



Fact Sheet

NPDES Permit Number: AK-005333-3
Date: May 24, 2002
Public Notice Expiration Date: July 8, 2002
Technical Contact: Cindi Godsey (907) 271-6561 or
1-800-781-0983 (within Alaska)
godsey.cindi@epa.gov

The U.S. Environmental Protection Agency (EPA) Plans To Issue A Wastewater Discharge Permit To:

Aurora Energy Chena Power Plant

Fairbanks, Alaska 99707

and the State of Alaska proposes to Certify the Permit

EPA Proposes NPDES Permit Issuance.

The EPA proposes to issue a *National Pollutant Discharge Elimination System* (NPDES) permit to Aurora Energy Chena Power Plant. The draft permit sets conditions on the discharge of pollutants from the power plant to the Chena River. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a description of the current discharge
- a description of the discharge location and a map and
- technical material supporting the conditions in the permit

Alaska State Certification.

The EPA requests that the Alaska Department of Environmental Conservation (ADEC) certify the NPDES permit to the Aurora Energy Chena Power Plant under section 401 of the Clean Water Act. The EPA may not issue the NPDES permit until the state has granted, denied, or waived certification. The state of Alaska has provided a draft certification for the permit (See Appendix B). For more information concerning this

review, please contact Luke Boles at (907) 451-2142 or 610 University Avenue, Fairbanks, Alaska 99709 or Luke_Boles@envircon.state.ak.us

Public Comment

The EPA will consider all comments before issuing the final permit. A public hearing will be held jointly with ADEC on June 24, 2002, from 6 to 9 pm at the Noel Wien Public Library, 1215 Cowles Street, Fairbanks, Alaska. Those wishing to comment on the draft permit may do so in writing by the expiration date of the Public Notice. All comments should include name, address, phone number, a concise statement of basis of comment and relevant facts upon which it is based. All written comments should be addressed to the Office of Water Director at U.S. EPA, Region 10, 1200 Sixth Avenue, OW-130, Seattle, WA 98101; submitted by facsimile to (206) 553-0165; or submitted via e-mail to godsey.cindi@epa.gov

After the Public Notice expires and all significant comments have been considered, EPA's regional Director for the Office of Water will make a final decision regarding permit reissuance. If no comments requesting a change in the draft permit are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If significant comments are received, the EPA will address the comments and reissue the permit along with a response to comments. The permit will become effective 30 days after the issuance date, unless the permit is appealed to the Environmental Appeals Board (EAB) within 30 days.

Persons wishing to comment on State Certification should submit written comments by the public notice expiration date to the Alaska Department of Environmental Conservation c/o Luke Boles, 610 University Avenue, Fairbanks, Alaska 99709 or Luke_Boles@envircon.state.ak.us

Documents are Available for Review.

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday (See address below). Draft permits, Fact Sheets, and other information can also be found by visiting the Region 10 website at www.epa.gov/r10earth/water.htm

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW-130
Seattle, Washington 98101
(206) 553-0523 or
1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permit are also available at:

EPA Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, Alaska 99513-7588
(800) 781-0983 toll free in Alaska only

Alaska Department of Environmental Conservation
610 University Avenue
Fairbanks, Alaska 99709

For technical questions regarding the permit or fact sheet, contact Cindi Godsey at (907) 271-6561 or godsey.cindi@epa.gov. Services can be made available to persons with disabilities by contacting Audrey Washington at (206) 553-0523.

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TECHNICAL INFORMATION

I. APPLICANT

Aurora Energy, LLC
100 Cushman Street, Suite 210
Fairbanks, Alaska 99701

Facility Contact: Bartly Coiley, Civil Engineer

II. FACILITY ACTIVITY

Aurora Energy, LLC owns and operates the Aurora Energy Chena River Power Plant (the facility), a coal-fired facility that generates electricity, steam heat, and hot water for Fairbanks customers. The facility is located in downtown Fairbanks on the south bank of the Chena River. The facility has one outfall (Outfall 001) that discharges once-through cooling water from the plant to the Chena River. The total discharge from the facility is approximately 20 million gallons per day (mgd).

A draft permit was prepared in 1977 but was not finalized. The facility has operated under those requirements since that time.

III. RECEIVING WATERS

- A. Outfall Location. The facility discharges to the Chena River via Outfall 001. Outfall 001 is located at latitude 64° 50' 54" N, and longitude 147° 44' 06" W. The discharge pipe is a submerged, single nozzle pipe located right above the river bottom. The pipeline from the cross connect to the discharge structure has a 48 inch diameter. The pipe is positioned perpendicular to the flow of the river.
- B. Water Quality Standards. The Alaska State Water Quality Standards (WQS) are composed of use classifications, and numeric and/or narrative water quality criteria. The use classification system designates the beneficial uses that each water body is expected to achieve (such as cold water biota, contact recreation, etc.). The numeric and/or narrative water quality criteria are the criteria deemed necessary, by the State, to support the beneficial use classification of each water body.

The Chena River is protected in the WQS for freshwater Classes (1) (A)(ii), (iii),(iv), (B), and (C) for uses in water supply (culinary and food processing, agriculture, aquaculture, and industrial water supply), water recreation (contact and secondary recreation), and growth and propagation of fish, shellfish, other aquatic life and wildlife.

The water quality parameters that could be affected by the discharge from the facility are temperature and pH. These are common potential water quality parameters of concern when discharging non-contact cooling water.

IV. DESCRIPTION OF DISCHARGE

Twenty million gallon per day (MGD) flow from the Chena River is collected at the Intake House and then flows through one of two cooling systems within the facility before it is discharged. The first cooling system uses 18.5 mgd of cooling water. Flow is split from the Intake House and is sent to the Condenser units, where it is split again. The Old Side Condenser receives a flow of 6.2 mgd, while 12.3 mgd of flow is sent through the Chena 5 Condenser. The remaining 1.5 mgd of the intake is sent through the facility as equipment cooling water. These three cooling water streams are then collected together and sent to the Mixing House, where they are discharged to the Chena River. However, in winter, 3.9 mgd of this flow is recirculated back to the Intake House and is re-used in the system.

Wastewater is not treated before it is discharged to the receiving water. The quality of the water used in the once-through circulating water system (condensers and component heat exchangers) varies as the quality of the water in the Chena River varies. The only significant change in water quality that will be attributed to the river water passing through the once-through circulating water system will be an increase in the discharge water temperature.

V. PERMIT REQUIREMENTS

A. Applicable Laws and Regulations

In general, the Clean Water Act requires that the effluent limits for a particular pollutant be the more stringent of either technology-based effluent limits or water quality-based limits. A technology based effluent limit requires a minimum level of treatment for industrial point sources based on currently available treatment technologies. A water quality-based effluent limit is designed to ensure that the water quality standards of a waterbody are being met. For more information on deriving water quality-based effluent limits, see Appendix C.

B. Effluent Limitations

An evaluation was done comparing the technology-limitations in 40 CFR Part 423 with the WQ-based limitations discussed in Appendix C. For pH, the WQ-based limitation is more restrictive. Free available chlorine is not included in the permit because chlorine is not used in the system and the permit application indicates that chlorine is below the detection level.

The following summarizes the effluent limitations that are in the draft permit.

1. Wastewater from Outfall 001 shall meet the following effluent limitations.

Effluent Parameter	DISCHARGE LIMITATIONS	
	Maximum Daily Limit	Average Monthly Limit
Flow*, mgd	20	Report
Temperature, °C		
Winter (Oct - May)	25.6	22.6
Summer (June - Sept)	30.7	26.6
* Flow shall be measured continuously.		

2. Temperature (°C) shall be monitored continuously for Outfall 001.
3. The pH shall be not be less than 6.5 standard units not greater than 8.5 standard units.
4. There shall be no discharge of floating solids, visible foam, other than in trace amounts, or oily wastes which produce a sheen on the surface of the receiving water.

C. Monitoring Requirements

1. Effluent Monitoring: Self-monitoring of effluent parameters is necessary for the permittee to demonstrate compliance with effluent limitations and to assure that state water quality standards are met. Monitoring frequencies are based on the Agency's determination of the minimum sampling frequency required to adequately monitor the facility's performance. Required sample types are based on the Agency's determination of the potential for effluent variability. These determinations take into consideration several factors, of which the most important are the type of pollutants of concern and the type of treatment system.

The following summarizes the monitoring requirements that are in the draft permit:

- a. pH be monitored once per week to ensure compliance with the effluent limitation.
- b. Flow and temperature will be monitored continuously.
- c. The ADEC draft 401 Certification contains ambient monitoring and frequency requirements. The proposed permit requires monthly ambient monitoring for temperature and dissolved oxygen at a station 800 feet downstream of the outfall. Monitoring frequency will be evaluated by EPA and ADEC after two years and could be

reduced to quarterly during March through November and monthly during December through February.

D. Best Management Practices

Section 304(e) of the CWA requires EPA to include conditions in the NPDES permit that require the permittee to develop a Best Management Practices (BMP) Plan. The BMP Plan will be used to control the discharge of toxics or hazardous pollutants by way of spillage or leaks, sludge or waste disposal, and drainage from raw material storage. Additionally, section 402 (p)(2)(B) of the CWA requires EPA to address storm water discharges associated with industrial activities within the framework of the NPDES permitting process. EPA is authorized under 40 CFR 122.44(k) to impose BMP's in lieu of numeric effluent limitations in NPDES permits when the Agency finds numeric effluent limitations to be infeasible. Any applicable storm water requirements should be incorporated into the BMP Plan.

The intent of the BMP Plan is to recognize the hazardous nature of various substances used and produced by the facility and the way such substances may be accidentally dispersed. The BMP Plan should incorporate elements of pollution prevention as set forth in the Pollution Prevention Act of 1990, 42 U.S.C. 13101.

The BMP Plan must be amended whenever there is a change in the facility or in the operation of the facility which materially increases the potential for an increased discharge of pollutants. The BMP Plan will become an enforceable condition of the permit. A violation of the BMP Plan is a violation of the permit.

E. Quality Assurance Plan

The permit requires the permittee to update its Quality Assurance Plan. The purpose of the Quality Assurance Plan is to establish appropriate sampling, handling and analytical procedures for all effluent and ambient water samples taken.

F. Additional Permit Provisions

Sections II, III, and IV of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

VI. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to request a consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) regarding potential effects an action may have on listed endangered species. EPA sent letters to the Services on July 2, 2001.

USFWS responded in a letter dated July 16, 2001. USFWS indicated that the project is not likely to affect listed species and that preparation of a Biological Assessment or further consultation is not necessary at this time.

NMFS responded in a letter dated September 13, 2001. NMFS indicated that they do not expect any endangered species under their jurisdiction to occur in the project area.

B. Essential Fish Habitat

Section 305(b) of the Magnuson-Stevens Act [16 USC 1855(b)] requires federal agencies to consult with NMFS when any activity proposed to be permitted, funded, or undertaken by a federal agency may have an adverse effect on designated Essential Fish Habitat (EFH) as defined by the Act. The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site-specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

EPA has determined that issuance of this permit will not likely have an adverse effect on EFH in the vicinity of the discharge. Effluent limitations have been incorporated into the draft permit based on criteria considered to be protective of overall water quality in the Chena River. ADF&G has determined that no adverse impact on the indigenous and anadromous populations of aquatic life in the Chena River have been documented from the past occurrence of the thermal discharge from the facility. EPA will provide NMFS with copies of the draft permit and fact sheet during the public notice period. Any comments received from NMFS regarding EFH will be considered prior to reissuance of this permit.

C. State Certification

Section 401 of the Clean Water Act requires EPA to seek state certification before issuing a final permit. As a result of the certification, the state may require more stringent permit conditions to ensure that the permit complies with water quality standards. A draft 401 Certification is included as Appendix B.

D. Permit Expiration

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

VII. **REFERENCES**

USGS Water-Resources Investigations Report 00-4227 by Robert L. Burrows, Dustin E. Langley and David M. Evetts, 2000.

Review of Water Quality Standards, Permit Limitations and Variances for Thermal Discharges at Power Plants. Prepared for EPA by Wade Miller Associates, Inc. and the Office of Wastewater Enforcement and Compliance.

Effects of Thermal Discharge Upon a Subarctic Stream (Completion Report: OWRT Project B-020-ALAS). Institute of Water Resources, University of Alaska, Fairbanks. By Robert F. Carlson, Timothy Tilsworth and Charlotte Hok.

Draft Preliminary Evaluation of Aurora Energy's Thermal Discharge to the Chena River, Sections 6 through 9. Prepared by Foster Wheeler Environmental Corporation, February 2001.

Phone Memo documenting personal communication between Jack Winters (ADF&G) and Cindi Godsey (EPA) on April 9, 2002.

Phone Memo documenting personal communication between Phyllis Weber-Scannell (ADF&G) and Cindi Godsey (EPA) on April 9, 2002.

E-mail documenting personal communication between Luke Boles (ADEC) and Cindi Godsey (EPA) on September 4, 2001.

Series of e-mails documenting personal communication between Luke Boles (ADEC), Cindi Godsey (EPA) and Mac McLean (ADF&G).

APPENDIX A
Power Plant Location

Permit AK-005333-3

APPENDIX B**DIVISION OF AIR & WATER QUALITY
WASTEWATER DISCHARGE PROGRAM**

610 University
Avenue
Fairbanks, AK 99709
PHONE: (907) 451-

Date

Bartly K. Coiley
Civil Engineer
Certified Mail #
Aurora Energy Chena Power Plant
Return Receipt Requested
100 Cushman Street, Suite 210
Fairbanks, AK 99701

Re: Draft Certificate of Reasonable Assurance for NPDES Permits AK-005333-3, Aurora
Energy Chena Power Plant.

Dear Ms. Coiley:

In accordance with Section 401 of the Federal Clean Water Act and provisions of the Alaska Water Quality Standards, the Department of Environmental Conservation has issued the enclosed Draft Certificate of Reasonable Assurance for the Draft NPDES Permit AK-005333-3 for cooling water discharged from Aurora Energy Chena Power Plant, located in Fairbanks, AK.

Department of Environmental Conservation regulations provide that any person, who disagrees with any portion of the final decision, may request an adjudicatory hearing in accordance with 18 AAC 15.200-920. The request should be mailed to the Commissioner of the Alaska Department of Environmental Conservation, 410 Willoughby Avenue, Suite 105, Juneau, AK. 99801-1795. Please send a copy of any such requests to the undersigned. You are reminded that, even if an adjudicatory hearing has been requested and granted, all permit conditions will remain in full force and effect. Failure to submit a hearing request within thirty days of receipt of the final determination letter shall constitute a waiver of that person's right to judicial review of this decision.

By copy of this letter we are advising the Environmental Protection Agency and Aurora Energy, LLC of our actions and enclosing a copy of the draft certification for their use.

If you have any questions concerning the certification, please contact Luke Boles
(907) 451-2142.

Sincerely,

Permit AK-005333-3

William D. McGee
Technical Engineer

Enclosure: Certificates of Reasonable Assurance

Cc: Cindi Godsey, EPA/Anchorage
Chena River Commission, Mayors Office/Fairbanks
Mac McLean, AF&G/Fairbanks
Sharmon Stambaugh, ADEC/Anchorage
Nadine Hargesheimer, FNSB/Fairbanks

Permit AK-005333-3

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DRAFT CERTIFICATE OF REASONABLE ASSURANCE

A Certificate of Reasonable Assurance, as required by Section 401 of the Clean Water Act, has been requested by Aurora Energy for the fresh water discharge of once-through cooling water from the Aurora Energy Chena Power Plant.

The activity is located at Latitude 64° 50' 54" N, Longitude 147° 44' 06" W, in Fairbanks, Alaska with discharge to the Chena River.

Public notice of the application for this certification is being made in accordance with 18 AAC 15.180.

Water Quality Certification is required for the proposed activity, because the activity will be authorized by an Environmental Protection Agency permit identified as NPDES Permit No. AK-005333-3 and a discharge will result from the proposed activity.

After review of the public comments received in response to the public notice, the Alaska Department of Environmental Conservation will certify that there is reasonable assurance that the activity and the resulting discharge is in compliance with the requirements of Section 401 of the Clean Water Act, which includes the Alaska Water Quality Standards, 18 AAC 70, provided that the following stipulations are adhered to:

1. The ADEC will require that the effluent temperature of the once-through cooling water shall not exceed a daily maximum of 25.6°C and a monthly average of 22.6°C during the months of October through May. During the months of June through September the effluent temperature of the once-through cooling water will not exceed a daily maximum of 30.7°C and a monthly average of 26.6°C.

Rationale: In accordance with State Regulations 18 AAC 70.220, the Department can apply a temperature criterion less stringent than the temperature criterion listed in 18 AAC 70.020 if the new criterion will assure the protection and propagation of diverse indigenous and anadromous populations of aquatic life, and other wildlife, in and on that waterbody, according to its protected use classes. Based on information from the Alaska Department of Fish and Game, the past occurrence of the thermal discharge from the facility has not been documented to have adverse impacts on the indigenous and anadromous populations of aquatic life in waters to which the discharge has occurred. Restricting the temperature of the effluent to levels that have occurred in the past will assure the protection and propagation of diverse indigenous and anadromous populations of aquatic life in the water where the discharge occurs.

2. The ADEC will require that the once-through cooling water discharged from this facility shall not exceed a maximum effluent flow of 20 million gallons per day (MGD).

Permit AK-005333-3

***Rationale:** In accordance with State Regulations 18 AAC 70.220, the Department can apply a temperature criterion less stringent than the temperature criterion listed in 18 AAC 70.020 if the new criterion will assure the protection and propagation of diverse indigenous and anadromous populations of aquatic life, and other wildlife, in and on that waterbody, according to its protected use classes. Based on information from the Alaska Department of Fish and Game, the past occurrence of the thermal discharge from the facility, at the above listed flow rates, has not been documented to have adverse impacts on the indigenous and anadromous populations of aquatic life in waters to which the discharge has occurred. Restricting the flow of the effluent to levels that have occurred in the past will assure the protection and propagation of diverse indigenous and anadromous populations of aquatic life in the water where the discharge occurs.*

3. The ADEC will require that the facility conduct monthly ambient monitoring in the Chena River for temperature and Dissolved Oxygen (DO) at a point 800 feet downstream from the outfall. After two years of monthly monitoring the permittee may request of EPA and ADEC that the ambient monitoring frequency be reduced to quarterly monitoring except for the months of December, January and February, which, would continue monthly monitoring.

***Rationale:** In accordance with State Regulations 18 AAC 70.220, the Department can apply a temperature criterion less stringent than the temperature criterion listed in 18 AAC 70.020 if the new criterion will assure the protection and propagation of diverse indigenous and anadromous populations of aquatic life, and other wildlife, in and on that waterbody, according to its protected use classes. Modeling of the thermal plume conducted in 2001 found that at 800 feet downstream from the outfall the thermal plume had stretched out to cover the full width of the river channel. Ambient monitoring of temperature and DO at the above referenced location will ensure that there are adequate escape routes for the resident fish in the area.*

4. The ADEC may conduct inspections and take enforcement actions for failure to comply with the stipulations, provisions and limitations in the NPDES permit.

***Rationale:** In accordance with AS 46.03.024 (a)(6) and AS 46.03.860 the Department has authority to conduct inspections and take enforcement actions to protect public health and the receiving environment from potentially damaging effects caused by the discharge if adequate treatment is not provided.*

Date

William D. McGee
Technical Engineer

APPENDIX C
Water Quality Based Effluent Limits

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. 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 NPDES regulation [40 CFR 122.44(d)(1)] implementing section 301 (b)(1)(C) of the CWA requires 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 regulations require that this evaluation be made using procedures which account for existing controls on point and non-point sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

When evaluating the effluent to determine if water quality-based effluent limits are needed based on chemical specific numeric criteria, a projection of the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern is made. The chemical specific concentration of the effluent and ambient water and, if appropriate, the dilution available from the ambient water are factors used to project the receiving water concentration. If the projected concentration of the receiving water exceeds the numeric criterion for a specific chemical, then there is a reasonable potential that the discharge may cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

The water quality parameters that may be affected by the discharge are pH and temperature.

1. **pH:** The WQS require a pH range of 6.5 - 8.5 standard units for waters protected for aquaculture, water supply and contact recreation.
2. **Temperature:** The facility discharges once through cooling water. The primary concern regarding once-through cooling systems is the development and dissipation of thermal plumes. The Chena River is classified by the state of Alaska as fresh water suitable for agriculture, aquaculture, and industrial water supply, contact and secondary recreation, growth and propagation of fish, shellfish, other aquatic life and wildlife. The most stringent WQS is for water supply (aquaculture) which states that the temperature cannot exceed

20°C at any time and the following maximum temperatures may not be exceeded, where applicable:

Migration routes:	15°C
Spawning area:	13°C
Rearing areas:	15°C
Egg & fry incubation	13°C

It should be noted that there is not an applicable temperature standard for secondary recreation and that the standard for contact recreation (30°C) is comparable to what is proposed in the permit.

Alaska Department of Fish and Game (ADF&G) has determined that the area of the Chena River where the discharge will occur is not an anadromous fish spawning area but does support rearing and migratory anadromous fish species (chum and chinook salmon) and resident fish spawning (arctic grayling). There is also burbot spawning and overwintering areas near the mouth of the Chena River. While fish migration does occur in this area, observations of resident fish populations by ADF&G have shown no adverse affects on fish due to the increased temperatures in the vicinity of the outfall. Therefore, the facility has requested a variance from the temperature requirements for this facility as allowed under section 18 AAC 70.220 of the WQS. The basis for the proposed variance can be found in Appendix D.

3. **Metals, Toxics, and Other Pollutants:** The facility has provided water quality monitoring data on metals, toxics, and other pollutants that was used to determine if any of these pollutants were at levels that may affect water quality. Sampling was conducted in September 2000. At this time, Outfall 001 discharged a combined effluent which consisted of the cooling water from the Aurora Energy facility as well as clarifier underflow from the Golden Heart utilities drinking water treatment plant. However, these effluent samples were taken during a period when the drinking water treatment plant flow had been diverted from the outfall. Therefore, the data obtained during this sampling period is representative of the effluent from the Aurora Energy facility. In January 2001, the Golden Heart discharge was removed from the outfall in compliance with an order from ADEC.

There are two types of criteria for the protection of aquatic life: acute and chronic. Chronic criteria protect against long term deleterious effects to aquatic life, and acute criteria protect against short term deleterious effects to aquatic life. The acute and chronic criteria for metals are found in the WQS. Acute and chronic criteria represent the concentrations of a pollutant that may be present in the receiving water without impairing aquatic life. Monitoring conducted in September 2000 did not detect any of metals, toxics, or other pollutants in the facility's discharge.

APPENDIX D

Basis for a variance under Section 316(a) of the Clean Water Act Determination of Potential Low Impact

The Chena River Power Plant is located in the Municipality of Fairbanks on the southern bank of the Chena River (see map in Appendix A). The owner and operator of the plant is Aurora Energy, LLC. Aurora Energy has requested a thermal standard waiver under 18 AAC 70.220 which references Section 316(a) of the Clean Water Act (the Act). The discharge from the plant is to the Chena River.

The circumstances surrounding this discharge are unique in applying the 316(a) variance. A review of the history of the Chena River as well as the plant will be useful in this evaluation.

The Chena River has not always flowed through downtown Fairbanks as it does now. This channel used to be the Chena Slough which was an arm of the Tanana River. Photos of the water system from 1938 were found in the USGS Water-Resources Investigations Report 00-4227 (USGS, 2000). These photos indicate that the slough, like the Tanana, carried a high sediment load. In a photo of the confluence of the Chena River with the Chena Slough, there is a marked difference in the appearance of the water with the water in the slough can be compared to that presently seen in the Tanana River in the summer while the river seems to be a clearwater stream. The confluence of the river with the slough was located about 7 miles east of Fairbanks.

In the 1940s, the Moose Creek Dike was constructed to cut off flow from the Tanana to Chena Slough. This occurred because it appeared that the Tanana may have been trying to reestablish its main channel to the north to include the Chena Slough, as well as parts of Fairbanks. With the surface flow from the Tanana cut off from Chena Slough, the major flow through the downtown Fairbanks area became dominated by the clearwater flow from the Chena River although some seepage from the Tanana still enters the upper portion of the slough.

In 1947, the USGS placed a gaging station on the Chena Slough at the Cushman Street bridge. The station was originally called the "Chena Slough at Fairbanks" but an acknowledgment of the changing characteristics of the waterbody was made later. After 1952, the station was called the "Chena River at Fairbanks."

The changes that occurred in the Chena system coincided with the construction of the power plant in 1951. The power plant has been discharging cooling water into the Chena system since its construction. What makes the situation unique is that the discharge actually preceded the recognition of the Chena as a river rather than a slough so according to the history, the Chena River has never been the Chena River without the cooling water discharge.

Section 316(a) of the Act states:

“With respects to any point source otherwise subject to the provisions of section 301 or section 306 of this Act, whenever the owner or operator of any such source, after opportunity for public hearing, can demonstrate to the satisfaction of the Administrator (or, if appropriate, the State) that any effluent limitation proposed for the control of the thermal component of any discharge from such source will require effluent limitations more stringent than necessary to assure the protection and propagation of a balanced, indigenous population of shell fish, fish, and wildlife in and on the body of water into which the discharge is to be made, the Administrator (or, if appropriate, the State) may impose an effluent limitation under such section for such plant, with respect to the thermal component of such discharge (taking into account the interaction of such thermal component with other pollutants), that will assure the protection and propagation of a balanced, indigenous population of shell fish, fish, and wildlife in and on the body of water.”

Because no data has been found to document the fish and wildlife using the Chena Slough prior to the construction of the power plant, it cannot be ascertained what affects may have been caused by the discharge. The consolation in this is that since the system itself was changing from one that carried a heavy sediment load to a clearwater system, it can be expected that it would have been in a state of flux so that the fish and wildlife utilizing the system as a slough probably are not the same as those that utilize the river.

There seems to be no question of the fish and wildlife becoming acclimated to the thermal discharge since Alaska Department of Fish and Game (ADF&G) has determined that the area of the Chena River where the discharge occurs does support rearing and migratory anadromous fish species (chum and chinook salmon) and resident fish spawning (arctic grayling). There is also burbot spawning and overwintering areas near the mouth of the Chena River. While fish migration does occur in this area, observations of resident fish populations by the ADF&G have shown no adverse affects on fish due to the increased temperatures in the vicinity of the outfall. Therefore, the proposed variance is based on the following:

3 ADF&G has observed no adverse affects on fish populations in the area. In addition, no complaints regarding the discharge have been received from local fishermen.

3 Any fish resident in the area of the discharge or migrating through it have escape routes from the increased temperatures associated with the outfall.

Modeling done by Foster Wheeler Environmental Corporation supports the latter statement by AF&G. This modeling shows that even in the most conservative of situations - the highest effluent flow and temperature higher (32.3°) than that included in the proposed permit, combined with the lowest summertime flow (3Q2) and reasonable maximum receiving water temperature (14.5° C) - that by approximately 800 feet downstream, the point at which the plume stretches across the entire width of the river, the temperature is only 0.5° C above ambient.

Based on the above information, EPA is proposing to grant the variance. According to 40 CFR 125.73(c)(1), existing dischargers may base their demonstration upon the absence of prior appreciable harm in lieu of predictive studies. The information provided by the applicant and other information relied upon in the determination indicates that no appreciable harm has resulted from the normal component of the discharge to a balanced, indigenous community of shellfish, fish and wildlife in and on the Chena River. The proposed thermal effluent limitations are based on the past performance as indicated in the permit application.