Fact Sheet

NPDES Permit Number: AK-000092-2
Date: June 30, 1998

The U.S. Environmental Protection Agency (EPA) Plans to Revoke and Reissue the Wastewater Discharge Permit for:

Ketchikan Pulp Company
Mile 8-1/2 North Tongass Highway
Ketchikan, Alaska 99901
and

The State of Alaska Proposes to Certify the Permit and Issue a Consistency Determination

EPA Proposes NPDES Permit Revocation and Reissuance.
EPA proposes to revoke the existing National Pollutant Discharge Elimination System (NPDES) permit to Ketchikan Pulp Company (KPC) and reissue a new permit. The draft permit sets conditions on the discharge--or release--of pollutants from the KPC facility to Ward Cove.

This Fact Sheet includes:
- information on public comment, public hearing, and appeal procedures
- a description of the current discharge
- a listing of proposed effluent limitations and other conditions
- a map and description of the discharge location
- detailed technical material supporting the conditions in the permit

The State of Alaska proposes certification and consistency determination.
The Alaska Department of Environmental Conservation (ADEC) proposes to certify the NPDES permit for KPC, under section 401 of the Clean Water Act. In addition, the Alaska Division of Governmental Coordination (DGC) proposes to issue a determination that the permit is consistent with the Alaska Coastal Management Program under section 307(c) of the Coastal Zone Management Act.

EPA invites comments on the draft permit.

EPA will consider all substantive comments before issuing a final permit. Those wishing to comment on the draft permit may do so in writing by August 7, 1998. In addition, EPA has tentatively scheduled a workshop and public hearing on August 3, 1998, at the Westmark Hotel, Cape Fox Lodge, 800 Venetia Way, Ketchikan (phone 225-8001). The workshop, which is scheduled from 1 to 4 p.m., will be a question and answer session regarding the draft permit. The hearing is scheduled from 7 to 10 p.m. A sign-in process will be used for persons wishing to make a statement or submit written comments at the hearing.

If sufficient interest is not shown during the comment period, the workshop and hearing will be canceled.

After the comment period closes and all comments have been considered, EPA's regional Office of Water Director will make a final decision regarding permit revocation and reissuance.

Persons wishing to comment on State Certification should submit written comments by the public notice expiration date to the State of Alaska Department of Environmental Conservation, Division of Air and Water Quality, 410 Willoughby Avenue, Juneau, Alaska 99801.

Persons wishing to comment on the State Determination of Consistency with the Alaska Coastal Management Program should submit written comments by the public notice expiration date to the State of Alaska, Southeast Regional Office, Office of Management and Budget, Division of Governmental Coordination, P.O. Box 110030, 240 Main St., Suite 500, Juneau, AK 99811-0030, (907)269-7470. Comments should be addressed to the attention of Alaska Coastal Management Program Consistency Review. The Division of Governmental Coordination complies with Title II of the Americans with Disabilities Act of 1990. Individuals with disabilities who may need auxiliary aids, services, or special modifications to participate in this review may contact the number above.

If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the permit along with a response to comments. The permit will become effective 30 days after the issuance date, unless a request for an evidentiary hearing is submitted within 30 days.

Documents are available for review.

The draft NPDES permit and related documents can be reviewed at EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday. To request copies and other information, contact the NPDES Permits Unit at:

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW-130
Seattle, Washington 98101
(206) 553-1214 or
1-800-424-4372 (within Region 10 only)

The fact sheet and draft permit are also available at:

EPA Alaska Operations Office, Room 537
Federal Bldg.
222 W. 7th Avenue, #19
Anchorage, Alaska 99513-7588

EPA Alaska Operations Office
410 Willoughby Avenue
Juneau, Alaska 9980-1795

Alaska Department of Environmental Conservation
540 Water St., Suite 203
Ketchikan, Alaska 99901

Ketchikan Public Library
629 Dock Street
Ketchikan, Alaska 99901.

The draft permit and fact sheet can also be found by visiting the Region 10 website at www.epa.gov/r10earth/offices/water/npdes.htm. To ensure effective communication, additional services can be made available to persons with disabilities by contacting EPA at one of the above addresses. For those with impaired hearing or speech, please contact EPA's telecommunication device for the deaf (TDD) at (206) 553-1598.

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I. APPLICANT

Ketchikan Pulp Company NPDES Permit No.: AK-000092-2

Mailing Address:
P.O. Box 6600
Ketchikan, Alaska 99901

Facility Location:
Mile 8.5 North Tongass Highway
Ketchikan, Alaska 99901

Contact: Allyn Hayes, Plant Manager

II. FACILITY ACTIVITY

Ketchikan Pulp Company (KPC) operates a sawmill at Ward Cove in Ketchikan, Alaska. (See Appendix A for maps of the facility location and discharge points.) Historically, KPC also operated a pulp and paper mill at this site. The pulp mill closed on March 24, 1997.

The facility does not discharge process water from the sawmill. However, the facility will discharge the following waste streams through outfall 001:

Lake Connell water	2 million gallons per day (mgd)
Treated landfill leachate	281,000 gallons per day (gpd)
Treated sanitary wastewater	4,060 gpd
Stormwater	137,000 gpd
Maintenance and construction activity wastewater	50,000 gpd

In addition, during storm events KPC expects to discharge an average of 3.85 million gallons per day (mgd) of stormwater through eight stormwater outfalls. See Appendix B for a detailed discussion of the waste streams and treatment processes.

III. RECEIVING WATER

KPC discharges its wastewaters and stormwater into Ward Cove, located on the north side of Tongass Narrows, about 5 miles northwest of Ketchikan, Alaska. The cove is approximately 0.3 miles wide at the entrance, 0.5 miles wide at the widest point, and approximately 1 mile long.

Ward Cove has been classified by the Alaska Department of Environmental Conservation (ADEC) as marine water with water use classes 2A through 2D (water supply; water recreation; growth and propagation of fish, shellfish, other

aquatic life, and wildlife; and harvesting for consumption of raw mollusks or other raw aquatic life).

In its 1998 list of impaired waters (the 303(d) list), Alaska included Ward Cove as not meeting standards for dissolved oxygen, sediment, and toxic and other deleterious substances. A total maximum daily load (TMDL) for dissolved oxygen in Ward Cove was issued on May 27, 1994. In determining whether water quality-based permit limits were necessary and establishing the appropriate limits in the draft permit, EPA considered the listing of Ward Cove and the TMDL.

IV. FACILITY BACKGROUND

EPA issued a National Pollutant Discharge Elimination System (NPDES) permit to KPC on December 28, 1984. KPC submitted an application for permit reissuance on August 4, 1989, and EPA reissued the permit based on this application on July 7, 1994.

KPC requested an evidentiary hearing on the 1994 permit. Because of this request, many of the conditions of that permit were stayed, resulting in the mill operating under a combination of conditions from the 1994 and 1984 permits. Because these permits were written for the pulp mill that has subsequently closed, most of the conditions in the permits are no longer applicable to this facility.

On March 19, 1997, KPC submitted an application for reissuance of its permit based on the modified discharge resulting from the mill closure. That application included cooling water, boiler blowdown, and steam condensate from operation of the facility's power boilers. However, on March 13, 1998, KPC submitted a revised application based on elimination of these three wastestreams starting March 16, 1998, when operation of the power boilers ceased.

Because the changes to the facility were so extensive, KPC requested that the permit be revoked and reissued rather than modified. Revoking and reissuing the permit allows EPA to consider the entire permit and extends the expiration date. When a permit is modified, EPA must determine which conditions will be subject to modification and the expiration date does not change.

V. EFFLUENT LIMITATIONS

EPA followed the Clean Water Act, state and federal regulations, and EPA's 1991 *Technical Support Document for Water Quality-Based Toxics Control* to develop the proposed effluent limits.

In general, the Clean Water Act requires that the effluent limit for a particular pollutant be the more stringent of either the technology-based or water quality-based limit. EPA sets technology-based limits based on the effluent quality that is achievable using available technology. Water quality-based limits are designed to prevent exceedances of the Alaska water quality standards in Ward Cove.

EPA develops technology-based limits based either on federally-promulgated effluent guidelines or, where such guidelines have not been promulgated for an industry, based on best professional judgement. The Agency evaluates these limits to determine whether they are adequate to ensure that water quality standards are met in the receiving water. If the limits are not adequate, EPA must include additional water quality-based limits. Tables 1 and 2 show the proposed effluent limits in the draft permit. Appendix C provides the basis for the development of effluent limits.

Table 1: Effluent Limitations for Outfall 001

Parameter	Effluent Limitation	
	Maximum Daily	Monthly Average
Chlorine, µg/l	62	43
Color, color units	320	220
Whole Effluent Toxicity, TU_c	31	21
Manganese, mg/l[1]	2.76	1.89

[1] Metals limits are expressed as total recoverable metals.

Table 2: Effluent Limitations for SAN1

Parameter	Effluent Limitation	
	Maximum Daily	Monthly Average
Biochemical oxygen demand, (BOD_5), mg/l	45	30
Total suspended solids (TSS), mg/l	45	30

VI. BEST MANAGEMENT PRACTICES (BMP) PLAN

The 1994 permit required KPC to develop a best management practices (BMP) plan to prevent or minimize the generation and potential for release of pollutants to waters of the United States. The draft plan was submitted to EPA on August 4, 1995, and approved by EPA on September 27, 1995. The draft permit requires that this plan be maintained and that any modifications to the facility are made with consideration to the effect the modification could have on generation or potential release of pollutants.

VII. MONITORING REQUIREMENTS

A. Effluent Monitoring

Section 308 of the Clean Water Act and the federal regulations at 40 CFR §122.44(i) require that permits include monitoring to determine compliance with effluent limitations. Monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results to EPA. Tables 3 and 4 present the proposed monitoring requirements based on the minimum sampling frequency necessary to adequately monitor the facility's performance.

Table 3: Final Effluent Monitoring Requirements

Parameter	Outfall(s)	Monitoring Requirements	
		Sample Frequency	Sample Type
Chlorine, µg/l	001	Monthly	Grab
Color, color units	001	Monthly	24-hour Composite
	Stormwater[1]	3/year[2]	Grab[2]
Whole Effluent Toxicity, TU_c[3]	001	Quarterly	24-hour Composite
Manganese, mg/l[4]	001	Monthly	24-hour Composite
	Stormwater[1]	3/year[2]	Grab[2]
Effluent Flow, mgd	001	NA	Continuous Recording
	Stormwater[1]	3/year[2]	Grab[2]
Turbidity, NTU	001	Monthly	24-hour Composite

Table 3: Final Effluent Monitoring Requirements			
Parameter	Outfall(s)	Monitoring Requirements	
		Sample Frequency	Sample Type
BOD_5, mg/l	001	Monthly	24-hour Composite
	Stormwater[5]	3/year[2]	Grab[2]
pH, standard units	001	Monthly	Grab
	Stormwater[1]	3/year[2]	Grab[2]
Arsenic, µg/l[4]	Stormwater[1]	3/year[2]	Grab[2]
Copper, µg/l[4]	Stormwater[1]	3/year[2]	Grab[2]
Zinc, µg/l[4]	Stormwater[1]	3/year[2]	Grab[2]
Chemical Oxygen Demand (COD), mg/l	Stormwater[1]	3/year[2]	Grab[2]
Total Suspended Solids (TSS), mg/l	Stormwater[1]	3/year[2]	Grab[2]
Oil & grease, mg/l	Stormwater[1]	3/year[2]	Grab[2]
Total Aromatic Hydrocarbons (TAH)[6], µg/l	Stormwater[1]	3/year[2]	Grab[2]
Total Aqueous Hydrocarbons (TAqH)[7], µg/l	Stormwater[1]	3/year[2]	Grab[2]

Footnotes

[1] Stormwater outfalls include SW2, SW4, SW5, SW6, SW7, SW8, SWL6, and SWL11.

[2] See Part III.B. of the draft permit.

[3] See Part III.C. of the draft permit.

[4] Metals must be analyzed as total recoverable metals.

[5] For BOD_5 monitoring, all stormwater outfalls except SW4 and SW5 shall be monitored.

[6] TAH is defined as those compounds measured by EPA Method 602 plus xylenes.

[7] TAqH is defined as the sum those compounds measured by EPA Method 602 plus xylenes and EPA Method 610.

Table 4: Sanitary Waste Monitoring Requirements		
Parameter	Monitoring Requirements	
	Sample Frequency	Sample Type
BOD_5	Monthly	24-hour Composite
TSS	Monthly	24-hour Composite

B. Stormwater Monitoring

The draft permit requires KPC to monitor at least three storm events per year, including both the wet and dry seasons for the parameters in Table 3. The draft permit specifies that the sampling events must be at least one week apart and must be preceded by at least 48 hours of dry weather.

To determine the concentrations of pollutants in the first flush (when pollutants are typically most concentrated), the draft permit requires that samples be collected as soon as practicable after the beginning of a storm event. KPC must also measure or estimate the instantaneous and 24-hour flow so that pollutant loadings can be calculated.

Based on the Ward Cove TMDL, the permit requires BOD monitoring of the stormwater. However, the previous permit allowed KPC to discontinue monitoring of any stormwater outfall that contributed less than 4 lbs/day of BOD. In its application, KPC reported that SW4 and SW5 contribute less than 4 lbs/day of BOD. Therefore, BOD monitoring for these outfalls has been deleted from the draft permit.

C. Quality Assurance Plan

The draft permit requires the permittee to develop a Quality Assurance Plan to ensure that the monitoring data submitted is accurate. The Quality Assurance Plan consists of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The draft permit requires KPC to submit the QAP to EPA within 60 days of effective date of the permit.

D. Representative Sampling

The requirement in the federal regulations regarding representative sampling (40 CFR 122.41[j]) has been expanded and specifically requires sampling whenever a bypass, spill, or non-routine discharge of pollutants occurs, if the discharge may reasonably be expected to cause or contribute to a violation of an effluent limit under the permit. This provision is included in the draft permit because routine monitoring could miss permit violations and/or water quality standards exceedences due to bypasses, spills, or non-routine discharges. This requirement directs KPC to conduct additional, targeted monitoring to quantify the effects of these occurrences on the final effluent discharge.

VIII. OTHER PERMIT CONDITIONS

In addition to facility-specific requirements, the draft permit contains "boilerplate" requirements. Boilerplate is standard regulatory language that applies to all permittees and must be included in NPDES permits. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. The boilerplate covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and general requirements.

IX. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service if their actions could beneficially or adversely affect any threatened or endangered species. EPA has determined that issuance of this permit is not likely to adversely affect any threatened or endangered species in the vicinity of the discharge.

In response to a request for a list of threatened and endangered species in the vicinity of the discharge, National Marine Fisheries Service identified humpback whale (*Megaptera novaeangliae*) as endangered and Steller sea lion (*Eumetopias jubatus*) as threatened in a letter dated March 6, 1997. The US Fish and Wildlife Service identified American peregrine falcon (*Falco peregrinus anatum*) as endangered on March 31, 1997.

EPA evaluated the effect of the discharge from KPC's pulp mill on these species as part of a biological evaluation submitted to National Marine Fisheries Service and US Fish and Wildlife Service on January 3, 1994. In that document, EPA concluded that, because none of these species are known to frequent the Ward Cove area, the discharge from the pulp mill was not likely to adversely affect any threatened or endangered species. The USFWS and NMFS concurred with these determinations on February 2, 1994, and February 4, 1994, respectively. This conclusion is still appropriate.

B. State Certification and Consistency Determination

Section 401 of the Clean Water Act requires EPA to seek certification from the State that the permit is adequate to meet State water quality standards before issuing a final permit. The regulations allow for the state to stipulate more stringent conditions in the permit, if the certification

cites the Clean Water Act or State law references upon which that condition is based. In addition, the regulations require a certification to include statements of the extent to which each condition of the permit can be made less stringent without violating the requirements of State law.

Part of the state's certification is authorization of a mixing zone. On June 18, 1998, the state provided EPA with a proposed mixing zone for KPC's discharge. The water quality-based limits in the draft permit are based on the dilution available in that mixing zone. The draft permit has been sent to the State to begin the final certification process.

If the state authorizes a different mixing zone in its final certification, EPA will recalculate the effluent limitations in the final permit based on the dilution available in the final mixing zone. If the State does not certify the mixing zone, EPA will recalculate the permit limitations based on meeting water quality standards at the point of discharge (zero dilution).

Section 307(c) of the Coastal Zone Management Act requires each federal agency to ensure that any projects it undertakes in coastal zones are consistent with the approved state management program. To ensure consistency, the Alaska Office of Management and Budget, Division of Governmental Coordination, reviews the draft permit and issues a consistency determination. As with certification, the consistency determination may include different conditions that will be incorporated into the final permit.

C. Permit Expiration

This permit will expire five years from the effective date of the permit.

REFERENCES

Alaska Water Pollution Control Board 1953. Ward Cove Survey. August 25, 1953.

Alaska Water Pollution Control Board 1957. First Draft Ward Cove Survey, Ketchikan, Alaska. September 4, 1957.

EPA 1991. Technical Support Document for Water Quality-based Toxics Control. Office of Water Enforcement and Permits, Office of Water Regulations and Standards. Washington, D.C., March 1991. EPA/505/2-90-001.

EPA 1994. Total Maximum Daily Load (TMDL) for Biochemical Oxygen Demand (BOD_5) In the Surface Waters of Ward Cove, Alaska. EPA Region 10, Seattle, WA. May 27, 1994.

APPENDIX A - KPC FACILITY MAPS

Figure A-1 - KPC: Facility Location

For a hard copy of this figure, send a request to:

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW-130
Seattle, Washington 98101
(206) 553-1214 or
1-800-424-4372 (within Region 10 only)

Be sure to reference the NPDES permit number for this facility (AK-000092-2) in addition to the file name.

KPC −Facility Location

Unspecified

Lat: 55 24 15 Long: 131 43 45

This computer representation has been compiled by the U.S. Environmental Protection Agency (EPA) from sources which have supplied data or information that has not been verified by the EPA. This data is offered here as a general representation only, and is not to be used for commercial purposes without verification by an independant professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

LEGEND

Note: Facility labeling turned off for categories with more than 50 points.
Some facilities without good addresses may plot at zip code centroids.
Facility points have been restricted to user specified area.

- EPCRA TRI Site (Toxics Release Inventory)
- Major Roads and Highways
- Other Roads
- County Boundary

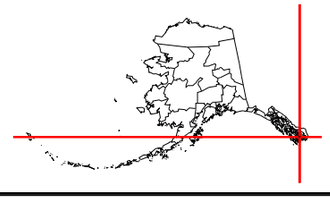
1990 Population Density Per Sq Mi

Under 10	3,000 −6,000
10 −100	6,000 −10,000
100 −1,000	10,000 −20,000
1,000 −3,000	Over 20,000

0 1 2 3

Miles

Albers Projection



EPA

U.S. Environmental Protection Agency

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Figure A-2 - KPC: Outfall Locations

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Seattle, Washington 98101
(206) 553-1214 or
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Be sure to reference the NPDES permit number for this facility (AK-000092-2) in addition to the file name.

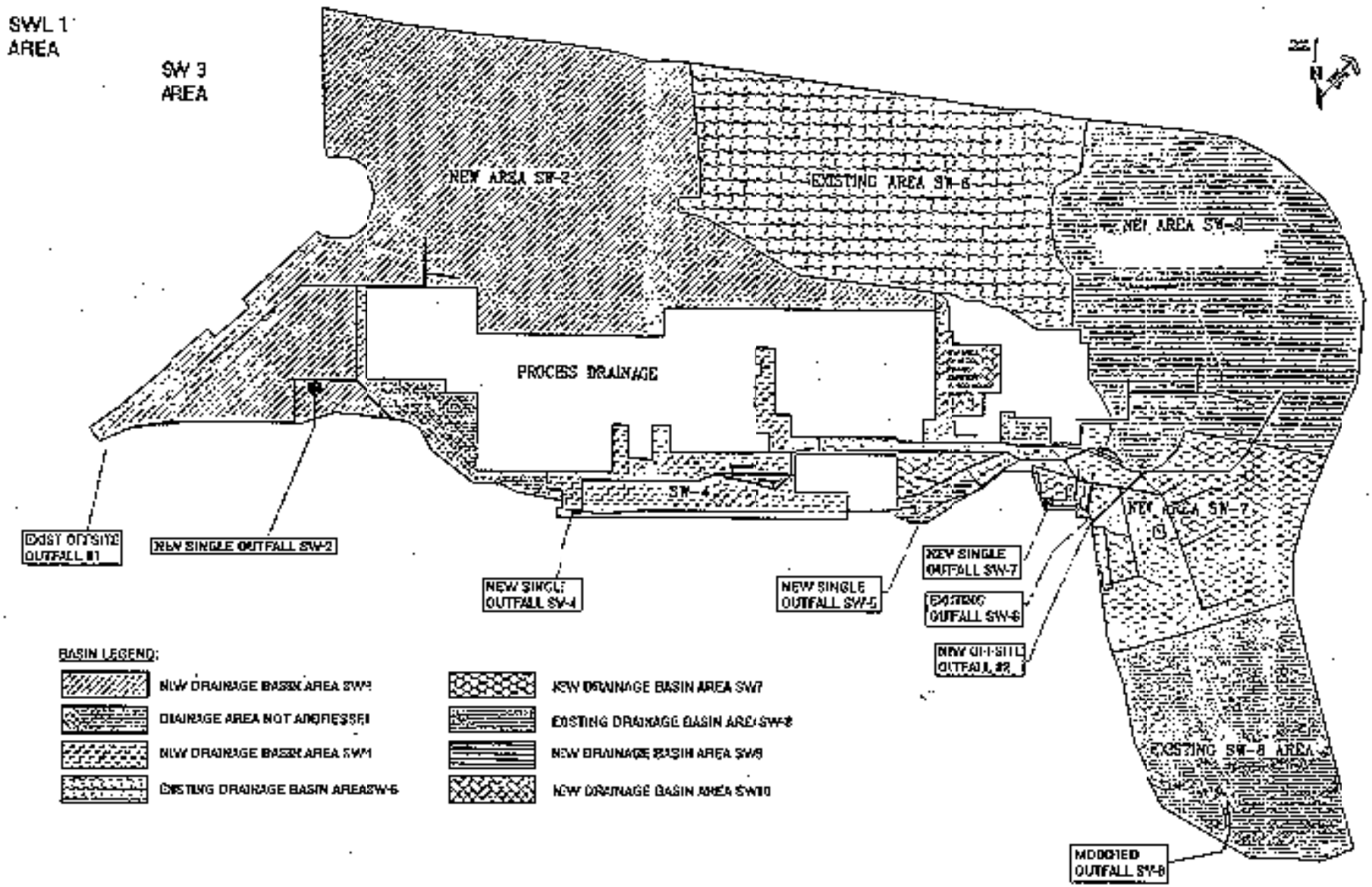

Figure A-2 - KPC Outfall Locations

APPENDIX B - KPC WASTE STREAMS AND TREATMENT PROCESSES

APPENDIX B - KPC WASTE STREAMS AND TREATMENT PROCESSES

I. Waste Streams

Table B-1 shows the waste streams discharged from Ketchikan Pulp Company's (KPC's) Ward Cove sawmill.

Table B-1: KPC Waste Streams

Outfall	Waste stream	Average Flow (gallons/day)
001	Water supply from Lake Connell (to prevent deterioration of wood-stave pipeline)	2,000,000
	Treated landfill Leachate	86,000
	Treated sanitary Wastewater	6,000
	Treated stormwater from hog fuel yard/storage area	53,000
	Stormwater runoff from former process area	84,000
	Maintenance and construction activity wastewater	50,000
SW2	Stormwater runoff from inactive portion of facility	1,000,000
SW4	Stormwater runoff from inactive portion of facility	58,000
SW5	Stormwater runoff from inactive portion of facility	23,600
SW6	Stormwater runoff from inactive portion of facility	1,480,000
SW7	Stormwater runoff from inactive portion of facility	190,000
SW8	Stormwater runoff from inactive portion of facility	32,000
SWL6	Stormwater runoff from closed woodwaste/ash landfill	228,000
SWL11	Stormwater runoff from closed woodwaste/ash landfill	630,000

II. Discharge Composition

In its NPDES application, KPC reported the pollutants listed in Table B-2 as being present in its discharges. The toxic and conventional pollutant categories are defined in the regulations (40 CFR 401.15 and 401.16, respectively). The category of nonconventional pollutants includes all pollutants not included in either of the other categories.

Table B-2: Pollutants Present in Discharge		
Pollutant type	Parameter	Outfall(s)
Conventional	Biochemical oxygen demand (BOD)	001, Stormwater
	Total Suspended Solids (TSS)	001, Stormwater
	pH	001, Stormwater
	Oil and grease	Stormwater
Toxic	Arsenic	001, Stormwater
	Chromium	001
	Copper	001, Stormwater
	Nickel	001
	Zinc	001, Stormwater
Non-conventional	Chemical oxygen demand (COD)	001, Stormwater
	Chlorine	001
	Iron	001
	Color	001, Stormwater
	Manganese	001, Stormwater
	Magnesium	001

III. Treatment Processes

The following is a discussion of the treatment for each outfall. (See Figure B-1.)

Outfall 001

Water from Connell Lake, stormwater from the former process area, and waste water from maintenance related yard cleanup and construction activities (a total of approximately 2.13 million gallons per day, or mgd) will be discharged without treatment. Stormwater from the former and current hog fuel storage areas (53,000 gallons per day, or gpd) will be treated by screening followed by oil/water separator. Approximately 86,000 gpd of landfill leachate will be treated by aeration, settling, and passive treatment (bulrushes planted in a mix of topsoil and sand or gravel). Finally,

the sanitary wastes (approximately 6,000 gpd) will be treated in the mill's existing extended aeration system.

Outfalls SW2, SW4, SW7, and SW8

During storm events, KPC discharges an average of approximately 1.9 mgd of stormwater from inactive portions of the facility through outfalls SW2, SW4, SW7, and SW8. These waste streams are treated with oil/water separators prior to discharge. Residual oily water is removed from the units with absorption pads.

Outfalls SW5 and SW6

During storm events, KPC discharges an average of approximately 1.6 mgd of stormwater from inactive portions of the facility through outfalls SW5 and SW6 without treatment.

Outfalls SWL6 and SWL11

During storm events, KPC discharges an average of approximately 0.85 mgd of stormwater from the closed woodwaste/ash landfill through outfalls SWL6 and SWL11 without treatment. KPC proposes to treat these waste streams with carbonate rock prior to discharge to control pH.

Figure B-1 - KPC: Waste Streams and Processes Diagram

For a hard copy of this figure, send a request to:

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW-130
Seattle, Washington 98101
(206) 553-1214 or
1-800-424-4372 (within Region 10 only)

Be sure to reference the NPDES permit number for this facility (AK-000092-2) in addition to the file name.

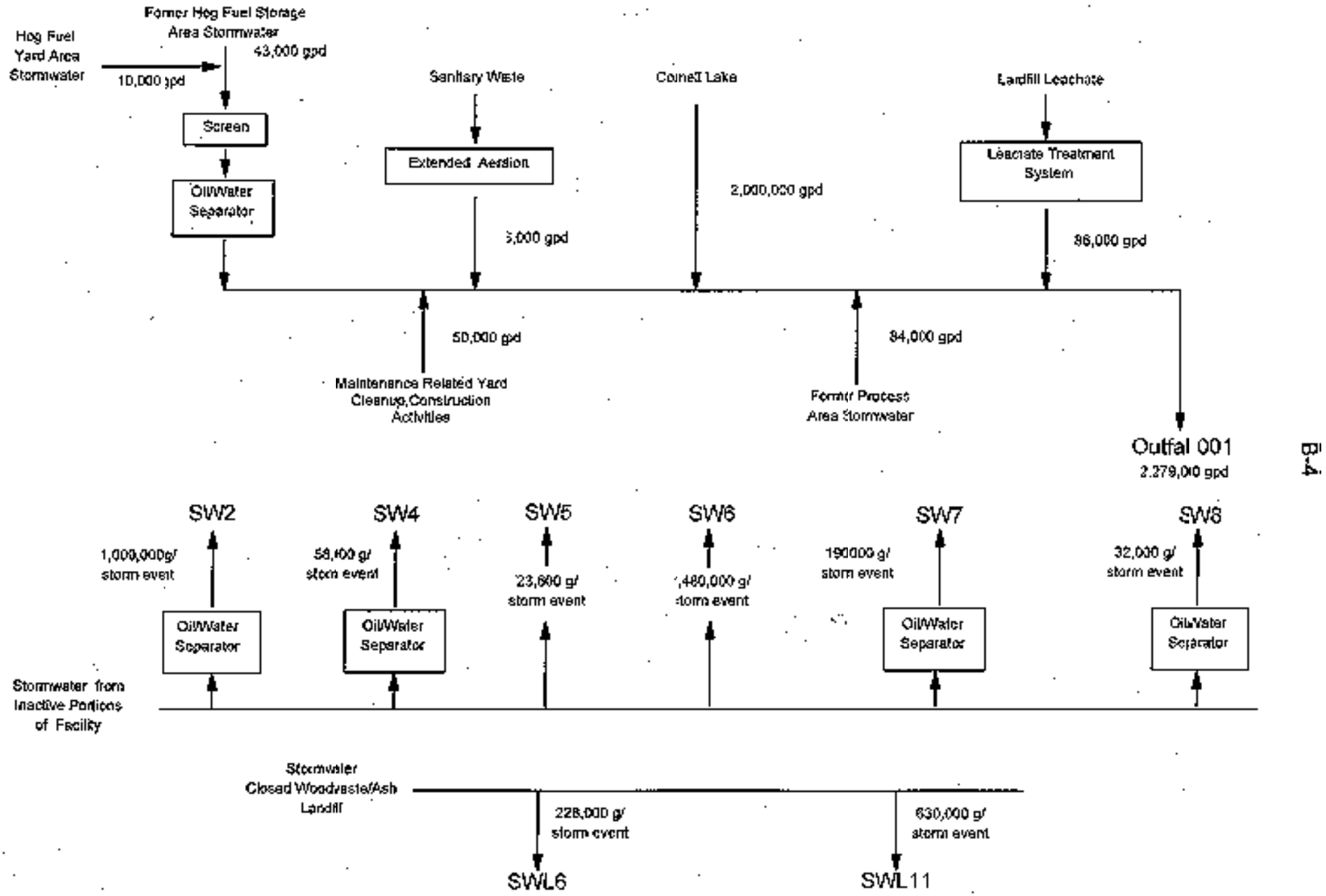

Figure B-1 - KPC Waste Streams and Treatment Processes

APPENDIX C - BASIS FOR EFFLUENT LIMITATIONS

APPENDIX C - BASIS FOR EFFLUENT LIMITATIONS

A. Statutory and Regulatory Basis for Limits

Sections 101, 301(b), 304, 308, 401, 402, and 405 of the Clean Water Act (CWA) provide the basis for the effluent limitations and other conditions in the draft permit. The EPA evaluates the discharge(s) with respect to these sections of the Clean Water Act (CWA) and the relevant National Pollutant Discharge Elimination System (NPDES) regulations to determine which conditions to include in the draft permit.

In general, the EPA first determines which technology-based limits must be incorporated into the permit. EPA then evaluates the effluent quality expected to result from these controls, to see if it could result in any exceedances of the water quality standards in the receiving water. If exceedances could occur, EPA must include water quality-based limits in the permit. The proposed permit limits will reflect whichever requirements (technology-based or water quality-based) are more stringent.

B. Technology-based Evaluation

Section 301(b) of the CWA requires industrial dischargers to meet effluent limitations established by EPA. The CWA initially focused on the control of "traditional" pollutants (conventional pollutants and some metals) through the use of “best practicable control technology currently available” (BPT). Section 301(b)(1)(A) of the CWA requires industries to meet this level of control by July 1, 1977. Section 301(b)(3) of the CWA allowed a deadline for achieving BPT of March 31, 1989, under certain circumstances, but that deadline has also passed. Thus, permits issued after March 31, 1989, must include any conditions necessary to ensure that BPT is achieved.

Section 301(b)(2) of the CWA requires further technology-based controls on effluents. This section of the CWA requires that all permits contain effluent limitations which: (1) control toxic pollutants and nonconventional pollutants through the use of “best available technology economically achievable” (BAT), and (2) represent “best conventional pollutant control technology” (BCT) for conventional pollutants by March 31, 1989. In no case may BCT or BAT be less stringent than BPT.

In many cases, BPT, BCT, and BAT limitations are based on effluent guidelines developed by EPA for specific industries. Where EPA has not yet developed guidelines for a particular industry or a particular pollutant, permit conditions must be established using best professional judgment procedures (40 CFR 122.43, 122.44, and 125.3).

KPC's facility is covered by federal effluent guidelines at 40 CFR 429 that specify the appropriate technology-based limits for the timber products industrial category. KPC's operation falls under two subcategories of the timber products guidelines: barking (Subpart A) and sawmills and planing mills (Subpart K). For both of these subcategories, the regulations specify no discharge of process water as the applicable technology. This prohibition has been incorporated into the draft permit.

In addition to federal effluent guidelines for the barking and sawmill operations, the facility's sanitary waste is subject to State technology-based requirements for biochemical oxygen demand (BOD) and total suspended solids (TSS). See section D for a discussion of these requirements.

C. Water Quality-based Evaluation

In addition to the technology-based limits discussed above, EPA evaluated the discharge to determine compliance with Section 301(b)(1)(C) of the CWA. This section requires the establishment of limitations in permits necessary to meet water quality standards by July 1, 1977. Discharges to state waters must also comply with limitations imposed by the state as part of its certification of NPDES permits under section 401 of the CWA.

The regulations at 40 CFR 122.44(d) implement section 301(b)(1)(C) of the CWA. These regulations require that permits include limits for all pollutants or parameters which "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation. The draft permit includes water quality-based limits for chlorine, color, whole effluent toxicity, and manganese.

In addition to water quality-based limitations for pollutants that could cause or contribute to exceedences of standards, EPA must consider the state's antidegradation policy. This policy is designed to protect existing water quality when the existing quality is better than that required to meet the standard and to prevent water quality from being degraded below the standard when existing quality just meets the standard. The draft permit will result in decreases in the authorized pollutant loadings to Ward Cove. Therefore, the draft permit will not result in degradation of water quality and is consistent with Alaska's antidegradation policy.

In determining whether water quality-based limits are needed and developing those limits when necessary, EPA uses the approach outlined below:

1. Determine the appropriate criteria
2. Determine whether there is "reasonable potential" to exceed the criteria
3. Develop WLA
4. Develop effluent limitation

The following sections provide a detailed discussion of each step. Appendix D provides example calculations to illustrate how these steps are implemented.

1. Water Quality Criteria

The first step in developing water quality-based limits is to determine the applicable water quality criteria. For Alaska, these criteria are found in the State water quality standards (Alaska Administrative Code 18 AAC 70) and the National Toxics Rule (NTR, 40 CFR 131.36). The applicable criteria are determined based on the beneficial uses of the receiving water. Beneficial uses for Ward Cove are: water supply; water recreation; growth and propagation of fish, shellfish, other aquatic life, and wildlife; and harvesting for consumption of raw mollusks or other raw aquatic life. For any given pollutant, different uses may have different criteria. To protect all beneficial uses, the permit limits are based on the most stringent of the water quality criteria applicable to those uses.

2. "Reasonable Potential" Evaluation

To determine if there is "reasonable potential" to cause or contribute to an exceedence of water quality criteria for a given pollutant, EPA compares the maximum projected receiving water concentration to the criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is "reasonable potential", and a limit must be included in the permit. EPA uses the recommendations in Chapter 3 of the *Technical Support Document for Water Quality-based Toxics Control* (TSD, EPA 1991) to conduct this "reasonable potential" analysis.

The maximum projected receiving water concentration is determined using the following mass balance equation. As the mass balance shows, the maximum projected receiving water concentration is based on the maximum projected effluent concentration, dilution (if available), and the background pollutant concentration.

$$C_m = C_a + \frac{C_e - C_a}{D}$$

where,

C_m = concentration at the edge of the mixing zone
C_a = ambient concentration
C_e = maximum projected effluent concentration
D = dilution

The maximum projected effluent concentration in the mass balance equation is represented by the 99th percentile, calculated using the statistical approach recommended in the TSD. The 99th percentile effluent concentration is calculated by multiplying the maximum reported effluent concentration by a reasonable potential multiplier. Reasonable potential multipliers can be found in Table 3-1 of the TSD. The multiplier decreases as the number of data points increases and variability of the data decreases. Variability is measured by the coefficient of variation (CV) of the data. When there are not enough data to reliably determine a CV, the TSD recommends using 0.6 as a default value.

a. Outfall 001

KPC applied to the State of Alaska Department of Environmental Conservation (ADEC) for a mixing zone on March 13, 1998. In a letter dated June 18, 1998, ADEC authorized a mixing zone approximately 15 feet in radius, extending the full depth of the water column, but not including sediments. The dilution available in this mixing zone is 19:1. This dilution was used to determine whether there was reasonable potential and to calculate the WLA for KPC. If ADEC authorizes a different size mixing zone in its final certification, EPA will recalculate the reasonable potential and effluent limits based on the final mixing zone. If no mixing zone is authorized in the final certification, EPA will recalculate the limits based on meeting water quality criteria at the point of discharge.

In evaluating whether there is reasonable potential to cause or contribute to a violation of State water quality standards, EPA considered the following sources of information:

2c form
mixing zone application
discharge monitoring reports (DMRs)
1994 stormwater application.

Because conditions at the facility have changed in the past 18 months, none of these sources fully represents the quality of the current discharge. For example, information on the 2c form was based on monitoring data collected prior to shut down of the power house on March 16, 1998. This shut down changed the nature of the discharge by eliminating boiler blowdown, condensates, and cooling water. Information on pollutant concentrations in the mixing zone application consists of actual monitoring data combined with estimates of pollutant concentrations for wastestreams for which there are no data. Because this information contains estimated pollutant concentrations, it may also not be representative of the actual discharge. As with the 2c form, DMRs submitted prior to March 1998 consists of actual sampling data from outfall 001. The DMRs from March and April are representative of the current discharge, however, because there are only two months, they are a very limited data base. Finally, KPC has changed its handling of stormwater since the 1994 application, combining 21 outfalls into eight and closing down portions of the facility. Therefore, data in this application may not be representative of current stormwater discharges.

As a result of the above data limitations, EPA used a conservative approach to determining reasonable potential. Where information from the mixing zone application was used to determine reasonable potential, 0.6 was used for the CV. In addition, EPA assumed only one data point (the minimum), resulting in a reasonable potential multiplier of 13.2 for these parameters. Where actual effluent data from the 2c form or DMRs were used, a CV of 0.6 and the actual number of samples were used to determine the reasonable potential multiplier.

Table C-1 summarizes reasonable potential multiplier, maximum effluent concentration, maximum projected effluent concentration (C_e), and most stringent criterion for each parameter.

TABLE C-1: Maximum Projected Effluent Concentrations from Outfall 001

Parameter	Maximum Reported Effluent Concentration, µg/L	Reasonable Potential Multiplier	Maximum Projected Effluent Concentration (C_e), µg/L	Maximum Projected Ambient Concentration (C_m), µg/L	Most Stringent Criterion, µg/l
Arsenic	3.47	2.9	10.	0.53	36
Cadmium, µg/l	0.03	13.2	0.40	0.021	9.3
Chlorine, µg/l	10	13.2	130	7.0[1]	2.0

TABLE C-1: Maximum Projected Effluent Concentrations from Outfall 001					
Parameter	Maximum Reported Effluent Concentration, µg/L	Reasonable Potential Multiplier	Maximum Projected Effluent Concentration (C_e), µg/L	Maximum Projected Ambient Concentration (C_m), µg/L	Most Stringent Criterion, µg/l
Chromium VI, µg/l	0.32	2.9	4.2	0.22	5.0
Color, CU	79	13.2	1,042	60[1]	15
Copper, µg/l	5.26	2.9	15	0.81	2.9
Manganese, mg/l	267	13.2	3,500	186[1]	0.100
Mercury, µg/l	0.0008	13.2	0.01	0.00056	0.025
Nickel, µg/l	0.97	2.9	13	0.68	7.1
Sulfide, µg/l	2	13.2	26	1.4	2.0
WET, TU_c	6.53	13.2	86	4.56[1]	1.0
Zinc, µg/l	20.7	13.2	270	14	95

[1]Maximum projected ambient concentration indicates "reasonable potential" to exceed water quality standards.

In addition to these analyses, EPA evaluated whether the pH of the discharge had the reasonable potential to cause or contribute to a violation of the state standard for pH. The State standard for pH requires that pH be within the range of 6.5 to 8.5 pH units with no more than 0.1 pH unit variation from natural conditions. Because pH is a logarithmic scale, the reasonable potential multipliers cannot be used to determine the maximum and minimum projected pH. Instead, the minimum and maximum reported pH were compared with the minimum and maximum pH that could be discharged without causing water quality standards to be exceeded.

KPC's NPDES application states that the effluent ranges from 6.2 to 7.5 and the receiving water ranges from 7.0 to 8.4. Based on this receiving water range, modeling indicates that the effluent pH could range from 4.8 to 11.5 without causing a violation of the standard for pH at the edge of the mixing zone. Therefore, EPA has concluded that there is no reasonable potential for the discharge to cause or contribute to a violation of water quality standards.

b. Stormwater Outfalls

In its application, KPC did not request mixing zones for any of the stormwater outfalls. Therefore, EPA conducted the reasonable potential analysis for the stormwater outfalls assuming that standards must be met without dilution.

Data from KPC's 2c application show that, with the exception of outfall SWL11, the stormwater outfalls all showed reasonable potential to cause or contribute to an exceedence of the water quality standard for pH. In its 2c application, KPC checked "believed absent" for several parameters, including color, arsenic, copper, manganese, and zinc. However, Its 1994 stormwater application showed concentrations of these pollutants at levels that could contribute to exceedences of water quality standards. Therefore, monitoring for these parameters has been included in the draft permit.

3. Wasteload Allocation (WLA) Development

Once the need for a permit limit is established, the first step in developing a permit limit is development of a WLA for the pollutant. A WLA is the concentration (or loading) of a pollutant that the permittee may discharge without causing or contributing to an exceedence of water quality standards in the receiving water. WLAs for this permit were established in three ways: mixing zone-based WLAs, a TMDL-based WLA for biochemical oxygen demand, and end-of-pipe WLAs for the stormwater outfalls.

a. Mixing zone-based WLA

Where the state authorizes a mixing zone for the discharge, the WLA is calculated as a mass balance, based on the available dilution, background concentrations of the pollutant(s), and the water quality criteria. Because the different criteria (acute aquatic life, chronic aquatic life, human health) apply over different time frames and may have different mixing zones, it is not possible to compare them directly to determine which criterion results in the most stringent limits. For example, the acute criteria are applied as a one-hour average and may have a smaller mixing zone, while the chronic criteria are applied as a four-day average and may have a larger mixing zone. To allow for comparison, each criterion is statistically converted to a long-term average WLA. This conversion is dependent upon the coefficient of variation (CV) of the effluent data and the probability basis used. The probability basis corresponds to the percentile of the estimated

concentration. EPA uses a 99th percentile for calculating a long-term average, as recommended in the TSD. Based on this analysis, the criterion that results in the most stringent long-term average WLA is used to calculate the permit limits.

b. TMDL-based WLA

Where the receiving water quality does not meet water quality standards, the WLA is generally based on a total maximum daily load (TMDL) developed by the State. A TMDL is a determination of the amount of a pollutant, or property of a pollutant, from point, nonpoint, and natural background sources, including a margin of safety, that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards. Section 303(d) of the CWA requires states to develop TMDLs for water bodies that will not meet water quality standards after the imposition of technology-based effluent limitations to ensure that these waters will come into compliance with water quality standards.

The first step in establishing a TMDL is to determine the assimilative capacity (the loading of pollutant that a water body can assimilate without exceeding water quality standards). The next step is to divide the assimilative capacity into allocations for nonpoint sources (called load allocations, or LAs), point sources (called wasteload allocations), natural background loadings, and a margin of safety to account for any uncertainties. Permit limitations are then developed for point sources that are consistent with the WLAs. Because the TMDL generally specifies the duration of the WLA (for example, maximum, monthly average, or long-term average), the statistical approach described above is not necessary to compare different duration criteria.

On May 27, 1994, EPA issued a final TMDL for BOD in Ward Cove. This TMDL was necessary because the cove was not meeting water quality standards for dissolved oxygen. BOD is a measure of the oxygen-demanding material in the receiving water and effluent. The TMDL established a seasonal WLA for KPC in the TMDL, resulting in daily maximum and monthly average permit limits for BOD of 23,100 and 12,700 lbs/day, respectively from June through October.

With closure of the pulp mill, the BOD in KPC's discharge has dropped significantly. In its March 13, 1998, application, the facility reported a maximum discharge of 71 lbs/day from outfall 001 and 674 lbs/day combined from all stormwater outfalls. This value is well below the WLA

established in the TMDL, with no reasonable potential to exceed it. Therefore, the draft permit does not include limits for BOD.

c. "End-of-Pipe" WLA

In some cases, there is no dilution available, either because the receiving water exceeds the criteria or because the State has decided not to authorize a mixing zone for a particular pollutant. When there is no dilution, the criterion becomes the WLA. The pH limits for the stormwater outfalls in the draft permit are based on meeting the state standards at the point of discharge.

4. Permit Limit Derivation

Once the WLA has been developed, EPA applies the statistical permit limit derivation approach described in Chapter 5 of the TSD to obtain daily maximum and monthly average permit limits. This approach takes into account effluent variability, sampling frequency, water quality standards, and the difference in time frames between the monthly average and daily maximum limits.

The daily maximum limit is based on the CV of the data and the probability basis, while the monthly average limit is dependent on these two variables and the monitoring frequency. As recommended in the TSD, EPA used a probability basis of 95 percent for monthly average limit calculation and 99 percent for the daily maximum limit calculation. As with the reasonable potential calculation, because there are not enough data to calculate a CV, EPA assumed a CV of 0.6 for both monthly average and daily maximum calculations.

D. Effluent Limitations

This discussion outlines the basis for each of the effluent limitations in KPC's draft permit.

1. Outfall 001

a. Chlorine

The most stringent Alaska standard for chlorine is 2.0 µg/l. The maximum concentration reported by KPC in its application is 10 µg/l. EPA assumed a background concentration of zero because there are no other significant sources of chlorine discharging to Ward Cove. As shown in Table C-1,

the discharge has reasonable potential to cause or contribute to an exceedence of the standard. Using the assumptions discussed above, and following the procedure in Appendix D, EPA calculated daily maximum and monthly average effluent limitations of 62 and 24 µg/l, respectively.

b. Color

The most stringent Alaska standard for color is for protection of water supply for seafood processing. That standard sets a maximum for color of 15 color units or the natural color, whichever is greater. Studies conducted by the Alaska Water Pollution Control Board (AWPCB 1953 and 1957) indicate that the natural color in Ward Cove is generally less than 5 color units. Therefore, the standard of 15 color units applies.

The relationship between effluent color and receiving water color is not certain. Color is not a conservative pollutant (i.e., it may be created or reduced in the receiving water by chemical/physical interactions), so it is difficult to back-calculate an effluent limit for color based on a receiving water standard. However, in 1984, the Ninth Circuit Court ruled that EPA must calculate an effluent limit instead of applying a standard in the receiving water (Trustees for Alaska v. EPA, 749 F. 2d 549). Therefore, the draft permit contains an effluent limit for color based on the assumption that it is a conservative pollutant.

The maximum color reported by KPC in its application is 79 color units. Because KPC is the only source of color other than natural sources, the historic value of 5 color units was used as the background concentration.

As shown in Table C-1, the discharge has reasonable potential to cause or contribute to an exceedence of the standard. Using the assumptions discussed above, and following the procedure in Appendix D, EPA calculated daily maximum and monthly average effluent limitations of 320 and 220 color units, respectively.

c. Whole effluent toxicity

For protection of aquatic life, the Alaska State standard for whole effluent toxicity states,

> An effluent discharged to a water may not impart chronic toxicity to aquatic organisms, expressed as 1.0 chronic toxic unit, at the point of discharge, or if the department authorizes a mixing zone in

> permit, approval, or certification, at or beyond the mixing zone boundary. . .

The maximum value for whole effluent toxicity reported by the permittee is an IC_{25} of 6.53 TU_c for toxicity to sea urchins. Because there were no data available to determine the background whole effluent toxicity, EPA assumed a value of zero. As shown in Table C-1, the discharge has reasonable potential to cause or contribute to an exceedence of the standard. Using the assumptions discussed above, and following the procedure in Appendix D, EPA calculated daily maximum and monthly average effluent limitations of 31 and 21 TU_c, respectively.

d. Manganese

The Alaska State standard for manganese is 0.100 mg/l for protection of human health. The maximum concentration reported by KPC is 267 mg/l. Because there were no data available to determine the background manganese concentrations, EPA assumed a value of zero. As shown in Table C-1, the discharge has reasonable potential to cause or contribute to an exceedence of the standard. Using the assumptions discussed above, and following the procedure in Appendix D, EPA calculated daily maximum and monthly average effluent limitations of 2.76 and 1.89 mg/l, respectively.

2. Stormwater Outfalls

The most stringent State water quality standards for pH require that pH be within the range of 6.5 to 8.5, with no more than a 0.1 standard unit variation from natural conditions. The pH values reported by KPC for its stormwater outfalls range from 5.9 (outfall SW5) to 9.1 (outfall SW8). Because KPC did not request mixing zones for the stormwater discharges, the draft permit requires that the discharges from the stormwater outfalls be within the range of 6.5 to 8.5 at all times.

3. Sanitary Waste

Alaska State regulations (18 AAC 072.40) require that facilities discharging domestic waste meet secondary treatment requirements. Secondary treatment is defined in federal regulations (40 CFR §133.102) as a monthly average concentration of 30 mg/l and a daily maximum concentration of 45 mg/l for BOD and TSS. These requirements were included in the 1994 permit and have been included in the draft permit. They apply at the point of discharge from the sanitary plant before it commingles with other waste streams.

APPENDIX D -EFFLUENT LIMIT CALCULATIONS

APPENDIX D - EFFLUENT LIMIT CALCULATIONS

NPDES Permit Limit Calculation for Whole Effluent Toxicity

Step 1: Determine the appropriate criteria

Define the uses of the receiving water. Ward Cove is protected for water supply; water recreation; growth and propagation of fish, shellfish, other aquatic life, and wildlife; and harvesting for consumption of raw mollusks or other raw aquatic life. In water protected for aquatic life, the State standards require that discharges may not exceed 1.0 chronic toxic unit (TU_C) at the edge of the State-approved mixing zone. There is no corresponding acute value.

Step 2: Determine whether there is "reasonable potential" to exceed the criteria

There is reasonable potential to exceed criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the criterion. The maximum projected concentration is calculated from the following equation:

$$C_m = C_a + \frac{C_e - C_a}{D}$$

where,

C_m = concentration at the edge of the mixing zone
C_a = ambient concentration
= 0
C_e = maximum projected effluent concentration
= maximum reported effluent concentration * reasonable potential
= 6.53 * 13.2 = 86
D = dilution
= 18.9

$$C_m = 0 + \frac{86 - 0}{18.9}$$

$$C_m = 4.56\ TU_c$$

This value is greater than the criterion, therefore a limit must be included in the permit.

Step 3: Calculate the wasteload allocations

Wasteload allocations (WLAs) are calculated using the same mass balance equation used to calculate the concentration of the pollutant at the edge of the mixing zone.

However, C_m becomes the criterion and C_e is replaced by the acute or chronic WLA. The equation is rearranged to solve for the WLA, becoming:

$WLA = C_a + D * (C_m - C_a)$

$= 0 + 18.9 * (1 - 0)$

$WLA = 18.9\ TU_c$

Because the standard is a chronic value, no derivation of an acute WLA or a human health WLA is necessary.

The WLAs are converted to long-term average concentrations. In this case, only a chronic long-term average concentration (LTA_c) is calculated, using the following equations from EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD):

$$LTA_c = WLA_c * e^{[0.5\sigma_4^2 - z\sigma_4]}$$

where:

$\sigma_4^2 = \ln(CV^2/4 + 1)$
$z = 2.326$ for 99^{th} percentile probability basis
CV = coefficient of variation
= standard deviation/mean

Using 0.6 for the CV as recommended in the TSD where there are not enough data to calculate a CV, σ_4^2 is:

$\sigma_4^2 = \ln[(0.6^2/4) +1]$
$= 0.08618$

$\sigma_4 = 0.2936$

$LTA_c = 18.9 * e^{[0.5 * 0.08618 - 2.326 * 0.2936]}$

$LTA_c = 9.97\ TU_c$

Generally, the LTAs are compared and the most stringent is used to develop the daily maximum and monthly average permit limits. In this case, there is only a chronic LTA.

Step 5: Derive the maximum daily (MDL) and average monthly (AML) permit limits

Using the TSD equations, the MDL and AML permit limits are calculated as follows:

$$MDL = LTA_c * e^{[z\sigma - 0.5\sigma^2]}$$

where:

σ^2 = $\ln(CV^2 + 1)$
z = 2.326 for 99th percentile probability basis
CV = coefficient of variation

σ^2 = $\ln(0.6^2 + 1)$
σ^2 = 0.3075

σ = 0.5545

$$MDL = 9.97 * e^{[2.326 * 0.5545 - 0.5 * 0.3075]}$$

$$= 31\ TU_c$$

$$AML = LTA_c * e^{[z\sigma - 0.5\sigma^2]}$$

where:

σ^2 = $\ln(CV^2/n + 1)$
z = 1.645 for 95th percentile probability basis
CV = coefficient of variation
= standard deviation/mean
n = number of sampling events required per month

Where sampling is less than monthly (for example, quarterly) n should be set equal to 1

$$AML = 9.97 * e^{[1.645 * 0.5545 - 0.5 * 0.3075]}$$

$$= 21\ TU_c$$