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RELIABILITY STUDY OF POINT SOURCES DISCHARGING TO GRAYS HARBOR

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Reliability Study of Point Sources
Discharging to Grays Harbor

June 1983

I. HISTORICAL PERSPECTIVE

One of the earliest hydrographic studies of Grays Harbor was the Chehalis Estuary and River Basin Study conducted by the Washington State Department of Health in August 1969, consisting of water quality data from the bay and its tributaries. In January 1971, the Northeast Technical Services Unit of the Food and Drug Administration issued a report analyzing and summarizing water quality information from Grays Harbor accumulated to date by the Washington State Department of Health. The FDA study included recommendations on the shellfish sanitation line established in the harbor. It also pointed out the need for information on the efficiency and reliability of waste water treatment facilities discharging into the harbor.

In 1976, the Washington State Department of Social and Health Services (formally the Washington State Department of Health) conducted a comprehensive study of shellfish sanitation within Grays Harbor. This study included water quality monitoring of the bay and its tributaries, a special study of water quality around a dredge dump within the harbor, and analysis of shell stock and packed meat samples. Total coliform, fecal coliform, as well as klebsiella were analyzed. From this report it was established that the wastes being discharged by local pulp mills contained organisms of sanitary significance, though these discharges did not seem to have a major impact upon the receiving waters. DSHS returned to conduct a sanitary survey of Grays Harbor in 1978. Also in that year, the Department of Ecology issued a report containing water quality data from their own monitoring program.

Early in 1982, water quality within the shellfish growing areas of Grays Harbor was found to exceed safe public health limits. The growing areas were closed for several months while DSHS and DOE conducted additional studies of the harbor and its tributaries. The results of these studies indicated that effluent being discharged by the Weyerhaeuser mill and dredging being conducted near the outfall of the Aberdeen sewage treatment plant were contributing to the degradation of the water quality over the growing beds. These conclusions prompted Weyerhaeuser to begin a program to reduce its discharge of pathogens into the harbor. Improvements to the Aberdeen and Hoquiam sewage treatment plants had already begun by that time.

In May of 1983, DSHS assisted by the FDA conducted a ten-day monitoring program to assess the status of water quality in the estuary and tributaries and the improvements made by the major waste water dischargers. One component of this study as an evaluation of the reliability of the regional waste treatment facilities. At the time of the study, Weyerhaeuser had implemented a pathogen control program based on the addition of sulfuric acid to reduce effluent pH. The mill at ITT Rayonier had cut its production and waste flows nearly in half, and the two municipal treatment plants at Aberdeen and Hoquiam had been operating satisfactorily for nearly a year. This report contains the results of the reliability evaluations of these improved facilities.

II. GENERAL RELIABILITY

Study Criteria

The ability of waste water treatment facilities to reliably protect the sanitation of shellfish growing areas depends upon such factors as the presence of bypasses within the system, the ability of both the collection system and the treatment facility to meet anticipated flows, the presence of adeuqate alarms within the system, auxillary power and equipment, adequate plant maintenance, adequate and uninterrupted chlorination, the ability to monitor chlorine residuals, and adequate chlorine contact detention at peak hourly flows. Administrative factors can also effect the reliability of waste water treatment facilities. These factors tend to take the form of emergency response procedures, notification requirements, and the terms and enforcement of existing discharge permits. These criteria have been set forth in more detail in the EPA Technical Bulletin, "Protection of Shellfish Waters", July 1974 (EPA 430/9-74-010). The guidelines contained in this document have been used as the basis for the reliability evaluations made in this report.

Point Sources Discharging into Grays Harbor

The roster of point source dischargers in Grays Harbor consists of two pulp mills, two municipal sewage treatment plants and a small cranberry processing plant. The Weyerhaeuser pulp mill is the largest discharger, producing about 25 million gallons of process wastewater per day. At this time, the control of effluent pathogens relies upon the addition of sulfric acid to maintain a pH of 3.5 or lower.

The ITT Rayonier pulp mill coupled with the adjacent Grays Harbor Paper Company produce 16 million gallons of process wastewater per day, making it the second largest discharger. Both operations utilize the same waste water treatment facility, which consists of extended aeration and secondary clarification.

The Hoquiam municipal sewage treatment plant treats an average flow of 2.5 million gallons per day (MGD) using an oxidation ditch and secondary clarifiers. The Aberdeen Sewage Treatment Plant is operating at about twice the capacity of the Hoquiam plant, treating an average design flow of 4 MGD using the activated sludge process.

The Ocean Spray Cranberry processing plant is the smallest of the known point sources, producing only 75,000 gallons of combined processed water and sanitary wastes per day, and is probably of minor influence to the receiving waters.

Waste Characteristics

The municipal sewage treatment plants receive waste waters that are fairly constant in their quality, though the quantity can be greatly influenced by storm events. These plants primarily treat residential waste water; industrial contributions comprise a very small fraction of the plant influences. The Aberdeen sewage treatment plant for instance, was designed to handle 2.99 million MGD gallons a day of domestic flows, 0.30 MGD commercial flow, and only 0.11 MGD of industrial flow, with infiltration contributing approximately 1.30 MGD.

A major portion of the pollution load from paper making originates in the pulping process. Both pulp mills use the sulphite process, which produces an average of 60,000 gallons of processed water per ton of paper product. This includes approximately 300 gallons of spent sulfite liquor per ton of pulp. This liquor contains about half of the solids of the original wood pulp. Sulfite waste liquor is a highly complex liquid containing 10 to 12 percent solids, free and combined SO_2, volatile acids, alcohols, acetone, furfural, sugars, and lignin.[2] Table 1 shows the approximate composition of typical sulfite plant waste. The composition and concentration of the waste flows entering the ITT Rayonier and Weyerhaeuser treatment systems can vary significantly with the specific activities taking place at the mills. In addition, the Weyerhaeuser mill, unlike ITT Rayonier, produces two different grades of pulp, each with its own waste flow characteristics. Since the Weyerhaeuser treatment lagoons have a combined detention time of two days, some degree of flow equalization is provided at this plant.

Table 1

Composition of a Typical Sulfite Pulp-Plant Waste[2]

Component	Digester Liquor (ppm)	Blow-pit Liquor (ppm)
Total Solids	111,100	38,700
Volatile Solids	101,000	34,000
Ash	10,100	4,700
Calcium	3,990	1,550
Total Sulfate	31,200	8,620
BOD, 20-day	42,900	

III. DESCRIPTION OF PLANTS

Hoquiam Sewage Treatment Plant

The Hoquiam plant is designed to handle an average of 4.0 MGD, 8.0 MGD maximum. Its discharge permit currently allows a maximum flow of 4 MGD, however. A schematic flow of this system is given in Figure 1.

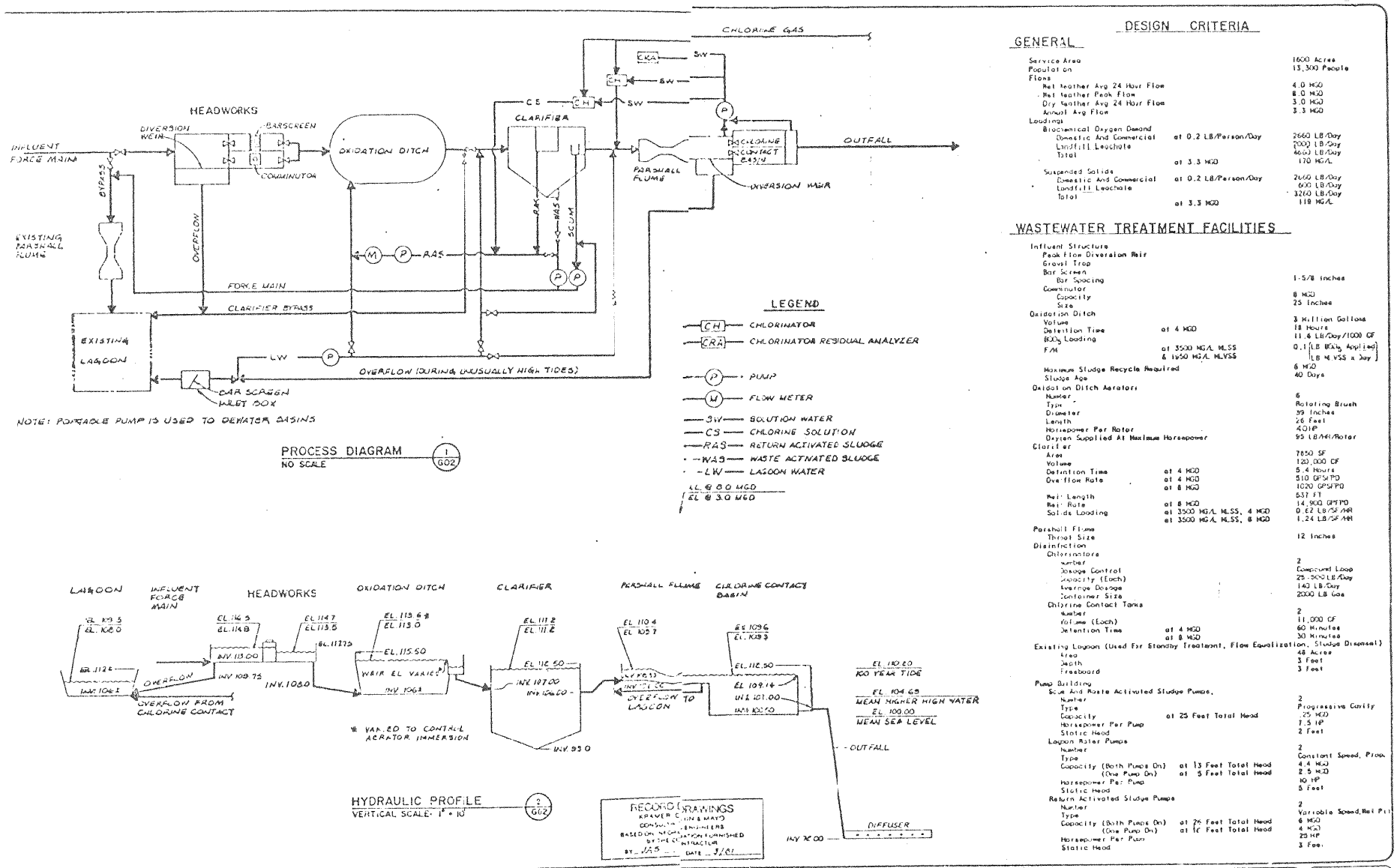
During this study, the Hoquiam sewage treatment plant appeared to be well maintained and operating adequately. The monthly discharge monitoring reports for the period of May 1982 through April 1983 indicate that the BOD removal efficiency ranged between 83 and 96 percent, with an average of 93 percent removal. These averages compare favorably with the 75 to 95 percent BOD removal normally estimated for this type of facility.[3] The suspended solids removal efficency ranged between 70 and 99 percent, with an average of 91 percent.

This plant has been designed with nonredundant headworks (barscreen, comminutor, flume), oxidation ditch, and a clarifier. The lack of redundancy within this system is compensated for by an adjoining 48 acre lagoon which provides emergency storage. Auxillary power has apparently been omitted by the same reasoning. The plant operators reported that sludge has never been removed from the lagoon, which is of uncertain depth. Wastewaters diverted to the lagoon are discharged through the plant's chlorination system. It is also possible to manually bypass this chlorination system from the lagoon.

The plant's dual gas chlorination system has been designed with an automatic chlorine analyzer, however this device was not operable at the time of this study. The chlorine analyzer was a part of a compound loop system which automatically controlled the chlorine dosage to obtain a fixed chlorine residual in the effluent. Absence of the automatic analyzer necessitates manual monitoring with a DPD kit as well as manual control of the chlorine dosage. As a result, chlorination is more subject to variation with changing plant flows. Absence of the automatic analyzer also means that the low chlorine residual alarm and strip chart are not operable, so that such variations could pass unnoticed. Fortunately, the system is hoped to be repaired before the more drastic fluctuations begin in winter.

The chlorine contact times at average and maximum design flows are in excess of 30 minutes, the minimum contact time recommended for adequate shellfish protection. Because the peak flows have not been defined for this plant, minimum detention time is uncertain. Since the system's rotometers designed for maximum of 200 pounds of chlorine per day, this system probably cannot adequately chlorinate much more than 8 MGD if a dosage of 5 mg/l is maintained, as recommended by some sources.[3,4]

The collection system, which was renovated during the period between 1979 and 1982, is able to deliver more than this, however. All 11 pump station's contain two pumps, each capable of delivering 100 percent of the stations' design flow. This comes to a total of approximately 18.4 MGD. However,



DESIGN CRITERIA

GENERAL

Service Area		1600 Acres
Population		13,300 People
Flows		
Wet Weather Avg 24 Hour Flow		4.0 MGD
Wet Weather Peak Flow		8.0 MGD
Dry Weather Avg 24 Hour Flow		3.0 MGD
Annual Avg Flow		3.3 MGD
Loadings		
Biochemical Oxygen Demand		
Domestic And Commercial	at 0.2 LB/Person/Day	2660 LB/Day
Landfill Leachate		2000 LB/Day
Total		4660 LB/Day
	at 3.3 MGD	170 MG/L
Suspended Solids		
Domestic And Commercial	at 0.2 LB/Person/Day	2660 LB/Day
Landfill Leachate		600 LB/Day
Total		3260 LB/Day
	at 3.3 MGD	118 MG/L

WASTEWATER TREATMENT FACILITIES

Influent Structure		
Peak Flow Diversion Weir		
Gravel Trap		
Bar Screen		
Bar Spacing		1-5/8 Inches
Comminutor		
Capacity		8 MGD
Size		25 Inches
Oxidation Ditch		
Volume		3 Million Gallons
Detention Time	at 4 MGD	18 Hours
BOD_5 Loading		11.6 LB/Day/1000 CF
F/M	at 3500 MG/L MLSS & 1950 MG/L MLVSS	0.1 {LB BOD_5 Applied / LB MLVSS a Day}
Maximum Sludge Recycle Required		6 MGD
Sludge Age		40 Days
Oxidation Ditch Aerators		
Number		6
Type		Rotating Brush
Diameter		39 Inches
Length		26 Feet
Horsepower Per Rotor		40 HP
Oxygen Supplied At Maximum Horsepower		95 LB/Hr/Rotor
Clarifier		
Area		7850 SF
Volume		120,000 CF
Detention Time	at 4 MGD	5.4 Hours
Overflow Rate	at 4 MGD	510 GPSFPD
	at 8 MGD	1020 GPSFPD
Weir Length		637 FT
Weir Rate	at 8 MGD	14,900 GPFPD
Solids Loading	at 3500 MG/L MLSS, 4 MGD	0.62 LB/SF/HR
	at 3500 MG/L MLSS, 8 MGD	1.24 LB/SF/HR
Parshall Flume		
Throat Size		12 Inches
Disinfection		
Chlorinators		
Number		2
Dosage Control		Compound Loop
Capacity (Each)		25-500 LB/Day
Average Dosage		140 LB/Day
Container Size		2000 LB Gas
Chlorine Contact Tanks		
Number		2
Volume (Each)		11,000 CF
Detention Time	at 4 MGD	60 Minutes
	at 8 MGD	30 Minutes
Existing Lagoon (Used For Standby Treatment, Flow Equalization, Sludge Disposal)		
Area		48 Acres
Depth		3 Feet
Freeboard		3 Feet
Pump Building		
Scum And Waste Activated Sludge Pumps		
Number		2
Type		Progressive Cavity
Capacity	at 25 Feet Total Head	.25 MGD
Horsepower Per Pump		7.5 HP
Static Head		2 Feet
Lagoon Water Pumps		
Number		2
Type		Constant Speed, Propeller
Capacity (Both Pumps On)	at 13 Feet Total Head	4.4 MGD
(One Pump On)	at 5 Feet Total Head	2.5 MGD
Horsepower Per Pump		10 HP
Static Head		5 Feet
Return Activated Sludge Pumps		
Number		2
Type		Variable Speed, Wet Pit
Capacity (Both Pumps On)	at 26 Feet Total Head	6 MGD
(One Pump On)	at 16 Feet Total Head	4 MGD
Horsepower Per Pump		25 HP
Static Head		3 Feet

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Revisions

CITY OF HOQUIAM, WASHINGTON
WASTEWATER FACILITIES IMPROVEMENT PROJECTS

WASTEWATER TREATMENT FACILITIES
PROCESS DIAGRAM, HYDRAULIC PROFILE AND DESIGN CRITERIA

Drawing Number G 02
Sheet Number 2 of 67

Figure 1. Hoquiam Sewage Treatment Plant Process Schematic

during the period since January of 1982, no flows exceeding 8 MGD have been encountered, and the maximum daily flow recorded was 7 MGD. City officials indicated that the considerable increase in flows during storm events were most probably attributable to side sewer contributions, though they also stated that 90 percent of the city side sewers have been checked and corrected where necessary.

The plant has been maintaining an average residual of 0.2 mg/l total chlorine, as this was appearing to maintain the effluent within its specified limits for fecal coliform discharge. During this study, however, considerable discrepancy appeared between laboratory results achieved by the treatment plant itself and those obtained in this study using the MPN method. The FDA laboratory showed an average fecal coliform count of about 400 MPN per 100ml (samples ranged from 930 MPN to 23 MPN). Because of this, the residual concentration was increased to 0.5 mg/l part way through the current study. This discrepancy in bacteriological results should be further researched, perhaps with split samples run by each laboratory using the membrane filter technique. An appropriate chlorine dosage could then be more accurately defined. Since January 1982, there have been very few days when the residual has fallen below the normal 0.2 mg/l.

During extreme high tides, effluent can backup within the chlorine chamber, though there is enough freeboard within the chamber to prevent overflows. It did not appear that a formal written set of emergency procedures existed, however most emergencies could probably be handled by merely bypassing effluent into the adjacent lagoon. The operators appeared to be well trained, and detailed daily records were maintained in the plant's log.

Aberdeen Sewage Treatment Plant

The Aberdeen sewage treatment plant is designed to handle an average flow of 4 MGD and 8.0 MGD maximum flow. It currently treats an average of 4.7 MGD. In 1982, the highest recorded flow was 13.1 MGD, which is approximately equal to the plant's peak hourly flow. The average BOD removal efficiency of this activated sludge plant is 95 percent, with removal efficiencies reaching as high as 97 percent. The plant appeared to be excellently maintained and operating adequately during our visit.

This plant was constructed in 1981 and its unit processes stablized within the first two months of 1982. Figure 2 shows a schematic of the plant, which has been designed with complete redundancy. It is supplied with auxillary power and spare pumps, and written emergency procedures have been developed. The plant is attended 8 hours a day and alarms register at the fire station when the plant is not attended.

The chlorine contact time is one hour at average flow, and 22 minutes at peak hourly flow. An average of 100 pounds of chlorine gas is added per day to maintain residuals between 0.5 and 0.8 mg/l. During the four months prior to the study, the plant was dosing at an average of three milligrams of chlorine per liter (lbs/d=mg/l x MGD x 8.33). Since the plant is equipped with 500 pound rotometers, it appears that approximately 20 MGD could be chlorinated even if the plant were overloaded. However, it should be noted that untreated or partially treated effluent may present a higher than usual chlorine demand.

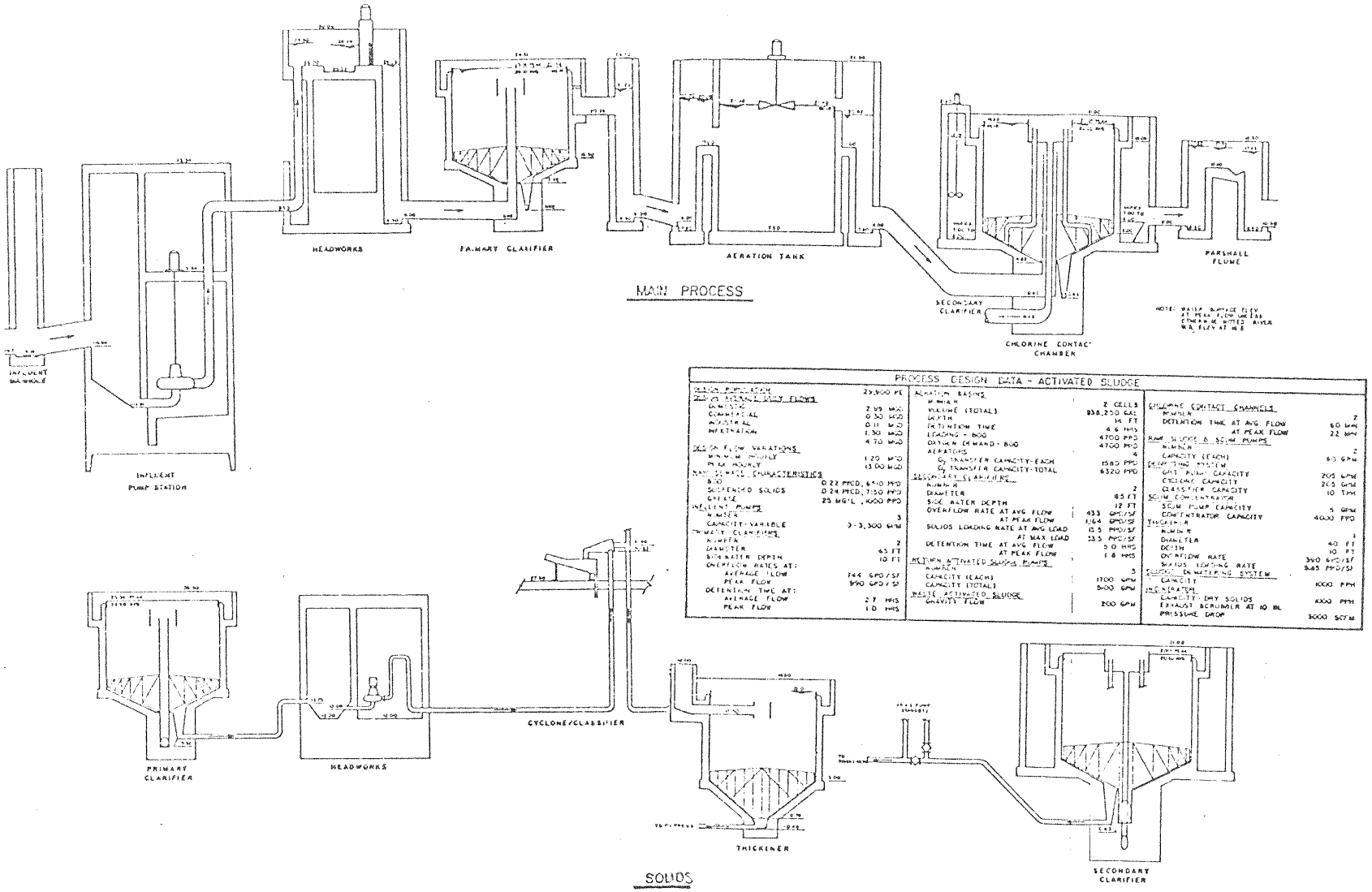

Figure 2.

Aberdeen Sewage Treatment Plant Process Schematic

Operators report that even at highest tides, the plant could maintain enough discharge head to evacuate sewage; at worst freeboard at the flume would be reduced to one foot. Effluent is discharged to the harbor's main channel near the mouth of the Chehalis River.

The collection system includes 15 pump stations which were renovated in 1978 and 1979. There is a 24-hour storage capacity at most of the system's 15 pump stations; storage volume for 6-12 hours is provided at others. Bypasses yet remain at six of the systems pumping stations. One was used in the previous winter for a duration of five days. An infiltration/inflow program is maintained, and an aggressive side sewer program is being pursued. The current improvement program calls for the elimination of two station bypasses every six months; this program is on schedule to date. For the purposes of shellfish sanitation however, it would be advisable to identify the location of these bypass discharges.

The plant appears to be subject to overloading during the rainy season. Flows exceeding the maximum design flow of 8 MGD occurred 59 times in the 16 months between January 1, 1982 and the current study. Within that same period, there were 44 days when the chlorine residual dropped below 0.3 mg/l. The frequency of these occurrences seemed to decrease with time; there were only six such occurrences in the six months previous to the study. Within the same 16-month period, there were nine days in which the chlorine residual was zero milligrams per liter; only two such events occurred within the six months previous to this study. These statistics suggest that chlorination control has been increasing since the new plant was put into operation. The maximum chlorine residual recorded during the 16 months was 3.4 mg/l.

Fecal coliform is monitored daily within the plant's own laboratory. Records show that a fecal coliform count of less than 25 per 100 ml has been maintained fairly consistently since November of 1982. During this study, no detectable fecal coliforms were found in the effluent. Appendix I gives detailed sample results.

Weyerhaeuser Pulp Mill

The Weyerhaeuser Pulp Mill produces an average of 25 MGD of process water, making it the largest single contributor of waste flows to Grays Harbor. All sanitary wastes are sent to the Aberdeen sewage treatment plant. A schematic of the Weyerhaeuser process flow is shown in Figure 3. The Weyerhaeuser plant produces only pulp, which is sold to paper companies for further processing. Two different grades of pulp come from this plant: dissolving grade (also known as acetate or MAC2 grade) and market grade. The former produces the highest pollutant load. Production of these grades alternates.

As shown in Figure 3, the plant's sources of coliform consist of the wastes entering the sour sewer sump (one quarter of the process flows), waste entering the deaeration tanks from the bleaching process (one-half of the process flows), and effluent from the aeration basins (one-quarter of the process waters). The flows from the basins (also known as the "bioponds") have typical fecal coliform counts of 7,500 to 51,000 per 100 ml, making this portion of the waste stream the greatest coliform contributor.

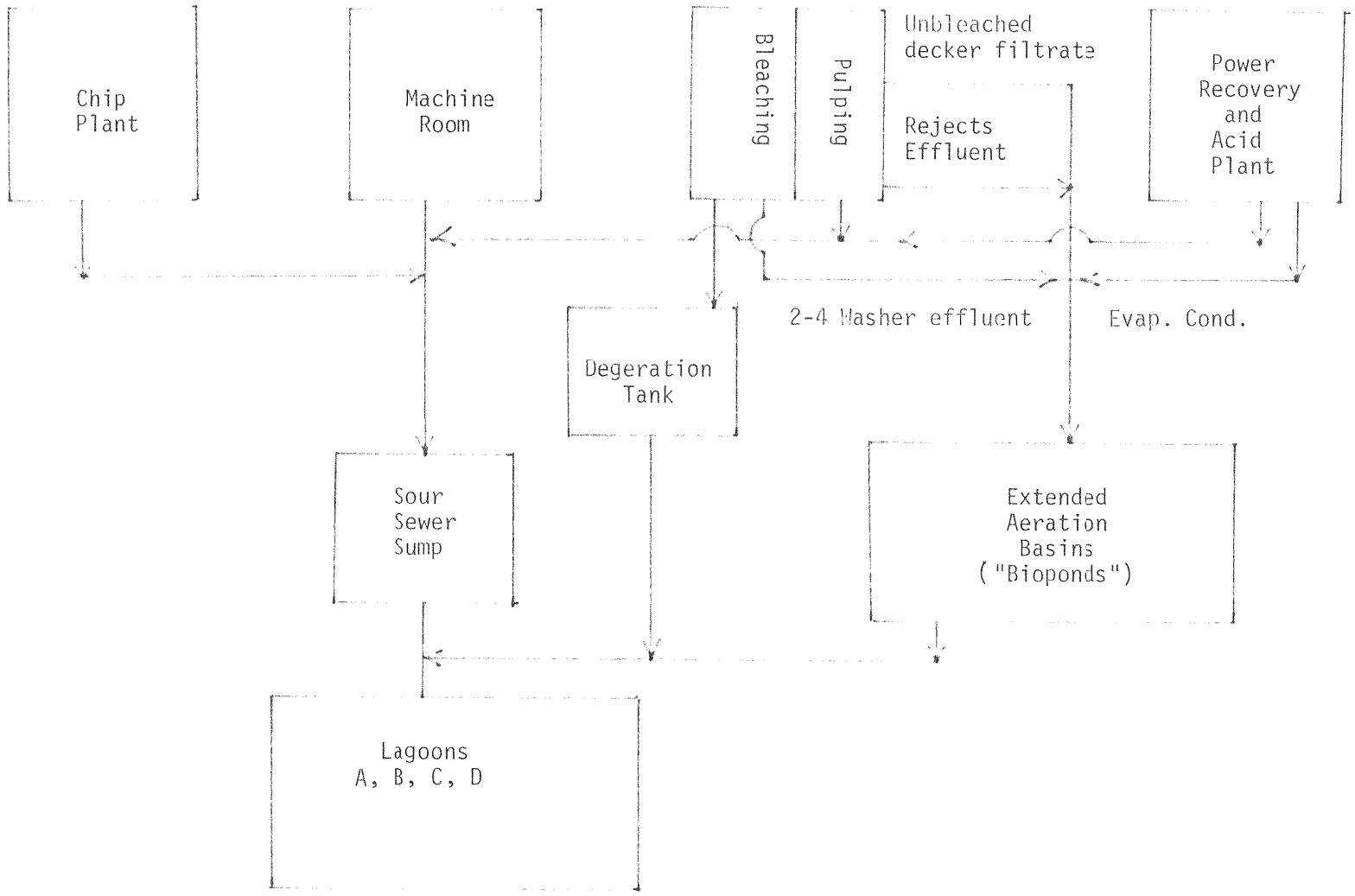

Figure 3. Weyerhaeuser Pulp Mill Process Schematic

Control of pathogens in the finished wastewater relies primarily upon the ability to apply sulfuric acid to maintain a pH of 3.5 or less. The sulfric acid is added to the flows from the deaeration tank. This acidified effluent is then combined with effluents from the sour sewer sump and the bioponds prior to transport to the waste treatment lagoons located four and a half miles away. Four lagoons are located at this site. Pond A provides primary settling. Ponds B and C are aerated. Pond D is the finishing pond from which effluent is pumped to the outfall twice a day on the ebb tide. BOD removal efficiency is about 30 percent. Prior to the acid disinfection program, BOD removal efficiency was 40 percent. This would indicate that biological action in the lagoons is minimal and that nonbiological mechanism such as sedimentation may be primarily responsible for BOD removal. In fact, BOD removals of 30-35 percent are normally expected of primary sedimentation basins.[3]

The addition of acid is controlled at the plant by a continuous pH feedback loop which monitors effluent from the sour sewer sump. In case of failure of the normal acid addition method, acid can be manually added at the effluent from the machine room or a tanker of acid can be dispatched to the lagoon site. When the deaeration tank inoperative, acidification may be incomplete. It is estimated, however, that acidification would have to be interrupted for five or six hours before the pH of the lagoon would deteriorate significantly. With a two-day detention time, these lagoons afford some equalization of the plant's waste flows.

At pH 3.5 or below, fecal coliform counts of less than three per 100 ml can be maintained. At pH 4, these pathogens die-off. PH 5 allows the pathogens to grow, and they will thrive at pH 6. Since relative control of the acid addition process was achieved in mid-April 1982, there have been only 28 days in which the pH exceeded 3.7 (excluding brief experimental periods which did not necessarily involve discharges). In that same period, there were 20 nonexperimental days during which the fecal coliform count rose above ten per 100 ml.

PH monitoring has proven to be a fairly reliable method of estimating coliform levels. Weyerhaeuser has accumulated data indicating good correlation between pH and fecal coliform. Because the mill's current system of laboratory analysis and reporting requires two or more days to provide bacteriological results, pH monitoring can afford a much more immediate assessment of effluent pathogen levels. Bacteriological samples are taken from Pond D four times a week and transported to a laboratory in Tacoma for analysis 24 to 30 hours after collection. Because wood wstes contain many contaminants which may either be toxic to microorganisms or may assist their grrowth, minimum holding times are desirable. There are several municipal and industrial laboratories in the Grays Harbor area which use the MF method for fecal coliform analysis. It would perhaps be more advisable and less costly for Weyerhaeuser to arrange for its analysis thorugh these laboratories.

There are few alarms provided within the system. Manual checks made twice per shift are relied upon to monitor the waste system and identify failures. Though the plant is attended 24 hours a day, this method is inherently subject to human error.

During the current study, MPN fecal coliform counts at the discharge pond, Pond "D", were generally maintained at less than 3.6 per 100ml. Fecal coliforms at the sour sewer sump averaged 290 per 100ml, while the contributing bioponds averaged 11,067 per 100ml and chip mill effluent averaged 33 per 100ml. Sampling data is given in Appendix I.

ITT Rayonier Pulp Mill

A schematic of the ITT treatment system is given in Figure 4. This system was originally designed to handle an average of 27 MGD, with a maximum of 35 MGD. Currently, it is operating at about half of this capacity. This has resulted in the over-design of the Kinnex high-rate extended aeration system constructed in 1977. To compensate for this and to save energy costs, attempts have been made to cut back on the compressed air system proportionally, however problems of short circuiting and sedimentation can occur within the aeration basin as a result. Short circuiting and resuspension of solids are currently thought to be the cause of the periodic jumps in effluent pathogen levels. Disturbances can also result when events within the mill cause a rapid fluctuation in the quality of the waste to be treated. For instance, the paper mill periodically wastes processed waters from its starch tank, which adds an unusual BOD load. Nonetheless, the treatment system normally achieves an average BOD efficiency of 75 to 80 percent, and soluble BOD removal efficiency of 95 to 98 percent. Monthly averages for effluent fecal coliform concentrations within the finished effluent are given in Table 3. During the present study, effluent fecal coliforms were about 260 MPN per 100ml or less. Primary effluent averaged about 450 MPN per 100ml. Detailed sampling results are given in Appendix I.

Treated wastewater is discharged on a continuous basis near the mouth of the Hoquiam River. Table 2 lists a number of other regulated outfalls operated by ITT for other plant wastewaters. The mill's three wastewater pump stations have bypasses to the estuary. ITT provided a list of pump station overflows for the purposes of this study (Table 4). Between the period of January 1982 and April 1983, there were a total of 13 overflows of an average duration of 5.8 hours apiece. These overflows result in the direct discharge of process wastewaters to the estuary. It should be noted, however, that the process waters contain relatively few pathogens before treatment in the aeration basin.

Auxillary power is not provided at the plant. Though there are two to three pumps at each of the three stations, only about 20 minutes detention time would be available in the case of a power outage. These pump stations are also subject to surcharge from unusually high tides. Since January 1982, two pump station overflows occurred due to high tides. These overflows lasted for about an hour. When this problem occurs, pumping from the stations is held to somewhat less than the estimated waste influent flow so that hopefully, only wastewater is sent to the treatment system and tidal flows are held stagnant within the overflow lines. The waste discharge outfall is located some 20 feet above zero tide, and seems to be adequate for discharge during any tidal level.

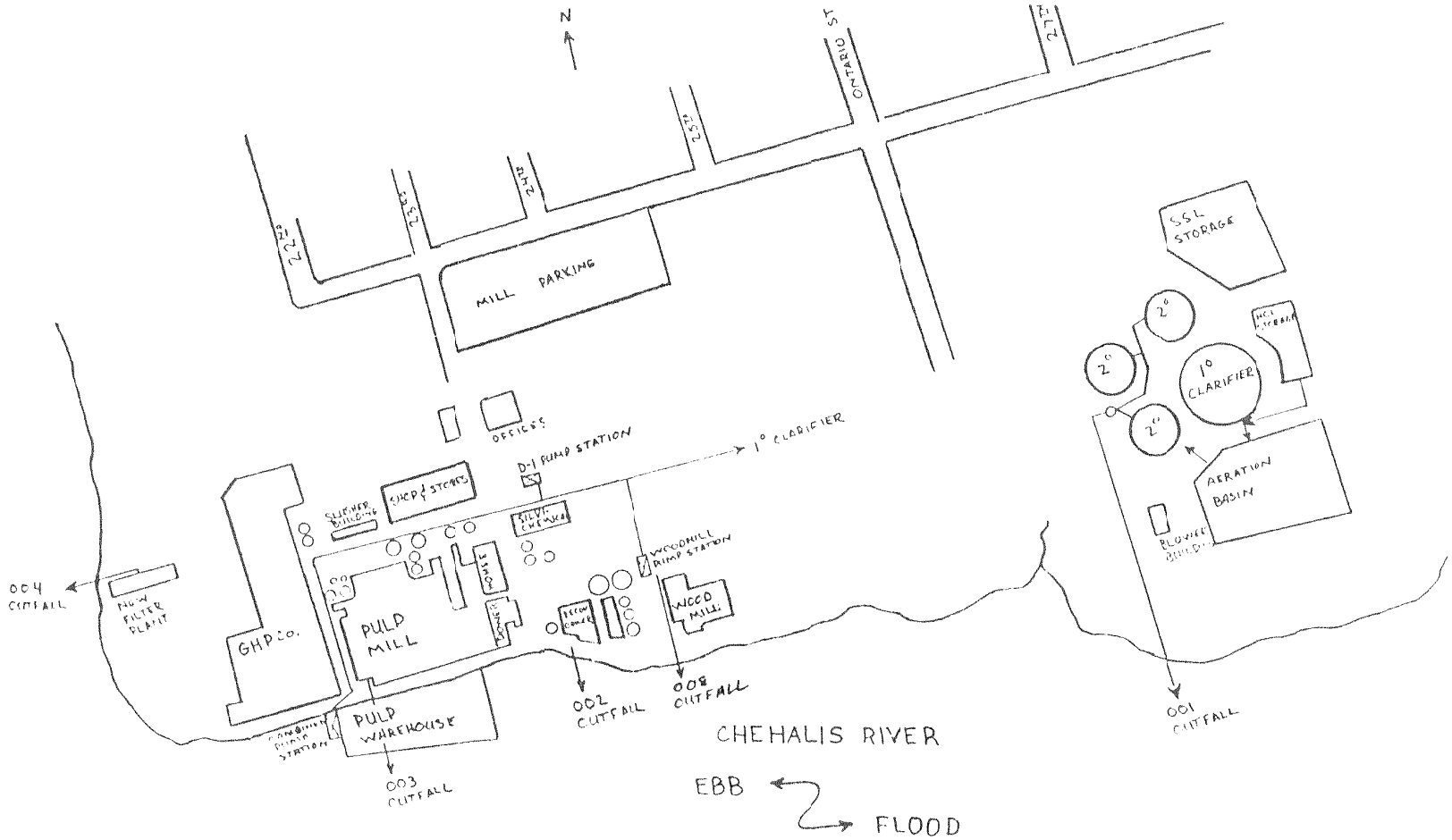

Figure 4. ITT Rayonier Pulp Mill Process Schematic

Table 2

List of ITT Wastewater Discharge Permits

Outfall No.	Operation(s) Contributing Flow Operation	Average Flow (include limits)	Treatment Description
001	Screening & Papermaking	10.4 MGD	Neutralization/Sedimentation
	Pulping & Bleaching	13.3 MGD	Activated Sludge/Discharge to Surface Water
	Chem. Recov. & Byproducts	3.2 MGD	Sedimentation/Chemical Conditioning
	Woodmill	2.0 MGD	Belt Filtration/Landfill
002	Cooling Water in Chemical Recovery and Powerhouse	9.5 MGD	Discharge to Surface Water
003	Filter Plant Overflow Papermill Cooling Water	1.3 MGD 0.8 MGD	Discharge to Surface Water
004	Filter Plant Overflow	1.2 MGD	Discharge to Surface Water
005	Decanted Water from Settled Settling Basin Sludge and Rennie Island Storm Runoff	1.6 MGD	Discharge to Surface Water
006	Treatment Complex Area Drainage and Storm Runoff	0.8 MGD	Discharge to Surface Water
007	Storm Drainage from Woodmill Boom Area	0.001 MGD	Discharge to Surface Water
008	Woodmill Area Storm Sewer	0.012 MGD	Discharge to Surface Water
009	Lime Slaker Area Storm Drainage	0.004 MGD	Discharge to Surface Water
010	Loading Dock Area Storm Drainage	0.009 MGD	Discharge to Surface Water

Flows reported from outfalls 006 through 010 include calculated influences from estimated yearly rainfall.

Table 3

Monthly Averages for ITT Rayonier Fecal Coliform Discharges

Month	Average Fecal Coliform per 100 ml	Samples per Month
March, 1983	240	18
February, 1983	3,938	15
January, 1983	1,693	18
December, 1982	4,357	20
November, 1982	78,226	22
October, 1982	46,338	18
September, 1982	20,294	17
August, 1982	3,702	17
July, 1982	10,864	17
June, 1982	3,853	18
May, 1982	849	17
April, 1982	792	22
March, 1982	2,118	25

Table 4.

ITT RAYONIER PUMP STATION OVERFLOWS - Jan.1982- April 1983

13 total overflows

Date	Station	Duration	Comments
1/26/82	D-1 Pump Station	1 hr.	High Tide
2/4	CPS	10 hrs.	Trash rake failure
2/9	"	2 hrs.	Repair leaks in discharge header
2/9	WPS	2.3 hrs.	Automatic control haywire
2/11	"	4 hrs.	Replaced failed discharge valve
2/21	"	4 hrs.	Elec. problems vari-speed control
2/22	"	4 hrs.	" " " " "
3/24	CPS	3 hrs.	Lost bearing to center pump
4/9	WPS	10 hrs.	Valve failure
5/82	None		
6/82	"		
7/82	"		
8/82	"		
9/82	"		
10/19	WPS	18.5 hrs.	Trash rake failure
10/20	"	11 hrs.	" " "
11/82	None		
12/3	WPS	1.5 hrs.	High tide
12/29	CPS	2 hrs.	Trash rake failure
1/83	None		
2/83	"		
3/83	"		
4/83	"		

Ocean Spray Cranberry Plant

The Ocean Spray food processing plant treats an average of 75,000 gallons per day of combined wastes through its oxidation ditch and facultative lagoon. Monitoring data for 1982 indicates that fecal coliform levels are usually three or less per 100ml.

The normal chlorine residual maintained in the system is approximately 0.6 mg/l. The new chlorination system, which was installed in 1982, includes a rapid mix chamber followed by a baffled contact chamber providing a detention time of one hour. The system utilizes one ton chlorine gas containers. Though spare one-ton containers are usually not kept on hand, a spare 150 pound tank is. No backup power is provided at the plant, however, a manual pump is available for discharging effluent to prevent possible lagoon overflow. Treated effluent is discharged from a pipe over a nearby dike into the John's River estuary. During this study's inspection, it was noted that chlorine gas lines, valving, and gas container were fully exposed and given no other protection than the outer plant fence.

The plant's waste treatment system seems to be subject to surcharging by surface runoff waters. Flows as high as 200,000 gallons per day can occur due to this problem; the plant's permit limit is 180,000 gallons per day. It may be advisable to ditch, dike, and check storm water pipes around the lagoons to prevent overloading due to surface water runoff.

Reliability Factor Matrix

Information gathered during this study on the reliability features of the treatment facilities inspected is displayed in Table 5 in matrix form.

Table 5.

RELIABILITY FACTOR MATRIX

FACTOR	HOQUIAM STP	ABERDEEN STP	WEYERHAEUSER	ITT RAYONIER	OCEAN SPRAY
A. COLLECTION SYSTEM					
1. Wastewater type	municipal	municipal	pulp waste	pulp waste	cranberry waste, sanitary, surface runoff
2. Total containment	no	no	no	no	not known
3. Side sewers controlled	90%	80%	N/A	N/A	N/A
4. Pump stations					
a. total number	11	15	3	3	1
b. number with bypasses	8	6		3	0
c. max total pumping capacity	18 MGD	15 MGD			
d. auxilliary power	yes	yes	no	no	no
e. highwater alarm	yes	yes	yes	no	no
B. WASTE TREATMENT FACILITIES					
1. Design flows					
a. average	4.0 MGD	4.0 MGD	25 MGD	27 MGD	75,000 gpd
b. maximum	8.0 MGD	8.0 MGD		35 MGD	180,000 gpd
c. peak hourly	undetermined	13 MGD			
2. Fluctuations in influent quality	little	little	occasional major	occasional major	large storm flows
3. Type of secondary treatment	oxidation ditch	activ'd sludge	extended aeration, lagoon	high rate activ'd sludge	oxidation ditch, lagoon
4. Protection from flood or tide	yes	yes	yes	sump flooding	yes
5. Redundancy	no (has emergency storage)	complete	partial	partial	no
6. Sludge handling	none	yes	yes	none	none
7. Auxilliary power	no	yes	no	no	no
8. Alarms					
a. power failure	no	yes	no	yes	no
b. highwater	yes	yes	no	no	no
c. pumps	yes	yes	no	no	no
9. Outfall dispersion	yes	yes	yes	yes	no
10. Distance from growing areas	6 hr.	6 hr.	6 hr.	6 hr.	
C. DISINFECTION					
1. Type of disinfectart	chlorine gas	chlorine gas	H_2SO_4	none	chlorine gas
2. Planned residual	0.2-0.5 mg/l	0.5-0.8 mg/l	$\leq$pH 3.0		0.6-0.7 mg/l
3. Unit redundancy	yes	yes	yes		yes
4. Dosage control		flow proportional	pH feedback loop		constant rate

Table 5.

RELIABILITY FACTOR MATRIX

FACTOR	HOQUIAM STP	ABERDEEN STP	WEYERHAEUSER	ITT RAYONIER	OCEAN SPRAY
5. Effluent monitoring					
a. method	auto analyzer	auto analyzer	pH meter		manual DPD kit
b. frequency	continuous	continuous	continuous		once daily
c. calibration	twice daily filtration	twice daily filtration			none
6. Contact and mixing					
a. detention time					
at average flow	60 minutes	60 minutes	2 days		60 minutes
at max design flow	30 minutes	35 minutes			N/A
at peak hourly flow	unknown	20 minutes			N/A
b. adequate plug flow	yes	yes	mixing adequate		yes
7. Alarms					
a. container depletion	yes	yes	no		no
b. low residual	yes	yes	no		no
c. other		leak detector	no		no
8. Uninterrupted changeover	yes, automatic	yes, manual	not critical		no
9. Reserve inventory	yes	yes	yes		yes
D. OPERATIONS					
1. Plant attendance	8 hrs/d, 7 d/wk	9 hrs/d, 6 d/wk	continuous	continuous	8 hrs/d, 5 d/wk
2. Emergency notification plan	yes	yes	yes	yes	yes
3. Emergency operations plans	no formal, written	yes	yes	yes	informal
4. Monitoring					
a. flow continuously recorded	yes	yes	yes	yes	no
b. disinfection continuously recorded	yes	yes	yes	N/A	no
c. fecal coliform	3 per week	daily	daily	4 per week	monthly

IV. DISCHARGE PERMITS AND NOTIFICATION PROCEDURES

Each of the plants included in this study operates under permits issued by the Department of Ecology through the National Pollutant Discharge Elimination System (NPDES). Copies of the pertinent portions of these permits have been included in the Appendix to this report.

Analysis of these permits shows that limits for fecal coliform content have not been included in the permit parameters for the two pulp mills or the Ocean Spray Cranberry plant, although each of these sources can discharge fecal coliforms in quantities which could significantly impact the shellfish growing areas. Since these permits bear the force of law and determine the primary priorities of the plants, it would be advisable to establish fecal coliform limits for the industrial plants also.

The permits for both of the pulp mills stipulate that production must be halted in the case of power failure. The Hoquiam Sewage Treatment Plant, on the other hand, has been directed to retain its waste in its lagoon during power failures. The Aberdeen Sewage Treatment Plant more specifically advocates the use of auxillary power sources in the case of power outages. The permits for the pulp mills also set forth a minimum monitoring program for receiving waters. At this time, the two mills are collaborating on their water quality monitoring programs.

The emergency notification procedures prescribed by in each of the permits includes a requirement that notification be given to the Department of Ecology within 24-hours when discharges exceed permitted limits. One plant interviewed interpreted this to mean 24-hour working hours. This interpretation could possibly allow high levels of pathogens to be discharged during a weekend or holiday. DOE's offical interpretation of this clause has been that this 24-hour period begins at the onset of the emergency discharge and terminates 24 clock hours later. None of the permits studied contained an emergency response plan specifically addressing shellfish concerns, including procedures to be used to make reports to the Department of Social and Health Services Shellfish Program. An interview with a representative of the Department of Ecology indicated that the Department would be amenable to the inclusion of such clauses within the discharge permits for plants which could effect the sanitation of shellfish growing waters.

V. RELIABILITY SUMMARY

Status of Compliance with the NSSP Standards

The National Shellfish Sanitation Program of the Food and Drug Administration and the EPA has setforth guidelines for the design of the treatment works which discharge near shellfish growing waters. Table 6 presents a summary of the compliance of each of the plants with the main reliability criteria contained in these guidelines.

Though each of the plants was operating adequately during this study, none of the plants meet all of the reliability criteria contained in the guidelines.

Vulnerability Analysis

One of the most conspicuous factors in the reliability in the ITT waste treatment system is the periodic surcharging of the collection pump stations, leading to estuarine bypasses. Another factor of concern is that period upsets of the aeration system can lead to the discharge of high counts of pathogens without a second line of defense such as emergency storage, disinfection, etc. The ITT plant is also vulnerable to power failures since discontinuation of the aeration system can cause problems of solids settling and startup lags which may lead to elevated levels of pathogen discharge.

Acid addition is the most crucial feature of the Weyerhaeuser treatment system. Though the equipment involved in this process seems to be fairly adequate, the system depends heavily upon the lack of human error in the manual monitoring, reporting, and emergency response. It appears that the installation of the type of alarm systems recommended by the NSSP standards could improve this plant's reliability significantly. Another critical factor in the reliability of the acid addition system is the functioning of the pH probe. PH probes, however, can become dirty or damaged, especially when used for wastewater monitoring. Each of these factors can counteract the benefits of the lagoon system's emergency storage capabilities.

Flow records indicate that the Aberdeen Sewage Treatment plant is subject to a significant frequency of surcharging during wet weather conditions. Also, unlike the Hoquiam Sewage Treatment Plant, the Aberdeen plant does not have the benefit of longer term emergency storage in the case of chlorination failure.

Though the Hoquiam Sewage Treatment plant has the benefit of a backup lagoon for emergency storage, the chlorination system suffered certain deficiencies at the time of this study. The anticipated repair of the chlorine monitoring and alarm system will allow the plant to meet NSSP disinfection standards.

The Ocean Spray Cranberry plant does not have the continuous chlorine monitoring and recording recommended by the NSSP standards. The lagoon system is subject to surcharging from surface water runoff and has difficulty staying within its permitted flow limits during portions of the year. The chlorination system is particularly vulnerable to vandalism and should be better protected.

Table 6

Compliance with National Reliability Standards

STANDARD	HOQUIAM STP	ABERDEEN STP	WEYERHAEUSER	ITT RAYONIER	OCEAN SPRAY
Total containment	no	no	no	no	?
30 min. contact at peak flows; plug flow	?	no	yes	N/A	yes
Dual chlorinators, reserve stock, uninterrupted changeover	yes	yes	N/A	N/A	yes
Continuous chlorine monitoring and recording	when repaired	yes	yes-pH	N/A	no
Adequate residual normally maintained	?	yes	yes	N/A	yes
Adequate lab analysis	?	yes	?	yes	(monthly)
Auxilliary power, pumps, or storage	yes	yes	yes	no	yes
Alarms - low residual	when repaired	yes	no	N/A	no
container depletion	yes	yes	no	N/A	no
Emergency plan, including shellfish notification	no	no	no	no	no

VI. RECOMMENDATIONS

1. The point sources discharging into Grays Harbor should be subject to specific emergency response procedures for the protection of shellfish growing areas including:

   a. Maintenance of uninterrupted chlorination.

   b. Specific equipment operating procedures for those valves, bypasses, and other features which are crucial to maintaining adequate chlorination of all discharges under various emergency situations.

   c. Emergency notification of the DSHS Shellfish Program in the event that emergency sewage discharges would effect shellfish sanitation.

   These items should be written into the NPDES permits for maximum effectiveness.

2. Fecal coliform discharge limits should be established for the industrial waste dischargers.

3. Further studies should be conducted on the exact location of collection system bypasses and estimated emergency bypass quantities within the municipal collection systems.

4. Further studies should be conducted to define the frequency and duration of regional power failures.

5. Examination of the results of the bacteriological analyses being conducted by the Hoquiam Sewage Treatment Plant should be made in order to confirm accuracy of these results. This might best be accomplished by splitting samples between the treatment plant laboratory and another certified laboratory using the millipore filter test.

6. Improvement of Weyerhaeuser's monitoring and reporting system should be considered. Use of a local laboratory (perhaps involving collaboration with ITT Rayonier, Hoquiam STP, or Aberdeen STP) would reduce the time required to obtain bacteriological data and perhaps improve the accuracy of the data while reducing costs.

7. Further studies should be condducted to better define adequate chlorine residuals for the Hoquiam Sewage Treatment Plant.

APPENDIX I:

ANALYTIC RESULTS OF POINT SOUCE SAMPLING

WEYERHAEUSER PULP/MILL
MAY, 1983

DATE	TIME	TEMP C	PH	FECAL COLIFORM (MPN/100 ML)	FECAL STREP (MPN/100 ML)	(MGD)	PULP GRADE
Weyerhaeuser Pond "D" (001)							
2	1450	20	2.6	< 360	< 3.6	20.4	Olympic/MAC
3	1200	20	2.9	< 3.6	--	21.7	MAC
3	1200	20	2.9	< 3.6	< 3.6	21.7	MAC
3	1200	20	2.9	< 3	< 3.6	21.7	MAC
4	1140	21.7	2.8	< 3.6	< 3.6	21.0	MAC
4	1155	21.7	2.8	3.0	--	21.0	MAC
4	1155	21.7	2.8	< 36	< 3.6	21.0	MAC
5	1128	22.2	4.5	< 3.6	< 3.6	20.6	MAC/MAC 2
5	1123	22.2	4.5	3.6	--	20.6	MAC/MAC 2
6	1040	23.3	3.1	3.6	< 3.6	26.2	MAC 2
7	1105	21.1	3.1	< 3.6	< 3.6	26.7	MAC 2
8	1120	25.0	2.9	< 3.6	--	28.7	MAC 2
9	0900	20.0	2.8	< 3.6	--	27.3	MAC 2
10	0940	20.0	3.2	< 3.6	< 3.6	27.2	MAC 2
11	1143	18.9	3.0	< 3.6	< 3.6		Crest
5	1128	22.2		< 3.6			
Weyerhaeuser Sour Sewer Sump							
4	1055	--	3	3.6	< 3.6	21.0	MAC
5	1920	30.0	3.5	< 3.6	< 3.6	20.6	MAC/MAC 2
6	0955	26.7	3.5	430	< 3.6	26.2	MAC 2
7	1045	28.3	4	430	< 3.6	26.7	MAC 2
8	1055	28.9	2.7	< 3.6	--	28.7	MAC 2
9	0910	28.9	4.5	1500	--	27.3	MAC 2
10	0915	26.7	3.7	430	< 3.6	27.2	MAC 2
11	1120	26.7	5	< 36	< 3.6		MAC/Crest
Weyerhaeuser Bio-Pond							
6	1010	24.4	--	7500	< 360	26.2	MAC 2
7	1030	21.7	> 5.5	9300	> 1100	26.7	MAC 2
8	1035	22.8	8-8.5	15,000	2400	28.7	MAC 2
9	0905	22.8	8.5	23,000	930	27.3	MAC 2
10	0905	21.1	8	2300	2400	27.2	MAC 2
11	1115	21.1	> 5.5	9300	2400		MAC/Crest
Weyerhaeuser Chip Mill							
6	1000	18.3	--	< 360	< 360		
7	1040	17.8	> 5	43	< 3.6		
8	1050	20.0	6.5	23	230		

ITT RAYONIER PULP MILL
MAY, 1983

DATE	TIME	TEMP C	PH	FECAL COLIFORM (MPN/100 ML)	FECAL STREP (MPN/100 ML)	FLOW (MGD)
ITT Effluent						
2	1318	23.3	6	360	930	16 MGD
3	0916	21	6	< 3600	< 3600	
4	1455	22.2	6.1	< 3600	4600	15
5	1410	21.5	6.1	< 3600	< 11,000	14.5
6	1630	22.8	6.0	360	46,000	17
7	0920	21.7	5.6	230	4600	16
8	0910	21.7	5.9	210	2400	15.1
9	1115	22.2	5.9	23	240	16.5
10	1115	20.0	5.8	36	1100	
11	1420	21.1	6.2	30	2400	
ITT Primary						
3	0925	21	7.3	< 3600	< 3600	
4	1455	22.8	5.9	< 3600	2400	
5	1400	21.1	5.5	< 3600	2400	
6	1640	22.2	5.8	910	24,000	17
7	0930	21.1	6.2	430	> 11,000	16
8	0915	21.1	7.1	150	11,000	15.1
9	1120	21.1	5.7	930	> 1100	16.5
10	1123	25.6	7.0	230	> 1100	
11	1425	21.1	4.8	91	230	
ITT Log Debarking						
11	1500	--	--	< 36	230	

MUNICIPAL WASTEWATER TREATMENT PLANTS
MAY, 1983

DATE	TIME	TEMP C	CHLORINE RESIDUAL (mg/l)	FECAL COLIFORMS (MPN/100 ML)	FECAL STREP (MPN/100 ML)	FLOW (MGD)	NOTES
Aberdeen Effluent							
2	1420	--	0.8	< 360	< 360	3.14	
3	1430	--	0.7	< 3600	< 360	3.00	
4	1330	15.0	0.6	< 3.6	< 3.6	3.02	
5	1506	--	1.8	< 3.6	< 3.6	3.05	
6	1145	17.8	1.8	< 3.6	< 3.6	3.2	
7	1000	15.6	1.0	< 3.6	< 3.6	5.21	
10	1020	13.9	1.5				
11	1543	--	1.5 west/ 1.0 east	< 3.6			
Hoquiam Effluent							
3	1445	16.1	0.15	210	23	2.7	
4	1415	16.7	0.2	93	< 3.6	2.7	
5	1445	16.1	0.15	910	15	2.6	
6	1330	16.1	0.2	930	3.6	2.7	
7	0900	15.0	0.2	930	230	3.1	
9	1530	16.1	0.15	93	3.0	2.9	
10	1450	15.0	0.2	23	--		
11	1345	13.9	0.3	< 36	< 3.6		
Aberdeen Storm Water Wet Well							
8	1010	--	--	9,300			
Ocean Spray							
5	1020	--	7	< 3.6	--	75,000	good flow

Appendix II:

NPDES Permits

Permit No. WA 000080-9

Issuance Date: March 28, 1979
Expiration Date: March 1, 1981

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT

State of Washington
DEPARTMENT OF ECOLOGY
Olympia, Washington 98504

In compliance with the provisions of
Chapter 90.48 RCW as amended
and
The Federal Water Pollution Control Act as amended

Weyerhaeuser Company
Pulp Division
Cosmopolis, Washington 98537

Plant Location	Receiving Water
Cosmopolis, Washington	Grays Harbor Estuary and Chehalis River
Industry Type	**Discharge Location**
Sulfite Pulp Mill	Grays Harbor Estuary and Chehalis River
	Waterway Segment Number
	10-22-04 10-22-12

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is authorized to discharge in accordance with the special and general conditions which follow.

Bruce A. Cameron
Assistant Director
Department of Ecology

SPECIAL CONDITIONS

S1. INITIAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the date of issuance, and lasting until June 30, 1979, the permittee is authorized to discharge at locations 001 and 002, subject to the following limitations:

a.

		EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
	Parameter	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
(1)	Flow 1/			Continuous	Instantaneous
	M^3/day	108,000	136,000		
	MGD	28	35		
(2)	Biochemical Oxygen Demand (5-day) 2/			Daily	24-hour Composite
	kg/day	11,800 4/	14,700 3/		
	lbs/day	26,000 4/	32,400 3/		
(3)	Total Suspended Solids 5/			Daily	24-hour Composite
	kg/day	17,700	32,700		
	lbs/day	39,000	72,000		
(4)	Acidity			Daily	24-hour Composite
	ppm as $CaCO_3$	200	400		
(5)	Settleable Solids			Weekly	Grab
	ml/l	-----	-----		
(6)	Total Coliform			Monthly	Grab
	Number per 100 ml by Membrane Filter Technique	-----	-----		
(7)	Fecal Coliform			Monthly	Grab
	Number per 100 ml by Membrane Filter Technique	-----	-----		

Note:
1/ Provided it does not violate the conditions of section S6.a.
2/ Only 500 lbs/day is allowed to be discharged from location 002.
3/ For Chehalis River flows greater than 2,000 cfs, the limitation shall be 49,000 lbs/day or 22,200 kg/day.
4/ For Chehalis River flows greater than 2,000 cfs, the limitation shall be 32,400 lbs/day or 14,710 kg/day.
5/ See Section S6.i. for additional requirements pertaining to filter plant backwash water.

SPECIAL CONDITIONS (Continued)

b. The effluent pH shall be monitored continuously with an instantaneous type recorder. The pH measured at the edge of the dilution zone defined in Section S6.a. shall not exceed the limitations specified in the state water quality standards.

c. There shall be no discharge of floating solids or visible foam in other than trace amounts.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at locations approved by the control agency.

e. Permittee shall collect all sorting yard drainage and provide primary treatment and oil removal.

f. Discharge from retaining lagoon effluent shall meet the additional water quality criteria as specified in Section S6.e.

g. The daily average is defined as the average of the measured values obtained over a calendar month's time unless otherwise specified.

h. The daily maximum is defined as the greatest allowable value for any calendar day unless otherwise specified.

SPECIAL CONDITIONS (Continued)

S2. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning July 1, 1979, and lasting until the expiration date of the permit, the permittee is authorized to discharge at locations 001 and 002, subject to the following limitations:

a.

Parameter	EFFLUENT LIMITATIONS Daily Average	EFFLUENT LIMITATIONS Daily Maximum	MONITORING REQUIREMENTS Measurement Frequency	MONITORING REQUIREMENTS Sample Type
(1) Flow 1/			Continuous	Instantaneous
M^3/day	108,000	136,000		
MGD	28	35		
(2) Biochemical Oxygen Demand (5-day) 2/			Daily	24-hour Composite
kg/day	11,800	14,700 3/		
lbs/day	26,000	32,400 3/		
(3) Total Suspended Solids 4/			Daily	24-hour Composite
kg/day	17,700	32,700		
lbs/day	39,000	72,000		
(4) Acidity			Daily	24-hour Composite
ppm as $CaCO_3$	200	400		
(5) Settleable Solids			Weekly	Grab
ml/l	-----	-----		
(6) Total Coliform			Monthly	Grab
Number per 100 ml by Membrane Filter Technique	-----	-----		
(7) Fecal Coliform			Monthly	Grab
Number per 100 ml by Membrane Filter Technique	-----	-----		

Note:
1/ Provided it does not violate the conditions of section S6.a.
2/ Only 500 lbs/day is allowed to be discharged from location 002.
3/ For Chehalis River flows greater than 2,000 cfs, the limitation shall be 49,000 lbs/day or 22,200 kg/day.
4/ See Section S6.i. for additional requirements pertaining to filter plant backwash water.

SPECIAL CONDITIONS (Continued)

b. The effluent pH shall be monitored continuously with an instantaneous type recorder. The pH measured at the edge of the dilution zone defined in Section S6.a. shall not exceed the limitations specified in the state water quality standards.

c. There shall be no discharge of floating solids or visible foam in other than trace amounts.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at locations approved by the control agency.

e. Permittee shall collect all sorting yard drainage and provide primary treatment and oil removal.

f. Discharge from retaining lagoon effluent shall meet the additional water quality criteria as specified in Section S6.e.

g. The daily average is defined as the average of the measured values obtained over a calendar month's time unless otherwise specified.

h. The daily maximum is defined as the greatest allowable value for any calendar day unless otherwise specified.

S3. SCHEDULE OF COMPLIANCE

a. For the limitations specified in section S1:

(1) In Compliance on the effective date of this permit.

b. For the limitations specified in Section S2:

(1) Prepare and submit plans and specifications and submit to the department no later than April 1, 1979.

(2) Operate facilities and achieve compliance no later than June 30, 1979.

Prior to constructing or modifying any wastewater control facilities, detailed plans shall be approved in writing by the department.

S4. MONITORING AND REPORTING

The permittee shall monitor the operation of all treatment and control facilities and the quantity and quality of the waste discharged. A record of all such data shall be maintained. The permittee shall monitor the parameters as specified in conditions S1 and S2 of this permit.

a. Reporting

Monitoring results obtained during the previous month shall be summarized and reported on a Discharge Monitoring Report Form (EPA No. 3320-1) submitted no later than the 15th day of the month following the completed reporting period. The report shall be sent to the Department of Ecology, Olympia, Washington 98504, Attn: Industrial Section. Monitoring shall be started on the date of issuance of this permit and the first report is due no later than the 15th day of the month following the first full month of monitoring.

In addition to the summary report required above, permittee shall also report the monitoring results of each day specified in Sections S1 and S2, production (in air dry bleached tons per day) and maximum daily temperature (°F by continuous recorder) of each outfall obtained during the previous month on an approved form postmarked no later than the 15th day of the month following the completed reporting period. This report shall be sent to the address stated above in this section, and shall be started when the EPA form No. 3320-1 is required.

b. Records Retention

The permittee shall retain for a minimum of three years all records of monitoring activities and results, including all reports of recordings from continuous monitoring instrumentation. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the director.

c. Recording of Results

The permittee shall record each measurement or sample taken pursuant to the requirements of this permit for the following information: (1) the date, exact place, and time of sampling; (2) the dates the analyses were performed; (3) who performed the analyses; (4) the analytical techniques or methods used; and (5) the results of all analyses.

d. Representative Sampling

Samples and measurements taken to meet the requirements of this condition shall be representative of the volume and nature of the monitored discharge.

e. Test Procedures

All sampling and analytical methods used to meet the monitoring requirements specified in this permit shall, unless approved otherwise in writing by the department, conform to one of the latest editions of the following references:

(1) American Public Health Association, Standard Methods for the Examination of Water and Wastewaters.

(2) American Society for Testing and Materials, A.S.T.M. Standards, Part 23, Water, Atmospheric Analysis.

(3) Environmental Protection Agency, Water Quality Office Analytical Control Laboratory, Methods for Chemical Analysis of Water and Wastes.

S5. OPERATION AND MAINTENANCE

a. Power Failures

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee has certified in writing to halt, reduce, or otherwise control production and/or all discharges upon the reduction, loss, or failure of one or more of the primary sources of power to the wastewater control facilities.

S6. OTHER REQUIREMENTS

a. Limitation on Thermal Discharges

Where specified in Sections S1 and S2, the permittee's discharge from outfall 001 shall not cause the following temperature criteria to be exceeded immediately outside the dilution zone defined below:

(1) No measurable increase, 0.3°Celsius shall be permitted which results in a water temperature exceeding 19°Celsius nor shall an increase arising from the permittee's discharge be permitted in excess of "t" in °Celsius; for the purpose hereto, "t" is equal to 16/T, where "T" represents the resulting water temperature in °Celsius. The water temperature at natural conditions shall be measured at a point 200 yards up-current from the point of discharge.

(2) Dilution zone shall not encompass more than 15 percent of the width of the estuary or river and the boundaries are defined as follows:

(a) The boundaries in the vertical plane shall be one foot below the receiving water surface and one foot above the bottom.

(b) The lateral distance from the center line of the diffuser shall be 150 feet plus the depth of water above outfall.

(c) The longitudinal distance will be the length of the diffuser plus 100 feet, or 15 percent of the width of the estuary or river at the times when discharging, whichever is less.

b. Disposal of Sanitary Sewage

All sanitary sewage shall be discharged to the treatment facilities of the City of Cosmopolis for treatment and disposal.

c. Retaining Lagoon Use

Where specified in Sections S1 and S2, the permittee may continue to use its existing retaining lagoon with discharge to an unnamed slough of the Chehalis River to provide partial primary treatment of its filter plant backwash water, cooling water, and miscellaneous plant stormwater runoff provided that:

(1) Any periodical maintenance dredging of the retaining lagoon shall be done by hydraulic dredging.

(2) During any dredging operation:

(a) The effluent from the retaining lagoon shall be monitored in the slough outside the existing tide gate discharge point, for dissolved oxygen, hydrogen sulfide, suspended combustible solids, and BOD, in a manner approved by the department.

(b) The receiving water dissolved oxygen in the slough outside the tide gates shall be maintained at 6.0 mg/l. When the water quality in this area fails to 6.0 mg/l, all dredging operations will be discontinued until the receiving water has recovered to a minimum of 8.0 mg/l of dissolved oxygen over at least a two-hour period.

d. Water Quality Surveys

During the period when the Chehalis River flow at Hoquiam is 2,000 cubic feet per second or lower, the following Grays Harbor water quality survey data will be obtained weekly at stations mutually agreed upon. During the period when the Chehalis River flow at Hoquiam is greater than 2,000 cubic feet per second and the dissolved oxygen in the Grays Harbor area influenced by the permittee's discharge is less than 7.5 mg/l, a similar survey will be conducted. Information from the surveys shall be submitted to the Department of Ecology on a weekly basis:

(1) River flow in cubic feet per second.

(2) Temperature in °F.

(3) pH.

(4) Chlorinity in mg/liter.

(5) Dissolved Oxygen in mg/liter.

(6) Turbidity.

e. Water Quality for Retaining Lagoon Effluent

Where specified in Sections S1 and S2, the discharge of retaining lagoon effluent (outfall 002) shall meet the following water quality criteria:

(1) Dissolved oxygen shall exceed 6.0 mg/l.

(2) pH shall be within the range of 6.5 - 8.5.

(3) Turbidity shall not exceed 5 NTU over natural conditions.

(4) Toxicity shall meet the limitations of Section S6.f.

(5) Aesthetic values shall not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the sense of sight, smell, touch, or taste.

(6) Thermal discharge limitations:

(a) No measurable temperature increase, 0.3°Celsius shall be permitted which results in a water temperature exceeding 18°Celsius nor shall an increase arising from the permittee's discharge be permitted in excess of "t" in °Celsius; for the purpose hereto, "t" is equal to 28/(T+7), where "T" represents the resulting water temperature in °Celsius. The water temperature at natural conditions shall be measured at a point 200 yards up-current from the slough outlet.

f. Requirements for Non-Toxicity

Permittee shall discharge wastes which will allow at least 80 percent survival in a 65 percent concentration of treated mill effluent for a 96-hour period. Toxicity tests shall be conducted by the permittee using bioassay techniques provided and/or approved by the Department of Ecology.

g. Solid Waste Disposal

(1) The permittee shall not permit solid waste material at the mill site to enter state surface waters. Disposal of such solid waste away from the mill site shall be only at approved disposal sites.

(2) The permittee shall not permit leachate from solid waste material at the mill site to cause any harmful effects on ground or surface water quality.

(3) The permittee has submitted to the department a plan for the handling and disposal of solid waste material generated at the mill site. The permittee shall comply with the plan which was approved by the Department of Ecology on November 16, 1976. No change in the plan shall be implemented by the permittee without written approval from the department.

h. Spill Prevention, Containment and Countermeasure Plan

The permittee has an approved spill prevention, containment and countermeasure plan. The permittee shall comply with the plan which was approved by the Department of Ecology on November 17, 1975. No change in the plan shall be implemented by the permittee without written approval from the department. Such plan shall include information and procedures relative to the prevention of spills and unplanned discharges of oil and hazardous substances such as:

(1) A description of the reporting system which will be used to alert responsible facility management and appropriate legal authorities.

(2) A description of preventive facilities (including overall facility plot) which prevent, contain, or treat spills and unplanned discharges and a compliance schedule to install any necessary facilities in accordance with the approved plan.

(3) A list of all oil and hazardous materials used, processed, or stored at the facility which may be spilled into permitted discharge.

(4) A copy of the report to satisfy the requirements of CFR Title 33, Chapter I, subchapter O, Part 154 dated December 21, 1972, if applicable.

(5) A copy of the report to satisfy the requirements of CFR Title 40, Chapter I, subchapter D, Part 112 dated December 11, 1973, if applicable.

i. Filter Plant Backwash Water

The effluent limitations specified in section S1 include the discharge of filter plant backwash water. The sample location, however, does not include the backwash water from the filter plant. No later than July 1, 1979, the permittee shall submit to the department either a report proving that the discharge through the tide gate at outfall 002 attributable to the filter plant backwash water meets the effluent limitations described below or a detailed engineering report containing various alternative means to achieve the following filter plant backwash effluent limitations:

(1) If the discharge contains only filter plant backwash water, it shall contain less than 0.1 ml/l of settleable solids.

(2) If the discharge is combined with other process discharges, an added allowance of TSS for the filter plant backwash water shall be granted but be limited to 20 mg/l at the backwash flow rate.

If the report proves that these specified effluent limitations are being continuously achieved, the Company shall sample TSS at the discharge from the retaining lagoon quarterly for several days each to determine compliance with i.(2) above to insure continued compliance.

If the engineering report is necessary this report shall include at least the detailed design data for each alternative, and the environmental impact of each alternative. In reviewing this report, the department may request additional information on the alternatives described in the report or on other alternatives not considered.

j. Program to Capture and Dispose of Total Suspended Solids

Permittee shall conduct a two-phase study to determine methods to dewater and dispose of the sludge that is generated from the pulp and paper facility complex. Phase 1 of the study shall consist of a pilot program to test several different sludge dewatering processes with the purpose of using that information in selecting, designing, and installing a full scale dewatering complex. This pilot study has been completed. Phase 2 shall consist of investigation and trial runs of in-mill process type sludge handling and disposal methods. This portion of the study shall be completed and a report submitted to the department no later than June 1, 1979.

No later than March 1, 1980, the permittee shall notify the department which of the sludge disposal alternatives will be implemented and submit a time schedule for the implementation of that alternative.

k. Special Studies

Permittee shall conduct a study to determine the total and fecal coliform counts and the color of the authorized discharges. The purpose of the study is to characterize the waste streams for the parameters at all expected mill operating conditions. The study program, including time schedules, shall be developed in consultation with the Department of Ecology and the final results of such study shall be submitted to the Department of Ecology.

GENERAL CONDITIONS

G1. All discharges and activities authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant more frequently than or at a level in excess of that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit.

G2. Any anticipated facility expansion, production increase, or process modification which will result in a new or increase discharge of pollutants must be reported to the department by submission of a new application or supplement thereto; or, if such discharge will not violate effluent limitations specified herein, by submission to the Department of notice of such new or increased discharge.

G3. The diversion or bypass of any discharge from facilities utilized by the permittee to maintain compliance with the terms and conditions of this permit is prohibited, except (a) where unavoidable to prevent loss of life or severe property damage, or (b) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the terms and conditions of this permit. The permittee shall immediately notify the department in writing of each such diversion or bypass in accordance with the procedure in Condition G4.

G4. In the event the permittee is unable to comply with any of the conditions of this permit because of a breakdown of equipment or facilities, an accident caused by human error or negligence, or any other cause, such as an act of nature, the permittee shall:

a. Immediately take action to stop, contain, and clean up the unauthorized discharges and correct the problem.

b. Immediately notify the department so that an investigation can be made to evaluate the impact and the corrective actions taken and determine additional action that must be taken.

c. Submit a detailed written report to the department describing the breakdown, the actual quantity and quality of resulting waste discharges, corrective action taken, steps taken to prevent a recurrence, and any other pertinent information.

Compliance with these requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of this permit or the resulting liability for failure to comply.

G5. The permittee shall at all times maintain in good working order and efficiently operate all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

G6. After notice and opportunity for a hearing, this permit may be modified, suspended or revoked in whole or in part during its term for cause including but not limited to the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in the condition of the receiving waters or any other condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

G7. The permittee shall, at all reasonable times, allow authorized representatives of the department:

a. To enter upon the permittee's premises for the purpose of inspecting and investigating conditions relating to the pollution of, or possible pollution of, any of the waters of the State, or for the purpose of investigating compliance with any of the terms of this permit;

b. To have access to and copy any records required to be kept under the terms and conditions of this permit;

c. To inspect any monitoring equipment or monitoring method required by this permit; or

d. To sample any discharge of pollutants.

G8. If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Federal Act for a toxic pollutant which is present in the discharge authorized herein and such standard or prohibition is more stringent than any limitation upon such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee shall be so notified. Section 307(a) requires that the Administrator of the Environmental Protection Agency shall promulgate effluent standards (or prohibition) for toxic pollutants which he has listed as such.

G9. Nothing in this permit shall be construed as excusing the permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G10. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable effluent limitation promulgated pursuant to the order the United States District Court for the District of Columbia issued on June 8, 1976, in Natural Resources Defense Council, Inc. et al. v. Russell E. Train, 8 ERC 2120 (D.D.C. 1976), if the effluent limitation so issued:

a. Is different in conditions or more stringent than any effluent limitation in the permit; or

b. Controls any pollutant not limited in the permit.

Permit No. WA 000307-7

Issuance Date: June 6, 1979
Expiration Date: March 31, 1981

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT

State of Washington
DEPARTMENT OF ECOLOGY
Olympia, Washington 98504

In compliance with the provisions of
Chapter 90.48 RCW as amended
and
The Federal Water Pollution Control Act as amended

ITT Rayonier, Incorporated
Grays Harbor Division
Hoquiam, Washington 98550

Plant Location	Receiving Water
Hoquiam, Washington	Grays Harbor Estuary
Industry Type	Discharge Location
Sulfite Pulp Mill	Grays Harbor Estuary
	Waterway Segment No.
	10-22-04

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is authorized to discharge in accordance with the special and general conditions which follow.

Elmer C. Vogel
Deputy Director
Department of Ecology

SPECIAL CONDITIONS

S1. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the date of issuance, and lasting until the expiration date of the permit, the permittee is authorized to discharge at location 001 subject to the following limitations:

a.

	Parameter	EFFLUENT LIMITATIONS* Daily Average	Daily Maximum	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
(1)	Flow**			Continuous	Instantaneous
	M^3/day	133,000	170,000		
	MGD	35	45		
(2)	Biochemical Oxygen Demand (5-day)			Daily	24-hour Composite
	kg/day	12,700	16,300****		
	lbs/day	28,000	36,000****		
(3)	Total Suspended Solids*****			Daily	24-hour Composite
	kg/day	18,600	34,700		
	lbs/day	41,000	76,400		
(4)	Settleable Solids			Weekly	Grab
	ml/l	-----	-----		
(5)	Total Coliform			Monthly***	Grab
	Number per 100 ml by Membrane Filter Technique	-----	-----		
(6)	Fecal Coliform			Monthly***	Grab
	Number per 100 ml by Membrane Filter Technique	-----	-----		
(7)	Toxicity	-----	-----	See section S9.f.	
(8)	Color			Monthly***	Grab
	Units (NCASI #253)	-----	-----		

Note:

*All wastewater effluent limitations include the contribution due to the waste from Grays Harbor Paper Company and vanillin plant.

**Provided it does not violate the conditions of section S9.a.

***Frequency of testing may be increased at DOE request.

****For Chehalis River Flows greater than 2000 cfs the limitations shall be 53,000 lbs/day or 24,000 kg/day.

*****Includes contribution from outfall 003 and 004.

SPECIAL CONDITIONS (Continued)

b. The pH shall not be less than 5.0 nor greater than 9.0 and shall be monitored continuously with an instantaneous type recorder.

c. There shall be no discharge of floating solids or visible foam in other than trace amounts.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at locations approved by the control agency.

e. The daily average is defined as the average of the measured values obtained over a calendar month's time unless otherwise specified.

f. The daily maximum is defined as the greatest allowable value for any calendar day unless otherwise specified.

SPECIAL CONDITIONS (Continued)

S2. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the date of issuance, and lasting until the expiration date of the permit, the permittee is authorized to discharge at location 002 subject to the following limitations:

a.

Parameter	EFFLUENT LIMITATIONS* Daily Average	EFFLUENT LIMITATIONS* Daily Maximum	MONITORING REQUIREMENTS Measurement Frequency	MONITORING REQUIREMENTS Sample Type
(1) Flow**			Monthly	Calculated
M^3/day	45,500	56,800		
MGD	12	15		
(2) Temperature °F	-----	-----	Continuous	Instantaneous
(3) Toxicity	-----	-----	See Section S9.f.	

b. The pH shall not be less than 5.0 nor greater than 9.0 and shall be monitored monthly by a grab sample.

c. There shall be no discharge of floating solids or visible foam in other than trace amounts.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at locations approved by the control agency.

e. The daily average is defined as the average of the measured values obtained over a calendar month's time unless otherwise specified.

f. The daily maximum is defined as the greatest allowable value for any calendar day unless otherwise specified.

NOTE:
*All wastewater effluent limitations include the contribution due to the waste from Grays Harbor Paper Company and vanillin plant.

**Provided it does not violate the conditions of section S9.a.

SPECIAL CONDITIONS (Continued)

S3. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the date of issuance, and lasting until the expiration date of the permit, the permittee is authorized to discharge at location 003 subject to the following limitations:

a.

Parameter	EFFLUENT LIMITATIONS* Daily Average	EFFLUENT LIMITATIONS* Daily Maximum	MONITORING REQUIREMENTS Measurement Frequency	MONITORING REQUIREMENTS Sample Type
(1) Flow**			Monthly	Calculated
M^3/day	49,200	53,000		
MGD	13	14		
(2) Temperature			Continuous	Instantaneous
°F	-----	-----		
(3) Total Suspended Solids				
kg/day	Included in S1		To be developed by permittee and then approved by the Department of Ecology	
lbs/day				
(4) Toxicity	-----	-----	See Section S9.f.	

b. The pH shall not be less than 5.0 nor greater than 9.0 and shall be monitored monthly by a grab sample.

c. There shall be no discharge of floating solids or visible foam in other than trace amounts.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at locations approved by the control agency.

e. The daily average is defined as the average of the measured values obtained over a calendar month's time unless otherwise specified.

f. The daily maximum is defined as the greatest allowable value for any calendar day unless otherwise specified.

g. All solids collected in the settling basin of the filter plant shall be disposed in a manner that prevents their entry to state waters.

NOTE:
*All wastewater effluent limitations include the contribution due to the waste from Grays Harbor Paper Company and vanillin plant.
**Provided it does not violate the conditions of Section S9.a.

SPECIAL CONDITIONS (Continued)

S4. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the date of issuance, and lasting until the expiration date of the permit, the permittee is authorized to discharge at location 004 subject to the following limitations:

a.

Parameter	EFFLUENT LIMITATIONS* Daily Average	EFFLUENT LIMITATIONS* Daily Maximum	MONITORING REQUIREMENTS Measurement Frequency	MONITORING REQUIREMENTS Sample Type
(1) Flow**			Monthly	Calculated
M^3/day	18,900	26,500		
MGD	5	7		
(2) Total Suspended Solids				
kg/day	Included in S1		To be developed by permittee and then approved by the Department of Ecology	
lbs/day				
(3) Toxicity	-----	-----	See Section S9.f.	

b. The pH shall not be less than 5.0 nor greater than 9.0 and shall be monitored monthly be a grab sample.

c. There shall be no discharge of floating solids or visible foam in other than trace amounts.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at locations approved by the control agency.

e. The daily average is defined as the average of the measured values obtained over a calendar month's time unless otherwise specified.

f. The daily maximum is defined as the greatest allowable value for any calendar day unless otherwise specified.

g. All solids collected in the settling basin of the filter plant shall be disposed in a manner that prevents their entry to state waters.

NOTE:
*All wastewater effluent limitations include the contribution due to the waste from Grays Harbor Paper Company and vanillin plant.

**Provided it does not violate the conditions of section S9.a.

SPECIAL CONDITIONS (Continued)

S5. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the date of issuance, and lasting until the expiration date of the permit, the permittee is authorized to discharge at location 005 subject to the following limitations:

a.

Parameter	EFFLUENT LIMITATIONS* Daily Average	EFFLUENT LIMITATIONS* Daily Maximum	MONITORING REQUIREMENTS Measurement Frequency	MONITORING REQUIREMENTS Sample Type
(1) Settleable Solids ml/l -----	0.1		Grab	
(2) Toxicity**	-----	-----	See Section S9.f.	

b. The pH shall not be less than 5.0 nor greater than 9.0 and shall be monitored during decanting operation by a grab sample.**

c. There shall be no discharge of floating solids or visible foam in other than trace amounts.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at locations approved by the control agency.

e. The daily average is defined as the average of the measured values obtained over a calendar month's time unless otherwise specified.

f. The daily maximum is defined as the greatest allowable value for any calendar day unless otherwise specified.

NOTE:
*All wastewater effluent limitations include the contribution due to the waste from Grays Harbor Paper Company and vanillin plant.

**Effective after October 1, 1979.

S6. SCHEDULE OF COMPLIANCE

a. For the limitations specified in sections S1, S2, S3, S4, and S5:

(1) In compliance on the effective date of this permit.

The permittee is expected to meet the aforementioned compliance schedule. No later than 14 calendar days following a date identified above the permittee shall submit to the Industrial Section of the Department a notice of compliance or noncompliance with the specification required in the schedule.

Prior to constructing or modifying any wastewater control facilities, detailed plans shall be approved in writing by the Department.

S7. MONITORING AND REPORTING

The permittee shall monitor the operation of all treatment and control facilities and the quantity and quality of the waste discharged. A record of all such data shall be maintained. The permittee shall monitor the parameters as specified in conditions S1, S2, S3, S4, and S5 of this permit.

a. Reporting

Monitoring results obtained during the previous month shall be summarized and reported on a Discharge Monitoring Report Form (EPA No. 3320-1) submitted no later than the 15th day of the month following the completed reporting period. The report shall be sent to the Department of Ecology, Olympia, Washington 98504, Attn: Industrial Section. Monitoring shall be started on the date of issuance of this permit and the first report is due no later than the 15th day of the month following the first full month of monitoring.

In addition to the summary report required above, permittee shall also report the daily monitoring results specified in sections S1 through S5 for each outfall and production of pulp in air-dried bleached tons per day, paper, and percent integrated obtained during the previous month on an approved form postmarked no later than the 15th day of the month following the completed reporting period. This report shall be sent to the address stated above in this section, and shall be started when the EPA form No. 3320-1 is required.

b. Records Retention

The permittee shall retain for a minimum of three years all records of monitoring activities and results, including all reports of recordings from continuous monitoring instrumentation. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the director.

c. Recording of Results

The permittee shall record each measurement or sample taken pursuant to the requirements of this permit for the following information: (1) the date, exact place, and time of sampling; (2) the dates the analyses were performed; (3) who performed the analyses; (4) the analytical techniques or methods used; and (5) the results of all analyses.

d. Representative Sampling

Samples and measurements taken to meet the requirements of this condition shall be representative of the volume and nature of the monitored discharge.

e. Test Procedures

All sampling and analytical methods used to meet the monitoring requirements specified in this permit shall, unless approved otherwise in writing by the department, conform to one of the latest editions of the following references:

(1) American Public Health Association, Standard Methods for the Examination of Water and Wastewaters.

(2) American Society for Testing and Materials, A.S.T.M. Standards, Part 23, Water, Atmospheric Analysis.

(3) Environmental Protection Agency, Water Quality Office Analytical Control Laboratory, Methods for Chemical Analysis of Water and Wastes.

S8. OPERATION AND MAINTENANCE

a. Power Failures

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee has certified in writing to halt, reduce, or otherwise control production and/or all discharges upon the reduction, loss, or failure of one or more of the primary sources of power to the wastewater control facilities.

S9. OTHER REQUIREMENTS

a. Limitation on Thermal Discharges

Where specified in section S1, S2, S3, S4, and S5, the permittee's discharge shall not cause the following temperature criteria to be exceeded immediately outside the dilution zone defined below:

(1) No measurable increase, 0.3°Celsius shall be permitted which results in a water temperature exceeding 19°Celsius nor shall an increase arising from the permittee's discharge be permitted in excess of "t" in °Celsius; for the purpose hereto, "t" is equal to 16/T, where "T" represents the resulting water temperature in °Celsius. The water temperature at natural conditions shall be measured at a point 200 yards up-current from the point of discharge.

(2) Dilution zone shall not encompass more than 15 percent of the width of the estuary at MLL water and the boundaries are defined as follows:

(a) The boundaries in the vertical plane shall be one foot below the receiving water surface and one foot above the bottom.

(b) The lateral distance from the center line of the diffuser shall be 150 feet plus the depth of water above outfall.

(c) The longitudinal distance will be the length of the diffuser plus 100 feet, or 15 percent of the width of the estuary, whichever is less.

b. Water Quality Surveys

During the period when the Chehalis River flow at Hoquiam is 2,000 cubic feet per second or lower, the following Grays Harbor water quality survey data will be obtained weekly at stations mutually agreed upon. During the period when the Chehalis River flow at Hoquiam is greater than 2,000 cubic feet per second the dissolved oxygen in the Grays Harbor area influenced by the permittee's discharge in less than 7.5 mg/l, the same survey shall be conducted. Information from the surveys shall be submitted to the Department of Ecology on a weekly basis:

(1) River flow in cubic feet per second.

(2) Temperature in °F.

(3) pH.

(4) Chlorinity in mg/liter.

(5) Dissolved Oxygen in mg/liter.

(6) Turbidity.

c. Receiving Water Study

Permittee shall conduct a receiving water study at the boundaries of the dilution zone of the existing mill effluent outfall as defined in section S9.a. to determine compliance or noncompliance with the temperature criteria and the no-foam requirements of this permit. If such study shows noncompliance, permittee shall undertake a program to make necessary improvements to the outfall and/or treatment facilities so as to achieve compliance. Permittee shall commence study when secondary treatment facilities are operational and submit a report to the department for approval. The report for part of the study was submitted on January 25, 1978 and the report on the remaining portions of the study shall be submitted by September 1, 1979. All necessary modifications shall be made and compliance shall be achieved by March 1, 1980.

d. Solid Waste Disposal

(1) The permittee shall handle and dispose of solid waste material in such a manner as to prevent their entry into state ground or surface water.

(2) The permittee shall not permit leachate from its solid waste material to cause adverse effects on ground or surface water quality.

(3) Permittee has submitted the department a plan for the handling, and disposal of solid waste material generated at the mill site. The permittee shall comply with the plan which was approved by the department on July 17, 1975. No change in the plan shall be implemented by the permittee without written approval by the Department of Ecology.

e. Spill Prevention, Containment and Countermeasure Plan

Permittee has an approved Spill Prevention, Containment, and Countermeasure Plan for the facility covered by this permit. The permittee shall comply with the plan which was approved by the Department of Ecology on January 26 and May 14, 1976. No change in the plan shall be implemented by the permittee without written approval by the Department of Ecology. Such plan shall include information and procedures relative to the prevention of spills and unplanned discharges of oil and hazardous substances such as:

(1) A description of the reporting system which will be used to alert responsible facility management and appropriate legal authorities.

(2) A description of preventive facilities (including overall facility plot) which prevent, contain, or treat spills and unplanned discharges and a compliance schedule to install any necessary facilities in accordance with the approved plan.

(3) A list of all oil and hazardous materials used, processed, or stored at the facility which may be spilled into permitted discharge.

(4) A copy of the report to satisfy the requirements of CFR Title 33 Chapter I, subchapter O, Part 154, dated December 21, 1972, if applicable.

(5) A copy of the report to satisfy the requirements of CFR Title 40, Chapter I, subchapter D, Part 112 dated December 11, 1973, if applicable.

f. Toxicity Evaluation Studies

The permittee shall conduct a three-phase study related to the toxicity of the effluent. The study shall be conducted in accordance with a program to be developed by the permittee in consultation with the Department of Ecology. This program was submitted on December 29, 1978.

Phase I shall consist of a series of toxicity tests on the final main mill effluent according to the procedures developed by the department. In the event any tests fail to meet the 100 percent survival in a 65 percent concentration of effluent for a 96-hour period criteria, an evaluation shall be made as to the cause of such failure.

Phase II shall consist of a study to determine the possible toxic impact of secondary treated effluent on the estuary. Specific items for investigation are:

(1) Study of the effects that the mill effluent may have on indigenous fish populations under the conditions of the receiving environment from April 15 to September 1.

(2) Data collected in the phase I study should be correlated with that collected in phase II-1 to determine if a relationship exists between the two sets of data.

(3) Dispersion characteristics of mill effluent at the boundary of the defined dilution zone.

(4) Fresh water/salt water toxicity response relationships as pertinent to the testing conducted in the study.

(5) Assessment of duration of exposure of salmonid species to effluent levels at the edge of the defined dilution zone.

(6) A semiannual meeting between the department and permittee shall be held to review the progress of phases I and II.

Phase III shall consist of a final report of the program submitted no later than September 1, 1980 together with an engineering report detailing any facilities or methods of operation for toxicity removal from industrial process effluent which can be provided to assure protection of significant species actually or potentially present in receiving waters. Satisfaction of this requirement shall include an evaluation of the measures necessary, if any, to allow at least 80% survival to any salmonid test fish in a 65 percent concentration of industrial waste water for a 96-hour period, and a reevaluation of the measures necessary to prevent toxicity as measured by the alternate standard proposed by the permittee in its last report.

g. Sanitary Sewage

All sanitary sewage shall be pumped to the City of Hoquiam for treatment.

GENERAL CONDITIONS

G1. All discharges and activities authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant more frequently than or at a level in excess of that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit.

G2. Whenever a facility expansion, production increase, or process modification is anticipated which will result in a new or increased discharge, or which will cause any of the conditions of this permit to be violated, a new application must be submitted together with the necessary reports and engineering plans for the proposed changes. No change shall be made until plans have been approved and a new permit or permit modification has been issued.

G3. The diversion or bypass of any discharge from facilities utilized by the permittee to maintain compliance with the terms and conditions of this permit is prohibited, except (a) where unavoidable to prevent loss of life or severe property damage, or (b) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the terms and conditions of this permit. The permittee shall immediately notify the department in writing of each such diversion or bypass in accordance with the procedure in Condition G4.

G4. In the event the permittee is unable to comply with any of the conditions of this permit because of a breakdown of equipment or facilities, an accident caused by human error or negligence, or any other cause, such as an act of nature, the permittee shall:

a. Immediately take action to stop, contain, and clean up the unauthorized discharges and correct the problem.

b. Immediately notify the department so that an investigation can be made to evaluate the impact and the corrective actions taken and determine additional action that must be taken.

c. Submit a detailed written report to the department describing the breakdown, the actual quantity and quality of resulting waste discharges, corrective action taken, steps taken to prevent a recurrence, and any other pertinent information.

Compliance with these requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of this permit or the resulting liability for failure to comply.

G5. The permittee shall at all times maintain in good working order and efficiently operate all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

G6. After notice and opportunity for a hearing this permit may be modified, suspended or revoked in whole or in part during its term for cause including but not limited to the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in the condition of the receiving waters or any other condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

G7. The permittee shall, at all reasonable times, allow authorized representatives of the department:

a. To enter upon the permittee's premises for the purpose of inspecting and investigating conditions relating to the pollution of, or possible pollution of, any of the waters of the State, or for the purpose of investigating compliance with any of the terms of this permit;

b. To have access to and copy any records required to be kept under the terms and conditions of this permit;

c. To inspect any monitoring equipment or monitoring method required by this permit; or

d. To sample any discharge of pollutants.

G8. If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Federal Act for a toxic pollutant which is present in the discharge authorized herein and such standard or prohibition is more stringent than any limitation upon such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee shall be so notified. Section 307(a) requires that the Administrator of the Environmental Protection Agency shall promulgate effluent standards (or prohibition) for toxic pollutants which he has listed as such.

G9. Nothing in this permit shall be construed as excusing the permittee from compliance with any applicable federal, state, or local statutes ordinances, or regulations.

G10. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable effluent limitation promulgated pursuant to the order the United States District Court for the District of Columbia issued on June 8, 1976, in Natural Resources Defense Council, Inc. et. al. v. Russell E. Train, 8 ERC 2120 (D.D.C. 1976), if the effluent limitation so issued:

a. Is different in conditions or more stringent than any effluent limitation in the permit; or

b. Controls any pollutant not limited in the permit.

Permit No. WA-002091-5
Issuance Date July 1, 1980
Effective Date July 1, 1980
Expiration Date July 1, 1985

mailed 7-1-85

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

WASTE DISCHARGE PERMIT

PE 7-1-85
PE6 1-1-85
PE8 11-1-84

State of Washington
DEPARTMENT OF ECOLOGY
Olympia, Washington 98504

In compliance with the provisions of
Chapter 90.48 RCW as amended
and
The Clean Water Act as amended
Public Law 95-217

City of Hoquiam
609 8th Street
Hoquiam, WA 98550

Plant Location: Airport Road

Receiving Water: Grays Harbor

Waterway Segment No.: 10-22-04

Discharge Location: Lat. 46° 58' 14" N
Long. 123° 55' 30" W

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is authorized to discharge in accordance with
the special and general conditions which follow.

Elmer C. Vogel, Deputy Director
Department of Ecology (3)

SPECIAL CONDITIONS

S1. INTERIM EFFLUENT LIMITATIONS

Beginning on the effective date of this permit and lasting through October 30, 1982, the permittee is authorized to discharge subject to the following limitations:

The monthly average quantity of effluent discharge shall not exceed 8 mgd.

	EFFLUENT LIMITATIONS	
Parameter	Monthly Average	Weekly Average
Biochemical oxygen demand (5 day)	30 mg/l, 2,001 lb/day	45 mg/l, 3,002 lb/day
Suspended solids	30 mg/l, 2,001 lb/day	45 mg/l, 3,002 lb/day
Fecal coliform bacteria	200/100 ml	400/100 ml
pH	Shall not be outside the range 6.0 - 9.0	

The monthly and weekly averages for BOD_5 and Suspended Solids are based on the arithmetic mean of the samples taken. The averages for fecal coliform are based on the geometric mean of the samples taken.

S2. FINAL EFFLUENT LIMITATIONS

After October 30, 1982 the permittee is authorized to discharge subject to meeting the following limitations for secondary treatment.

The monthly average quantity of effluent discharged shall not exceed 4.0 mgd. Treatment design flow is 4.0 mgd.

	EFFLUENT LIMITATIONS	
Parameter	Monthly Average	Weekly Average
Biochemical oxygen demand* (5 day)	30 mg/l, 1,001 lb/day	45 mg/l, 1,501 lb/day
Suspended solids*	30 mg/l, 1,001 lb/day	45 mg/l, 1,501 lb/day
Fecal coliform bacteria	200/100 ml	400/100 ml
pH	Shall not be outside the range of 6.0 - 9.0	

The monthly and weekly averages for BOD_5 and Suspended Solids are based on the arithmetic mean of the samples taken. The averages for fecal coliform are based on the geometric mean of the samples taken.

*The monthly average effluent concentration limitations for BOD_5 and Suspended Solids shall not exceed 30 mg/l or 15 percent of the respective influent concentrations, whichever is more stringent. The concentration and lbs/day limitations above may be made more stringent to reflect 85 percent removal when sufficient data is available for the upgraded system.

Total available (residual) chlorine shall be maintained which is sufficient to attain the Fecal Coliform limits specified above. Chlorine concentrations in excess of that necessary to reliably achieve these limits shall be avoided.

S3. SCHEDULE OF COMPLIANCE

a. (1) The permittee shall achieve compliance with the effluent limitations specified in Special Condition S2. by October 30, 1982.

(2) The permittee shall complete the sewer system rehabilitation construction by October 30, 1982.

(3) The permittee shall submit a report of progress on February 28, 1981 and each nine months thereafter until final effluent limitations are met.

(4) The permittee shall submit the annual I/I evaluation as required in Section S6.g. by May 31, each year beginning in 1981.

(5) Where the department approves a change order or orders extending the date for completion of sewer rehabilitation construction, the dates specified in S3.a.(1) and (2) are automatically extended by an equal time period up to a maximum of 90 days total. Such extensions will be limited to delays caused by circumstances beyond the reasonable control of the permittee.

b. The permittee is expected to meet this compliance schedule. No later than 14 calendar days following a date identified above the permittee shall submit to the appropriate regional office of the department a notice of compliance or noncompliance with the specifications required in the schedule.

S4. TESTING SCHEDULE

The permittee shall monitor the wastewater according to the following schedule:

Tests	Sample Point	Sampling Frequency	Sample Type
Temperature	raw sewage	as needed	grab
pH	raw sewage	as needed	grab
	final effluent	daily	grab
Flow	effluent	daily	Continuous & Recording
Chlorine residual*	final effluent	daily	grab
DO	raw sewage	as needed	grab
	final effluent	5/week	grab
	aeration units	as needed	grab
BOD	raw sewage	3/week	24 hr. composite
	final effluent	3/week	24 hr. composite
Suspended solids	raw sewage	weekly	24 hr. composite
	final effluent	3/week	24 hr. composite
	aeration units	as needed	grab
Vol. Susp. Solids	aeration units	as needed	grab
	RAS	as needed	grab
	wasted sludge	as needed	grab
Loading Index**	aeration units	as needed	grab
Fecal Coliform	effluent	3-week	grab

*Total available (residual) chlorine.

**Loading Index tests are SVI or F/M Ratio or MCRT, etc.

S5. MONITORING AND REPORTING

The permittee shall monitor the operation and efficiency of all treatment and control facilities and the quantity and quality of the waste discharged. A record of all such data shall be maintained. The permittee shall monitor the parameters as specified in condition S4 of this permit.

a. Reporting

Monitoring results obtained during the previous month shall be reported on a form provided by the department, to be submitted no later than the 15th day of the month following the completed reporting period. The report shall be sent to Department of Ecology, Southwest Regional Office, Olympia, Washington 98504. Monitoring shall be started on the effective date of the permit. In addition to the monthly report a monthly summary report form (EPA No. 3320-1) shall be submitted no later than the 15th day of the following month. This report is limited to the parameters specified in condition S2.

b. Records Retention

The permittee shall retain for a minimum of three years all records of monitoring activities and results, including all reports of recordings from continuous monitoring instrumentation. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the director.

c. Recording of Results

For each measurement or sample taken, the permittee shall record the following information: (1) the date, exact place, and time of sampling; (2) the dates the analyses were performed; (3) who performed the analyses; (4) the analytical techniques or method used; and (5) the results of all analyses.

d. Representative Sampling

Samples and measurements taken to meet the requirements of this condition shall be representative of the volume and nature of the monitored discharge.

e. Test Procedures

All sampling and analytical methods used to meet the monitoring requirements specified in this permit shall, unless approved otherwise in writing by the department, conform to the Guidelines Establishing Test Procedures for the Analysis of Pollutants, contained in 40 CFR 136, as published in the Federal Register, on December 1, 1976, or the latest revision thereof, which currently references the following publications:

(1) American Public Health Association, Standard Methods for the Examination of Water and Wastewaters

(2) American Society for Testing and Materials, A.S.T.M. Standards, Part 23, Water, Atmospheric Analysis

(3) Environmental Protection Agency, Methods for Chemical Analysis of Water and Wastes.

S6. SUPPLEMENTAL REQUIREMENTS

a. Operation and Maintenance

(1) In accordance with WAC 173-230, the permittee shall provide an adequate operating staff which is qualified to carry out the operation, maintenance and testing activities required to ensure compliance with the conditions of this permit. An operator certified for a Class II plant by the State of Washington shall be in responsible charge of the day-to-day operation of the wastewater treatment plant.

(2) The approved operation and maintenance manual shall be kept available at the treatment plant. The operator is responsible for being familiar with and using this manual.

(3) The permittee shall institute an adequate operation and maintenance program for their entire sewage system. This program shall include such items as sewer cleaning, pump station maintenance and other system maintenance activities. Records are to be kept on all such activities.

(4) If a permittee contemplates a reduction in the required level of treatment that would exceed permit effluent limitations on a short-term basis for any reason, and such reduction cannot be avoided, the permittee shall give written notification to the department, if possible, 30 days prior to such activities, detailing the reasons for, length of time of, and the potential effects of the reduced level of treatment. If such a reduction involves a bypass, the requirements of condition G5 and the "Construction or Maintenance-Related Overflow or Bypass" conditions must be met.

b. Solid Waste Disposal

(1) The permittee shall handle and dispose of all solid waste material in such a manner as to prevent its entry into state ground or surface waters.

(2) The permittee shall not permit leachate from its solid waste material to enter state surface waters without providing all known, available and reasonable methods of treatment, nor permit such leachate to cause any adverse effect on state ground waters. The permittee shall apply for a permit or permit modification as may be required for such discharges.

(3) Any deviation from or addition to the solid waste handling plan as now approved shall first be submitted to the Department for review and approval.

(4) This permit shall be modified, or alternatively, revoked and reissued to comply with any applicable standard or limitation promulgated or approved under Section 405(d) (Disposal of Sewage Sludge) of the Clean Water Act, if the standard or limitation so issued or approved:

A. Contains different conditions or is otherwise more stringent than any condition in the permit; or

B. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirement of the Act then applicable.

c. Provision for Electric Power Failure

The permittee is responsible for maintaining adequate safeguards to prevent the discharge of untreated wastes or wastes not treated in accordance with the requirements of this permit during electrical power failure at the treatment plant and/or sewage lift stations either by means of alternate power sources, standby generator, or retention of inadequately treated wastes. Compliance with the alternate power source requirement is to be accomplished by October 30, 1982.

d. Construction or Maintenance-Related Overflow or Bypass

Bypasses of untreated or partially treated sewage during construction or maintenance shall be avoided if at all feasible.

If a construction or maintenance-related overflow or bypass is contemplated, the permittee shall submit to the department not less than 90 days prior to the contemplated overflow or bypass a report which describes in detail any construction work which will result in overflow or bypass of wastewater. The report shall contain: (1) an analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing; (2) a cost-effective analysis of alternatives including comparative resource damage assessment; (3) the minimum and maximum duration of bypass under each alternative; (4) a recommendation as to the preferred alternative for conducting the bypass; (5) the projected date of bypass initiation; (6) a statement of compliance with SEPA; and, (7) a request for a water quality modification, as provided for in WAC 173-201-100(2).

For probable construction bypasses, the need to bypass is to be identified as early in the planning process as possible. The analysis required above shall be considered during preparation of the engineering report or facilities plan and plans and specifications, and shall be included to the extent practical. In cases where the probable need to bypass is determined early, continued analysis is neccessary up to and including the construction period in an effort to minimize or eliminate the bypass.

Final authorization to bypass may be granted after review of the above information, in accordance with condition G5. Authorization to bypass will be by administrative order.

e. Occasional Sewer Overflows and Bypasses

The following is a list of sanitary sewer overflows and sewage pumping station bypasses which are occasional point sources of pollutants during inclement weather. They are authorized by the terms of this permit until October 30, 1982.

Discharge No.	Location	Receiving Water
002	Lane Street	Little Hoquiam River
003	Queen Avenue	Hoquiam River
004	Ramer Avenue	Hoquiam River
005	Emerson Avenue	Hoquiam River
006	28th and Bay	Grays Harbor
007	"K" Street	Grays Harbor
008	Riverside Pump Sta.	Hoquiam River

f. Pretreatment

(1) The permittee shall ensure that all industrial users of the wastewater treatment system are in compliance with the pretreatment regulations promulgated in 40 CFR Part 403 and any additional pretreatment regulations that may be promulgated under Section 307(b), and reporting requirements under Section 308 of the Clean Water Act. The department may issue waste discharge permits to significant industries discharging wastewater to municipal sewerage systems in accordance with RCW 90.48 as amended.

(2) General Prohibitions - In accordance with 40 CFR Part 403.5(b) the following industrial discharges may not be discharged into the system:

A. Pollutants that create a fire or explosion hazard.

B. Pollutants that will cause corrosive damage to Publicly Owned Treatment Works (POTW), more specifically discharges with pH values below 5.0.

C. Solid or viscous pollutants in amounts that could cause obstruction in sewers or otherwise interfere with the operation of POTW.

D. Slug discharges, in terms of volume, strength, or oxygen demand, of such magnitude as to cause treatment process upsets and subsequent loss of treatment efficiency.

E. Heat in amounts that will inhibit biological activity at the POTW, specifically discharges that cause the temperature at the POTW influent to exceed 40°C (104°F).

(3) The permittee shall assist the department in monitoring and enforcing the pretreatment requirements as specified in the aforementioned department permits.

g. Annual Infiltration and Inflow Evaluation

(1) The permittee shall conduct an annual infiltration and inflow evaluation. Plant monitoring records may be used to assess measurable infiltration and inflow.

(2) An annual report shall be prepared which summarizes any measurable infiltration and inflow. If infiltration and inflow has increased by more than 15 percent from that found in the first annual report the report shall also contain a plan and a schedule for: (A) locating the sources of infiltration and inflow; (B) correcting the problem.

(3) The annual report shall be submitted by May 31, 1981 and annually, thereafter.

(4) The permittee shall strictly enforce their sewer ordinance, and not allow the connection of inflow (roof drains, foundation drains, etc.) to the sanitary sewer system.

h. Notification of New or Altered Sources

The permittee shall submit written notice to the department whenever any new discharge or increase in volume or change in character of an existing discharge into the sewer system is proposed which: (1) would interfere with the operation of or exceed the design capacity of any portion of the collection or treatment system; (2) would increase the total system flow or influent waste loading by more than 10 percent; (3) is not a part of an approved general sewerage plan or approved plans and specifications; or, (4) would be subject to pretreatment standards under 40 CFR part 403 or Section 307(b) of the Clean Water Act. This notice shall include an evaluation of the systems ability to adequately transport and treat the added flow and/or waste load.

Approval of the new or increased discharge may be required under condition G11 or RCW 90.48.160.

GENERAL CONDITIONS

G1. All discharges and activities authorized by this permit shall be consistent with the terms and conditions of this permit. The discharge of any pollutant more frequently than or at a level in excess of that authorized by this permit shall constitute a violation of the terms and conditions of this permit.

G2. The permittee shall at all times maintain in good working order and operate as efficiently as possible all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee for water pollution control and abatement to achieve compliance with the terms and conditions of this permit.

G3. The permittee, in order to maintain compliance with its permit, shall control production and all discharges upon reduction, loss, failure, or bypass of the treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

G4. If, for any reason, the permittee does not comply with or will be unable to comply with any of the discharge limitations or other conditions specified in the permit, the permittee shall, at a minimum, provide the department with the following information:

a. A description of the nature and cause of noncompliance, including the quantity and quality of any unauthorized waste discharges;

b. The period of noncompliance, including exact dates and times and/or the anticipated time when the permittee will return to compliance; and

c. Steps taken or to be taken to reduce, eliminate, and prevent recurrence of the noncompliance.

In addition, the permittee shall take immediate action to stop, contain, and clean up any unauthorized discharges and take all reasonable steps to minimize any adverse impacts to waters of the state and correct the problem. The permittee shall notify the department immediately by telephone so that an investigation can be made to evaluate any resulting impacts and the corrective actions taken to determine if additional action should be taken.

In the case of any discharge subject to any applicable toxic pollutant effluent standard under Section 307 (a) of the Clean Water Act, or which could constitute a threat to human health, welfare, or the environment, 40 CFR Part 122.14 (h) requires that the information specified in items G4.a., G4.b., and G4.c., above, shall be provided not later than 24 hours from the time the permittee becomes aware of the circumstances. If this information is provided orally, a written submission covering these points shall be provided within five days of the time the permittee becomes aware of the circumstances, unless the department waives or extends this requirement on a case-by-case basis.

Compliance with these requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of this permit or the resulting liability for failure to comply.

G5. The intentional bypass of wastes from all or any portion of a treatment works to the extent that permit effluent limitations cannot be met is prohibited unless the following four conditions are met:

a. Bypass is: (1) unavoidable to prevent loss of life, personal injury, or severe property damage; or (2) necessary to perform construction or maintenance-related activities essential to meet the requirements of the Clean Water Act and authorized by administrative order;

b. There are no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, maintenance during normal periods of equipment down time, or temporary reduction or termination of production;

c. The permittee submits notice of an unanticipated bypass to the department in accordance with Condition G4. Where the permittee knows or should have known in advance of the need for a bypass, this prior notification shall be submitted for approval to the department, if possible, at least 30 days before the date of bypass (or longer if specified in the special conditions);

d. The bypass is allowed under conditions determined to be necessary by the department to minimize any adverse effects. The public shall be notified and given an opportunity to comment on bypass incidents of significant duration, to the extent feasible.

"Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which 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.

After consideration of the factors above and the adverse effects of the proposed bypass, the department will approve or deny the request. Approval of a request to bypass will be by administrative order under RCW 90.48.120.

G6. The permittee shall allow an authorized representative of the department, upon the presentation of credentials and such other documents as may be required by law:

a. To enter upon the permittee's premises where a discharge source is located or where any records must be kept under the terms and conditions of the permit;

b. To have access to and copy at reasonable times any records that must be kept under the terms and conditions of the permit;

c. To inspect at reasonable times any monitoring equipment or method required in the permit;

d. To inspect at reasonable times any collection, treatment, pollution management, or discharge facilities required under the permit; and

e. To sample at reasonable times any discharge of pollutants.

G7. The permittee shall submit a new application or supplement to the previous application where facility expansions, production increases, or process modifications will (1) result in new or substantially increased discharges of pollutants or a change in the nature of the discharge of pollutants, or (2) violate the terms and conditions of the existing permit.

G8. After notice and opportunity for public hearing, this permit may be modified, terminated, or revoked during its term for cause as follows:

a. Violation of any term or condition of the permit;

b. Failure of the permittee to disclose fully all relevant facts or misrepresentation of any relevant facts by the permittee in the application or during the permit issuance process;

c. A change in any condition that requires either a temporary or a permanent reduction or elimination of any discharge controlled by the permit;

d. Information indicating that the permitted discharge poses a threat to human health or welfare;

e. A change in ownership or control of the source; or

f. Other cause listed in 40 CFR Part 122.31.

Permit modification, revocation and reissuance, or termination may be initiated by the department or requested by any interested person.

G9. A permittee who knows or has reason to believe that any activity has occurred or will occur which would constitute cause for modification or revocation and reissuance under condition G8. or 40 CFR Part 122.31 must report its plans, or such information, to the department so that a decision can be made on whether action to modify or revoke and reissue a permit will be required. The department may then require submission of a new application. Submission of such application does not relieve the discharger of the duty to comply with the existing permit until it is modified or reissued.

G10. If any applicable toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Clean Water Act for a toxic pollutant and that standard or prohibition is more stringent than any limitation upon such pollutant in the permit, the department shall institute proceedings to modify or revoke and reissue the permit to conform to the toxic effluent standard or prohibition.

G11. Prior to constructing or modifying any wastewater control facilities, detailed plans shall be submitted to the department for approval in accordance with WAC 173-240. Facilities shall be constructed and operated in accordance with the approved plans.

G12. All other requirements of 40 CFR Part 122.14 are incorporated into this permit by reference.

G13. Nothing in this permit shall be construed as excusing the permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

INFILTRATION-INFLOW (I/I) REPORT GUIDELINES

Special Condition S3 of your NPDES permit requires the annual submission of an I/I report. This report is required in order that the municipality control I/I in their sewage system to prevent:

1. hydraulic overloading of the treatment plant;

2. hydraulic overloading of the collection system resulting in overflows and/or bypasses of sewage; and

3. dilute sewage that cannot be treated to secondary effluent standards.

In order to comply with this requirement the municipality shall submit each year a report giving:

1. The average monthly flow and rainfall for the past year. (For lagoons this means influent flows.)

2. Total population equivalents, PE's, served by the treatment facilities.

3. Additional lengths of sewer lines added to the collection system.

The difference between the highest and lowest monthly average flow will be considered the amount of I/I the treatment facility is experiencing. After the basic study, if the amount of I/I increases by 15 percent for the next two out of three years or exceeds 20 percent of the hydraulic capacity of the treatment plant then the report shall additionally give an explanation for the increased I/I and what corrective measures are planned. Any questions about the report should be directed to the appropriate district engineer.

National Pollutant Discharge Elimination System Waste Discharge Permit

City of Aberdeen

Permit No. WA 003719-2

SPECIAL CONDITIONS

S1. INTERIM EFFLUENT LIMITATIONS

Through October 31, 1981, the permittee is authorized to discharge subject to the following limitations:

The monthly average quantity of effluent discharge shall not exceed 8.75 mgd. Treatment Design Flow is 4.5 mgd.

	EFFLUENT LIMITATIONS	
Parameter	Monthly Average	Weekly Average
Biochemical oxygen demand (5 day)	84 mg/l, 6,305 lb/day	126 mg/l, 9,458 lb/day
Suspended solids	43 mg/l, 3,228 lb/day	65 mg/l, 4,879 lb/day
Fecal coliform bacteria	700/100 ml	1,500/100 ml
pH	Shall not be outside the range 6.0 - 9.0	

The monthly and weekly averages for BOD_5 and Suspended Solids are based on the arithmetic mean of the samples taken. The averages for fecal coliform are based on the geometric mean of the samples taken.

S2. FINAL EFFLUENT LIMITATIONS

Beginning October 31, 1981 the permittee is authorized to discharge subject to meeting the following limitations for secondary treatment.

The monthly average quantity of effluent discharged shall not exceed the wet weather flow of 8.75 mgd.

	EFFLUENT LIMITATIONS	
Parameter	Monthly Average	Weekly Average
Biochemical oxygen demand* (5 day)	30 mg/l, 2,189 lb/day	45 mg/l, 3,284 lb/day
Suspended solids*	30 mg/l, 2,189 lb/day	45 mg/l, 3,284 lb/day
Fecal coliform bacteria	200/100 ml	400/100 ml
pH	Shall not be outside the range of 6.0 - 9.0	

The monthly and weekly averages for BOD_5 and Suspended Solids are based on the arithmetic mean of the samples taken. The averages for fecal coliform are based on the geometric mean of the samples taken.

*The monthly average effluent concentration limitations for BOD_5 and Suspended Solids shall not exceed 30 mg/l or 15 percent of the respective influent concentrations, whichever is more stringent. The concentration and lbs/day limitations above may be made more stringent to reflect 85 percent removal when sufficient data is available for the upgraded system.

Total available (residual) chlorine shall be maintained which is sufficient to attain the Fecal Coliform limits specified above. Chlorine concentrations in excess of that necessary to reliably achieve these limits shall be avoided.

S3. SCHEDULE OF COMPLIANCE

a. The permittee shall complete construction by February 1, 1981 and achieve compliance with the effluent limitations specified in Special Condition S2 by October 31, 1981.

b. Where the department approves a change order or orders extending the date for completion of construction, the dates specified in S3.a. are automatically extended by an equal time period up to a maximum of 90 days, total. Such extensions will be limited to delays caused by circumstances beyond the reasonable control of the permittee.

c. The permittee shall complete the downtown area sewer system rehabilitation by October 31, 1981.

d. The permittee shall submit the annual I/I evaluation as required in Section S5 by May 31, each year beginning in 1982.

e. The permittee shall ensure that an operator certified by the State of Washington for a Class III plant be in responsible charge of the treatment plant by 50 percent completion of the treatment plant construction.

f. The occasional sewer overflows listed in condition ~~S5(e)~~ S6(f) are to be eliminated by the end of the rehabilitation construction schedule except for Discharge No. 1 which is to be eliminated after upgrade construction of the treatment plant.

g. The permittee shall expeditiously initiate and complete the current and remaining steps of the project. Delays that cannot be justified will be cause for enforcement action.

Failure to comply with the schedule outlined herein will subject the permittee to enforcement action under the provisions of RCW 90.48. The permittee shall provide the appropriate regional office of the Department with written notice of compliance or noncompliance with the interim or final requirements not later than 14 days after each date set forth above.

S4. TESTING SCHEDULE

a. The permittee shall monitor the wastewater according to the following schedule until February 1, 1981:

Tests	Sample Point	Sampling Frequency	Sample Type
Temperature	raw sewage	5/week	grab
	anaerobic digester	5/week	grab
pH	raw sewage	5/week	grab
	anaerobic digester	5/week	grab
Flow	influent or effluent	daily	Continuous & Recording
Chlorine Residual	final effluent	2/day (a.m.-p.m.)	grab
DO	raw sewage	5/week	grab
	final effluent	5/week	grab
BOD	raw sewage	weekly	24 hr. composite
	final effluent	weekly	24 hr. composite
Settleable Solids	raw sewage	5/week	grab
	final effluent	5/week	grab
Suspended Solids	raw sewage	weekly	24 hr. composite
	final effluent	weekly	24 hr. composite
Volatile Susp. Solids	raw sludge	monthly	grab
	anaerobic digester sludge (to be wasted)	monthly	grab
Fecal Coliform	final effluent	weekly	grab
Volatile Acids & Alkalinity	digesters	operational control	grab
Gas Analysis & Vol.	digesters	operational control	grab

b. The permittee shall monitor the wastewater according to the followihg schedule after February 1, 1981:

Tests	Sample Point	Sampling Frequency	Sample Type
Temperature	raw sewage	daily	grab
pH	raw sewage	daily	grab
	final effluent	daily	grab
	digester(s)	daily	grab
Flow	influent or effluent	daily	Continuous & Recording
Chlorine Residual*	final effluent	daily	grab
DO	raw sewage	as needed	grab
	final effluent	as needed	grab
	aerators	as needed	grab
BOD**	raw sewage	daily	24 hr. composite
	final effluent	daily	24 hr. composite
TSS Suspended Solids	raw sewage	daily	24 hr. composite
	final effluent	daily	24 hr. composite
	aerators	daily	grab
Volatile Susp. Solids	aerators	3-5/week	grab
	RAS	3-5/week	grab
	aerobic digester	3-5/week	grab
Turbidity and/or Color	final effluent	daily	grab
Loading Index	aerators	as needed	
Fecal Coliform	effluent	daily	grab

*Total available (residual) chlorine.

**Analysis for COD may be substituted for BOD analysis if a long-term correlation is established.

S5. MONITORING AND REPORTING

The permittee shall monitor the operation and efficiency of all treatment and control facilities and the quantity and quality of the waste discharged. A record of all such data shall be maintained. The permittee shall monitor the parameters as specified in condition S4 of this permit.

a. Reporting

Monitoring results obtained during the previous month shall be reported on a form provided by the department, to be submitted no later than the 15th day of the month following the completed reporting period. The report shall be sent to Department of Ecology, Southwest Regional Office, Olympia, Washington 98504. Monitoring shall be started on the effective date of the permit. In addition to the monthly report a monthly summary report form (EPA No. 3320-1) shall be submitted no later than the 15th day of the following month. This report is limited to the parameters specified in condition S4.

b. Records Retention

The permittee shall retain for a minimum of three years all records of monitoring activities and results, including all reports of recordings from continuous monitoring instrumentation. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the director.

c. Recording of Results

For each measurement or sample taken, the permittee shall record the following information: (1) the date, exact place, and time of sampling; (2) the dates the analyses were performed; (3) who performed the analyses; (4) the analytical techniques or method used; and (5) the results of all analyses.

d. Representative Sampling

Samples and measurements taken to meet the requirements of this condition shall be representative of the volume and nature of the monitored discharge.

e. Test Procedures

All sampling and analytical methods used to meet the monitoring requirements specified in this permit shall, unless approved otherwise in writing by the department, conform to the Guidelines Establishing Test Procedures for the Analysis of Pollutants, contained in 40 CFR 136, as published in the Federal Register, on December 1, 1976, or the latest revision thereof, which currently references the following publications:

(1) American Public Health Association, Standard Methods for the Examination of Water and Wastewaters

(2) American Society for Testing and Materials, A.S.T.M. Standards, Part 23, Water, Atmospheric Analysis

(3) Environmental Protection Agency, Methods for Chemical Analysis of Water and Wastes.

c. Provision for Electric Power Failure

The permittee is responsible for maintaining adequate safeguards to prevent the discharge of untreated wastes or wastes not treated in accordance with the requirements of this permit during electrical power failure at the treatment plant and/or sewage lift stations either by means of alternate power sources, standby generator, or retention of inadequately treated wastes. Compliance with the alternate power source requirement is to be accomplished by October 31, 1981.

d. Construction or Maintenance-Related Overflow or Bypass

Bypasses of untreated or partially treated sewage during construction or maintenance shall be avoided if at all feasible.

If a construction or maintenance-related overflow or bypass is contemplated, the permittee shall submit to the department not less than 90 days prior to the contemplated overflow or bypass a report which describes in detail any construction work which will result in overflow or bypass of wastewater. The report shall contain: (1) an analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing; (2) a cost-effective analysis of alternatives including comparative resource damage assessment; (3) the minimum and maximum duration of bypass under each alternative; (4) a recommendation as to the preferred alternative for conducting the bypass; (5) the projected date of bypass initiation; (6) a statement of compliance with SEPA; and, (7) a request for a water quality modification, as provided for in WAC 173-201-100(2).

For probable construction bypasses, the need to bypass is to be identified as early in the planning process as possible. The analysis required above shall be considered during preparation of the engineering report or facilities plan and plans and specifications, and shall be included to the extent practical. In cases where the probable need to bypass is determined early, continued analysis is neccessary up to and including the construction period in an effort to minimize or eliminate the bypass.

Final authorization to bypass may be granted after review of the above information, in accordance with condition G5. Authorization to bypass will be by administrative order.

e. The permittee is required to comply with all terms of Section 201(b) through (g) of the Clean Water Act as amended consistent with the terms of the construction grant.

Occasional Sewer Overflows

The following is a list of sanitary sewer overflows and sewage pumping station bypasses which are occasional point sources of pollutants during inclement weather. They are authorized by the terms of this permit through October 31, 1981.

Discharge No.	Location	Receiving Water
002	Storm pump - 1205 W. State St.	Chehalis River Estuary
003	#2 Lift Sta. - Scott & Mill Sts.	Chehalis River Estuary
004	Overflow - South end of Oak St.	Frye Creek
005	Special Manhole - State & "L" Sts.	Chehalis River Estuary
006	Manhole - Market & "E" Sts.	Chehalis River Estuary
007	#4 Lift Sta. - Heron & Kansas Sts.	Chehalis River Estuary
008	#6 Lift Sta. - Young & Lafayette Sts.	Chehalis River Estuary
009	#7 Lift Sta. - Fifth Avenue	Chehalis River Estuary
010	#3 Lift Sta. - Taylor & Rosecrans Sts.	Chehalis River Estuary
011	Special Manhole - Scott & Crockett St.	Chehalis River Estuary
012	Manhole - Lawrence & Wood Sts.	Chehalis River Estuary

These overflows are to be eliminated or corrected in order to meet water quality standards as determined in the approved Facilities Plan by November 30, 1981.

g. Pretreatment

(1) The permittee shall ensure that all industrial users of the wastewater treatment system are in compliance with the pretreatment regulations promulgated in 40 CFR Part 403 and any additional pretreatment regulations that may be promulgated under Section 307(b), and reporting requirements under Section 308 of the Clean Water Act. The department may issue waste discharge permits to significant industries discharging wastewater to municipal sewerage systems in accordance with RCW 90.48 as amended.

(2) General Prohibitions - In accordance with 40 CFR Part 403.5(b) the following industrial discharges may not be discharged into the system:

A. Pollutants that create a fire or explosion hazard.

B. Pollutants that will cause corrosive damage to Publicly Owned Treatment Works (POTW), more specifically discharges with pH values below 5.0.

C. Solid or viscous pollutants in amounts that could cause obstruction in sewers or otherwise interfere with the operation of POTW.