0,1,2
90		SEVERELY REFINED PETROLEUM DISTILLATE	2	MIXTURE	LUBRICATING BASE OIL	CHEVRON MACHINE OIL
3 -	16		99	64742-65-0	HIGHLY REFINED BASE OILS	CHEVRON HYDRAULIC OIL 46
90	1	SEVERELY REFINED PETROLEUM DISTILLATE	2	MIXTURE	LUBRICATING BASE OIL	CHEVRON GST OILS
8			97	64742014	RESIDUAL OILS AND/OR DISTILLATES	CHEVRON GEAR COMPOUND EP ISO 460
T	64742-52-5	HYDROTREATED HEAVY NAPHTENIC		64742-65-0	SOLVENT DEWAXED HEAVY PARAFFINIC	EP NLGI 2
8	1	SEVERELY REFINED PETROLEUM DISTILLATE	10	MIXTURE	LUBRICATING BASE OIL	CHEVRON DRIVE TRAIN FLUID
VARIES	┸		VARIES	64742-01-4	RESIDUAL OILS SOLVENT REFINED	CHEVRON CYLINDER OIL
1.5	0-73-2	SODIUM HYDROXIDE 1.5%	2.4	5064-31-3	TRISODIUM NITRILOTRIACETATE 2.4%	CHELANT
1	1	Chemical 2	%wt1	CAS1	CHEMICAL 1	NAME

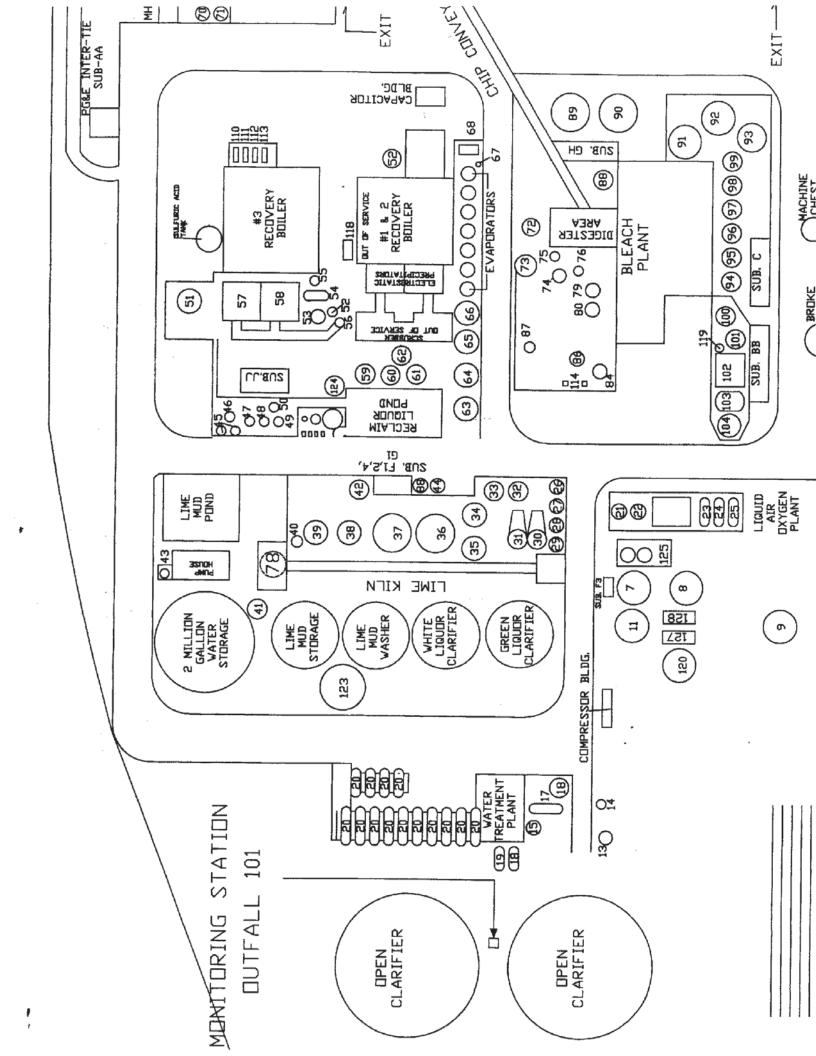
CHEMICAL 3	CAS3	%wt3	CHEMICAL 3	CAS4	%wt4	NAME
					ı	CHELANT
HEAVY PARAFFINIC VACUUM DISTILLATE	64742-16-1	VARIES	TOWER BOTTOMS	64741-56-6	VARIES	CHEVRON CYLINDER OIL
	_					CHEVRON DRIVE TRAIN FLUID
		E-14				CHEVRON DURA-LITH GREASE EP NLGI 2
						CHEVRON GEAR COMPOUND EP ISO 460
					8	
ADDITIVES	MIXTURE !	St.				CHEVRON MOLY GREASE EP NLGI 0,1,2
				Organia min	(7—5)	
HYDROTREATED DISTILLATE LIGHT PARAFFIN	64742-55-8	VARIES	SOLVENT DEWAXED	64742-56-9	VARIES	CHEVRON SUPREME AUTOMATIC TRANSMISSION FLUID
						CHEVRON SYNTHETIC GL TEGRA SAE 80W-140
						CHEVRON TRACTOR HYDRAULIC FLUID
REFINED RESIDUM	64742-01-4	VARIES				CHEVRON ULTI-PLEX GREASE EP 2
The second secon						CITRIC ACID
						COMPRESSED AIR
			1			DEFOAMER
						DIACHEM 611
		_				ECO-BRITE 1000
		===	1000		1000	ECO-BRITE 510
POLYESTER RESIN 52%	-	52				FIBER GLASS RESINS
						FLOWABLE SULFUR MICROSUL 70
TRIXYLENYL PHOSPHATE 40 - 50%	25155-23-1	40-50				FYRQUEL EHC
WATER	7732-18-5				7000	GREEN LIQUOR
						GROUT
						HYDROCHLORIC ACID (INHIBITED)
						HYDROGEN
						HYDROGEN PEROXIDE 50%
						HYDROGEN SULFIDE IN NITROGEN
						INFINITY DA 2718
						INFINITY PK2726
Contraction of the Contraction o						INFINITY PS4309
						INFINITY PS4701
			Contractor Contractor			KEROSENE
						KLEEN BLAST ABRASIVE SANDBLASTING SAND
					Section Control	

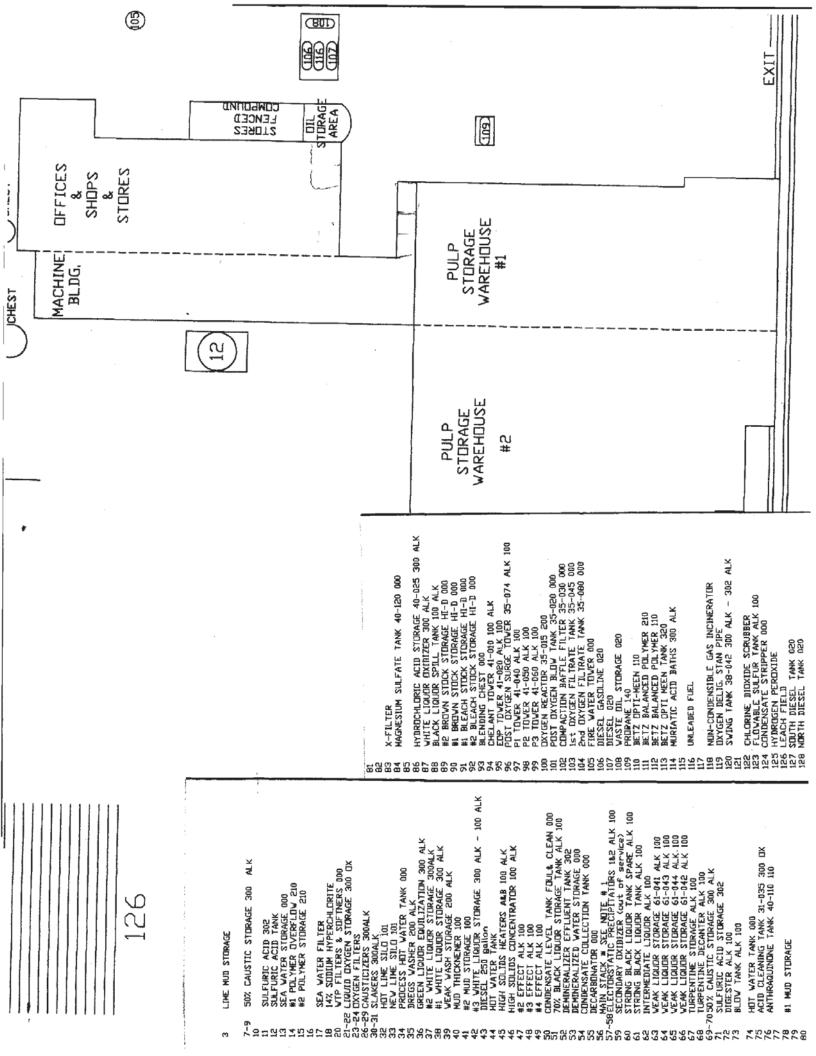
NAME	CHEMICAL 1	CAS1 9	%wt1	Chemical 2	CAS2	%wt2
LIME (FRESH LIME)	CALCIUM OXIDE	1305-78-8				Г
LIME MUD	CALCIUM CARBONATE		35	SODIUM HYDROXIDE	1310-73-2	VARIES
MAGNESIUM SULFATE	MAGNESIUM SULFATE	10034-99-8	36 -38			
MORTAR	CRISTOBLITE <16%	14464-46-1	> 16	QUARTZ <18%	14808-60-7	>18
NALCO 7570 FELT CLEANER	STRAIGHT RUN MIDDLE DISTILLATES 40+ %	100	>40	ETHOXYLATED OXTYLPHENOL 10%	9036-19-5	10
NALCO BT-1811	SODUM HYDROXIDE	100	0.1-1.0			
NALCO BT-2611	SODDIUM HYDROXIDE		1-5			
NALCO NALKLEEN 2626	Hydrotreated light distilate	64741-86-2	70	Oxyalkylate	Prop.	5
NALCO NALCLEAR 7744	HYDROTREATED LIGHT DISTILATE		1-5			
NALCO NALCON 7648 MICROBIOCIDE	ISOPROPANOL	67-63-0	5-10	N-ALKYLDIMEHTYL BENZYL AMMONIUM CHLORIDE	68391-01-5	31.87
NALCO TRI-ACT 1803 INHIBITOR	ETHOXYLATED AMINE	8-0	1-10	METHOXYPROPYLAMINE	5332-73-0	10-20
NALCO TRI-ACT 1820	CYCLOHEXYLAMINE		20-40	DIETHYLAMINOETHANOL	100-37-8	5-10
NALCO ULTRION 7157 COAGULANT	ALUMINUM PHOSPHATE	13530-50-2	2	ALUMINUM HYDROXY CHLORIDE	1327-41-9	20
NALKO NALKLEEN 2626	ETHOXYLATED SECONDARY ALCOHOL	38131-40-8	5-10	STRAIGHT RUN MIDDLE DISTILLATE	64741-44-2	70-100
NITRIC ACID	NITRIC ACID	7697-37-2	69 -70	WATER	7732-18-5	
NITROGEN	NITROGEN	7727-37-9				
NITROUS OXIDE	NITROUS OXIDE	10024-97-2	>99.6			T
OXYGEN (GAS CYLINDERS)	OXYGEN	7782-44-7				
OXYGEN (USED FOR PULP PRODUCTION)	OXYGEN	7782-44-7				T
PAINT LATEX BASED	WATER	7732-18-5	VARIES	TITANIUM DIOXIDE	13463-67-7	VARIES
PAINT OIL BASED	MINERAL SPIRITS	64742-88-7	VARIES	ALKYD RESIN	Z.	VARIES
PERGASOL BROWN SP	WATER	7732-18-5	59-61	PROPRIETARY DYE		26-28
PEROXIDE STABILIZER	DIETHYLENETRIAMINEPENTAKIS ACID 15 TO 40%	15827-60-8	15 to 40	DIETHYLENETRIAMINEPENTAKIS ACID SODIUM SALT 15-40%	6 22042-96-2	15-40
PROPANE	PROPANE	74-98-6				T
RAIFIX 120	MODIFIED CATIONIC STARCH		20			T
REFRACTORY						T
SANDBLASTING SAND						
SODIUM BISULFITE	SODIUM BISULFITE 15-43%	7631-90-5	15-43	WATER	7732-18-5	T
SODIUM CARBONATE	SODIUM CARBONATE	5968-11-6				T
SODIUM HYDROXIDE SOLUTION 50%	SODIUM HYDROXIDE	1310-73-2	50	WATER	7732-18-5	T
SODIUM HYPOCHLORITE SOLUTION	SODIUM HYPOCHLORITE 12.5%	7681-52-93	12.5	SODIUM HYDROXIDE 1.0%	1310-73-2	-
SOLID HAZARDOUS WASTE						
SPECTRUM RX3100	DODECYLGUANIDINE HYDROCHLORIDE	13590-97-1		METHYLENE BIS	6317-18-6	-
SULFAMIC ACID	SULFAMIC ACID	5329-14-6			\dagger	T
SULFUR HEXAFLUORIDE	SULFUR HEXAFLUORIDE	2551-82-4			t	t
SULFURIC ACID 93%	SULFURIC ACID	7664-93-9	93	WATER	7732-18-5	

CHEMICAL 3	CAS3	%wt3	CHEMICAL 3	CAS4	%wt4	NAME
						LIME (FRESH LIME)
SODIUM SULFIDE	1313-84-4	VARIES				LIME MUD
	Ш					MAGNESIUM SULFATE
LIQUID SODIUM SILICATE 15-22%	6834-92-0	15-22				MORTAR
	-0					NALCO 7570 FELT CLEANER
						NALCO BT-1811
						NALCO BT-2611
						NALCO NALKLEEN 2626
	A 107 A					NALCO NALCLEAR 7744
N-DIALKYL METHYL BENZYL AMMONIUM CHLORIDE	73049-75-9	0.13				NALCO NALCON 7648 MICROBIOCIDE
ETHANOLAMINE		10-20	CYCLOHEXYLAMINE	108-91-8	10-20	NALCO TRI-ACT 1803 INHIBITOR
MORPHOLINE		5-10				NALCO TRI-ACT 1820
						NALCO ULTRION 7157 COAGULANT
						NALKO NALKLEEN 2626
				10000		NITRIC ACID
						NITROGEN
			20000	1000000	C - 1000	NITROUS OXIDE
						OXYGEN (GAS CYLINDERS)
						OXYGEN (USED FOR PULP PRODUCTION)
CALCIUM CARBONATE	1317-65-3	VARIES	VARIES ETHYLENE GLYCOL	107-21-1	VARIES	VARIES PAINT LATEX BASED
TITANIUM DIOXIDE	13463-67-7	VARIES	XYLENE(MIXEDISOMERS) 1330-20-7	1330-20-7	VARIES	PAINT OIL BASED
						PERGASOL BROWN SP
						PEROXIDE STABILIZER
		1000				PROPANE
						RAIFIX 120
						REFRACTORY
						SANDBLASTING SAND
						SODIUM BISULFITE
						SODIUM CARBONATE
				5:		SODIUM HYDROXIDE SOLUTION 50%
						SODIUM HYPOCHLORITE SOLUTION
						SOLID HAZARDOUS WASTE
ISOPROPYL ALCOHOL	67-63-0					SPECTRUM RX3100
						SULFAMIC ACID
		N. O'CHILL				SULFUR HEXAFLUORIDE
						SULFURIC ACID 93%

NAME	CHEMICAL 1	CAS1	%wt1	Chemical 2	CAS2	%wt2
TALC	MAGNESIUM SILICATE	14807-96-6				
TURPENTINE	TURPENTINE	8006-64-2	VARIES			
UNOCAL 76 GUARDOL QLT 15W-40	HYDROTREATED DISTILLATE 0-85%	64742-54-7	0-85	SOLVENT DEWAXED DISTILLATE 0-85%	64742-65-0	0-85
UNOCAL DIESEL # 2	DIESEL#2	68476-34-6	98			
UNOCAL EXTRA DUTY NL GEAR LUBE 5EP	HYDROTREATED DISTILLATE	64742-54-7	0-99	SOLVENT DEWAXED DISTILLATE HEAVY	64742-65-0	0-99
UNOCAL EXTRA DUTY NL GEAR LUBE 7EP	SOLVENT DEWAXED RESIDUAL OIL 98%	64742-62-7	98			
UNOCAL GUARDOL MOTOR OIL 10W	SOLVENT DEWAXED DISTILLATE HEAVY PARAFFIN 88-89%	64742-65-0	88-89	PROPRIETARY ZINC COMPOUNDS 1.5-2.0%	NA	1.5-2.0
UNOCAL HT/4 FLUID 30	ZINC COMPOUNDS PROPORIETARY 1-3%	NA	1-3	The second secon		
UNOCAL HYDRAULIC TRACTOR FLUID	HYDROTREATED DISTILLATE, HEAVY 0-93%	64742-54-7	0-93	SOLVENT DEWAXED DISTILLATE, HEAVY PARAFFIN 0-93%	64742-65-0	0-93
UNOCAL MULTIPURPOSE ATF	HYDROTREATED DISTILLATE LIGHT PARAFFIN 90%	64742-55-8	90			
UNOCAL PM OIL 150	SOLVENT DEWAXED RESIDUAL OIL 60-65%	64742-62-7	60-65	SOLVENT DEWAXED DISTILLATE LIGHT PARAFFIN 35-40%	64742-56-9	35-40
UNOCAL TRITION SYNTHETIC OIL 32	PROPRIETARY		100			
UNOCAL TRITON SYN LUBE 80W-140	OIL MIXTURE 100%	NA	100			
UNOCAL TURBINE OIL 32	SOLVENT DEWAXED DISTILLATE HEAVY PARAFFIN 99%	64742-65-0	99	TRADE SECRET 1%	N/A	1
UNOCAL TURBINE OIL HD 68	SOLVENT DEWAXED DISTILLATE HEAVY PARAFFIN 100%	64742-65-0	100			
UNOCAL UNAX AW 100	SOLVENT DEWAXED DISTILLATE HEAVY PARAFFFIN 99%	64742-65-0	99	TRADE SECRET 1%	N/A	1
UNOCAL UNAX AW 150	HYDROTREATED DISTILLATE HEAVY PARAFFIN	64742-54-7	0-85	SOLVENT DEWAXED DISTILLATE HEAVY PARAFFIN	64742-65-0	0-85
UNOCAL UNAX AW 220	SOLVENT DEWAXED RESIDUAL OIL 64%	64742-62-7	64	SOLVENT DEWAXED DISTILLATE HEAVY PARAFFIN 35%	64742-65-0	35
UNOCAL UNAX AW 46	SOLVENT DEWAXED DISTILLATE HEAVY PARAFFIN 99%	64742-65-0	99	TRADE SECRET 1%	NIA	_
UNOCAL UNLEADED GASOLINE	GASOLINE	8006-61-9		BENZENE 1-5%	71-43-2	1-5
UNOCAL UNOBA EP GREASE 2	SPENT LUBE OIL CLAY TREATED 37-40%	64742-50-3	37-40	SOLVENT REFINED RESIDUUM 32-35%	64742-01-4	32-35
UNOCAL UNOBA MOLY XD GREASE 2	SOLVENT DEWAXED RESIDUAL OIL 70-80%	64742-62-7	70-80	SOLVENT DEWAXED DISTILLATE HEAVY PARAFFIN 20-50%	64742-65-0	20-50
USED OIL FILTERS						
VESENEX 80 CHELATING AGENT	PENTASODIUM DIETHYLENETRIAMINEPENTAACETATE	000140012	38	TETRASODIUM DIETHYLENETRIAMINETETRAACETATE	075348606	4
WASTE OIL						
WASTE PAINT	WASTE PAINT			PAINT THINNER		
WASTE SOLVENT	2003 St. H. H. H. H. S. S. S. S.					
WHITE LIQUOR	SODIUM HYDROXIDE	1310-73-2	varies	SODIUM SULFIDE	1313-84-4	varies

CHEMICAL 3	CAS3	%wt3	CHEMICAL 3	CAS4	%wt4	NAME
			The state of the s			TALC
						TURPENTINE
ADDITIVES (PROPRIETARY) 20-23%	AN	20-23	RESIDUAL OIL 0-2%	64742-62-7	0-2	UNOCAL 76 GUARDOL OLT 15W-40
						UNOCAL DIESEL # 2
SOLVENT DEWAXED DISTILLATE LIGHT						UNOCAL EXTRA DUTY NL GEAR LUBE 5EP
						UNOCAL EXTRA DUTY NL GEAR LUBE 7EP
PROPRIETARY TRADE SECRET						UNOCAL GUARDOL MOTOR OIL 10W
						UNOCAL HT/4 FLUID 30
ADDITIVES 1-11% PROPRIETARY						UNOCAL HYDRAULIC TRACTOR FLUID
						UNOCAL MULTIPURPOSE ATF
PROPRIETARY COMPOUNDS 0-10%						UNOCAL PM OIL 150
					0.5	UNOCAL TRITION SYNTHETIC OIL 32
		100		- 10 Visit		UNOCAL TRITON SYN LUBE 80W-140
						UNOCAL TURBINE OIL 32
						UNOCAL TURBINE OIL HD 68
						UNOCAL UNAX AW 100
SOLVENT DEWAXED RESIDUAL OIL	5 5					UNOCAL UNAX AW 150
TRADE SECRET 1%						UNOCAL UNAX AW 220
	100					UNOCAL UNAX AW 46
TOLUENE 1-5%	108-88-3	1-5	XYLENE 1-9%	1330-20-7	1-9	UNOCAL UNLEADED GASOLINE
HYDROTREATED DISTILLATE HEAVY NAPHTHENIC 12-15%	64742-52-5	12-15	TRADE SECRET 10-19%	N/A	10-19	UNOCAL UNOBA EP GREASE 2
PROPRIETARY INOGANIC MOLYBDENUM 3%	NA	3	TRADE SECRET 5%	N/A	5	UNOCAL UNOBA MOLY XD GREASE 2
						USED OIL FILTERS
TRISODIUM DIETHYLENETRIAMINETRIACETATE	075348617	1	TRISODIUM NITRILOTR-	005064313	1	VESENEX 80 CHELATING AGENT
						WASTE OIL
						WASTE PAINT
						WASTE SOLVENT
SODIUM CARBONATE	497-19-8	varies	WATER	7732-18-5	varies	WHITE LIQUOR





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TRADE NAME

BLACK LIQUOR

SYNONYMS

Spent kraft pulping liquor

CAS. NO.

66071-92-9

DESCRIPTION

Black Liquor is a substance of highly variable alkaline composition produced when wood chips are cooked in the kraft pulping process. It contains excess pulping chemicals (NaOH, Na₂S), carbonates, sulfates, along with dissolved and degraded cellulose, hemicallulose and lignins.

PHYSICAL DATA

FIRE AND EXPLOSION DATA

Flash Point Not Available Autoignition Temperature Not Available Flammable Limits in Air Not Available Extinguishing Media Not Applicable Special Fire Fighting Procedures Not Applicable Unusual Fire and Explosion Hazard Not Applicable

HEALTH EFFECTS INFORMATION

REACTIVITY DATA

Conditions Contributing to Instability Not Applicable

Incompatibility Contact with acids can result in release of potentially lethal concentrations of hydrogen sulfide gas.

Hazardous Decomposition Products . Not Applicable

Conditions Contributing to

PRECAUTIONS, SAFE HANDLING

Avoid all contact with eyes and skin.

Do not permit contact with acidic materials.

Do not allow potential leaks to be discharged into acid sewer.

Vessels which have contained black liquor should be checked for hydrogen sulfide before entering.

GENERALLY APPLICABLE CONTROL MEASURES

Where splash potential exists, wear chemical worker's goggles and rubber gloves. Other protective equipment such as aprons, boots, face shield, or a rubber suit, may be needed when handling large amounts of this material.

Eyewash stations and safety showers should be readily accessible near use areas.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation Remove to fresh air.

Ingestion Do not induce vomiting. Rinse mouth out with water. Drink large amounts of water. Seek prompt medical assistance for further treatment, observation and support.

SPILLILEAK CLEAN-UP PROCEDURES

IF SPILL OR LEAK OCCURS, IMMEDIATELY CONSULT MILL ENVIRONMENTAL CONTROL DEPARTMENT.

Never neutralize spill with acid.

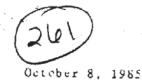
Never divert spill to an acid-containing sewer.

Dilute and flush to an approved treatment system as per mill requirements.

Spills can make floors very slippery. Clean up all spills immediately.

Ventilate spill area.

Important: The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification. API NFPA makes no warranty of any kind, express or implied, concerning the accuracy or completeness of the information and data herein. API NFPA will not be liable for claims relating to any party's use of or reliance on information and data contained herein regardless of whether it is claimed that the information and data are inaccurate, incomplete or otherwise misleading.



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TRADE NAME

GREEN LIQUOR

SYNONYMS

CAS. NO.

None

DESCRIPTION

Green Liquor is an aqueous alkaline mixture of sodium sulfide and sodium carbonate. Green liquor is formed when smelt from a kraft recovery furnace is dissolved in water.

PHYSICAL DATA

Boiling Point		Variable
Specific Gravity		Variable
Vapor density		Not Available
% Volatiles by Vol		Not Available
Melting Point		Not Available
Vapor Pressure		Not Available
Solubility in H ₂ O (% by	Wt.)	Infinite
Evaporation Rate (Butyl	Acetate=1)	Not Available
pH		Alkaline
Appearance and Odor		Green liquid

FIRE AND EXPLOSION DATA

Flash Point Not Available
Antoignition Temperature Not Available
Flammable Limits in Air Not Available
Extinguishing Media Not Applicable
Special Fire Fighting Procedures Not Applicable
Unusual Fire and Explosion Hazard Not Applicable

Conditions Contributing to Hazardous Polymerization. . . . Not Applicable

HEALTH EFFECTS INFORMATION

Exposure Limit	None established.
Skin and eye contact	Can cause irritation, reddening or burning, up to severe burns and possible blindness.
Ingestion	Will cause serious damage to mouth, throat and stomach if accidentally ingested.
Skin Absorption	Not known to occur.
Inhalation	Inhalation of solution mist may cause upper respiratory tract irritation.
Chronic Effects	None that are known.

REACTIVITY DATA

Instability	Not Applicable
Incompatibility	Contact with acids can result in release of potentially lethal concentrations of hydrogen sulfide gas.
Hazardous Decomposition Products.	Not Applicable

PRECAUTIONS, SAFE HANDLING

Avoid all contact with eyes and skin.

Do not permit contact with acidic materials.

Do not allow potential leaks to be discharged into acid sewer.

Vessels which have contained green liquor should be checked for hydrogen sulfide before entering.

GENERALLY APPLICABLE CONTROL MEASURES

Where splash potential exists, wear chemical worker's goggles and rubber gloves. Other protective equipment such as aprons, boots, face shield, or a rubber suit, may be needed when handling large amounts of this material.

Eyewash stations and safety showers should be readily accessible near use areas.

EMERGENCY AND FIRST AID PROCEDURES

Eyes	Speed is essential.	Contact physician.	Flush thoroughly
	with running water fevelids.	or 15 minutes incl	uding under the

Skin Wash affected area immediately with water for at least 15 minutes or until slippery feel is gone. Remove contaminated clothing.

Inhalation Remove to fresh air.

Ingestion Do not induce vomiting. Rinse mouth out with water.

Drink large amounts of water. Seek prompt medical assistance for further treatment, observation and support.

SPILL LEAK CLEAN-UP PROCEDURES

IF SPILL OR LEAK OCCURS, IMMEDIATELY CONSULT MILL ENVIRONMENTAL CONTROL DEPARTMENT.

Never neutralize spill with acid.

Never divert spill to an acid-containing sewer.

Dilute and flush to an approved treatment system as per mill requirements.

Spills can make floors very slippery. Clean up all spills promtly.

Ventilate spill area.

Important: The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification. API NFPA makes no warranty of any kind, express or implied, concerning the accuracy or completeness of the information and data herein. API NFPA will not be liable for claims relating to any party's use of or reliance on information and data contained herein regardless of whether it is claimed that the information and data are inaccurate, incomplete or otherwise misleading.

TRADE NAME

WHITE LIQUOR - ALKALI

SYNONYMS

Cooking Liquor

CAS. NO.

None

DESCRIPTION

White Liquor is an aqueous alkaline solution consisting of sodium hydroxide, sodium sulfide, sodium carbonate, and sodium sulfate. The mixture is used for the digesting of wood chips in the kraft pulping process.

PHYSICAL DATA

FIRE AND EXPLOSION DATA

Flash Point Not Available Autoignition Temperature Not Available Flammable Limits in Air Not Available Extinguishing Media Not Applicable Special Fire Fighting Procedures Not Applicable Unusual Fire and Explosion Hazard Not Applicable

HEALTH EFFECTS INFORMATION

Skin Absorption Not known to occur.

Inhalation Inhalation of solution mist may cause upper respiratory tract irritation.

Chronic Effects None that are known.

REACTIVITY DATA

Conditions Contributing to Instability Not Applicable

Incompatibility Contact with acids can result in release of potentially lethal concentrations of hydrogen sulfide gas.

Hazardous Decomposition Products . Not Applicable

Conditions Contributing to Hazardous Polymerization Not Applicable





PRECAUTIONS, SAFE HANDLING

Avoid all contact with eyes and skin.

Do not permit contact with acidic materials.

Do not allow potential leaks to be discharged into acid sewer.

Vessels which have contained white liquor should be checked for hydrogen sulfide before entering.

GENERALLY APPLICABLE CONTROL MEASURES

Where splash potential exists, wear chemical worker's goggles and rubber gloves. Other protective equipment such as aprons, boots, face shield, or a rubber suit, may be needed when handling large amounts of this material.

Eyewash stations and safety showers should be readily accessible near use areas.

EMERGENCY AND FIRST AID PROCEDURES

Eyes Speed is essential. Flush thoroughly with running water for 15 minutes including under the eyelids. Contact physician.

Inhalation Remove to fresh air.

Ingestion Do not induce vomiting. Rinse mouth out with water.

Drink large amounts of water. Seek prompt medical assistance for further treatment, observation and support.

SPILL LEAK CLEAN-UP PROCEDURES

IF SPILL OR LEAK OCCURS, IMMEDIATELY CONSULT MILL ENVIRONMENTAL CONTROL DEPARTMENT.

Never neutralize spill with acid.

Never divert spill to an acid-containing sewer.

Dilute and flush to an approved treatment system as per mill requirements.

Spills can make floors very slippery.

Ventilate spill area.

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Waste Streams

<u>Manhole 5</u> - The Samoa Pulp mill discharges wastewater to the Pacific Ocean through outfall 001 (M1). This discharge is regulated by a National Pollutant Discharge Elimination System (NPDES) permit. Effluent from the mill consists of:

- a. process wastewater from the kraft pulping process including pulping, bleaching, drying, chemical recovery and power generation;
- b. wastewater from maintenance activities during pulp production, scheduled maintenance shutdowns and unscheduled shutdown periods;
 - c. solids from the water treatment plant (E6);
 - d. blowdown from the recovery boiler (J5);
 - e. storm water from the pulp mill site and adjacent sawmill; and
 - f. freshwater flow to maintain the outfall during periods of pulp mill shutdown.

A monitoring and reporting program is in place to document compliance with the waste discharge requirements. The results are reported to the North Coast Regional Water Quality Control Board monthly and the records are stored on site.

Waste Oil - Waste oil is generated by rolling equipment as well as various machines throughout the mill. The oil is collected in 55-gallon drums and transported by forklift to the waste oil storage area (M-15). The waste oil is picked up by Chico Drain Oil and recycled. Used Oil filters and oily rags are stored in the hazardous waste storage area (J16) until they are picked up by a licensed hazardous waste disposal facility.

Other Hazardous Wastes - Used batteries and florescent light bulbs are stored in the hazardous waste area (J-16) until they can be disposed of. The batteries are taken to local dealers for recycling and a licensed commercial waste hauler removes the light bulbs. A licensed waste hauler also removes waste chemicals that have been used for analysis in the laboratory.

<u>Lime Grits/Dregs</u> - Lime Grits/Dregs are produced in recaust (H-7). Pure quicklime (calcium oxide) is used to regenerate chemicals used in the digestion of wood chips to make pulp. One of the reactants in this regeneration process is calcium carbonate. Most of the calcium carbonate is re-burned back into useful calcium oxide in an onsite rotary limekiln. However, some of the calcium carbonate is used on a specialized filter to remove boiler ash, called dregs, from the process. The dregs are also high in calcium carbonate content and contain some carbon, iron, sulfur and trace quantities of various metals. From 1995 until May of 1997, the material was used as road base and cover material for the Samoa Landfill just west of the Samoa Pulp mill. From May 1997 until the closure of the Cummings Road Landfill, the lime was used as capping material for

that site. Since the closure of the landfill approximately 3 years ago, the lime has been marketed as an agricultural amendment first through Western Ag Service and currently through Cold Creek Compost. The lime is transported by truck to a rented warehouse where it is stored before being transported by truck to Ukiah, where Cold Creek Compost is located.

<u>Fiber Wastes</u> - In the past, fiber wastes were transported by truck to the Fairhaven Power Plant where they were burned. Currently, the fiber wastes are not being burned by the power plant because they are too wet to provide sufficient energy input. There are two locations where fiber wastes is being stored (I-13 and G-17) until a press is purchased in order to reduce the moisture content of the fibers so that they can again be burned in the power plant.

The mill also generates approximately 40 tons of office type garbage per month that is disposed of by City Garbage Co. of Eureka.

SITE CHARACTERIZATION SUMMARY REPORT

Pulp Mill One TCF Drive Samoa, California

January 22, 2004



consulting scientists and engineers

TABLE 1

CONSTITUENTS OF POTENTIAL CONCERN IN SURFACE AND SUBSURFACE SOIL SAMPLES COLLECTED FROM BORINGS

Stockton Pacific Enterprises, Inc. Pulp Mill Samoa, California

		NUMBER OF	NUMBER OF	RANGE OF DETECTED	REGION 9 PRG	NUMBER OF SAMPLES	CONSTITUENT OF POTENTIAL
CONSTITUENT	UNITS	SAMPLES	DETECTIONS	CONCENTRATIONS	(Residential)	ABOVE PRG	CONCERN
SURFACE SOIL UP TO 1	O FEET BGL)						
Volatile Organic Compour							
1,1-DCA	mg/kg	34	1	0.012	2.81	0	No
Chloroform	mg/kg	34	2	0.008 - 0.009	0.94 1	o	No
1,1,1-TCA	mg/kg	34	4	0.007 - 0.054	1,200	0	No
TCE	mg/kg	34	i	0.036	0.053	0	No
PCE	mg/kg	34	4	0.024 - 1.0	1.5	0	No
Methylene Chloride	mg/kg	34	3	0.029 J - 0.042	9.1	0	No
Toluene	mg/kg	43	8	0.006 - 0.22	520	0	No
Ethylbenzene	mg/kg	43	i	0.16	8.9	0	No
Total Xylenes	mg/kg	43	3	0.0182 - 0.41	270	0	No
MTBE	mg/kg	24	1	0.013	17 1	Õ	No
sec-Butylbenzene	mg/kg	23	1	0.15	220	o	No
n-Butylbenzene	mg/kg	23	1	0.45	240	0	No
1,2,4,-TMB	mg/kg	23	2	0.065 - 0.69	52	0	No
1,3,5-TMB	mg/kg	23	2	0.038 - 0.20	21	0	No
p-lsopropyltoluene	mg/kg	23	2	0.065 - 0.39		0	No
Isopropylbenzene	mg/kg	23	1	0.032		0	No
n-Propylbenzene	mg/kg	23	1	0.083		Õ	No
Naphthalene	mg/kg	33	2	0.43 ~ 0.5	56	0	No
-	mg/ Mg	20	-	0.15	50	ŭ	
Hydrocarbons	_		_				
TEPH (Diesel Range)	mg/kg	19	9	1.1 - 13,000		1	Yes
TPPH (Gasoline Range)	mg/kg	19	1	470		1	Yes
TEPH (Motor Oil Range)	mg/kg	10	. 0	••	***		No
Oil and Grease (Total)	mg/kg	9	1	29,000			Yes
TRPH (Total Recoverable)	mg/kg	1	0			-	No
Semi-volatile Organic Cor	mpounds (SVO	Cs)					
Naphthalene	(See VOCs)	,					
2-Methylnaphthalene	mg/kg	10	1	0.7	**		No
Metals							
Arsenic	mg/kg	10	10	2.2 - 3.7	22 1	, 0	No
Barium	mg/kg	10	10	11 - 23	5,400	0	No
Cobalt	mg/kg	10	10	5.8 - 9.7	900	0	No
Chromium (total)		10	10	34 - 76	210	0	No
,	mg/kg	10	10	12 - 80	3,100	0	
Copper Iron	mg/kg	10	10	12,000 - 17,000	23,000	0	No No
Lead	mg/kg	10	10	2.7 - 10	25,000 150 ¹	0	
	mg/kg						No
Manganese Nickel	mg/kg	10	10	200 - 290	1,800	0	No
	mg/kg	10	10	37 - 53	**	0	No
Vanadium	mg/kg	10	10	21 - 41	550	0	No
Zinc	mg/kg	10	10	27 - 51	23,000	0	No
General Chemistry/Misce	llaneous						
pH ²	std. units	27	27	7.4 - 12.8	~		Yes 2
Conductivity	µmhos/cm	15	15	38 - 860	~-		
Total Alkalinity	mgCaCO3/kg	20	20	26 - 1,500			
Hydroxide Alkalinity	mgCaCO3/kg	16	0				

Page 1 of 3

MFG Project No. 240014.7

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TABLE 1

CONSTITUENTS OF POTENTIAL CONCERN IN SURFACE AND SUBSURFACE SOIL SAMPLES COLLECTED FROM BORINGS

				RANGE OF	REGION 9	NUMBER OF	CONSTITUENT
		NUMBER OF	NUMBER OF	DETECTED	PRG	SAMPLES	OF POTENTIAL
CONSTITUENT	UNITS	SAMPLES	DETECTIONS	CONCENTRATIONS	(Residential)	ABOVE PRG	CONCERN
Bicarbonate Alkalinity	mgCaCO3/kg	16	16	26 - 1,500			
Carbonate Alkalinity	mgCaCO ₃ /kg	24	8	1.8 - 170,000			
Chloride	mg/kg	20	9	2.8 - 24			-
Sulfate	mg/kg	20	10	4.2 - 90			
Calcium	mg/kg	21	11	2,700 - 42,000			
Magnesium	mg/kg	21	11	6,100 - 10,000			
Potassium	mg/kg	11	11	390 - 1,300			
Sodium	mg/kg	21	. 10	130 - 2,100			·
Hexavalent Chromium	mg/kg	2	1	0.085	30	0	No
Resin/Fatty Acids (total)	mg/kg	3	0		~~ ,		No
SUBSURFACE SOIL (G	REATER THAN	N 10 FEET BGL	ì				
Volatile Organic Compo	unds (VOCs)						
1,1-DCA	mg/kg	20	0		2.8 1	0	No
Chloroform	mg/kg	20	0		0.94 1	0	No
1,1,1-TCA	mg/kg	20	1	0.041	1,200	0	No
TCE	mg/kg	20	1	0.032	0.053	0	No
PCE	mg/kg	20	6	0.035 - 0.59	1.5	0	No
Methylene Chloride	mg/kg	20	4	0.028 J - 0.044	9.1	0	No
Toluene	mg/kg	20	0		520	0	No
General Chemistry/Misc	ellaneous						
pH ²	std. units	18	4	7.2 - 12.3			Yes 2
Conductivity	µmhos/cm	4	4	130 - 450			No
Total Alkalinity	mgCaCO ₃ /kg	4	4	47 - 220			No
Hydroxide Alkalinity	mgCaCO ₃ /kg	3	0	**			No
Bicarbonate Alkalinity	mgCaCO3/kg	3	3	47 - 120			No
Carbonate Alkalinity	mgCaCO3/kg	17	1	100 - 5,200			No
Chloride	mg/kg	4	4	2.2 - 23		-	No
Sulfate	mg/kg	4	4	7.7 - 23	-		No
Calcium	mg/kg	4	4	1,300 - 2,900			No
Magnesium	mg/kg	4	4	5,200 - 7,300		,	No
Potassium	mg/kg	4	4	440 - 650			No
Sodium							
	mg/kg	4	4	120 - 550			No

TABLE 1

CONSTITUENTS OF POTENTIAL CONCERN IN SURFACE AND SUBSURFACE SOIL SAMPLES COLLECTED FROM BORINGS

		•		RANGE OF	REGION 9	NUMBER OF	CONSTITUENT
		NUMBER OF	NUMBER OF	DETECTED	PRG	SAMPLES	OF POTENTIAL
CONSTITUENT	UNITS	SAMPLES	DETECTIONS	CONCENTRATIONS	(Residential)	ABOVE PRG	CONCERN
NOTES:	-	-					
PRG	Preliminary Re	mediation Goal (EPA	Region 9. October	2002).			
BGL	Below ground I						
TCA	Trichloroethan						
PCE	Tetrachloroethe	ene.					
MTBE	Methyl tertiary	-butyl ether.					
TMB	Trimethylbenze	ene.					
TEPH	Total extractab	le petroleum hydroca	arbons.				
TPPH	Total purgeable	e petroleum hydrocar	bons.				
TRPH	Total recoverab	ole petroleum hydroc	arbons.				
mg/kg	Milligrams per	kilogram.					
μmhos/cm	Micromhos per	centimeter.					
mgCaCO ₃ /kg	Milligrams cald	cium carbonate per k	ilogram.				
1	Constituent wa	s detected below the	laboratory reporting	limit.			
	Not applicable.						
1.	California-mod	lified PRG (EPA Reg	gion 9, October 2002)			
2.	pH used as sur	rogate indicator for g	eneral chemical (cau	stic) impacts.			

TABLE 2

CONSTITUENTS OF POTENTIAL CONCERN IN GROUNDWATER SAMPLES FROM BORINGS AND MONITORING WELLS

CONSTITUENT UNITS NUMBER OF SAMPLES NUMBER OF DESAMPLES GROUNDWATER FROM BORINGS Volatile Organic Compounds (VOCs) 1,1-DCE μg/L 43 1,1-DCA μg/L 43 Chloroform μg/L 43 1,1,1-TCA μg/L 43	5 8 9	DETECTED CONCENTRATIONS 0.88 J - 6.2	MCL	ABOVE MCL	CONCERN
Volatile Organic Compounds (VOCs) 1,1-DCE μg/L 43 1,1-DCA μg/L 43 Chloroform μg/L 43	8	0.88 J - 6.2			
Volatile Organic Compounds (VOCs) 1,1-DCE μg/L 43 1,1-DCA μg/L 43 Chloroform μg/L 43	8	0.88 J - 6.2			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8	0.88 J - 6.2			
1,1-DCA μg/L 43 Chloroform μg/L 43	8	0.00 3 - 0.2	6	1	Yes
Chloroform µg/L 43		0.35 J - 17	5	2	Yes
P8 -		0.51 J - 9.3	80	0	No
1.1.1*1UA 119/L 43	19	0.45 J - 58	200	0	No
1,1,2-TCA µg/L 43	1	1.5 J	5	0	No
	7	1.1 J - 62	5	4	Yes
, ,	8	3 - 830	5	4	Yes
	1	4.2	0.5	1	Yes
10		0.82 - 0.9	0.5	1	
Vinyl Chloride μg/L 43	1.		80	0	Yes
Bromodichloromethane µg/L 43	1	0.41 J			No
trans-1,2-DCE µg/L 43	2	0.44 J - 0.53 J 2.1 J - 13	10 6	0 1	No
cis-1,2-DCE μg/L 43 Benzene μg/L 51	3 2	2.1 J - 13 0.26 J - 0.32 J	1	0	Yes No
1.5	3			1	
Toluene μg/L 51 Ethylbenzene μg/L 51	3	0.58 J - 880 0.68 - 6.4	150 700	0	Yes No
	4	0.49 J - 59	1,750	0	No
		0.49 J - 39 48	1,730	1	Yes
MTBE μg/L 8 sec-Butylbenzene μg/L 43	1	0.74 - 1			No No
	1	2.1			No
, ,	1 3	0.38 J - 39			
1,2,4,-TMB μg/L 43			••		No
1,3,5-TMB μg/L 43	2	2.8 - 13			No
p-Isopropyltoluene µg/L 43 Isopropylbenzene µg/L 43	3 2	0.48 J-5 0.6 - 1.8 J			No No
		1.1 - 7.8			No No
n-Propylbenzene μg/L 43	2				
Naphthalene μ g/L 43	2	0.92 J - 22	••		No
Hydrocarbons					
TEPH (Diesel Range) μg/L 8	1	680	100 ¹	1	Yes
TPPH (Gasoline Range) μg/L 8	1	560	50 1	1	Yes
Oil and Grease (Total) mg/L 8	0			••	No
TRPH (Total Recoverable) µg/L 1	0	••			No
Resin/Fatty Acids	2	1.400 1.000	100 1	2	Yes
Pimaric Acid μg/L 6	2	1,400 - 1,900	100 ¹	2	
Isoprimaric Acid µg/L 6	2	3,100 - 8,900		2	Yes
Dehydroabiatic Acid μg/L 6	3	169 - 14,000	100 1	. 3	Yes
Abiatic Acid μg/L 6	2	180 - 1,600	100 ¹	2	Yes
General Chemistry/Miscellaneous					
pH std. units 51	51	6.7 - 11	6.5-8.5 ²	25	Yes
Conductivity µmhos/cm 45	45	180 - 39,000	900 ³	19	Yes
Total Alkalinity mgCaCO ₃ /L 36	36	64 - 8,200	••		No
Hydroxide Alkalinity mgCaCO ₃ /L 36	2	70 - 7,800			No
Bicarbonate Alkalinity mgCaCO ₃ /L 36	34	10 - 2,200			No
Carbonate Alkalinity mgCaCO ₃ /L 36	24	1.1 - 1,600		••	No
Chloride mg/L 36	35	5.3 - 3,400	250 ³	1	Yes
Sulfate mg/L 36	36	9.5 - 3,300	250 ³	2	Yes
Calcium mg/L 36	35	2.1 - 150	**		No

TABLE 2

CONSTITUENTS OF POTENTIAL CONCERN IN GROUNDWATER SAMPLES FROM BORINGS AND MONITORING WELLS

		NUMBER OF	NUMBER OF	RANGE OF DETECTED		NUMBER OF SAMPLES	CONSTITUENT OF POTENTIAL
CONSTITUENT	UNITS	SAMPLES	DETECTIONS	CONCENTRATIONS	MCL	ABOVE MCL	CONCERN
Magnesium	mg/L	36	35	0.51 - 520			No
Potassium	mg/L	36	33	5.3 - 2,000			No
Sodium	mg/L	36	36	26 - 14,000		-	No
Total Organic Carbon	mg/L	36	36	0.94 - 25,000			No
Hexavalent Chromium	mg/L	2	0				No
GROUNDWATER FROM	MONITOR	ING WELLS					
Volatile Organic Compoun	ds (VOCs) -	April 2003					
1,1-DCE	μ g /L	10	1	55	6	1	Yes
1,1-DCA	μg/L	10	2	2.7 - 3.9	5	0	No
Chloroform	μg/L	10	3	1.2 - 8.9	80	0	No
1,1,1-TCA	μ g/L	10	3	1.7 - 5.7	200	0	No
TCE	μg/L	10	1	4.2	5	0	No
PCE	μg/L	10	2	2.8 - 3.4	5	0	No
4-Isopropyltoluene	μg/L	10	1	1,100	~		No
Hydrocarbons - April 2003							
TEPH (Diesel Range)	μg/L	5	2	210 - 1,200	100 1	2	Yes
TPPH (Gasoline Range)	μg/L	5	2	93 - 2,600	50 1	2	Yes
TEPH (Motor Oil Range)	μg/L	5	2	890 - 1,700	500 1	2	Yes
Total Metals - November 1	997						
Arsenic	μg/L	10	5	15 - 190	50	2	Unknown 4
Barium	μg/L	10	10	7.4 - 500	1,000	0	No
Cobolt	μg/L	10	2	19 - 38	**		No
Chromium (Total)	μg/L	10	9	5.5 - 96	50	2	Unknown 4
Copper	μg/L	10	4	11 - 43	1,000	0	No
Lead	μg/L	10	1	67	50	1	Unknown ⁴
Mercury	μg/L	10	1	3.4	2	1	Unknown 4
Nickel	μg/L	10	5	34 - 210	100	2	Unknown 4
Vanadium	μg/L	10	5	20 - 270			No
Zinc	μg/L	10	4	20 - 37	5,000 ³	0	No
Total Metals - April 1998						•	
Arsenic	μg/L	1	1	150	50	1	Unknown 4
Barium	μg/L	2	1	12	1,000	0	No
Cobolt	μg/L	1	1	13	**		No
Copper	μg/L	1	1	49	$1,000^3$	0	No
Lead	μg/L	1	0		50		No
Mercury	μ g /L	1	1	1.4	2	0	No
Vanadium	μg/L	1	1	110			No
Zinc	μg/L	3	1	27	5,000 ³	0	No
Resin/Fatty Acids - Novem	ber 1997						
Pimaric Acid	μg/L	5	1	91			Yes
Isoprimaric Acid	μg/L	5	1	359			Yes
Dehydroabietic Acid	μg/L	5	í	595			Yes
Abietic Acid	μg/L	5	ī	75		-	Yes
	. •						

TABLE 2

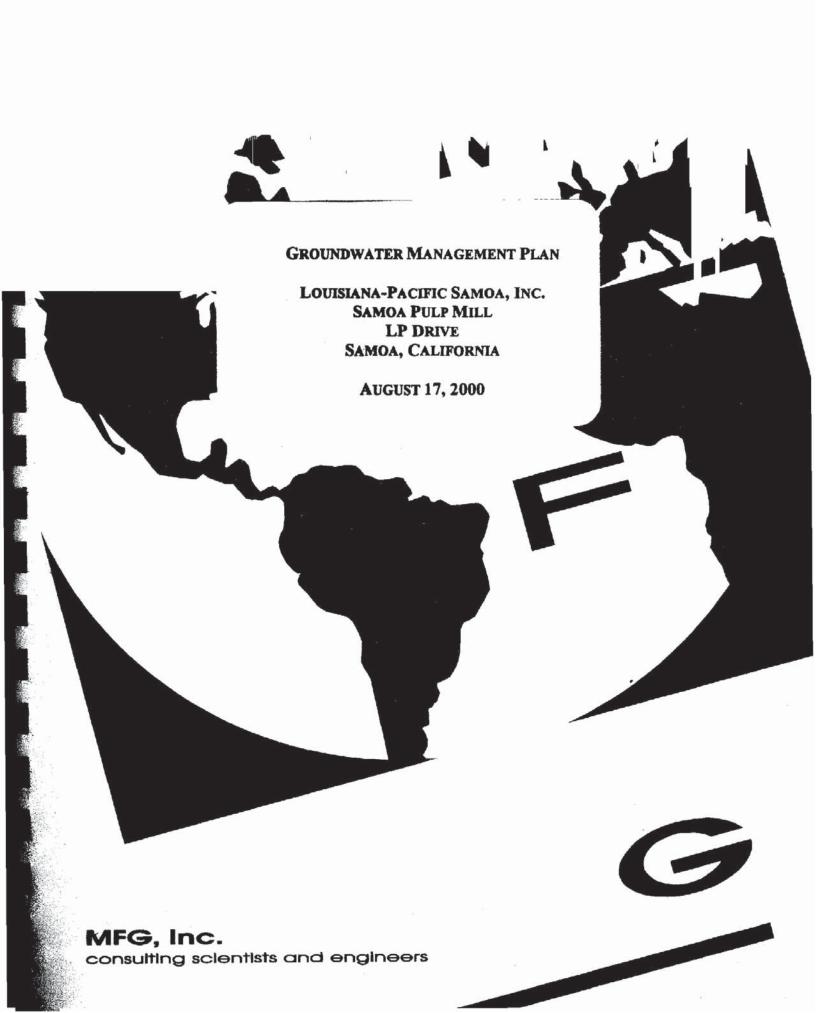
CONSTITUENTS OF POTENTIAL CONCERN IN GROUNDWATER SAMPLES FROM BORINGS AND MONITORING WELLS

CONSTITUENT	UNITS	NUMBER OF SAMPLES	NUMBER OF DETECTIONS	RANGE OF DETECTED CONCENTRATIONS	MCL	NUMBER OF SAMPLES ABOVE MCL	CONSTITUENT OF POTENTIAL CONCERN
Resin/Fatty Acids - April 1							
Pimaric Acid	μg/L	ī	1	630	100 1	1	Yes
Isoprimaric Acid	μg/L	l	1	1,000	100 1	1	Yes
Dehydroabietic Acid	μg/L	1	1	2,100	100 1	1	Yes
Abietic Acid	μg/L	1	0		100 1	**	No
Semi-volatile Organic Com	pounds (SVO	Cs) - November	1997				
Naphthalene	μg/L	10	1	7		 .	No
bis-(2-ethylhexyl) Phthalate	μg/L	10	1	21	••		No
General Chemistry/Miscell	aneous - Nove	mber 1997					
рН	std. units	10	10	6.9 - 10.5	6.5 - 8.5 ²	3	Yes
Conductivity	umhos/cm	10	10	430 - 2,200	900 ³	4	Yes
Total Alkalinity	mgCaCO ₃ /L	10	10	82 - 1,100			No
Hydroxide Alkalinity	mgCaCO3/L	10	0				No
Bicarbonate Alkalinity	mgCaCO3/L	10	10	59 - 720			No
Carbonate Alkalinity	mgCaCO3/L	10	3	190 - 470			No
Chloride	mg/L	10	10	13 - 84	250 ³	0	No
Nitrate as Nitrogen	mg/L	10	8	0.21 - 18	10	1	Yes
Sulfate	mg/L	10	10	15 - 100	250 ³	0	No
Calcium	mg/L	10	10	2.5 - 57			No
MBAS	mg/L	10	0		500 ³		No
General Chemistry/Miscell	laneous - Apri	l 1998					
pН	std. units	4	4	7.1 - 9.3	$6.5 - 8.5^{2}$	3	Yes
Total Alkalinity	mgCaCO ₃ /L	4	4	290 - 3,600			No
Carbonate Alkalinity	mgCaCO ₃ /L	4	3	30 - 580	**		No
General Chemistry/Miscell	laneous - Nove	mber 2002					
pH	std. units	6	6	8.4 - 12	6.5 • 8.5 ²	5	Yes
General Chemistry/Miscell	laneous - Apri	I 2003					
pН	std. units	10	10	6.6 - 9.1	$6.5 - 8.5^{2}$	2	Yes
Conductivity	μmhos/cm	10	10	270 - 3,100	900 ³	2	Yes

TABLE 2

CONSTITUENTS OF POTENTIAL CONCERN IN GROUNDWATER SAMPLES FROM BORINGS AND MONITORING WELLS

				RANGE OF		NUMBER OF	CONSTITUENT
		NUMBER OF	NUMBER OF	DETECTED		SAMPLES	OF POTENTIAL
CONSTITUENT	UNITS	SAMPLES	DETECTIONS	CONCENTRATIONS	MCL	ABOVE MCL	CONCERN
NOTES:		•					
MCL	Manimum Car		I- 22 C-116 C	la af Danulationa Chance 15	C	121 5.1 2002	
			ie 22, Camornia Coo	le of Regulations, Chapter 15,	, Section 644	131, February 2002).	
DCE	Dichloroethen						
DCA	Dichloroethan	41					
TCA	Trichloroethan						
TCE	Trichloroethen	**					
PCE	Tetrachloroeth						
MTBE	Methyl tertiary	, ,					
TMB	Trimethylbenz						
TEPH		ble petroleum hydrod					
ТРРН	Total purgeabl	le petroleum hydroca	arbons.				
TRPH	Total recovera	ble petroleum hydro	carbons.				
μ g/ L	Milligrams per	r kilogram.					
μmhos/cm	Micromhos pe	er centimeter.					
mgCaCO ₃ /L	Milligrams cal	lcium carbonate per l	kilogram.				
mg/L	Milligrams per	r liter.					
1	Constituent wa	as detected below the	e laboratory reporting	g limit.			
-	Not applicable) .					
1.	RWQCB Wate	er Quality Objective.					
2.	Basin Plan, No	orth Coast Region.					
3.	Secondary MC	L (Title 22, Californ	nia Code of Regulation	ons, Chapter 15, Section 6443	1, February	2002).	
	Associated wit	th impacts from non-	petroleum hydrocarl	bons in the black liquor storag	ge area.	,	
4.	Sample not fie	eld filtered prior to pr	reservation. Detecte	d concentration may be biased	d high.		



APPENDIX E

Tabulated Soil and Groundwater Chemical Analysis Data Collected by ERM from Geoprobe Borings in May 2000 in conjunction with Site Assessment performed for a Prospective Purchaser

SOIL ANAL SAMOA PULP SAMOA, (Pa

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Sample Number	5801	SB02	SB03	5B04	SB05	SB06	SB07	SB08	SB09
Depth (feet BGS)	2-4	2-4	6-8	12-13	2-4	10-12	12-14	12-14	10-12
Location	Metal	Retaining	Retaining	Retaining	Retaining	Watermain	Sandblasting	Fiberglass	Loading Dock 1
Parameter (ug/kg)	Tub	Wall	Wall	Wall	Wall	Break	Shed	Shop	Storm Drain
sec-Butylbenzene	<25	<25	<25	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25	<25	<25	<25
p -Isopropyltoluene	<25	<25	<25	<25	<25	<25	<25	<25	<25
Methylene chloride	<25	42	41	<25	<25	<25	<25	29 J	28 J
Naphthalene	<25	<25	<25	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	120	1000	<25	<25	<25	<25
Toluene	<25	<25	<25	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	34	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	. <25	<25	<25	<25
m&p-Xylene	<50	<50	<50	<50	<50	<50	<50	<50	<50
o-Xylene	<25	<25	<25	<25	<25	<25	<25	<25	<25

Key:

BGS = Below ground surface

AST = Aboveground storage tank

ESB = Exporting sand blasting area

ETA = Exporting tank area

EDS = Exporting drum storage shed

DDD = Dump drainage ditch

UST = Underground storage tank

Bold = Value exceeds the detection limit.

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SB10	SB11	SB12	SB13	SB14	SB15	SB16	SB17	SB18	SB19	SB20	P1	P2
2-4	14-16	2-4	6-8	13-15	12-14	6-8	14-16	14-16	4-6	2-4	0.5-1	0,5-1
oneyard	Boneyard	Boneyard	Boneyard	Boneyard	Boneyard							
		*									Soil Pile 1	Soil Pile 2
<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	44	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	130
<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	55	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	820
29 J	44	<25	<25	<25	35	<25	<25	<25	. <25	<25	<25	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	41
<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	42
<25	<25	<25	<25	<25	<25	220	<25	<25	<25	<25	62	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	44	<25	<25	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
<25	<25	<25	<25	<25	<25	65	<25	<25	· <25	<25	<25	<25
<25	<25	<25	<25	<25	<25	38	<25	<25	<25	<25	<25	<25
<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	61
<25	<25	<25	<25	<25	<25	<25	<25	< 2 5	<25	<25	<25	56

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SOIL ANALY SAMOA PULP N SAMOA, ((Pag

			<u> </u>						
Sample Number	SB21	SB22	SB23	SB24	SB25	SB26	SB27	SB28	SB
Depth (feet BGS)	14-16	2-4	6-8	10-12	8-10	10-12	10.5-11	16-16.5	15-
Location	Boneyard	Boneyard	Leach	Leach	Leach	Pulp	Paint	Oil	OI
Parameter (ug/kg)	100		Field	Field	Field	Reject	Locker	Storage	AS
sec-Butylbenzene	<25	<25	<25	<25	<25	<25	<25	<25	<2
n-Butylbenzene	<25	<25	<25	<25	<25	<25	<25	<25	<2
Chloroform	<25	<25	<25	<25	<25	<25	<25	<25	<2
Ethylbenzene	<25	<25	<25	<25	<25	<25	<25	<25	<2
Isopropylbenzene	<25	<25	<25	<25	<25	<25	<25	<25	<2
p-Isopropyltoluene	<25	<25	<25	<25	<25	<25	<25	<25	<2
Methylene chloride	<25	<25	<25	<25	<25	<25	<25	<25	<2
Naphthalene	<25	<25	<25	<25	<25	<25	<25	<25	<2
n-Propylbenzene	<25	<25	<25	<25	<25	<25	<25	<25	<2
Tetrachloroethene	<25	42	<25	<25	<25	<25	230	410	<2
Toluene	<25	<25	<25	<25	<25	<25	<25	<25	<2
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25	41	<25	<2
Trichloroethene	<25	<25	<25	<25	<25	<25	32	<25	<2
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	<25	<25	<25	<2
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25	<25	<25	<2
m&p-Xylene	<50	<50	<50	<50	<50	<50	<50	<50	<5
o-Xylene	<25	<25	<25	<25	<25	<25	<25	<25	<2

Key:

BGS = Below ground surface

AST = Aboveground storage tank

ESB = Exporting sand blasting area

ETA = Exporting tank area

EDS = Exporting drum storage shed

DDD = Dump drainage ditch

UST = Underground storage tank

Bold = Value exceeds the detection limit.

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				man .						
SB30	SB31	SB32	SB33	SB34	SB35	SB36	SB37	SB38	SB39	SB40
	2-4	2-4	6-8	2-4	10-12	6-8	6-8		6-8	
Sewer	Landfill	Landfill	Knot	Tote	Chip	Chip	Chip	Chip	Chip Dump	Chip Dump
Break			Pile	Storage	ESB	ETA	EDS	DDD	UST	AST
<25	<25	<25	<25	<25	<25	<25	<25	<25	150	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	450	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	32	<25
<25	<25	<25	65	<25	<25	<25	<25	<25	390	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	430	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	83	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	32	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
r <25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	690	<25
<25	<25	<25	<25	<25	<25	<25	<25	<25	200	<25
<50	<50	<50	<50	<50	<50	<50	<50	<50	66	<50
<25	<25	<25	<25	<25	<25	<25	<25	<25	56	<25

GROUND WATER A SAMOA PULP N SAMOA, (Pa

SBAL

							21376		
Sample Number	Maximum	SB01	SB02	SB03	SB04	SB05	₩ SB6	SB07	SB
Location	Contaminant	Metal	Retaining	Retaining	Retaining	Retaining	Watermain	Sandblasting	Fiber
Parameter (ug/l)	Level (ug/l)	Tub	Wall	Wall	Wall	Wall	Break	Shed	Sh
Benzene	0	<0.25	<0.25	<0.25	<0.25	< 0.25	<0.25	<0.25	<0.
Bromodichloromethane	NE	0.41 J	< 0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.
sec-Butylbenzene	NE	<0.22	< 0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.
n-Butylbenzene	NE	< 0.29	< 0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.
Carbon Tetrachloride	0	<0.33	< 0.33	<0.33	<0.33	< 0.33	< 0.33	<0.33	<0
Chloroform	NE	4.3	< 0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0
1,1-Dichloroethane	NE	<0.34	< 0.34	<0.34	0.35 J	<0.34	<0.34	< 0.34	<0
1,1-Dichloroethene	7	<0.36	< 0.36	<0.36	<0.36	< 0.36	< 0.36	<0.36	<0
cis-1,2-Dichloroethene	70	<1	<1	<1	<1	<1	<1	<1	<
trans-1,2-Dichloroethene	100	<0.23	< 0.23	<0.23	< 0.23	< 0.23	< 0.23	< 0.23	<0
Ethylbenzene	700	<0.12	<0.12	0.68	<0.12	<0.12	<0.12	<0.12	<0
Isopropylbenzene	NE	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0
p-Isopropyltoluene	NE	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<(
Naphthalene	NE	<0.68	< 0.68	<0.68	<0.68	<0.68	<0.68	<0.68	<0
n-Propylbenzene	NE	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0
Tetrachloroethene	0	<0.25	<0.25	<0.25	4.4	830	<0.25	< 0.25	<0
Toluene	1,000	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	< 0.22	0.7
1,1,1-Trichloroethane	200	0.45]	<0.29	0.78 J	4.5	43	0.49 J	< 0.29	<0
1,1,2-Trichloroethane	3	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0
Trichloroethene	0	<0.36	< 0.36	<0.36	<0.36	7.5	<0.36	<0.36	<0
1,2,4-Trimethylbenzene	NE	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0
1,3,5-Trimethylbenzene	NE	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0
Vinyl Chloride	0	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0
m&p-Xylene	10,000	<0.52	<0.52	3.3	<0.52	<0.52	<0.52	<0.52	<0
o-Xylene	10,000	<0.22	<0.22	1.5	<0.22	<0.22	<0.22	<0.22	<(

Key:

J = Estimated concentration; detected between limit of detection and limit of quantitation.

AST = Aboveground storage tank

ESB = Exporting sand blasting area

ETA = Exporting tank area

EDS = Exporting drum storage shed

DDD = Dump drainage ditch

UST = Underground storage tank

Bold = Value exceeds the detection limit.

Shaded = Value exceeds the maximum contaminant level.

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ALYTICAL RESULTS LL OPERATIONS LIFORNIA 1 of 2)



1	SB09	SB10	SB11	SB12	SB13	SB14	SB15	SB16	SB17	SB18	SB19	SB20
SS	Loading Dock	Boneyard	Boneyard	Boneyard	Boneyard	Boneyard	Boneyard	Boneyard	Boneyard	Boneyard	Boneyard	B on eyard
	Storm Drain											
	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25
	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<1.3	<0.21	<0.21	<0.21	<0.21
1	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<1.1	<0.22	<0.22	<0.22	<0.22
	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<1.5	< 0.29	<0.29	<0.29	<0.29
	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.7	<0.33	<0.33	<0.33	, <u>(9</u>
	1.1 J	<0.32	<0.32	<0.32	<0.32	< 0.32	<0.32	<1.6	< 0.32	<0.32	<0.32	0. 51 J
	<0.34	< 0.34	<0.34	< 0.34	<0.34	< 0.34	< 0.34	<1.7	1.2	<0.34	<0.34	0.61 J
	<0.36	<0.36	<0.36	<0.36	< 0.36	< 0.36	< 0.36	<1.8	< 0.36	< 0.36	<0.36	0.88 J
	<1	4	<1	<1	<1	<1	<1	<5	<1	<1	<1	2.6 J
	<0.23	<0.23	<0.23	<0.23	<0.23	< 0.23	<0.23	<1.2	< 0.23	<0.23	<0.23	O.44 J
	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	6.4	<0.12	<0.12	<0.12	<0.12
	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	1.8]	< 0.15	<0.15	<0.15	<0.15
	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1.3 J	<0.2	<0.2	<0.2	<0.2
	<0.68	<0.68	<0.68	<0.68	<0.68	<0.68	<0.68	<3.4	<0.68	<0.68	<0.68	<0.68
	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	7.8	<0.18	<0.18	<0.18	<0.18
	¢ <0.25	<0.25	<0.25	<0.25	< 0.25	< 0.25	<0.25	<1.3	< 0.25	<0.25	<0.25	1200
	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	880	<0.22	<0.22	<0.22	<0.22
	2.7	<0.29	15	<0.29	<0.29	0.51 J	<0.29	<1,5	<0.29	<0.29	2.7	32
	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<2.8	<0.56	<0.56	<0.56	1.5 J
		<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<1.8	<0.36	<0.36	<0.36	1000
	<0.36	1	1		<0.24	<0.24	<0.24	39	<0.24	<0.24	<0.24	< 0.24
	<0.24	<0.24	<0.24	<0.24	2000	<0.24	<0.24	13	<0.26	<0.26	<0.26	<0.26
	<0.26	<0.26	<0.26	<0.26	<0.26	<0.23	<0.23	<1.2	<0.23	<0.23	<0.23	<0.23
	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	27	<0.23	<0.52	<0.52	<0.52
	<0.52	<0.52	<0.52	<0.52	<0.52		The same of the sa			<0.22	<0.22	<0.22
	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	32	<0.22	<0.22	10.22	-0.22

GROUND WATER A SAMOA PULP M SAMOA, C

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Sample Number	Maximum	SB21	SB22	SB23	SB24	SB25	SB26	SB27	SB
Location	Contaminant	Boneyard	Boneyard	Leach	Leach	Leach	Pulp	Paint	0
Parameter (ug/l)	Level (ug/l)		28-12	Field	Field	Field	Reject	Locker	Stora
Benzene	0	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.3
Bromodichloromethane	NE	<0.21	<0.21	< 0.21	<0.21	<0.21	<0.21	<0.21	<0.
sec-Butylbenzene	NE	<0.22	<0.22	< 0.22	<0.22	< 0.22	< 0.22	<0.22	<0.
n-Butylbenzene	NE	<0.29	<0.29	< 0.29	<0.29	< 0.29	<0.29	<0.29	<0.
Carbon Tetrachloride	0	<0.33	<0.33	< 0.33	<0.33	<0.33	<0.33	<0.33	<0.3
Chloroform	NE	<0.32	<0.32	< 0.32	<0.32	<0.32	9.3	0.91 J	1.:
1,1-Dichloroethane	NE	<0.34	1J	< 0.34	< 0.34	<0.34	<0.34	2.1	2
1,1-Dichloroethene	7	<0.36	<0.36	< 0.36	<0.36	<0.36	<0.36	6.2	<0.
cis-1,2-Dichloroethene	70	<1	2.1 J	<1	<1	<1	<1	<1	<
trans-1,2-Dichloroethene	100	<0.23	<0.23	< 0.23	< 0.23	<0.23	<0.23	<0.23	<0.
Ethylbenzene	700	<0.12	<0.12	< 0.12	<0.12	<0.12	<0.12	<0.12	<0.
Isopropylbenzene	NE	<0.15	<0.15	< 0.15	<0.15	<0.15	<0.15	<0.15	<0.
p-Isopropyltoluene	NE	<0.2	<0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	<0
Naphthalene	NE	<0.68	<0.68	< 0.68	<0.68	<0.68	<0.68	<0.68	<0.
n-Propylbenzene	NE	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.
Tetrachloroethene	0	<0.25	3	< 0.25	<0.25	<0.25	<0.25	49	Contraction of the last of the
Toluene	1,000	<0.22	< 0.22	< 0.22	<0.22	<0.22	<0.22	< 0.22	<0.
1,1,1-Trichloroethane	200	3.8	14	< 0.29	<0.29	<0.29	3.3	6.1	28
1,1,2-Trichloroethane	3	<0.56	<0.56	< 0.56	<0.56	<0.56	<0.56	<0.56	<0
Trichloroethene	0	<0.36		<0.36	<0.36	<0.36	<0.36	1.7	
1,2,4-Trimethylbenzene	. NE	<0.24	< 0.24	< 0.24	<0.24	<0.24	<0.24	< 0.24	<0.
1,3,5-Trimethylbenzene	NE	<0.26	< 0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.
Vinyl Chloride	0	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.
m&p-Xylene	10,000	<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	<0.
o-Xylene	10,000	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.

Key:

J = Estimated concentration; detected between limit of detection and limit of quantitation.

AST = Aboveground storage tank

ESB = Exporting sand blasting area

ETA = Exporting tank area

EDS = Exporting drum storage shed

DDD = Dump drainage ditch

UST = Underground storage tank

Bold = Value exceeds the detection limit.

Shaded = Value exceeds the maximum contaminant level.

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of 2)



SB29	SB30	SB31	SB32	SB33	SB34	SB35	SB36	SB37	SB38	SB39	SB40
Old	Sewer	Landfill	Landfill	Knot	Tote	Chip	Chip	Chip	Chip	Chip Dump	Chip Dump
AST	Break			Pile	Storage	ESB	ETA	EDS	DDD	UST	AST
0:26]	< 0.25	<0.25	<0.25	0.32 Js	<0.25	< 0.25	< 0.25	<0.25	< 0.25	<0.25	<0.25
<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	< 0.21	<0.21	<0.21	<0.21	<0.21
<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	< 0.22	< 0.22	< 0.22	<0.22	0.74	<0.22
<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	< 0.29	< 0.29	<0.29	<0.29	1.6	<0.29
<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	< 0.33	< 0.33	<0.33	<0.33	< 0.33	<0.33
1.3	0.56 J	<0.32	<0.32	<0.32	2.3	< 0.32	< 0.32	<0.32	<0.32	<0.32	<0.32
17	< 0.34	<0.34	<0.34	<0.34	<0.34	< 0.34	< 0.34	< 0.34	< 0.34	<0.34	<0.34
5.8	<0.36	<0.36	<0.36	<0.36	<0.36	< 0.36	< 0.36	<0.36	< 0.36	<0.36	<0.36
13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
0.48 J	. <0.23	<0.23	<0.23	<0.23	<0.23	< 0.23	< 0.23	<0.23	< 0.23	<0.23	< 0.23
<0.12	<0.12	<0.12	<0.12	1.3	<0.12	< 0.12	<0.12	<0.12	<0.12	<0.12	<0.12
<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	< 0.15	<0.15	<0.15	<0.15	0.6	<0.15
<0.2	<0.2	<0.2	<0.2	5	<0.2	<0.2	<0.2	<0.2	<0.2	0.53 J	<0.2
≠<0.68	<0.68	<0.68	<0.68	0.92 J	<0.68	< 0.68	<0.68	<0.68	<0.68	17	<0.68
<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	1.1	<0.18
130	<0.25	<0.25	<0.25	<0.25	<0.25	< 0.25	< 0.25	<0.25	<0.25	<0.25	< 0.25
<0.22	<0.22	<0.22	<0.22	5.3	<0.22	< 0.22	<0.22	<0.22	<0.22	0.58 J	< 0.22
56	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29
<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	< 0.56	< 0.56	<0.56	<0.56	<0.56	<0.56
62	<0.36	< 0.36	<0.36	<0.36	<0.36	< 0.36	< 0.36	<0.36	< 0.36	< 0.36	<0.36
<0.24	<0.24	<0.24	<0.24	0.38 J	<0.24	<0.24	<0.24	<0.24	< 0.24	11	<0.24
<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	< 0.26	<0.26	<0.26	2.8	<0.26
(09)	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	< 0.23	<0.23	<0.23	<0.23	<0.23
<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	. 1.7	<0.52
<0.22	<0.22	<0.22	<0.22	0.49 J	<0.22	<0.22	<0.22	<0.22	<0.22	3.1	<0.22

This work plan is based on comments contained in the RWQCB's February 6, 2004 letter and our discussions during the April 20, 2004 meeting, and presents a scope of work and rationale to address the remaining site characterization data needs. Specifically, this work plan addresses the following areas/items:

- Additional characterization of the Black Liquor Storage Area, including discussion of black liquor chemistry;
- Additional characterization of the presence and extent of metals in soil and groundwater, including soil and groundwater sampling and analysis, evaluation of background metals concentrations, and narrative discussion of the likelihood of uranium impacts;
- Additional characterization of the lateral and vertical extent of chlorinated volatile organic compounds (VOCs) in soil and groundwater in the vicinity of the Hazardous Waste Storage Area and boring SB-05, including a discussion of the likelihood of the presence of dense non-aqueous phase liquid (DNAPL);
- Augmentation of the monitoring well network at the Site to support more detailed evaluation of the extent and potential migration or attenuation of constituents in groundwater;
- Discussion of the occurrence and sources of petroleum hydrocarbons in the Chip Dump Area and whether further work is warranted in these areas; and
- Discussion of the status of work in the Hot Water/Diesel aboveground storage tank (AST) and whether further work is warranted in this area.

SCOPE OF WORK

The objective of the proposed additional site characterization is to further investigate site impacts by black liquor, metals, VOCs and petroleum hydrocarbons and to expand the groundwater monitoring network to support decision making regarding remedial actions and site management. The proposed scope of work to accomplish these objectives includes advancement and sampling of seven direct push borings with collection of soil and groundwater samples, and installation and monitoring of one additional groundwater monitoring well. The approach for each of the areas/items mentioned above is summarized briefly below, followed by a discussion of specific procedures.

APPROACH

Black Liquor

A Material Safety Data Sheet (MSDS) for black liquor and a description of its generation, handling and chemistry were provided to RWQCB in the April 12, 2004 History of Chemical Storage and Waste Streams at the Samoa Pulp Mill. In summary, black liquor is an alkaline solution generated by digestion of wood chips in a solution of sodium hydroxide and sodium sulfide during the pulping process. It contains residual pulping chemicals (sodium, hydroxide and sulfide), sulfate, carbonate and organic matter leached from the wood chips. The organic matter consists of cellulose, hemicellulose, lignins, resins, methanol, turpentine and fatty acids (which are resins that have reacted with hydroxide to form a soap-like substance). Analytes and parameters that have been used to test for the presence of impacts by black liquor at the Site include analyses for pH, total dissolved solids (TDS), conductivity, alkalinity (carbonate, bicarbonate and sodium hydroxide), resins and fatty acids, chemical oxygen demand (COD), sulfate, sodium, potassium, total organic carbon and "petroleum" hydrocarbons. Impacts by black liquor

are assessed during the groundwater monitoring program by analyzing groundwater samples for pH, COD, conductivity and total petroleum hydrocarbons (TPH) as gasoline. The latter analysis (TPH as gasoline) is used to assess the presence of non-petroleum hydrocarbons contained in black liquor, even though gasoline hydrocarbons are not present.

Sampling and analysis have been completed to characterize and define the extent of black liquor effects. Five groundwater monitoring wells have been installed in the vicinity of this area and have been sampled for black liquor constituents (TPH, resins and fatty acids, pH and conductivity). In addition, 21 direct push borings have been advanced in the vicinity and soil and groundwater grab samples were collected and analyzed for black liquor constituents (TPH, resins and fatty acids, pH, alkalinity and/or sulfate). To supplement this information, we propose to advance and sample one direct push boring in the black liquor storage area to further assess the lateral and vertical extent of black liquor effects. The location of the proposed boring is shown on Figure 2. The boring will be completed to a depth of approximately 15 feet into the uppermost water-bearing zone. One groundwater grab sample and two soil samples from the boring (from depths of approximately 5 and 10 feet below ground level [bgl]) will be analyzed for pH, COD and TPH as gasoline.

Metals

In order to further investigate the Site for impacts from metals, including naturally-occurring metals that may have been mobilized due to high pH conditions, three direct push borings will be advanced and sampled in the Chemical Storage Area and Causticizing Area. The proposed locations of these borings are shown on Figure 2. The borings will be advanced to depths of approximately 15 to 20 feet bgl, into the uppermost water-bearing zone. Soil samples collected from approximately 5 and 10 feet bgl and one field-filtered groundwater grab sample from each boring will be preserved for laboratory analysis. In addition, the two soil samples and one field filtered groundwater grab sample collected from the previously described boring to be advanced in the Black Liquor Storage Area will be analyzed as part of this metals investigation. In total, eight soil samples and four groundwater grab samples will be collected to be analyzed for pH, total concentrations of 17 metals listed in Title 22 of the California Code of Regulations (22 CCR – "17 CAM Metals") and manganese.

The samples will not be analyzed for aluminum, iron or uranium. Aluminum and iron are excluded from the analysis because they are not mobile under high pH conditions. Uranium is excluded from analysis because the northwest pacific coastal mountain area, where the Site is located, is reported to have one of the lowest concentrations of naturally-occurring uranium, thorium and terrestrial gamma ray exposure in the United States (USGS, 1993). Rocks suspect for containing naturally-occurring uranium, such as granitic intrusive or metamorphic rocks, or sedimentary rocks with abundant heavy mineral accumulations, are not generally found in this area. Glauconite, a mineral associated with marine sedimentary rocks that may contain some uranium, is known to occur locally in sediments of the lower Wildcat Group (including the Pullen and Eel River Formations) (SHN, 2004); however, these formations are absent beneath the Site. Furthermore, uranium is not associated with the industrial activities at the Site.

Based on the analyses of the soil and groundwater samples described above, one soil sample will be analyzed for soluble metals concentrations using the Synthetic Precipitation Leaching Procedure with groundwater collected from a nearby monitoring well as the extracting agent.

In order to further evaluate the presence and extent of metals in groundwater at the site, each of the groundwater monitoring wells at the site will be sampled and a field-filtered sample will be analyzed for 17 CAM metals and manganese.

In order to further evaluate background metals concentrations, one direct push boring will be advanced to a depth of approximately 10 feet bgl in the northwest area of the Site, in an area that has not historically been used for industrial activities. The tentative location for this borings is shown on Figure 2. Soil samples collected from depths of approximately 2, 5 and 10 feet bgl from this boring will be analyzed for total concentrations of 17 CAM Metals and manganese. The results of these analyses and historical analyses of soil samples from unimpacted areas of the Site for metals will be evaluated using standard techniques to estimate the range of background metals concentrations naturally occurring in shallow soils beneath the Site.

Chlorinated VOCs

As discussed in the Site Characterization Summary Report, chlorinated VOCs have been detected in groundwater at concentrations exceeding water quality objectives in samples from well MW-9, located downgradient of the hazardous waste storage area, and in a grab sample collected from boring SB-05, located in the southeast corner of the bone yard. In addition, VOCs were detected at concentrations exceeding water quality objectives at SB-20, which appears to be an isolated occurrence. The concentrations of chlorinated VOCs detected in samples from well MW-9 are low and the well is located well within the Site boundaries. To address the detection of chlorinated VOCs detected in the sample from well SB-05, impacted soil in that area was recently excavated. Monitoring well MW-11 was recently installed downgradient of this location to monitor groundwater conditions. Well MW-11 was sampled in June of 2004, and the sample was reported to contain tetrachloroethylene (PCE) at a concentration of 670 micrograms per liter (µg/l), 1,1,1-trichloroethane (1,1,1-TCA) at a concentration of 12 µg/l and trichloroethylene (TCE) at a concentration of 9.5 µg/l, cis-1,2-dichloroethylene (cis-1,2-DCE) at a concentration of 4.5 µg/l and carbon tetrachloride at a concentration of 1.4 µg/l. Complete results will be presented in the upcoming groundwater monitoring report for the Site that is expected to be issued in September.

We have determined that based on the data to date, the likelihood for chlorinated solvents to have migrated below the water table as DNAPLs is very low. The detected concentrations are far below "rules-of-thumb" used to infer the presence of DNAPL (Cohen and Mercer, 1993). In addition, the paper and pulp industry is not ordinarily considered suspect for use of chlorinated solvents in sufficient quantity to cause a DNAPL release (Cohen and Mercer, 1993). Chlorinated solvents were used at the Site in small quantities for equipment maintenance purposes only, and were not part of a manufacturing process at the site. As shown in the list of materials provided at the April 20 meeting, only small quantities of chlorinated solvents are stored at the Site and no bulk storage occurs. Free product is not an issue at the Site, due to the insignificant volume and distribution of these materials, so movement of such materials in soils and/or groundwater would be minimal. Therefore, as discussed during our April 20 meeting, we propose to investigate the vertical extent of chlorinated VOC distribution by drilling and sampling borings to a depth of approximately 35 feet bgl rather than drilling to the base of the uppermost saturated zone, which is believed to occur at approximately 80 to 90 feet bgl. Based on the existing data and available information regarding solvent use at the Site, this depth of investigation will be adequate to define the vertical extent of chlorinated VOCs.

In order to further investigate the lateral and vertical extent of chlorinated VOCs in the soil and groundwater in the vicinity of the Hazardous Waste Storage Area, two direct push borings will be

advanced and sampled at the approximate locations shown on Figure 2 and collect two soil samples and one groundwater grab sample from each boring. The borings will be advanced to depths of approximately 35 feet bgl and will be used to further investigate the lateral and vertical extent of chlorinated VOCs in the saturated zone. Soil samples will be collected from approximately 5-foot vertical intervals, and the samples collected from depths below 20 feet bgl will be preserved for potential chemical analysis. The soil samples collected from depths of approximately 20 and 35 feet bgl from these borings will be analyzed for chlorinated VOCs. The groundwater grab samples will be collected from the upper 5 feet of the saturated zone and will also be analyzed for chlorinated VOCs.

Augmentation of the Monitoring Well Network

In addition to the above, under this plan one additional monitoring well will be installed to characterize groundwater at the downgradient limit of the Site. This well will be located immediately east of the Pulp Storage Warehouse. Groundwater from this well will be analyzed for chlorinated VOCs, pH and TPH as gasoline. In addition, this well will be included in the existing groundwater monitoring program for the Site. Concentration trends will continue to be monitored in the areas affected by black liquor, caustics, petroleum hydrocarbons and VOCs using the existing wells present in each of these areas. Further augmentation of the existing monitoring well network is not proposed at this time.

Petroleum Hydrocarbons

This section of the plan describes plans to detect and characterize petroleum hydrocarbons in two areas: the Chip Dump Area and the Hot Water/Diesel AST.

Chip Dump Area

The former UST in the Chip Dump Area served as a collection sump for occasional spills of hydraulic oil and diesel fuel from the truck dumper located in that area. After the UST was removed in December of 2000, petroleum-impacted soil around the tank cavity was excavated to the extent practicable (approximately 200 cubic yards) in 2001 (MFG, 2002). On May 28, 2003, the Humboldt County Division of Environmental Health (HCDEH) indicated it had concluded the remaining residual long-chain hydrocarbons associated with the UST presented a minimal threat to groundwater quality. After receiving concurrence from the RWQCB, the HCDEH issued a Remedial Action Completion Certificate on September 4, 2003 (MFG, 2004).

As discussed during the meeting on April 20, 2004, we believe that the petroleum hydrocarbon impacts detected in the vicinity of the Chip Dump are all associated with the truck dumping operation. Gasoline-range hydrocarbons detected in samples collected from this area represent the light end of diesel-range hydrocarbons associated with the Chip Dump operation (MFG, 2002). It has also been noted that the containment basin for the truck dumper occasionally overflowed during periods of heavy rainfall (MFG, 2002). Thus, we believe the detection of diesel-range hydrocarbons cited in the RWQCB's February 6, 2004 letter (located approximately 65 feet from the former UST location but only 20 feet from the truck dumper as discussed in MFG, 2003), is the result of incidental surface spillage associated with the truck dumper. The concentration of diesel-range hydrocarbons detected in this grab sample (65 μ g/l) is below the water quality objective of 100 μ g/l. Given these results and the fact the residual diesel-range hydrocarbons will tend to be relatively immobile while concentrations continue to decline due to natural processes, we believe no further work is warranted to address the presence of diesel- and oil-range hydrocarbons in the Chip Dump area.

Hot Water/Diesel AST

Specific information about the depth of groundwater samples collected around the former diesel fuel AST at the site is not available; however, based on data regarding other sampling conducted at the Site we believe the groundwater samples from borings P-1, P-2 and P-4 were collected from near the water table at 10 to 15 feet bgl. L-P determined that since these three locations were so close together, collection of samples from location P-3 was not warranted. Residual TPH as gasoline, diesel and oil and grease were detected in the sample collected from a depth of 4 feet from boring P-2. The only petroleum hydrocarbon detected in the remaining samples, including the sample collected from a depth of 8 feet bgl in boring P-2, was TPH as diesel at concentrations ranging from 1.1 to 3.6 milligrams per kilogram. TPH as diesel and gasoline were detected only in the groundwater grab sample collected from boring P-4 and not in the samples collected from borings P-1 and P-2, which were located about 15 to 30 feet away. Low concentrations of TPH as diesel (56 to 62 µg/L) were detected in groundwater samples collected from well MW-4 (located about 35 feet downgradient of the AST) in 1998 and 1999, but TPH as diesel has not been detected in samples from this well since that time. TPH as gasoline and motor oil have not been detected in samples from this well. Since the extent of TPH impact thus appears to be very localized, further investigation by collecting "upgradient" soil and groundwater samples is not warranted. It can be readily extrapolated that the upgradient extent of TPH impact (in the direction of P-3) is equal to or less than the downgradient extent, which is known.

Gasoline-range hydrocarbons were detected in the soil sample collected from a depth of 4 feet bgl in boring P-2 and gasoline-range hydrocarbons and methyl tert-butyl ether (MTBE) were detected in groundwater grab sample P-2. TPH as gasoline, MTBE, BTEX and other gasoline constituents have not been detected in groundwater samples collected from well MW-4, located approximately 35 feet downgradient of the AST. Gasoline was not stored or dispensed in this area, so there is no operational source that could result in detection of gasoline. Based on the available data, the extent of this impact is very localized and is likely the result of an incidental spill during the use of portable, gasoline-powered equipment such as a generator or pump. Further investigation is not warranted because of the isolated nature of the detection combined with the absence of any current or historical operations in this area that would have caused this detection.

PROCEDURES

Preliminary Activities

Prior to field operations, the necessary permit will be obtained. A monitoring well construction permit for new wells will be obtained from the Humboldt County Department of Environmental Health and appropriate fees will be submitted. The proposed drilling locations will be checked by Underground Service Alert (USA) and facility personnel that are familiar with onsite utility locations. All fieldwork will be conducted in accordance with Standard Operating Procedures (SOPs) based on sound scientific and engineering standards and quality control procedures used for this type of work in the environmental consulting industry. The Site-specific health and safety plan will be updated to include the work.

Direct-Push Sampling and Groundwater Grab Sampling

Direct-push soil borings will be advanced using conventional, truck-mounted drilling equipment. The specific locations of the borings will be determined by site accessibility, the location of underground

APPENDIX D

Waste Discharge Requirements Orders No. R1-2003-0064 and R1-2010-0033





California Regional Water Quality Control Board North Coast Region

North Coast Region





Linda S. Adams
Secretary for Environmental
Protection

www.waterboards.ca.gov/northcoast 5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403 Phone: (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135 Arnold Schwarzenegger **Governor**

ORDER NO. R1-2010-0033 NPDES NO. CA0005894 WDID No. 1B77005OHUM

WASTE DISCHARGE REQUIREMENTS FOR FRESHWATER TISSUE COMPANY, SAMOA PULP MILL

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	Freshwater Tissue Company				
Name of Facility	Samoa Pulp Mill				
	1 TCF Drive				
Facility Address	Samoa CA 95564				
	Humboldt County				
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a major discharge.					

The discharge by the owner from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	wastewater	40°, 49', 10" N	124º, 13', 32" W	Pacific Ocean

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	July 15, 2010
This Order shall become effective on:	July 15, 2010
This Order shall expire on:	July 14, 2015
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	180 days prior to the Order expiration date

IT IS HEREBY ORDERED, that, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

I, Catherine Kuhlman, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, North Coast Region, on July 15, 2010.

Catherine	Kuhlman,	Executive	Office

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Order R1-2008-0020 3

I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 4. Facility Information

Discharger	Freshwater Tissue Company	
Name of Facility	Samoa Pulp Mill	
	1 TCF Drive	
Facility Address	Samoa CA 95564	
	Humboldt County	
Facility Contact, Title, and Phone	Robert Simpson, President, (707) 441-2801	
Mailing Address	PO Box 248, Samoa, CA 95564	
Type of Facility	Pulp Mill	
Facility Design Flow	20 million gallons per day	

II. FINDINGS

The California Regional Water Quality Control Board, North Coast Region (hereinafter Regional Water Board), finds:

A. Background. Freshwater Tissue Company (hereinafter Discharger) submitted a Report of Waste Discharge, dated January 27, 2010, and applied for a NPDES permit to discharge wastewater generated from the production of kraft pulp at the Samoa Pulp Mill, hereinafter Facility. Additional information was submitted on February 16, 2010 and March 23, 2010, and the application fee was submitted on March 29, 2010. The application was deemed complete on March 29, 2010.

The discharge from the Facility was previously regulated pursuant to Board Order No. R1-2004-0047 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0005894 issued to Evergreen Pulp, Inc., a subsidiary of Lee & Man Paper Manufacturing Limited. The Facility ceased operation on October 17, 2008. On January 7, 2009, the Regional Water Board issued a Notice of Intent to terminate Board Order No. R1-2004-0047 in accordance with 40 CFR § 122.61(b) to prevent the automatic transfer of the existing NPDES permit from Evergreen Pulp, Inc. to a new owner of the Facility. On March 12, 2009, after due notice to Evergreen Pulp, Inc. and all other affected persons, the Regional Water Board conducted a public hearing at which time the Regional Water Board terminated Board Order No. R1-2004-0047.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

- **B. Facility Description.** The Discharger acquired the Samoa Pulp Mill in February 2009 and plans to resume pulp production in December 2010. Wastewater created during the pulp production process, the energy and chemical recovery processes, and the water treatment plant will be discharged from Discharge 001 (see table on cover page) to the Pacific Ocean, a water of the United States, through an outfall that is approximately 8,200 feet long and provides an initial dilution rate of 115:1. Attachment B provides a map of the area around the facility. Attachment C provides a flow schematic of the facility.
- C. Legal Authorities. This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

The CWA authorizes the USEPA to permit a state to serve as the NPDES permitting authority in lieu of the USEPA. The State of California has an in-lieu authority of the NPDES program. The State Water Resources Control Board (State Water Board) entered into a Memorandum of Agreement with the USEPA on September 22, 1989, to administer the NPDES program governing discharges to waters of the United States. The Porter-Cologne Water Quality Control Act authorizes the State Water Board, through the Regional Water Board, to regulate and control the discharge of pollutants to waters of the state.

- D. Background and Rationale for Requirements. The Regional Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through E are also incorporated into this Order.
- **E. California Environmental Quality Act (CEQA).** Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of the CEQA, Public Resources Code sections 21100-21177.
- **F. Technology-based Effluent Limitations.** Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations¹ require that permits include conditions meeting applicable

All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge of wastewater authorized by this Order must meet minimum federal technology-based requirements set out in Effluent Limitations Guidelines and Standards for the Pulp, Paper, and Paperboard Point Source Category in Part 430. Wastewaters from the water treatment plant must meet technology-based effluent limitations in Table A of the Water Quality Control Plan for Ocean Waters of California, California Ocean Plan (Ocean Plan), with the exception of effluent limitations for suspended solids, for which the Facility has been granted an exception by the State Water Board.

The Discharger's pulping process includes an oxygen delignification process to brighten finished unbleached pulp and as a pretreatment process prior to its totally chlorine free (TCF) bleaching process. The Discharger has stated that it plans to produce both unbleached pulps and bleached pulp using TCF bleaching as market demands require. The Regional Water Board has determined that, for purposes of the effluent limitations guidelines, the Samoa Pulp Mill fits into the Unbleached Kraft subcategory (40 CFR 430 Subpart C), when a kraft pulp is produced without TCF bleaching. When producing a kraft pulp using TCF bleaching, the Samoa Pulp Mill fits into the Bleached Kraft subcategory (40 CFR 430 Subpart B). Should the Discharger produce bleached pulp using traditional chlorine-based bleaching processes, effluent limitations guidelines for bleached kraft pulp would apply.

Raw surface water used in the pulp making process is drawn directly from the Mad River and treated in an onsite water treatment plant to remove naturally-occurring mud and silt entrained in the river water prior to use in the mill. The water treatment plant consists of conventional circular clarifiers with the addition synthetic polymers to aid the settling of the river mud and silt. Solids removed in the water treatment plant are discharged to the ocean. There are no applicable effluent limitation guidelines for discharges from water treatment plants and the effluent limitation guidelines for the kraft pulp industry do not apply to the water treatment plant discharge. Consequently, the discharge of solids from the Facility's water treatment plant is regulated under technology-based effluent limitations that are contained in Table A of the Ocean Plan. However, pursuant to State Water Board Resolution 87-103, the Samoa Pulp Mill is granted an exception to the suspended solids standard in the Ocean Plan that requires dischargers to remove 75 percent of solids from the influent stream before discharging to the ocean.

A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet (Attachment F).

G. Water Quality-Based Effluent Limitations. Section 301(b) of the CWA and section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements more stringent than secondary treatment

requirements that are necessary to meet applicable water quality standards. The rationale for these requirements is discussed in Attachment F Fact Sheet part IV.C.

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

H. Water Quality Control Plans. The Regional Water Board adopted a *Water Quality Control Plan for the North Coast Basin* (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for the Pacific Ocean Beneficial uses applicable to the Pacific Ocean are as follows:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Pacific Ocean	Existing:
		NAV – Navigation
		REC1 – Water Contact Recreation
		REC2 – Non-contact Water Recreation
		COMM – Commercial and Sport Fishing
		WILD – Wildlife Habitat
		RARE – Rare, Threatened, or Endangered Species
		MAR – Marine Habitat
		MIGR – Migration of Aquatic Organisms
		SPWN – Spawning, Reproduction, and/or Early Development
		SHELL – Shellfish Harvesting
		AQUA – Aquaculture
		Potential:
		IND – Industrial Service Supply
		PRO – Industrial Process Supply
		ASBS – Preservation of Areas of Special Biological Significance

Requirements of this Order implement the Basin Plan.

The State Water Board adopted the *Water Quality Control Plan for Control of Temperature* in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975. This

plan contains temperature objectives for coastal waters. Requirements of this Order implement the Thermal Plan.

H. California Ocean Plan. The State Water Board adopted the Water Quality Control Plan for Ocean Waters of California, California Ocean Plan (Ocean Plan) in 1972 and amended it in 1978, 1983, 1988, 1990, 1997, 2000, and 2005. The State Water Board adopted the latest amendment on April 21, 2005 and it became effective on February 14, 2006. The Ocean Plan is applicable, in its entirety, to point source discharges to the ocean. To the extent that there is a conflict between a provision of this plan and a provision of another statewide plan or policy, or the Basin Plan, the more stringent provision shall apply except where pursuant to Chapter III.I of the Ocean Plan, the State Water Board has approved an exception.

The Ocean Plan identifies beneficial uses of ocean waters of the State to be protected as summarized below:

Table 6. Ocean Plan Beneficial Uses

Discharge Point	Receiving Water	Beneficial Uses
Outfall 001	Pacific Ocean	Industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance (ASBS); rare and endangered species; marine habitat; fish spawning and shellfish harvesting

In order to protect the beneficial uses, the Ocean Plan establishes water quality objectives and a program of implementation. Requirements of this Order implement the Ocean Plan.

- J. Alaska Rule. On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA purposes (40 C.F.R. § 131.21; 65 Fed. Reg. 24641; (April 27, 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000 must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.
- K. Stringency of Requirements for Individual Pollutants. This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on pH, total suspended solids, biochemical oxygen demand, and adsorbable organic halides (AOX) for pulp processing wastewaters and technology-based effluent limitations based on Table A of the Ocean Plan for the discharge from the water treatment plant. Restrictions are discussed in section IV.B of Attachment F (Fact Sheet). This Order's technology-based

pollutant restrictions implement the minimum, applicable federal technology-based requirements. These limitations are not more stringent than required by the CWA.

Water quality-based effluent limitations for Aldrin, HCH, DDT, and TCDD Equivalents for have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. The scientific procedures for calculating the individual water quality-based effluent limitations are based on the Ocean Plan, which was approved by USEPA on February 14, 2006. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

- L. Antidegradation Policy. Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. As discussed in detail in the Fact Sheet the permitted discharge is consistent with the antidegradation provision of section 131.12 and State Water Board Resolution No. 68-16.
- M. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in a previous permit, with some exceptions where limitations may be relaxed.
- N. Endangered Species Act. This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The discharger is responsible for meeting all requirements of the applicable Endangered Species Act.
- **O. Monitoring and Reporting.** Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections

13267 and 13383 of the CWC authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. This Monitoring and Reporting Program is provided in Attachment E.

- P. Standard and Special Provisions. Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.
- Q. Notification of Interested Parties. The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet of this Order.
- **R. Consideration of Public Comment.** The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet of this Order.

III. DISCHARGE PROHIBITIONS

- **A.** The discharge of any waste not disclosed by the Discharger or not within the reasonable contemplation of the Regional Water Board is prohibited.
- **B.** The discharge of any waste at any point not described in Finding II.B is prohibited.
- **C.** The creation of a pollution, contamination, or nuisance as defined by Water Code section 13050 is prohibited.
- **D.** The discharge of sanitary wastes to the Pacific Ocean is prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point 001

1. Final Effluent Limitations during Bleached Pulp Production² – Discharge Point 001

During manufacture of bleached pulp, the Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 as described in the attached MRP:

Table 7. Effluent Limitations – Bleached Pulp

	Units	Effluent Limitations						
Parameter		Average Monthly ³	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Six- Month Median	
TSS	lbs/day ⁴	22,960		42,560				
BOD ₅	lbs/day ³	11,270		21,630				
pH ⁵	standard units				5.0	9.0		
(AOX) ⁶	ug/L			20				
HCH	ug/L			0.93	1.4		0.46	
TCDD equivalents	pg/L	0.45						
Aldrin	ug/L	0.0026						
DDT	ug/L	0.020						

Bleached Pulp Production shall mean the chemical delignification of pulp with chlorine compounds and by means of a Totally Chlorine-Free (TCF) bleaching process. The use of oxygen delignification is not included in this definition of bleached pulp production.

Monthly Discharge (lbs/day) =
$$\frac{8.34}{N} \sum_{i}^{N} Q_{i} C_{i}$$

in which N is the number of days of production of bleached pulp in any calendar month. Q_i and C_i are the flow rate (mgd) and the constituent concentration, respectively, which are associated with each of the N days in any calendar month.

The monthly discharge (lbs/day) of BOD and TSS during production of bleached pulp is obtained from the following calculation on any calendar month:

⁴ Based on a monthly average production rate of 700 ADT/day

⁵ Compliance with pH limitations shall be determined in accordance with 40 CFR 401.17 and 430.22, as explained in the Fact Sheet.

⁶ Compliance with the AOX limitation shall be determined by analyzing the water treatment plant effluent at INT-001 and the effluent discharge at EFF-001. The AOX measured at INT-001 shall be subtracted from the AOX measured at EFF-001 to determine compliance with this limitation.

2. Final Effluent Limitations during Unbleached Pulp Production – Discharge Point 001

During manufacture of unbleached pulp, the Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001 with compliance measured at Monitoring Location EFF-001 as described in the attached MRP.

Table 8. Effluent Limitations – Unbleached Pulp

	Units	Effluent Limitations						
Parameter		Average Monthly ⁷	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Six- Month Median	
TSS	lbs/day ³	8,400		16,800				
BOD ₅	lbs/day ³	3,920		7,840				
pH ³	standard units				6.0	9.0		
HCH	ug/L			0.93	1.4		0.46	
TCDD equivalents	pg/L	0.45						
Aldrin	ug/L	0.0026						
DDT	ug/L	0.020						

3. Final Effluent Limitations for the Raw Water Discharge from the Water Treatment Plant– Discharge Point 001

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001 with compliance measured at Monitoring Location EFF-002 as described in the attached MRP.

Monthly Discharge (lbs/day) =
$$\frac{8.34}{N} \stackrel{N}{\underset{i}{\sum}} Q_i C_i$$

in which N is the number of days of production of unbleached pulp in any calendar month. Q_i and C_i are the flow rate (mgd) and the constituent concentration, respectively, which are associated with each of the N days in any calendar month.

⁷ The monthly discharge (lbs/day) of BOD and TSS during production of unbleached pulp is obtained from the following calculation on any calendar month:

Table 9. Final Effluent Limitations – Water Treatment Plant

Parameter		Effluent Limitations					
	Units	Average Monthly	Average Weekly	Maximum Daily	Instantaneous Maximum	Six-Month Median	
Oil and Grease	mg/L	25	40	75			
Total Suspended Solids Wet Season (OctApr.)	lbs/day	70,000		400,000			
Total Suspended Solids Dry Season (May-Sep.)	lbs/day	14,000		400,000			
Settleable Solids	mL/L-hr	1.0	1.5	3.0			
Turbidity	NTU	75	100	225			
рН	S.U.	6.0 to 9.0 at all times			<u>I</u>		
Arsenic	ug/L			3,367	8,935	583	
Cadmium	ug/L			464	1,160	116	
Hexavalent Chromium	ug/L			928	2,320	232	
Copper	ug/L			1,162	3,250	118	
Lead	ug/L			928	2,320	232	
Mercury	ug/L			18.5	46.3	4.58	
Nickel	ug/L			2,320	5,800	580	
Selenium	ug/L			6,960	17,400	1,740	
Silver	ug/L			306	794	62.8	
Zinc	ug/L			8,360	22,280	1,400	
Cyanide	ug/L			464	1,160	116	
Chronic Toxicity	TUc			116			
Endosulfan	ug/L			2.088	3.132	1.044	
Endrin	ug/L			0.464	0.696	0.232	
HCH	ug/L			0.93	1.4	0.46	
Aldrin	ug/L	0.0026					
Chlordane	ug/L	0.0026					
Dieldrin	ug/L	0.0046					
Heptachlor	ug/L	0.0058					
Heptachlor Epoxide	ug/L	0.0023					
Toxaphene	ug/L	0.024					
DDT	ug/L	0.020					
TCDD Equivalents	pg/L	0.45					

- **B. Land Discharge Specifications** (Not Applicable)
- C. Reclamation Specifications (Not Applicable)

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

The following receiving water limitations are based on water quality objectives established by the Ocean Plan and are a required part of this Order. Compliance with the water quality objectives contained in the Ocean Plan shall be determined from samples collected at stations representative of the area within the waste field where initial dilution is completed.

1. Bacterial Characteristics

a. Body Contact Standards. Within a zone bounded by the shoreline and a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, and in areas outside this zone designated for water contact recreation use by the Regional Water Board, but including all kelp beds, the following bacteriological objectives shall be maintained throughout the water column.

30-Day Geometric Mean – The following standards are based on the geometric mean of the five most recent samples from each receiving water monitoring location.

- i. Total coliform density shall not exceed 1,000 per 100 ml;
- ii. Fecal coliform density shall not exceed 200 per 100 mL; and
- iii. Enterococcus density shall not exceed 35 per 100 mL.

Single Sample maximum;

- i. Total coliform density shall not exceed 10,000 per 100 ml;
- ii. Fecal coliform density shall not exceed 400 per 100 mL; and
- iii. Enterococcus density shall not exceed 104 per 100 mL.
- iv. Total coliform density shall not exceed 1,000 per 100 mL when the fecal coliform to total coliform ratio exceeds 0.1.
- b. Shellfish Harvesting. At all areas where shellfish may be harvested for human consumption, as determined by the Regional Water Board, the following bacteriological objectives shall be maintained throughout the water column:
 - i. The median total coliform density shall not exceed 70 organisms per 100 mLs, and in not more than 10 percent of samples shall coliform density exceed 230 organisms per 100 mLs.

2. Physical Characteristics

a. Floating particulates and grease and oil shall not be visible.

- b. The discharge of waste shall not cause aesthetically undesirable discoloration of the ocean surface.
- c. Natural light shall not be significantly reduced at any point outside the initial dilution zone as the result of the discharge of waste.
- d. The rate of deposition of inert solids and the characteristics of inert solids in ocean sediments shall not be changed such that benthic communities are degraded.

3. Chemical Characteristics

- a. The dissolved oxygen concentration shall not at any time be depressed more than 10 percent from that which occurs naturally as a result of the discharge of oxygen demanding waste material.
- b. The pH shall not be changed at any time more than 0.2 units from that which occurs naturally.
- c. The dissolved sulfide concentration of waters in and near sediments shall not be significantly increased above that present under natural conditions.
- d. The concentration of substances set forth in Chapter IV, Table B of the Ocean Plan in marine sediments shall not be increased to levels that would degrade indigenous biota.
- e. The concentration of organic materials in marine sediments shall not be increased to levels that would degrade marine life.
- f. Nutrient levels shall not cause objectionable aquatic growths or degrade indigenous biota.
- g. Discharges shall not cause exceedances of water quality objectives for ocean waters of the State established in Table B of the Ocean Plan.
- h. Discharge of radioactive waste shall not degrade marine life.

4. Biological Characteristics

- a. Marine communities, including vertebrate, invertebrate and plant species, shall not be degraded.
- b. The natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption shall not be altered.
- c. The concentration of organic materials in fish, shellfish, or other marine resources used for human consumption shall not bioaccumulate to levels that are harmful to human health.

5. General Standards

- a. The discharge shall not cause a violation of any applicable water quality standard for the receiving waters adopted by the Regional Water Board or the State Water Board as required by the Clean Water Act and regulations adopted thereunder.
- b. The discharge shall be essentially free of:
 - i. Material that is floatable or will become floatable upon discharge.

- ii. Settleable material or substances that may form sediments that will degrade benthic communities or other aquatic life.
- iii. Substances that will accumulate to toxic levels in marine waters, sediments or biota.
- iv. Substances that significantly decrease natural light to benthic communities and other marine life.
- v. Material that results in aesthetically undesirable discoloration of the ocean surface.
- c. Waste effluent shall be discharged in a manner that provides sufficient initial dilution to minimize the concentrations of substances not removed in the treatment.
- B. Groundwater Limitations (Not Applicable)

VI. PROVISIONS

A. Standard Provisions

- 1. **Federal Standard Provisions.** The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.
- 2. **Regional Water Board Standard Provisions**. The Discharger shall comply with the following provisions:
 - a. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.
 - b. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, interim or final effluent limitation, land discharge specification, reclamation specification, receiving water limitation, or provision of this Order that may result in a significant threat to human health or the environment, such as inundation of treatment components, breach of pond containment, sanitary sewer overflow, irrigation runoff, etc., that results in a discharge to a drainage channel or a surface water, the Discharger shall as soon as possible, but no later than two (2) hours after becoming aware of the discharge, orally notify the State Office of Emergency Services, the local health officer or directors of environmental health with jurisdiction over the affected water bodies, and the Regional Water Board.

c. As soon as possible, but no later than twenty-four (24) hours after becoming aware of an unauthorized discharge to a drainage channel or a surface water, the Discharger shall submit to the Regional Water Board a written certification that the State Office of Emergency Services and the local health officer or directors of environmental health with jurisdiction over the affected water body have been notified of the discharge. Written documentation of the circumstances of the spill event shall be submitted to the Regional Water Board within five (5) days, unless the Regional Water Board waives the confirmation. The written notification shall state the nature, time, duration, and cause of noncompliance, and shall describe the measures being taken to remedy the current noncompliance and to prevent recurrence, including, where applicable, a schedule of implementation. Other types of noncompliance require written notification, as described above, at the time of the normal monitoring report.

B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the MRP, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions

- a. Standard Revisions. If applicable water quality standards are promulgated or approved pursuant to Section 303 of the CWA, or amendments thereto, the Regional Water Board may reopen this Order and make modifications in accordance with such revised standards.
- **b.** Reasonable Potential. This Order may be reopened for modification to include an effluent limitation if monitoring establishes that the discharge causes, has the reasonable potential to cause, or contributes to an excursion above an Ocean Plan Table B water quality objective.
- c. Whole Effluent Toxicity. As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a limitation for a specific toxicant identified in the TRE.
- d. **Tiered Effluent Limitations.** If the pulp production rates change significantly during the life of this Order, the Regional Water Board may reopen this Order and make modifications in production-based effluent limitations for BOD and total suspended solids.

e. **Ocean Plan Exception.** If the State Water Board revises, reissues, or revokes the Facility's Ocean Plan exception for the discharge of solids from its water treatment plant, the Regional Water Board may reopen this Order and make modifications in requirements in this Order related to this discharge.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. Toxicity Reduction Requirements

i. Whole Effluent Toxicity. The MRP of this Order requires routine monitoring for whole effluent toxicity at Monitoring Location EFF-001 and EFF-002, as described in Table E-1 of the MRP, to determine compliance with the Ocean Plan's water quality objective for toxicity. As established by the MRP, if the results of whole effluent toxicity tests exceed the chronic toxicity water quality objective or effluent limitation of 116 TUc, the Discharger shall conduct accelerated toxicity monitoring.

Results of accelerated toxicity monitoring will indicate a need to conduct a Toxicity Reduction Evaluation (TRE), if toxicity persists; or it will indicate that a return to routine toxicity monitoring is justified because persistent toxicity has not been identified by accelerated monitoring. TREs shall be conducted in accordance with the TRE workplan prepared by the Discharger pursuant to Section VI. C. 2. a. ii. of this Order, below, and section V.A.8.c of the MRP, respectively.

- ii. Toxicity Reduction Evaluations (TRE) workplan. The Discharger shall prepare and submit to the Regional Water Board Executive Officer a TRE workplan by December 1, 2010. This plan shall be reviewed and updated as necessary in order to remain current and applicable to the discharge and discharge facilities. The workplan shall describe the steps the Discharger intends to follow if toxicity is detected, and should include at least the following items:
 - (a) A description of the investigation and evaluation techniques that would be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency.
 - (b) A description of the facility's methods of maximizing in-house treatment efficiency and good housekeeping practices.
 - (c) If a toxicity identification evaluation (TIE) is necessary, an indication of the person who would conduct the TIEs (i.e., an in-house expert or an outside contractor).
- iii. **Toxicity Reduction Evaluations (TRE).** The TRE shall be conducted in accordance with the following:
 - (a) The TRE shall be initiated within 30 days of the date of completion of the accelerated monitoring test, required by Section V of the MRP, if that test

- result exceeds the chronic toxicity water quality objective or effluent limitation.
- (b) The TRE shall be conducted in accordance with the Discharger's workplan.
- (c) The TRE shall be in accordance with current technical guidance and reference material including, at a minimum, the USEPA manual EPA/833B-99/002.
- (d) The TRE may end at any stage if, through monitoring results, it is determined that there is no longer consistent toxicity.
- (e) The Discharger may initiate a TIE as part of the TRE process to identify the cause(s) of toxicity. As guidance, the Discharger shall use the USEPA chronic manual, EPA/600/6-91/005F (Phase I), EPA/600/R-92/080 (Phase II), and EPA-600/R-92/081 (Phase III).
- (f) As toxic substances are identified or characterized, the Discharger shall continue the TRE by determining the source(s) and evaluating alternative strategies for reducing or eliminating the substances from the discharge. All reasonable steps shall be taken to reduce toxicity to levels consistent with acute or chronic toxicity parameters.
- (g) Many recommended TRE elements may be implemented in tandem with required efforts of source control, pollution prevention, and storm water control programs. TRE efforts should be coordinated with such efforts. To prevent duplication of efforts, evidence of complying with requirements of recommendations of such programs may be acceptable to comply with requirements of the TRE.
- (h) The Regional Water Board recognizes that chronic toxicity may be episodic and identification of a reduction of sources of chronic toxicity may not be successful in all cases. Consideration of enforcement action by the Regional Water Board will be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.

3. Best Management Practices and Pollution Prevention

- a. Pollutant Minimization Program (PMP). The Discharger shall, as required by the Executive Officer, develop and conduct a PMP as further described below when there is evidence (e.g., sample results reported as detected, not quantified (DNQ) when the effluent limitation is less than the minimum detection limit (MDL), sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, results of benthic or aquatic organism tissue sampling) that a priority pollutant is present in the effluent above an effluent limitation and either:
 - (1) The concentration of the pollutant is reported as DNQ and the effluent limitation is less than the reported Minimum Level (ML); or

(2) The concentration of the pollutant is reported as Not Detected (ND) and the effluent limitation is less than the MDL, using definitions described in Attachment A and reporting protocols described in MRP section X.B.4.

The PMP shall include, but not be limited to, the following actions and submittals acceptable to the Regional Water Board:

- An annual review and semi-annual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling;
- (2) Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system;
- (3) Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation;
- (4) Implementation of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy; and
- (5) An annual status report that shall be sent to the Regional Water Board including:
 - (a) All PMP monitoring results for the previous year;
 - (b) A list of potential sources of the reportable priority pollutant(s);
 - (c) A summary of all actions undertaken pursuant to the control strategy; and
 - (d) A description of actions to be taken in the following year.

b. Spill Prevention and Control

- i. Plan Preparation. The Discharger shall implement a Best Management Practices (BMP) Plan to prevent or otherwise contain leaks and spill of spent pulping liquors, soap, and turpentine, and to control intentional diversions of these materials. The BMP Plan shall be based on best engineering practices and shall be implemented in a manner that takes into account the specific circumstances at the Samoa Pulp Mill. At a minimum, the BMP Plan should include
 - (a) initial and refresher training of operators, maintenance personnel, and other technical and supervisory personnel who have responsibility for operating, maintaining, or supervising the operation and maintenance of equipment;

- (b) engineering analyses of problem areas and appropriate prevention and control strategies;
- (c) preventive maintenance;
- (d) engineered controls and containment;
- (e) work practices;
- (f) surveillance and repair programs;
- (g) dedicated monitoring and alarm systems; and
- (h) recordkeeping to document implementation of these practices.

Additional BMPs that should be considered include:

- (i) secondary containment diking around pulping liquor and storage tanks;
- (j) covered storage tank capacity for collected spills and planned liquor diversions;
- (k) automated spill detection systems, such as high level, flow, and conductivity monitors and alarms; and
- (I) backup equipment capacity to handle process upset conditions.
- ii. **Plan Amendment and Review** The Discharger shall review and evaluate its BMP plan at least once every five years or more often whenever there is a change in mill design, operation or maintenance that materially affects the potential for leaks or spills.
- 4. Construction, Operation and Maintenance Specifications (Not Applicable)
- 5. Special Provisions for Municipal Facilities (POTWs Only) (Not Applicable)
- **6. Other Special Provisions** (Not Applicable)
- 7. Compliance Schedules (Not Applicable)

VII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in Section IV of this Order that are derived from Ocean Plan Table B water quality objectives shall be determined as specified below:

A. Compliance with Single-Constituent Effluent Limitations.

Dischargers are out of compliance with the effluent limitation if the concentration of the pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum* Level.

B. Compliance with Effluent Limitations expressed as a Sum of Several Constituents

Dischargers are out of compliance with an effluent limitation which applies to the sum of a group of chemicals (e.g., PCB's) if the sum of the individual pollutant concentrations is greater than the effluent limitation. Individual pollutants of the group will be considered to have a concentration of zero if the constituent is reported as ND or DNQ.

C. Multiple Sample Data Reduction

The concentration of the pollutant in the effluent may be estimated from the result of a single sample analysis or by a measure of central tendency (arithmetic mean, geometric mean, median, etc.) of multiple sample analyses when all sample results are quantifiable (i.e., greater than or equal to the reported Minimum* Level). When one or more sample results are reported as ND or DNQ, the central tendency concentration of the pollutant shall be the median (middle) value of the multiple samples. If, in an even number of samples, one or both of the middle values is ND or DNQ, the median will be the lower of the two middle values.

ATTACHMENT A - DEFINITIONS

Acute Toxicity

a. Acute Toxicity (TUa)

Expressed in Toxic Units Acute (TUa)

$$TUa = \frac{100}{96 - hr \ LC \ 50\%}$$

b. Lethal Concentration 50% (LC 50)

LC 50 (percent waste giving 50% survival of test organisms) shall be determined by static or continuous flow bioassay techniques using standard marine test species as specified in Ocean Plan Appendix III. If specific identifiable substances in wastewater can be demonstrated by the discharger as being rapidly rendered harmless upon discharge to the marine environment, but not as a result of dilution, the LC 50 may be determined after the test samples are adjusted to remove the influence of those substances.

When it is not possible to measure the 96-hour LC 50 due to greater than 50 percent survival of the test species in 100 percent waste, the toxicity concentration shall be calculated by the expression:

$$TUa = \frac{\log (100 - S)}{1.7}$$

where:

S = percentage survival in 100% waste. If <math>S > 99, TUa shall be reported as zero.

Areas of Special Biological Significance (ASBS): Those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of STATE WATER QUALITY PROTECTION AREAS.

Arithmetic Mean (\mu), also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$

where: Σx is the sum of the measured ambient

water concentrations, and n is the

number of samples.

Average Monthly Effluent Limitation (AMEL): the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL): the highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bioaccumulative pollutants are those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic pollutants are substances that are known to cause cancer in living organisms.

Chlordane shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

Chronic Toxicity: This parameter shall be used to measure the acceptability of waters for supporting a healthy marine biota until improved methods are developed to evaluate biological response.

a. Chronic Toxicity (TUc)

Expressed as Toxic Units Chronic (TUc)

$$\mathsf{TUc} = \frac{100}{\mathsf{NOEL}}$$

b. No Observed Effect Level (NOEL)

The NOEL is expressed as the maximum percent effluent or receiving water that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test listed in Ocean Plan Appendix III, Table III-1.

Coefficient of Variation (CV): the measure of the data variability that is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge: Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean

measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

DDT shall mean the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.

Degrade: Degradation shall be determined by comparison of the waste field and reference site(s) for characteristic species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species. Degradation occurs if there are significant differences in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected.

Detected, but Not Quantified (DNQ): sample results less than the reported Minimum Level, but greater than or equal to the laboratory's MDL.

Dichlorobenzenes shall mean the sum of 1,2- and 1,3-dichlorobenzene.

Downstream Ocean Waters: Waters downstream with respect to ocean currents.

Dredged Material: Any material excavated or dredged from the navigable waters of the United States, including material otherwise referred to as "spoil".

Effective Concentration (EC) is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, "all or nothing," response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Karber. EC25 is the concentration of toxicant (in percent effluent) that causes a response in 25 percent of the test organisms.

Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay,

Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Endosulfan: The sum of endosulfan-alpha and -beta and endosulfan sulfate.

Estimated Chemical Concentration is the estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries and Coastal Lagoons are waters at the mouths of streams that serve as areas of mixing for fresh and ocean waters during a major portion of the year. Mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to the upstream limit of tidal action but may be considered to extend seaward if significant mixing of fresh and salt water occurs in the open coastal waters. The waters described by this definition include but are not limited to the Sacramento-San Joaquin Delta, as defined by Section 12220 of the California Water Code, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Klamath, Mad, Eel, Noyo, and Russian Rivers.

Halomethanes shall mean the sum of bromoform, bromomethane (methyl bromide) and chloromethane (methyl chloride).

HCH shall mean the sum of the alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.

Inhibition Concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal, non-quantal biological measurement, such as growth. For example, an IC25 is the estimated concentration of toxicant that would cause a 25 percent reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as U.S. EPA's Bootstrap Procedure.

Initial Dilution is the process that results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge.

For a submerged buoyant discharge, characteristic of most municipal and industrial wastes that are released from the submarine outfalls, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally.

For shallow water submerged discharges, surface discharges, and non-buoyant discharges, characteristic of cooling water wastes and some individual discharges, turbulent mixing results primarily from the momentum of discharge. Initial dilution, in these cases, is considered to be completed when the momentum induced velocity of the discharge ceases to produce significant mixing of the waste, or the diluting plume reaches a fixed distance from the discharge to be specified by the Regional Board, whichever results in the lower estimate for initial dilution.

Instantaneous Maximum Effluent Limitation: the highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation: the lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Kelp Beds, for or purposes of the bacteriological standards of the Ocean Plan, are significant aggregations of marine algae of the genera *Macrocystis* and *Nereocystis*. Kelp beds include the total foliage canopy of *Macrocystis* and *Nereocystis* throughout the water column.

Lowest Observed Effect Concentration (LOEC) is the lowest concentration of toxicant to which organisms are exposed in a test, which causes statistically significant adverse effects on the test organisms (i.e., where the values for the observed endpoints are statistically significantly different from the control).

Mariculture: The culture of plants and animals in marine waters independent of any pollution source.

Material: (a) In common usage: (1) the substance or substances of which a thing is made or composed (2) substantial; (b) For purposes of the Ocean Plan relating to waste disposal, dredging and the disposal of dredged material and fill, MATERIAL means matter of any kind or description which is subject to regulation as waste, or any material dredged from the navigable waters of the United States. See also, DREDGED MATERIAL.

Maximum Daily Effluent Limitation (MDEL) means the highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median is the middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the n/2 and n/2+1).

Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML) is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample

that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Natural Light: Reduction of natural light may be determined by the Regional Water Board by measurement of light transmissivity or total irradiance, or both, according to the monitoring needs of the Regional Water Board.

No Observed Effect Concentration (NOEC) is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

Not Detected (ND): those sample results less than the laboratory's MDL.

Ocean Waters are the territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

PAHs (polynuclear aromatic hydrocarbons) shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene.

PCBs (polychlorinated biphenyls) shall mean the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.

Pollutant Minimization Program (PMP) means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Regional Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not

include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Reported Minimum Level: The ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix II of the Ocean Plan in accordance with section III.C.5.a. of the Ocean Plan or established in accordance with section III.C.5.b. of the Ocean Plan. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Shellfish: Organisms identified by the California Department of Public Health as shellfish for public health purposes (i.e., mussels, clams and oysters).

Significant Difference: Defined as a statistically significant difference in the means of two distributions of sampling results at the 95 percent confidence level.

Six-Month Median Effluent Limitation: The highest allowable moving median of all daily discharges for any 180-day period.

Source of Drinking Water is any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Standard Deviation (σ) is a measure of variability that is calculated as follows:

$$\sigma = (\sum [(x - \mu)^2]/(n - 1))^{0.5}$$

where:

x is the observed value;

μ is the arithmetic mean of the observed values; and

n is the number of samples.

State Water Quality Protection Areas (SWQPAs): Non-terrestrial marine or estuarine areas designated to protect marine species or biological communities from an undesirable alteration in natural water quality. All AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS) that were previously designated by the State Water Board in Resolution No. 74-28, 74-32, and 75-61 are now also classified as a subset of State Water Quality Protection Areas and require special protections afforded by the Ocean Plan.

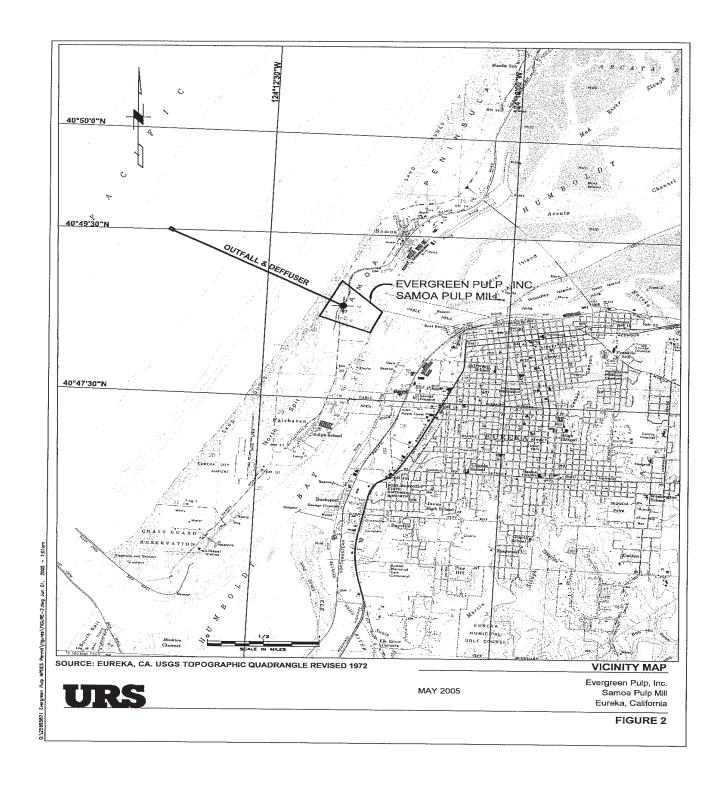
TCDD Equivalents shall mean the sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown in the table below.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8-tetra CDD	1.0
2,3,7,8-penta CDD	0.5
2,3,7,8-hexa CDDs	0.1
2,3,7,8-hepta CDD	0.01
octa CDD	0.001
2,3,7,8 tetra CDF	0.1
1,2,3,7,8 penta CDF	0.05
2,3,4,7,8 penta CDF	0.5
2,3,7,8 hexa CDFs	0.1
2,3,7,8 hepta CDFs	0.01
octa CDF	0.001

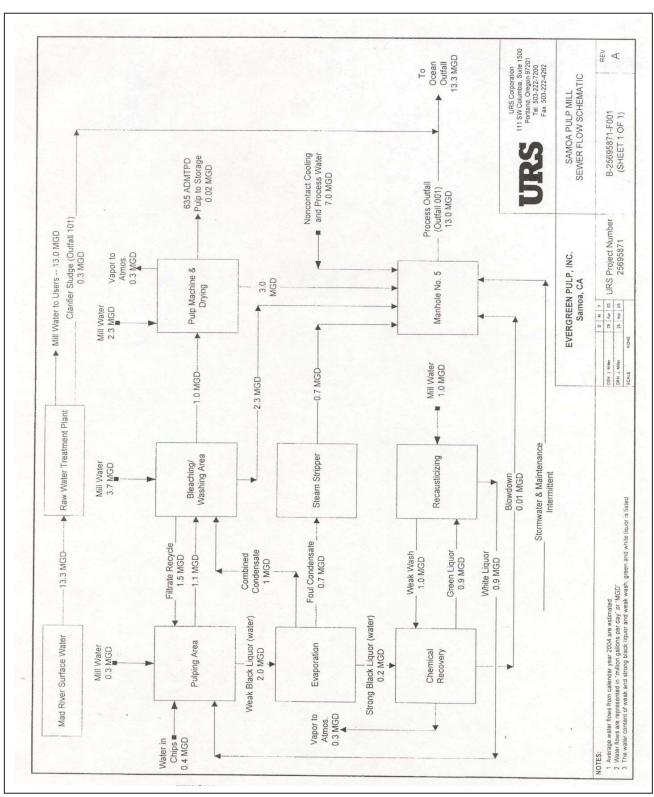
Toxicity Reduction Evaluation (TRE) is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

Waste: As used in the Ocean Plan, waste includes a Discharger's total discharge, of whatever origin, i.e., gross, not net, discharge.

ATTACHMENT B - MAP



ATTACHMENT C - FLOW SCHEMATIC



ATTACHMENT D - STANDARD PROVISIONS

I. STANDARD PROVISIONS - PERMIT COMPLIANCE

A. Duty to Comply

- 1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 C.F.R. § 122.41(a).)
- 2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 C.F.R. § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 C.F.R. § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 C.F.R. § 122.41(e).)

E. Property Rights

- 1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 122.41(g).)
- 2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 C.F.R. § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 C.F.R. § 122.41(i); Wat. Code, § 13383):

- Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 C.F.R. § 122.41(i)(1));
- 2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 C.F.R. § 122.41(i)(2));
- 3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 C.F.R. § 122.41(i)(3)); and
- 4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 C.F.R. § 122.41(i)(4).)

G. Bypass

1. Definitions

- a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)
- b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be

expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii).)

- 2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 C.F.R. § 122.41(m)(2).)
- Prohibition of bypass. Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):
 - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));
 - b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and
 - c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions Permit Compliance I.G.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)
- 4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. § 122.41(m)(4)(ii).)

5. Notice

- a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 C.F.R. § 122.41(m)(3)(i).)
- b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions Reporting V.E below (24-hour notice). (40 C.F.R. § 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 C.F.R. § 122.41(n)(1).)

- 1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)
- 2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):
 - a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));
 - b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));
 - c. The Discharger submitted notice of the upset as required in Standard Provisions Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and
 - d. The Discharger complied with any remedial measures required under Standard Provisions Permit Compliance I.C above. (40 C.F.R. § 122.41(n)(3)(iv).)
- 3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

II. STANDARD PROVISIONS - PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or

termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 C.F.R. § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 C.F.R. § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. § 122.41(I)(3); § 122.61.)

III. STANDARD PROVISIONS - MONITORING

- **A.** Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. § 122.41(j)(1).)
- **B.** Monitoring results must be conducted according to test procedures under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503 unless other test procedures have been specified in this Order. (40 C.F.R. § 122.41(j)(4); § 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS - RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)

B. Records of monitoring information shall include:

The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));

- 2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));
- 3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));
- 4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));
- 5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and
- 6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):

- 1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and
- 2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2).)

V. STANDARD PROVISIONS - REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); Wat. Code, § 13267.)

B. Signatory and Certification Requirements

- 1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. § 122.41(k).)
- 2. All permit applications shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital

investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. (40 C.F.R. § 122.22(a)(1).)

- 3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described in Standard Provisions Reporting V.B.2 above (40 C.F.R. § 122.22(b)(1));
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and
 - c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)
- 4. If an authorization under Standard Provisions Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)
- 5. Any person signing a document under Standard Provisions Reporting V.B.2 or V.B.3 above shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware

that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 C.F.R. § 122.22(d).)

C. Monitoring Reports

- 1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.41(I)(4).)
- 2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 C.F.R. § 122.41(I)(4)(i).)
- 3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 C.F.R. § 122.41(I)(4)(ii).)
- 4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 C.F.R. § 122.41(I)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 C.F.R. § 122.41(I)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. Compliance with the 24 hour reporting requirement meets the minimum reporting requirement set forth in section 122.41(I)(6)(i) of title 40 of the code of federal regulations. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 C.F.R. § 122.41(I)(6)(i).)

- 2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 C.F.R. § 122.41(I)(6)(ii)):
 - a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(I)(6)(ii)(A).)
 - b. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(I)(6)(ii)(B).)
- 3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 2 hours. (40 C.F.R. § 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 C.F.R. § 122.41(I)(1)):

- The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 C.F.R. § 122.41(l)(1)(i)); or
- 2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 C.F.R. § 122.41(I)(1)(ii).)
- 3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 C.F.R. § 122.41(I)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 C.F.R. § 122.41(I)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 C.F.R. § 122.41(I)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(I)(8).)

VI. STANDARD PROVISIONS - ENFORCEMENT

A. The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural Dischargers shall notify the Regional Water Board as soon as they know or have reason to believe (40 C.F.R. § 122.42(a)):

- 1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 C.F.R. § 122.42(a)(1)):
 - a. 100 micrograms per liter (µg/L) (40 C.F.R. § 122.42(a)(1)(i));
 - b. 200 μg/L for acrolein and acrylonitrile; 500 μg/L for 2,4-dinitrophenol and 2-methyl-4, 6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(1)(ii));
 - c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(1)(iii)); or
 - d. The level established by the Regional Water Board in accordance with 40 CFR Section 122.44(f). (40 C.F.R. § 122.42(a)(1)(iv).)

- 2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 C.F.R. § 122.42(a)(2)):
 - a. 500 micrograms per liter (µg/L) (40 C.F.R. § 122.42(a)(2)(i));
 - b. 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(2)(ii));
 - c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(2)(iii)); or
 - d. The level established by the Regional Water Board in accordance with 40 CFR Section 122.44(f). (40 C.F.R. § 122.42(a)(2)(iv).)

ATTACHMENT E - MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations section 122.48 requires that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement the federal and California regulations.

I. GENERAL MONITORING PROVISIONS

- A. Wastewater Monitoring Provision. Composite samples may be taken by a proportional sampling device approved by the Executive Officer or by grab samples composited in proportion to flow. In compositing grab samples, the sampling interval shall not exceed one hour.
- B. If the Discharger monitors any pollutant more frequently than required by this Order, using test procedures approved by section 136 or as specified in this Order, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the monthly and annual discharger monitoring reports.
- C. Laboratories analyzing monitoring samples shall be certified by the Department of Public Health, in accordance with the provisions of Water Code section 13176, and must include quality assurance / quality control data with their analytical reports.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1A. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
	INT-001	Internal monitoring station representing treated water supply prior to use in the Pulp Mill.
001	EFF-001	Combined discharge of all pulp mill process wastewaters (Manhole 5)
001	EFF-002	Raw water treatment plant sludge discharge prior to mixing with other pulping process wastewaters (formerly Outfall 101)
	RSW-001	Receiving water at a location within the zone of initial dilution at discharge outfall at 40° 49'10"N, 124 °13'32'W
	RSW-002	Receiving water at a location immediately outside the zone of initial dilution
	REF-001	The reference station in the ocean at least 1,000 feet upcurrent of the effluent plume, representing natural background and natural water quality conditions

Table E-1B. Benthic Monitoring Station Locations

CTATION		COORDINATES Projection)	LATITUDE NORTH	LONGITUDE WEST	
	NORTH	EAST			
ST31	547188.74	1381203.50	40°48'49"	124°14′09″	
NT31	553087.46	1384078.38	40°49'48"	124°13′34″	
ST28	546649.69	1382309.53	40°48′44″	124°13′55″	
SM28	548124.37	1383028.25	40°48′59″	124°13′46″	
CT28	549599.05	1383746.97	40°49′14″	124°13′37″	
NM28	551073.73	1384465.69	40°49′29″	124°13′28″	
NT28	552548.41	1385184.41	40°49'43"	124°13′19″	
ST25	546110.64	1383415.56	40°48′39″	124°13′40″	
SM25	547585.32	1384134.28	40°48′54″	124°13′31″	
SD25	548322.66	1384493.64	40°49′01″	124°13′27″	
ND25	549797.34	1385212.36	40°49′16″	124°13′18″	
NM25	550534.68	1385571.72	40°49′24″	124°13′13″	
NT25	552009.36	1386290.44	40°49′38″	124°13′05″	
ST22	545571.59	1384521.60	40°48′34″	124°13′25″	
SM22	547046.27	1385240.31	40°48′49″	124°13′17″	
CT22	548520.95	1385959.03	40°49′04″	124°13′08″	
NM22	549995.63	1386677.75	40°49′19″	124°12′59″	
NT22	551470.31	1387396.47	40°49'33"	124°12′50″	
ST19	545032.54	1385627.63	40°48′29″	124°13′11″	
NT19	550931.26	1388502.50	40°49′28″	124°12′36″	
NC25	572647.70	1396349.00	40°53′05″	124°11′00″	

Table E-1C. Trawling Station Locations

TRAWL STATION NAME	DESCRIPTION			
Trawl Track TR1	Southernmost trawl track running upcurrent along the 25-meter depiction contour between 3,000 meters south and 4,500 meters south of the outfal diffuser for 10 minutes			
Trawl Track TR2	Running upcurrent along the 25-meter depth contour between the outfall diffuser and 1,500 meters south of the diffuser for 10 minutes			
Trawl Track TR3	Running upcurrent along the 25-meter depth contour between the outfall diffuser and 1,500 meters north of the diffuser for 10 minutes			
Trawl Track TR4	Running upcurrent along the 25-meter depth contour between 3,00 meters north and 4,500 meters north of the outfall diffuser for 10 minutes			
Trawl Track TR5	Northernmost trawl track running upcurrent along the 25-meter depth contour between benthic monitoring station NC25 (8,000 meters north of the outfall diffuser) and 1,500 meters north of station NC25 for 10 minutes			

III. INTERNAL MONITORING REQUIREMENTS

A. Monitoring Location INT-001

1. The Discharger shall monitor treated water supply prior to use in the Pulp Mill at INT-001 as follows:

Table E-2. Internal Monitoring INT-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
Adsorbable Organic Halides (AOX)	ug/L	24-hour composite	monthly during bleached pulp production	EPA Method 1650 (20 ug/L)

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

 The Discharger shall monitor combined wastewater flow to the outfall at EFF-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-3. Effluent Monitoring EFF-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units) ¹
Flow	MGD	daily total	continuous	recording meter
BOD ₅	mg/L	24-hour composite	daily ²	Standard Method 5210B
Total Suspended Solids	mg/L	24-hour composite	daily	Standard Method 2540D
рН	рН	recording meter	continuous	40CFR136
AOX	ug/L	24-hour composite	monthly	EPA Method 1650 (20 ug/L)
HCH	ug/L	24-hour composite	monthly	40CFR136 (0.02)
DDT	ug/L	24-hour composite	monthly	40CFR136 (0.05)
TCDD Equivalents	ug/L	24-hour composite	quarterly	40CFR136

For toxic pollutants with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix II of the Water Quality Control Plan for Ocean Waters of California (Ocean Plan) is not below the effluent limitation, the detection limit shall be the lowest ML. For toxic pollutants without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix II of the Ocean Plan.

During periods of startup and shutdown of the Facility, the Discharger shall conduct monitoring at EFF-001 for flow, BOD, Total Suspended Solids, and pH for a minimum of 5 days until stable operational conditions have been reached. Monitoring samples shall be collected in accordance with Table E-3.

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units) ¹
Aldrin	ug/L	24-hour composite	quarterly	40CFR136 (0.005)
Arsenic	ug/L	24-hour composite	semiannually 2	40CFR136 (1)
Cadmium	ug/L	24-hour composite	semiannually	40CFR136 (0.2)
Hexavalent Chromium	ug/L	24-hour composite	semiannually	40CFR136 (5)
Copper	ug/L	24-hour composite	semiannually	40CFR136 (0.5)
Lead	ug/L	24-hour composite	semiannually	40CFR136 (0.5)
Mercury	ug/L	Grab	semiannually	40CFR136 (0.2)
Nickel	ug/L	24-hour composite	semiannually	40CFR136 (1)
Selenium	ug/L	24-hour composite	semiannually	40CFR136 (1)
Silver	ug/L	24-hour composite	semiannually	40CFR136 (0.2)
Zinc	ug/L	24-hour composite	semiannually	40CFR136 (1)
Cyanide	ug/L	24-hour composite	semiannually	40CFR136 (5)
Total Chlorine Residual	ug/L	Grab	semiannually	40CFR136
Ammonia	ug/L	Grab	semiannually	40CFR136
Phenolic Compounds (non- chlorinated)	ug/L	24-hour composite	semiannually	40CFR136 (1)
Chlorinated Phenolics	ug/L	24-hour composite	semiannually	40CFR136 (1)
Endosulfan	ug/L	24-hour composite	semiannually	40CFR136 (0.02)
Endrin	ug/L	24-hour composite	semiannually	40CFR136 (0.01)
Acrolein	ug/L	Grab	semiannually	40CFR136 (2)
Antimony	ug/L	24-hour composite	semiannually	40CFR136 (0.5)
bis(2-chloroethoxy) methane	ug/L	24-hour composite	semiannually	40CFR136 (5)
bis(2-chloroisopropyl) ether	ug/L	24-hour composite	semiannually	40CFR136 (2)
Chlorobenzene	ug/L	Grab	semiannually	40CFR136 (0.5)
Chromium	ug/L	24-hour composite	semiannually	40CFR136 (0.5)
di-n-butyl phthalate	ug/L	24-hour composite	semiannually	40CFR136 (10)
Dichlorobenzenes	ug/L	Grab	semiannually	40CFR136 (2)
Diethyl phthalate	ug/L	24-hour composite	semiannually	40CFR136 (2)
Dimethyl phthalate	ug/L	24-hour composite	semiannually	40CFR136 (2)
4,6-dinitro-2-methylphenol	ug/L	24-hour composite	semiannually	40CFR136 (5)
2,4-dinitrophenol	ug/L	24-hour composite	semiannually	40CFR136 (5)
Ethylbenzene	ug/L	Grab	semiannually	40CFR136 (0.5)
Fluoranthene	ug/L	24-hour composite	semiannually	40CFR136 (0.05)
Hexachlorocyclopentadiene	ug/L	24-hour composite	semiannually	40CFR136 (5)
Nitrobenzene	ug/L	24-hour composite	semiannually	40CFR136 (1)
Thallium	ug/L	24-hour composite	semiannually	40CFR136 (1)
Toluene	ug/L	Grab	semiannually	40CFR136 (0.5)
Tributyltin	ug/L	24-hour composite	semiannually	40CFR136
1,1,1-trichloroethane	ug/L	Grab	semiannually	40CFR136 (0.5)
Acrylonitrile	ug/L	Grab	semiannually	40CFR136 (2)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units) ¹
Benzene	ug/L	Grab	semiannually	40CFR136 (0.5)
Benzidine	ug/L	24-hour composite	semiannually	40CFR136 (5)
Beryllium	ug/L	24-hour composite	semiannually	40CFR136 (0.5)
bis(2-chloroethyl) ether	ug/L	24-hour composite	semiannually	40CFR136 (1)
bis(2-ethylhexyl) phthalate	ug/L	24-hour composite	semiannually	40CFR136 (5)
Carbon tetrachloride	ug/L	Grab	semiannually	40CFR136 (0.5)
Chlordane	ug/L	24-hour composite	semiannually	40CFR136 (0.1)
Chlorodibromomethane	ug/L	Grab	semiannually	40CFR136 (0.5)
chloroform	ug/L	Grab	semiannually	40CFR136 (0.5)
1,4-dichlorobenzene	ug/L	Grab	semiannually	40CFR136 (0.5)
3,3'-dichlorobenzidine	ug/L	24-hour composite	semiannually	40CFR136 (5)
1,2-dichloroethane	ug/L	Grab	semiannually	40CFR136 (0.5)
1,1-dichlorethylene	ug/L	Grab	semiannually	40CFR136 (0.5)
Dichlorobromomethane	ug/L	Grab	semiannually	40CFR136 (0.5)
Dichloromethane	ug/L	Grab	semiannually	40CFR136 (0.5)
1,3-dichloropropene	ug/L	24-hour composite	semiannually	40CFR136 (0.5)
Dieldrin	ug/L	24-hour composite	semiannually	40CFR136 (0.01)
2,4-dinitrotoluene	ug/L	24-hour composite	semiannually	40CFR136 (5)
1,2-diphenylhydrazine	ug/L	24-hour composite	semiannually	40CFR136 (1)
Halomethanes	ug/L	Grab	semiannually	40CFR136 (1)
Heptachlor	ug/L	24-hour composite	semiannually	40CFR136 (0.01)
Heptachlor epoxide	ug/L	24-hour composite	semiannually	40CFR136 (0.01)
Hexachlorobenzene	ug/L	24-hour composite	semiannually	40CFR136 (1)
Hexachlorobutadiene	ug/L	24-hour composite	semiannually	40CFR136 (1)
Hexachloroethane	ug/L	24-hour composite	semiannually	40CFR136 (1)
Isophorone	ug/L	24-hour composite	semiannually	40CFR136 (1)
N-nitrosodimethylamine	ug/L	24-hour composite	semiannually	40CFR136 (5)
N-nitroso di-N-propylamine	ug/L	24-hour composite	semiannually	40CFR136 (5)
N-nitrosodiphenylamine	ug/L	24-hour composite	semiannually	40CFR136 (1)
PAHs	ug/L	24-hour composite	semiannually	40CFR136 (10)
PCBs	ug/L	24-hour composite	semiannually	40CFR136 (0.5)
1,1,2,2-tetrachloroethane	ug/L	Grab	semiannually	40CFR136 (0.5)
Tetrachloroethylene	ug/L	Grab	semiannually	40CFR136 (0.5)
Toxaphene	ug/L	24-hour composite	semiannually	40CFR136 (0.5)
Trichlorethylene	ug/L	Grab	semiannually	40CFR136 (0.5)
1,1,2-trichloroethane	ug/L	Grab	semiannually	40CFR136 (0.5)
2,4,6-trichlorophenol	ug/L	24-hour composite	semiannually	40CFR136 (10)
Vinyl chloride	ug/L	Grab	semiannually	40CFR136 (0.5)

² Semiannual monitoring for Table B pollutants shall be collected in months not previously sampled

B. Monitoring Location EFF-002

1. The Discharger shall monitor the raw water treatment plant discharged to the outfall at **EFF-002** as follows:

Table E-4. Effluent Monitoring EFF-002

Table E-4. Effluent Monitoring EFF-002							
Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively			
Flow	MGD	daily total	continuous	recording meter			
TSS	mg/L	24-hour composite	weekly	Standard Method 2540D			
Oil and Grease	mg/L	24-hour composite	monthly	40CFR136			
Settleable Solids	mL/L-hr	24-hour composite	monthly	40CFR136			
Turbidity	NTU	24-hour composite	monthly	40CFR136			
рН	s.u.	24-hour composite	daily	40CFR136			
Arsenic	ug/L	24-hour composite	annually	40CFR136 (1)			
Cadmium	ug/L	24-hour composite	annually	40CFR136 (0.2)			
Hexavalent Chromium	ug/L	24-hour composite	annually	40CFR136 (5)			
Copper	ug/L	24-hour composite	annually	40CFR136 (0.5)			
Lead	ug/L	24-hour composite	annually	40CFR136 (0.5)			
Mercury	ug/L	24-hour composite	annually	40CFR136 (0.2)			
Nickel	ug/L	24-hour composite	annually	40CFR136 (1)			
Selenium	ug/L	24-hour composite	annually	40CFR136 (1)			
Silver	ug/L	24-hour composite	annually	40CFR136 (0.2)			
Zinc	ug/L	24-hour composite	annually	40CFR136 (1)			
Cyanide	ug/L	24-hour composite	annually	40CFR136 (5)			
Chronic Toxicity	TUc	Grab	annually				
Endosulfan	ug/L	24-hour composite	annually	40CFR136 (0.02)			
Endrin	ug/L	24-hour composite	annually	40CFR136 (0.01)			
HCH	ug/L	24-hour composite	annually	40CFR136 (0.02)			
Aldrin	ug/L	24-hour composite	annually	40CFR136 (0.005)			
Chlordane	ug/L	24-hour composite	annually	40CFR136 (0.1)			
Dieldrin	ug/L	24-hour composite	annually	40CFR136 (0.01)			
Heptachlor	ug/L	24-hour composite	annually	40CFR136 (0.01)			
Heptachlor Epoxide	ug/L	24-hour composite	annually	40CFR136 (0.01)			
Toxaphene	ug/L	24-hour composite	annually	40CFR136 (0.5)			
DDT	ug/L	24-hour composite	annually	40CFR136 (0.05)			
TCDD Equivalents	pg/L	24-hour composite	annually	40CFR136			

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

Whole effluent toxicity (WET) testing of discharges and receiving water is required by this MRP to determine compliance with water quality objectives established by the Ocean Plan for chronic WET and with effluent limitations established for the discharge from the water treatment plant. In certain circumstances, accelerated WET testing and/or a Toxicity Reduction Evaluation (TRE) are required by the MRP when WET "triggers" or effluent limitations are exceeded. Table E-5 below, summarizes the WET testing requirements of the MRP.

Table E-5. Summary of WET Testing Requirements

Monitoring Location	WET Testing Requirement
EFF-001	Chronic WET shall be tested at least 2 times per year.
EFF-002	Chronic WET shall be tested at least 1 time per year.

A. Chronic Toxicity Testing

The Discharger shall conduct chronic toxicity testing to demonstrate compliance with applicable effluent limitations and the Ocean Plan's water quality objective for toxicity. The Discharger shall meet the following chronic toxicity testing requirements:

- 1. **Test Frequency**. The Discharger shall conduct chronic WET testing in accordance with the schedules established by this MRP, as summarized in Table E-4 above.
- Sample Type. For static renewal or static non-renewal testing, effluent samples and receiving water samples shall be grab samples that are representative of the volume and quality of the discharge from the facility. For toxicity tests requiring renewals, grab samples collected on successive days are required.
- 3. Test Species. In the initial screening phase, critical life stage bioassay testing shall be conducted with a vertebrate, an invertebrate, and a plant species using an approved test, and test species, as presented below in Table E-6. After this screening period, monitoring shall be conducted using the most sensitive species. The Discharger shall re-screen once with the three species and continue to monitor with the most sensitive specites at least once every five years.

Table E-6. Approved Tests—Chronic Toxicity

Species	Test	Tier ¹	Reference ²
Giant kelp, Macrocystis pyrifera	percent germination; germ tube length	1	a, b
Red abalone, Haliotis rufescens	abnormal shell development	1	a, b

Species	Test	Tier ¹	Reference ²
Oyster, Crassostrea gigas; mussels,	abnormal shell development;	1	a, b
Mytilus spp.	percent survival	'	a, b
Urchin, Strongylocentrotus purpuratus;	percent normal development	1	a, b
sand dollar, Dendraster excentricus			
Urchin, Strongylocentrotus purpuratus;	percent fertilization	1	a, b
sand dollar, Dendraster excentricus			
Shrimp, Homesimysis costata	percent survival; growth	1	a, b
Topsmelt, Atherinops affinis	larval growth rate; percent	1	a, b
	survival		

First tier methods (designated "1" in this column) are preferred for compliance monitoring. If first tier organisms are not available, the Discharger can use a second tier test method (designated "2" in the above column) following approval by the Regional Water Board.

- a. Chapman, G.A., D.L. Denton, and J.M. Lazorchak. 1995. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms. U.S. EPA Report No. EPA/600/R-95/136.
- SWRCB 1996. Procedures Manual for Conducting Toxicity Tests Developed by the Marine Bioassay Project. 96-1WQ.
- 4. Test Methods. The presence of chronic toxicity shall be estimated as specified in USEPA's Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to West Coast Marine and Estuarine Organisms (USEPA Report No. EPA/600/R-95/136, or subsequent editions), Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms (USEPA Report No. EPA-821-R-02-014 or subsequent editions), or other methods approved by the Executive Officer.
- 5. **Test Dilutions.** The chronic toxicity test shall be conducted using a series of at least five dilutions and a control. The series shall consist of the following dilution series: 1.0, 0.75, 0.5, 0.25 and 0.2 percent, and a control. Control and dilution water shall be receiving water collected at an appropriate location beyond the influence of the discharge. Laboratory water may be substituted for receiving water, as described in the USEPA test methods manual, upon approval by the Executive Officer. If the dilution water used is different from the culture water, a second control using culture water shall be used.
- 6. **Reference Toxicant.** If organisms are not cultured in-house, concurrent testing with a reference toxicant shall be conducted. Where organisms are cultured in-house, monthly reference toxicant testing is sufficient. Reference toxicant tests also shall be conducted using the same test conditions as the effluent toxicity tests (e.g., same test duration, etc).
- 7. **Test Failure.** If either the reference toxicant test or the chronic toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger shall re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

Protocol References:

- 8. Accelerated Monitoring Requirements. If the result of any chronic toxicity test exceeds a monitoring "trigger" of 116 TUc (the water quality objective for chronic toxicity established by the Ocean Plan or the effluent limitation for the water treatment plant discharge), and the testing meets all test acceptability criteria, the Discharger shall initiate accelerated monitoring. Accelerated monitoring shall consist of four additional samples with one test conducted approximately every week over a four week period. Testing shall commence within 14 days of receipt of initial sample results which indicated an exceedance of the chronic toxicity "trigger." If the discharge will cease before the additional samples can be collected, the Discharger shall contact the Executive Officer within 21 days with a plan to address elevated levels of chronic toxicity in effluent and/or receiving water. The following protocol, which should be incorporated into the TRE Workplan, shall be used for accelerated monitoring and TRE implementation:
 - a. If the results of four consecutive accelerated monitoring tests do not exceed the chronic toxicity "trigger" or the effluent limitation of 116 TUc, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However, if there is adequate evidence of a pattern of effluent toxicity, the Regional Water Board's Executive Officer may require that the Discharger initiate a TRE.
 - b. If the source(s) of the toxicity is easily identified (i.e. temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four (4) consecutive accelerated tests do not exceed the monitoring "trigger." Upon confirmation that the chronic toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.
 - c. If the result of any accelerated toxicity test exceeds the monitoring "trigger" or effluent limitation, the Discharger shall cease accelerated monitoring and initiate a TRE to investigate the cause(s) and identify corrective actions to reduce or eliminate the chronic toxicity.
- Notification. The Discharger shall notify the Regional Water Board in writing 14 days after the receipt of test results, which indicate the exceedance of the monitoring "trigger" or effluent limitation for chronic toxicity.

B. Chronic Toxicity Reporting

 Routine Reporting. All toxicity test reports shall include the contracting laboratory's complete report provided to the Discharger and shall be in accordance with the appropriate "Report Preparation and Test Review" sections of the method manuals. The WET test report shall contain a narrative report that includes details about WET test procedures and results, including the following:

a. Test Procedures

- receipt and handling of the effluent sample that includes a tabular summary of initial water quality characteristics;
- ii. the source and make-up of the lab control/diluent water used for the test:
- iii. any manipulations done to lab control/diluent and effluent such as filtration, nutrient addition, etc.;
- iv. identification of any reference toxicant testing performed;
- v. tabular summary of test results for control water and each effluent dilution and statistics summary to include calculation of NO
- vi. EC, TU_c and IC₂₅;
- vii. identification of any anomalies or nuances in the test procedures or results;
- viii. Summary and Conclusions section.

b. Test Results. Test results shall include, at a minimum, for each test:

- i. sample date(s)
- ii. test initiation date
- iii. test species
- iv. end point values for each dilution (e.g., number of young, growth rate, percent survival)
- v. NOEC value(s) in percent effluent
- vi. IC15, IC25, IC40, and IC50 values (or EC15, EC25...etc.) in percent effluent
- vii. TUc values (100/NOEC)
- viii. Mean percent mortality (±s.d.) after 96 hours in 100 percent effluent (if applicable)
- ix. NOEC and LOEC values for reference toxicant test(s)
- x. IC50 or EC50 value(s) for reference toxicant test(s)
- xi. Available water quality measurements for each test (e.g., pH, DO, temperature, conductivity, hardness, salinity, ammonia)
- xii. Statistical methods used to calculate endpoints.

- xiii. The statistical output page, which includes the calculation of percent minimum significant difference (PMSD.)
- xiv.Results of applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD and dates tested; the reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory; and any information on deviations from standard test procedures or problems encountered in completing the test and how the problems were resolved.
- 2. Quality Assurance Reporting: Because the permit requires sublethal hypothesis testing endpoints from methods 1006.0 and 1007.0 in the test methods manual titled Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms (EPA-821-R-02-014, 2002), in-test variability must be reviewed for acceptability and variability criteria (upper and lower PMSD bounds) must be applied, as directed under section 10.2.8 Test Variability of the test methods manual. Under section 10.2.8, the calculated PMSD for both reference toxicant test and effluent toxicity test results must be compared with the upper and lower PMSD bounds variability criteria specified in Table 6 Variability Criteria (Upper and Lower PMSD Bounds) for Sublethal Hypothesis Testing Endpoints Submitted Under NPDES Permits, following the review criteria in paragraphs 10.2.8.2.4.1 through 10.2.8.2.4.5 of the test methods manual. Based on this review, only accepted effluent toxicity test results shall be reported.
- 3. Compliance Summary: The results of the chronic toxicity testing shall be provided in the most recent self-monitoring report and shall include a summary table organized by test species, type of test (survival, growth or reproduction) and monitoring frequency of toxicity data from at least three of the most recent samples. The final report shall clearly demonstrate that the Discharger is in compliance with effluent limitations and other permit requirements.
- VI. LAND DISCHARGE MONITORING REQUIREMENTS (NOT APPLICABLE)
- VII. RECLAMATION MONITORING REQUIREMENTS (NOT APPLICABLE)

VIII. RECEIVING WATER MONITORING REQUIREMENTS

A. Offshore Monitoring

1. The Discharger shall conduct water quality monitoring of the Pacific Ocean at RSW-001, RSW-002 and REF-001 as follows:

Table E-7. Receiving Water Quality Monitoring – Offshore

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Total suspended solids			Annually ³	Standard Method 2540D
turbidity	NTU	grab	Annually ²	Standard Method 2130B
dissolved oxygen	mg/L	grab	Annually ²	40CFR136
рН	рН	grab	Annually ²	40CFR136
Oil and Grease	mg/L	grab	Annually ²	40CFR136
Visible particles	P/A	observation	Annually ²	
Light transmittance	%	meter	Annually ²	
	transmittance			

B. Benthic Monitoring

 Sediment. Within one year of commencement of production of pulp by the Discharger, one pooled bottom sediment sample, consisting of sediments collected from three replicate grabs, shall be collected from all Benthic Monitoring Stations identified in Table E-1B and analyzed as follows:

Table E-8. Receiving Water Quality Monitoring – Benthic Sediment

Parameter	Units	Minimum Sampling Frequency	Required Analytical Test Method
Grain size distribution	Percent greater than phi	Biennially	
BOD_5	mg/kg	Biennially	40CFR136
Grease and Oil	mg/kg	Biennially	Standard Method 2130B
Total organic carbon	percent	Biennially	40CFR136
Dissolved sulfides	mg/kg	Biennially	40CFR136
Oil and Grease	mg/kg	Biennially	40CFR136
HCH	ug /kg	Biennially	40CFR136 (0.02)

Based on results of the first year of monitoring, the Regional Water Board Executive Officer will determine the frequency of monitoring as well as the specific parameters to be monitored thereafter; however, monitoring shall be required, at a minimum, at least two times during the term of the permit.

Parameter	Units	Minimum Sampling Frequency	Required Analytical Test Method
DDT	ug /kg	Biennially	40CFR136 (0.05)
Aldin	ug /kg	Biennially	40CFR136 (0.005)
TCDD Equivalents	ug /kg	Biennially	40CFR136

 Infauna. Samples of bottom sediments shall be collected separately from those collected for sediment analyses from all Benthic Monitoring Stations in Table E-1B. The minimum screen size for collecting benthic infauna shall be 1.0 mm.

The biomass of infauna shall be estimated from wet weight measurements for each of the following taxa: mollusks, echinoderms, polychaetes, crustaceans, and other taxa. Community analysis shall consist of number of species, number of individuals per species and total numerical abundance, and biomass. Community analysis shall also include but not be limited to, the following: number of species per 0.1 m², total number of species per station, total numerical abundance, biomass, infaunal trophic index, Swarz' 75% dominance index, Shannon-Weiner's diversity index, and Margalef's Species Richness. The Discharger shall also conduct additional analysis, as appropriate, to elucidate temporal and spatial trends in the data.

C. Demersal Fish and Invertebrate Monitoring

The Discharger shall conduct trawls to assess the populations of demersal fish and epibenthic macroinvertebrates, and to determine whether differences exist between populations near the outfall diffuser and populations found outside the zone of initial dilution. Trawling shall be conducted once every 24 months, with the first trawling event to take place within one year of commencement of production of pulp by the Discharger. Duplicate trawls shall be conducted at all trawl stations (Table E-1C). Trawls shall be conducted using a Marinovich 7.62 meter (25 ft) head rope otter trawl having 3.8 cm (1.5 in) body mesh and 0.6 cm (0.25 in) cod-end liner mesh, or equivalent. Trawls shall be towed along the 11.6 m (38 ft) depth contour for a duration of 10 minutes at a uniform speed of between 2.0 and 2.5 knots. Necessary steps shall be taken to ensure that the second trawl at each station covers the same distance but does not sweep the same path as the first trawl or cover the stations sampled for benthic sediments and infauna.

Fish and macroinvertebrates collected by each trawl shall be identified to the lowest taxon possible. At all stations, community structure shall be conducted. Community structure analysis shall consist of: the wet weight of each species, number of individuals per species, total numerical abundance, species richness,

species diversity, and other statistical analysis, as necessary, to compare monitoring results with previous studies in the vicinity of the outfall. Abnormalities and disease symptoms (e.g., fin erosion, external lesions, tumors, and parasites) shall also be recorded and itemized.

D. Bioaccumulation Monitoring

Within one year of commencement of production of pulp by the Discharger, muscle and hepatopancreas tissue of Dungeness crabs (*Cancer magister*) shall be analyzed for HCH, DDT, Aldrin, and TCDD equivalents. Collection of the crabs by trapping or trawl for tissue analysis shall occur near trawl stations T3 and T5. At each station, three composite samples shall be prepared for each tissue type. Each composite sample shall consist of tissues from at least six Dungeness crabs of similar size. If six Dungeness crabs are not caught at each station, the Discharger shall collect and analyze muscle and liver tissues from trawl-caught English sole (*Parophrys vetulus*). If neither Dungeness crabs nor English sole are caught in sufficient number, the Discharger may nominate other available species to fulfill the requirements as necessary. Any substitutions must be approved by the Regional Water Board and the California Department of Fish and Game prior to analysis. Results from muscle and tissue analyses shall be compared to results from analyses of muscle and tissue samples collected at a reference station outside the influence of the discharge

IX. OTHER MONITORING REQUIREMENTS

A. Production Reporting Requirements

- 1. The Discharger shall report, in the monthly self monitoring report, the daily production type (i.e., bleached or unbleached), the daily and monthly average production levels, and the limitations and standards applicable to that production type.
- 2. Pounds of market pulp produced shall be reported daily on an air dry basis (10% moisture content.)
- 3. Compliance with daily maximum effluent limitations shall be determined from mass emission rates calculated as follows:
 - lbs/day = $8.34 \times C \times Q$, where C is the result of the daily concentration in mg/L and Q is the daily flow rate in MGD.
- 4. Compliance with monthly average effluent limitations applicable during pulp production shall be determined by computing a mass emission rate using the average monthly flow and the average of all daily concentrations obtained within a calendar month, as follows:

Monthly Discharge (lbs/day) =
$$\frac{8.34}{N}$$
 \sum_{i}^{N} Q_{i} C_{i}

Where N is the number of days of pulp production in any calendar month. Q_i and C_i are the flow rate (in MGD) and the constituent concentration (in mg/L), respectively, that are associated with each of the N days in any calendar month.

5. When both bleached and unbleached pulp are produced in a single calendar month, monthly mass emission rates shall be calculated separately for each pulp product, as follows:

Unbleached Monthly Discharge (lbs/day) =
$$\frac{8.34}{N}$$
 $\stackrel{N}{\sum}$ Q_i C_i

Where N is the number of days of unbleached pulp production in any calendar month. Q_i and C_i are the flow rate (in MGD) and the constituent concentration (in mg/L), respectively, that are associated with each of the N days in any calendar month in which unbleached pulp is produced.

Bleached Monthly Discharge (lbs/day) =
$$\underbrace{8.34}_{N} \stackrel{N}{\underset{i}{\sum}} Q_i C_i$$

Where N is the number of days of bleached pulp production in any calendar month. Q_i and C_i are the flow rate (in MGD) and the constituent concentration (in mg/L), respectively, that are associated with each of the N days in any calendar month in which bleached pulp is produced.

The calculated mass emission rate is then compared to the applicable average monthly effluent limitation.

B. Outfall and Diffuser Monitoring Requirements

 At least once before the permit expiration date, the Discharger shall conduct a survey of the outfall and diffuser port system to identify leaks and port blockages and to assess flow distribution. A report documenting their condition shall be submitted within 90 days of completing the inspection, but no later than 180 days prior to the expiration date of this Order.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

- 1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.
- 2. Compliance Time Schedules. For compliance time schedules included in the Order, the Discharger shall submit to the Regional Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Water Board by letter when it returns to compliance with the compliance time schedule.

B. Self Monitoring Reports (SMRs)

- 1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.
- 2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit monthly SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. If the Discharger monitors any pollutant more frequently than required by this Order, using test procedures approved under 40 CFR Part 136 or as specified in this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.
- 3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-9. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On	Monitoring Period	SMR Due Date
Continuous	commencement of water flows through the Facility	All	Submit with monthly SMR
Daily	commencement of water flows through the Facility	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with monthly SMR
Weekly	the first Sunday after commencement of water flows through the Facility	Sunday through Saturday	Submit with monthly SMR
Monthly	the first day of the month following commencement of pulp production	1 st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
Quarterly	the first day of the quarter following commencement of pulp production	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	First day of second calendar month following month of sampling
Semiannually	within six months following commencement of pulp production	January 1 through June 30 July 1 through December 31	First day of second calendar month following month of sampling
Annually	within one year of commencement of production of pulp by the Discharger	January 1 through December 31	March 1
Biennially	within one year of commencement of production of pulp by the Discharger	Every other year	Submit with Annual Report

4. Reporting Protocols. The Discharger shall report with each sample result the applicable reported Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in Part 136.

The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

- a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
- b. Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (± a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

- c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.
- d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve.
- 5. The Discharger shall submit SMRs in accordance with the following requirements:
 - a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The reported data shall include calculation of all effluent limitations that require averaging, taking of a median or other computation. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.
 - b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify:
 - (1) Facility name;
 - (2) WDID;
 - (3) Applicable period of monitoring and reporting;
 - (4) Violations of the WDRs (identified violations must include a description of the requirement that was violated and a description of the violation);
 - (5) Corrective actions taken or planned; and
 - (6) The proposed time schedule for corrective actions.

c. SMRs must be submitted to the Regional Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

North Coast Regional Water Board 5550 Skylane Blvd., Suite A Santa Rosa, CA 95403

C. Discharge Monitoring Reports (DMRs)

- As described in Section X.B.1 above, at any time during the term of this
 permit, the State or Regional Water Board may notify the Discharger to
 electronically submit SMRs that will satisfy federal requirements for
 submittal of Discharge Monitoring Reports (DMRs). Until such notification
 is given, the Discharger shall submit DMRs in accordance with the
 requirements described below.
- 2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to the address listed below:

Standard Mail	FedEx/UPS/ Other Private Carriers	
State Water Resources Control Board	State Water Resources Control Board	
Division of Water Quality	Division of Water Quality	
c/o DMR Processing Center	c/o DMR Processing Center	
PO Box 100	1001 I Street, 15 th Floor	
Sacramento, CA 95812-1000	Sacramento, CA 95814	

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated will not be accepted unless they follow the exact same format of EPA Form 3320-1.

D. Other Reports

 The Discharger shall report the results of any special studies, acute and chronic toxicity testing, TRE/TIE, PMP, and Pollution Prevention Plan required by Special Provisions – VI.C.2 and 3 of this Order. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date in compliance with SMR reporting requirements described in subsection X.B. above.