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MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT AND MAINE WASTE DISCHARGE LICENSE

FACT SHEET

Date: October 10, 2003

PERMIT NUMBER: **ME0036188**
LICENSE NUMBER: **W008016-50-C-R**

NAME AND ADDRESS OF APPLICANT:

CASCO BAY ENERGY COMPANY, L.L.C.
Maine Independence Station
Subsidiary of Duke Energy North America
P.O. Box 716
Bangor, Maine 04402

COUNTY: **Penobscot County**

NAME AND ADDRESS WHERE DISCHARGE OCCURS:

125 Shore Road
Veazie, Maine 04401

RECEIVING WATER/CLASSIFICATION: **Penobscot River/Class B**

COGNIZANT OFFICIAL AND TELEPHONE NUMBER: **Mr. Gonzalo Garcia**
Plant Manager
(207) 973-1219

1. APPLICATION SUMMARY

The applicant has applied for renewal of its combination Maine Pollutant Discharge Elimination System (MEPDES) permit #ME0036188 and Waste Discharge License (WDL) #W008016-50-A-N, which was issued on August 24, 1998, modified on December 13, 2001 and expired on August 28, 2003. The previous permitting/licensing actions approved the discharge of up to 1.96 million gallons per day (MGD) of miscellaneous waste waters from a combined cycle natural gas-fired electrical generating facility to the Penobscot River, Class B, in Veazie, Maine. The waste waters discharged include 0.530 million gallons per day (MGD) of sand filter backwash, 0.018 MGD of demineralization system ion exchange regeneration water, and 1.41 MGD of cooling water blowdown which includes 0.091 MGD of boiler blowdown. The permittee has indicated in their application for renewal of the MEPDES permit/WDL that they are not requesting any changes in the terms and conditions of the previous permit.

2. PERMIT SUMMARY

a) Modifications - This permitting action is carrying forward all the terms and conditions of the 12/13/01 MEPDES permit/WDL action with the following exception:

1) Incorporating a footnote for pH stating that the discharge may be outside of the limitation range of 6.0 – 9.0 standard units if the cause is due to the ambient pH of the intake water (Penobscot River) being outside of that range. Under these circumstances, the discharge from the power plant may not be more than 0.5 standards units different than the ambient pH or more than 0.5 standard units outside of the pH range limitation of 6.0 – 9.0 standard units.

2) Incorporating miscellaneous boilerplate language throughout the documents to be consistent with other MEPDES permits/WDL's recently issued by the Department.

3) Reducing the monitoring frequency for total residual oxidants (TRO) from 1/Day to 1/Week.

b) History: The most current relevant regulatory actions include the following:

August 24, 1998 – The Department issued WDL #W008016-50-A-N for the then proposed facility.

March, 2000 – The CBEC's Maine Independence Station commenced operations as an electrical generating station.

January 12, 2001 – The Department received authorization from the U.S. Environmental Protection Agency (EPA) to administer the National Pollutant Discharge Elimination System (NPDES) permit program in Maine. From that point forward, the permitting program has been referred as the MEPDES program. To promote consistency with the NPDES program, the MEPDES permit issued for the Veazie power plant will remain as #ME0036188.

July 13, 2001 – The CBEC submitted an application to the Department to modify WDL #W008016-50-A-N to incorporate the terms and conditions of the MEPDES program.

November 1, 2001 – The Department received a letter from the CBEC authorizing the EPA to retire NPDES permit #ME0036188 (last issued by the EPA on August 25, 1998) upon issuance of a final MEPDES permit.

December 31, 2001 – The Department issued a combination MEPDES permit modification #ME0036188/WDL #W008016-5O-B-M which superseded the NPDES permit.

February 20, 2003 – The CBEC submitted a timely application for renewal of the MEPDES/WDL for the discharge from the power plant in Veazie.

2. PERMIT SUMMARY (cont'd)

c. Source Description: CBEC constructed and commenced operation of a 520-megawatt (MW) nominal capacity, combined cycle natural gas-fired generating facility in March of calendar year 2000. The facility commonly referred to as the Maine Independence Station is operated as a base-loaded facility. The facility is located at the site of the Bangor Hydroelectric Company's former Graham Station generating facility in Veazie, Maine. Process and service waters are drawn from the Penobscot River via the intake and pump house for the former Graham Station. All waste waters from the facility are discharged to the Penobscot River via a pipe for the former Graham Station that is 48 inches in diameter that conveys the waste waters to a weir structure for discharge to the Penobscot River.

Waste streams contributing to the discharge to the river consists of 0.530 MGD of sand filter backwash, 0.018 MGD of demineralization system ion exchange regeneration water, 1.41 MGD of cooling tower blowdown (0.091 MGD made up of boiler blowdown) for a total 1.96 MGD. It is noted that the discharges of ion exchange regeneration waters and sand filter backwash waters have never been realized as these systems were incorporated into the original design of the facility but were never constructed. The permittee has requested to retain authorization in this permit to discharge these waste waters in the event the need arises to construct these systems in the future.

Service waste waters totaling approximately 0.015 MGD from floor drains and sanitary wastes are discharged to the Veazie Sewer District's (VSD) waste water treatment facility. All floor drain flows pass through an oil/water separator prior to being pumped to the VSD's sewer collection system.

d. Treatment: The only waste water actively being discharged from the facility that receives any formal treatment is the cooling tower blowdown. The cooling towers are mechanical draft wet cooling towers that are operated under induced draft conditions. Make-up water for the cooling towers is disinfected with chlorine to control the growth of slime, bacteria, and other organisms in the circulating water system. The cooling tower blowdown is then dechlorinated prior to discharge to neutralize disinfection chemicals added to the circulating water by injecting sodium bisulfite upstream of a control valve regulating effluent in the cooling tower blowdown line.

Under normal circumstances, cleaning of the heat recovery steam generators and the cooling tower occurs once every 5 to 6 years during major equipment outages. The chemical metal cleaning wastes generated when cleaning the heat recovery steam generators are trucked off-site for disposal. Cleaning the cooling tower of solids can be accomplished several ways. The cooling tower is either drained or pumped down until there is a risk of solids being discharged and then the solids are removed for filtering or drying, either on-site or off-site, followed by proper disposal off site. An alternative method is to employ a weir box where the waste water is discharged over a weir and the solids removed from the box for filtering or drying and off-site disposal.

3. CONDITIONS OF PERMITS

Maine Law, 38 M.R.S.A., Section 414-A, requires that the effluent limitations prescribed for discharges require application of best practicable treatment, be consistent with the U.S. Clean Water Act, and ensure that the receiving waters attain the State water quality standards as described in Maine's Surface Water Classification System. In addition, 38 M.R.S.A., Section 420, and Department Regulation Chapter 530.5, *Surface Water Toxics Control Program* requires the regulation of toxic substances at the levels set forth for Federal Water Quality Criteria, as established by the United States Environmental Protection Agency pursuant to the Federal Water Pollution Control Act, Public Law 92-500, Section 304(a).

3. RECEIVING WATER QUALITY STANDARDS

Maine Law, 38 M.R.S.A., Section 465 states that the Penobscot River, Class B, shall be suitable for the designated uses of drinking water supply after treatment; fishing; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, Section 403; and navigation; and as habitat for fish and other aquatic life. The habitat shall be characterized as unimpaired. Discharges to Class B waters shall not cause adverse impact to aquatic life in that the receiving waters shall be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes in the resident biological community.

4. RECEIVING WATER QUALITY CONDITIONS

A document published by the Department entitled, State of Maine Department of Environmental Protection, 2002 Integrated Water Quality Monitoring and Assessment Report (305b Report) indicates the ten-mile segment of the Penobscot River between Orono and Bangor is not attaining the standards of its assigned classification due to toxics (dioxin, PCB's) from industrial sources and bacteria associated with combined sewer overflow (CSO) events in Bangor and Brewer. The Department is not aware of any information that indicates the CBEC facility is causing or contributing to the non-attainment status.

5. EFFLUENT LIMITATIONS

The effluent limits in this permit are based on the effluent guidelines published in the Code of Federal Regulations (CFR), 40 CFR Part 423 – Steam Electric Power Generating Point Source Category, New Source Performance Standards (NSPS). The NSPS guidelines listed in 40 CFR §423.15 that apply for the facility are:

40 CFR §423.15(b):	Requires no discharge of PCBs
40 CFR §423.15(c):	Limits TSS, oil & grease from low volume waste sources
40 CFR §423.15(d):	Limits TSS, oil & grease, copper, and iron from chemical metal cleaning wastes.
40 CFR §423.15(h)(1):	Limits free available chlorine, and use of the 126 Priority Pollutants (Appendix A) in cooling tower water treatment chemicals.

5. EFFLUENT LIMITATIONS (cont'd)

This permitting action is establishing monthly average and daily maximum mass and or concentration limits as follows.

a. Flow: The previous permitting action established a daily maximum limitation of 1.96 MGD that is being carried forward in this permitting action. Flows tend to be higher in the summer months than the winter months A summary of the monthly Discharge Monitoring Report (DMR) data for the period 9/00 – 7/03 indicates the facility has operated in the range of 0.218 MGD to 0.827 MGD with an arithmetic daily maximum flow of 0.51 MGD.

b. Dilution Factors: Dilution factors associated with the discharge from the CBEC facility were derived in accordance with freshwater protocols established in Department Rule Chapter 530.5, *Surface Water Toxics Control Program*, October 1994. With a daily maximum permit flow limit of 1.96 MGD, dilution calculations are as follows:

Acute: ¼1Q10[1] = 805 cfs ⇒ $\frac{(805\text{ cfs})(0.6464)}{1.96\text{ MGD}} = 265:1$

Acute: 1Q10 = 3,221 cfs ⇒ $\frac{(3{,}221\text{ cfs})(0.6464)}{1.96\text{ MGD}} = 1{,}062:1$

Chronic: 7Q10 = 3,790 cfs ⇒ $\frac{(3{,}790\text{ cfs})(0.6464)}{1.96\text{ MGD}} = 1{,}250:1$

Harmonic Mean: 8,810 cfs ⇒ $\frac{(8{,}810\text{ cfs})(0.6464)}{1.96\text{ MGD}} = 2{,}906:1$

Footnotes:

(1) The Department has made a best professional judgement determination that ¼1Q10 is applicable to this discharge pursuant to the criteria established in Department rule Chapter 530.5 §D(4)(a). More specifically, the Department has determined that based on the configuration of the outfall weir structure, the discharge does not receive rapid and complete mixing with the receiving water. Therefore, the default position in the rule is that ¼1Q10 is applicable. The Department is receptive to the permittee providing additional information as to the mixing characteristics in the receiving water that would warrant a receiving water flow greater than ¼1Q10 in the acute dilution factor calculation.

5. EFFLUENT LIMITATIONS (cont'd)

c. Temperature: The previous permitting established a daily maximum temperature limit of 100°F with a monthly average reporting requirement. Both are being carried forward in this permitting action as the DMR data for the period 9/00 – 7/03 indicates the facility has operated during the summer months (most critical time for impacts to the receiving waters) at 87°F as a mean daily maximum and 78°F as a mean monthly average. No mass limitations are being established for temperature based on federal regulation 40 CFR, §122.45(f)(i).

d. Total Residual Oxidants (TRO): The previous licensing action established technology based monthly average and daily maximum concentration limits of 0.2 mg/L and 0.5 mg/L respectively, pursuant to federal regulation, 40 CFR, §423.5(h)(1). A review of the DMR data for the period 9/00 – 7/03 indicates the facility has consistently reported 0.0 mg/L of TRO since 9/00 due to the dechlorination efforts. No mass limitations are being established due to the nature of the pollutants. This permitting action is reducing the monitoring frequency from 1/Day to 1/Week based on the fact TRO has never been reported above 0.0 mg/L.

e. Total Suspended Solids (TSS): The previous permitting action established technology based monthly average and daily maximum concentration limits of 30 mg/L and 100 mg/L respectively, pursuant to federal regulation, 40 CFR, §423.5(c) that are being carried forward in this permitting action. The limits were established for the low volume waste sources (sand filter backwash and ion-exchange regeneration waters).

The previous permitting action also establishing monthly average and daily maximum mass limits of 137 lbs/day and 457 lbs/day respectively. The mass limits are based on the total daily maximum flow limit of 0.548 MGD (0.53 MGD + 0.018 MGD) for the low volume waste streams established in the previous permitting action and the applicable concentrations. Because the low volume waste stream sources were never constructed, there hasn't been any data collected to date. However, this permitting action (and the previous permitting action) requires testing for TSS on the cooling tower and boiler blowdown waste stream being that all waste streams are being regulated under one outfall. A review of the DMR data for the period 1/02 – 7/03 indicates the daily maximum concentrations and mass discharged ranges from <5 mg/L – 28 mg/L with a arithmetic mean of 13 mg/L and <2 lbs/day - 100 lbs/day with an arithmetic mean of 53 lbs/day respectively. The monthly average concentrations discharged ranges from 5 mg/L – 15 mg/L with an arithmetic mean of 7 mg/L and 3 lbs/day - 19 lbs/day with an arithmetic mean of 11 lbs/day respectively.

5. EFFLUENT LIMITATIONS (cont'd)

f. Zinc (Total): The previous permitting action established a technology based daily maximum concentration limit of 1.0 mg/L pursuant to 40 CFR, 423.5(j)(1) and a daily maximum mass limit of 12 lbs/day that are being carried forward in this permitting action. The mass limitation was derived using a daily maximum cooling tower/boiler blowdown flow of 1.41 MGD and a concentration limit of 1.0 mg/L. A review of the DMR data for the period 3/02 – 7/03 indicates the zinc being discharged has average <0.03 mg/L and <0.2 lbs/day respectively.

g. Oil & Grease – The previous permitting action established technology based monthly average and daily maximum concentration limits of 15 mg/L and 20 mg/L respectively, pursuant to 40 CFR, 423.5(c). The concentration limits are being carried forward in this permitting action. The limits were established for the low volume waste sources that include floor drains. No mass limits are being established in this permitting action due to the nature of the pollutant. A review of the DMR data for the period 3/02 – 7/03 indicates the discharge of oil & grease has been consistently reported as <5 mg/L as both monthly average and daily maximums.

h. Chromium (Total) - The previous permitting action established a technology based daily maximum concentration limit of 0.2 mg/L based on federal regulation 40 CFR, 423.5(j)(1) that is being carried forward in this permitting action. The previous permitting action also established a daily maximum mass limit of 1.04 lbs/day. The Fact Sheet for the 8/25/98 NPDES permit indicates the limits were based on CBEC's calculations of projected leaching of chromium from the pressure treated wood used to construct the cooling tower after the first year of operation of the cooling tower. The projected loadings were established as daily maximum limits in the NPDES permit and State WDL based on an EPA/Department best professional judgement.

A mass balance calculation using a cooling tower/boiler blowdown flow of 1.41 MGD and a concentration limit of 0.2 mg/L yields a mass of 2.4 lbs/day. However, antibacksliding provisions found in federal regulation at 40 CFR 122.44(l) prohibited the Department in the previous permitting action (12/13/01) from reissuing a permit with less stringent limitations than the previous license/permit. Therefore, the daily maximum mass limit of 1.04 lbs/day is being carried forward in this permitting action.

A review of the DMR data for the period 3/02 – 7/03 indicates the discharge has been averaging approximately 0.07 lbs/day, well below the daily maximum limit 1.04 lbs/day.

5. EFFLUENT LIMITATIONS (cont'd)

i. Copper (Total) – As with chromium, the previous permitting action established a technology based daily maximum concentration limit of 1.0 mg/L L based on federal regulation 40 CFR, 423.5(j)(1) that is being carried forward in this permitting action. The previous permitting action also established a daily maximum mass limit of 1.04 lbs/day. The Fact Sheet for the 8/25/98 NPDES permit indicates the limits were based on CBEC's calculations of projected leaching of copper from the pressure treated wood after the first year of operation. The projected loadings were established as daily maximum limits in the NPDES permit and State WDL based on an EPA/Department best professional judgement.

A mass balance calculation using a cooling tower/boiler blowdown flow of 1.41 MGD and a concentration limit of 1.0 mg/L yields a mass of 12 lbs/day. As with chromium, antibacksliding provisions found in federal regulation at 40 CFR 122.44(l) prohibited the Department from reissuing a permit with less stringent limitations than the previous license/permit. Therefore, the daily maximum mass limit of 1.04 lbs/day is being carried forward in this permitting action.

A review of the DMR data for the period 3/02 – 7/03 indicates the discharge of copper has been averaging approximately 0.09 lbs/day, well below the daily maximum limit 1.04 lbs/day.

j. pH – The previous licensing action established a pH range limitation of 6.0 standard units (SUs) to 9.0 SUs based on federal regulation 40 CFR §423.15(a). The range limitations is being carried forward in this permitting action.

During the whole effluent toxicity (WET) screening testing required by the original WDL issued on 8/24/98, the permittee experienced a number of problems with the controls for WET tested as a result of the pH of the diluent (Penobscot River water). Low pH values below the minimum of 6.0 SUs as specified for the discharge in this permit were identified as one of the problems that was causing and/or contributing to the problem with the WET tests. To account for the low "naturally occurring" pH values and to remedy pH violations outside of the permitee's control, the Department has incorporated a footnote to the pH limit in this permiting action. The footnote authorizes the pH of the discharge from the facility to be outside of the range of 6.0 – 9.0 SUs only if it is due to ambient conditions in the penobscot River and limits the difference between the discharge and ambient pH to be no more than 0.5 SUs.

It is noted the 12/13/01 permit modification eliminated the WET and chemical specific (priority pollutant) testing as a permit requirement as the facility had completed screening level testing (1/Quarter for four consecutive calendar quarters). A statistical evaluation of the test results indicated the discharge did not exceed critical ambient water quality thresholds or ambient water quality criteria.

6. DISCHARGE IMPACT ON RECEIVING WATER QUALITY

As permitted, the Department has determined the existing water uses will be maintained and protected and the discharge will not cause or contribute to the failure of the waterbody to meet standards for Class B classification.

The outfall structure from the Veazie facility conforms with criteria in Section 316(a) of the CWA in that it has been designed and constructed such that it asures the protection and propogation of balanced indigenous population of fish and wildlife in and on the receiving water. In addition, the intake structure for the facility conforms with criteria in Section 316(b) of the CWA in that it is located, designed and constructed and reflects the best available technology available for minimizing adverse environmental impacts.

7. PUBLIC COMMENTS

Public notice of this application was made in the Bangor Daily newspaper on or about February 18, 2003. The Department receives public comments on an application until the date a final agency action is taken on that application. Those persons receiving copies of draft permits shall have at least 30 days in which to submit comments on the draft or to request a public hearing, pursuant to Chapter 522 of the Department's rules.

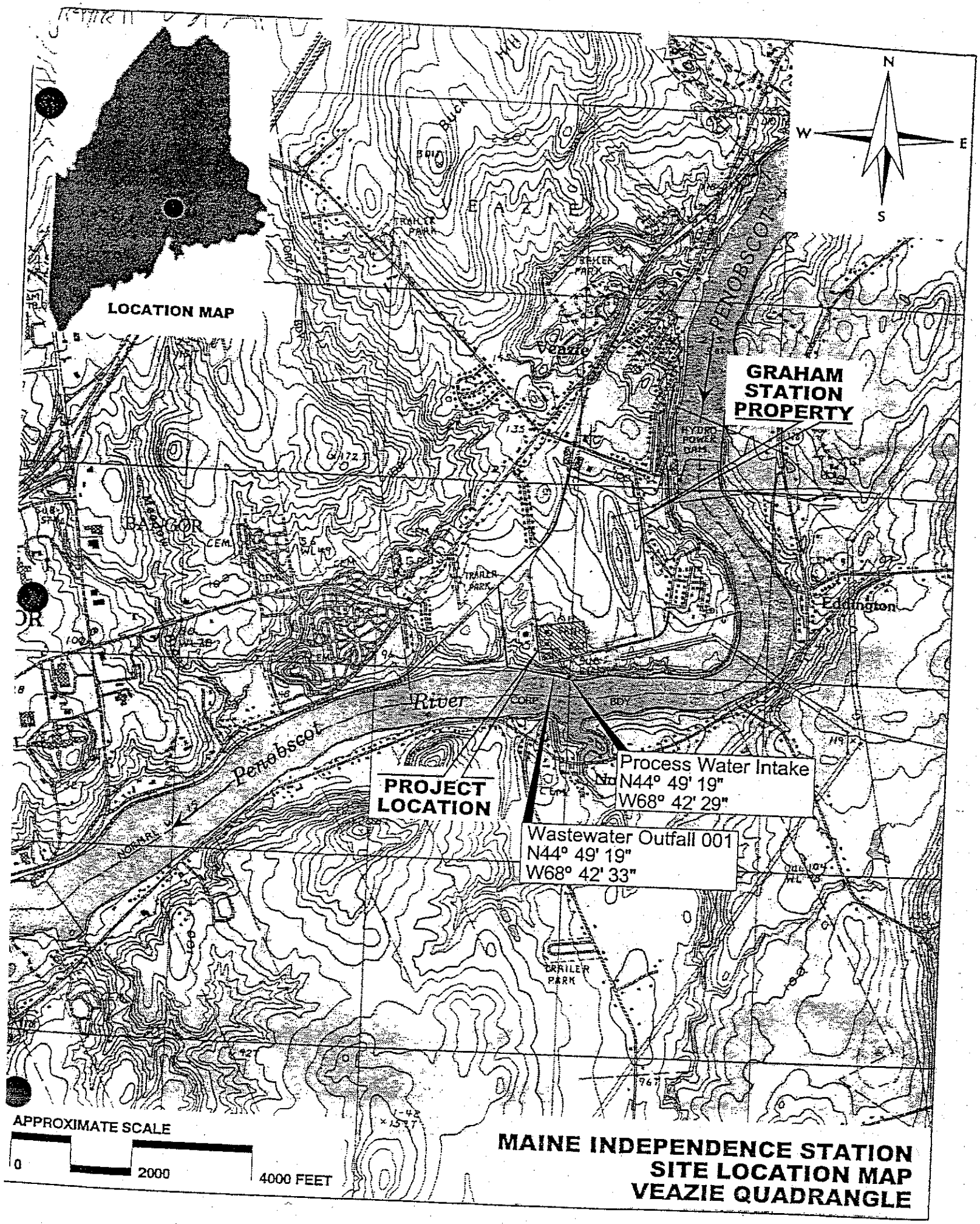
8. DEPARTMENT CONTACTS

Additional information concerning this permitting action may be obtained from and written comments should be sent to:

Gregg Wood
Division of Water Resource Regulation
Bureau of Land and Water Quality
Department of Environmental Protection
17 State House Station
Augusta, Maine 04333-0017 Telephone (207) 287-3901

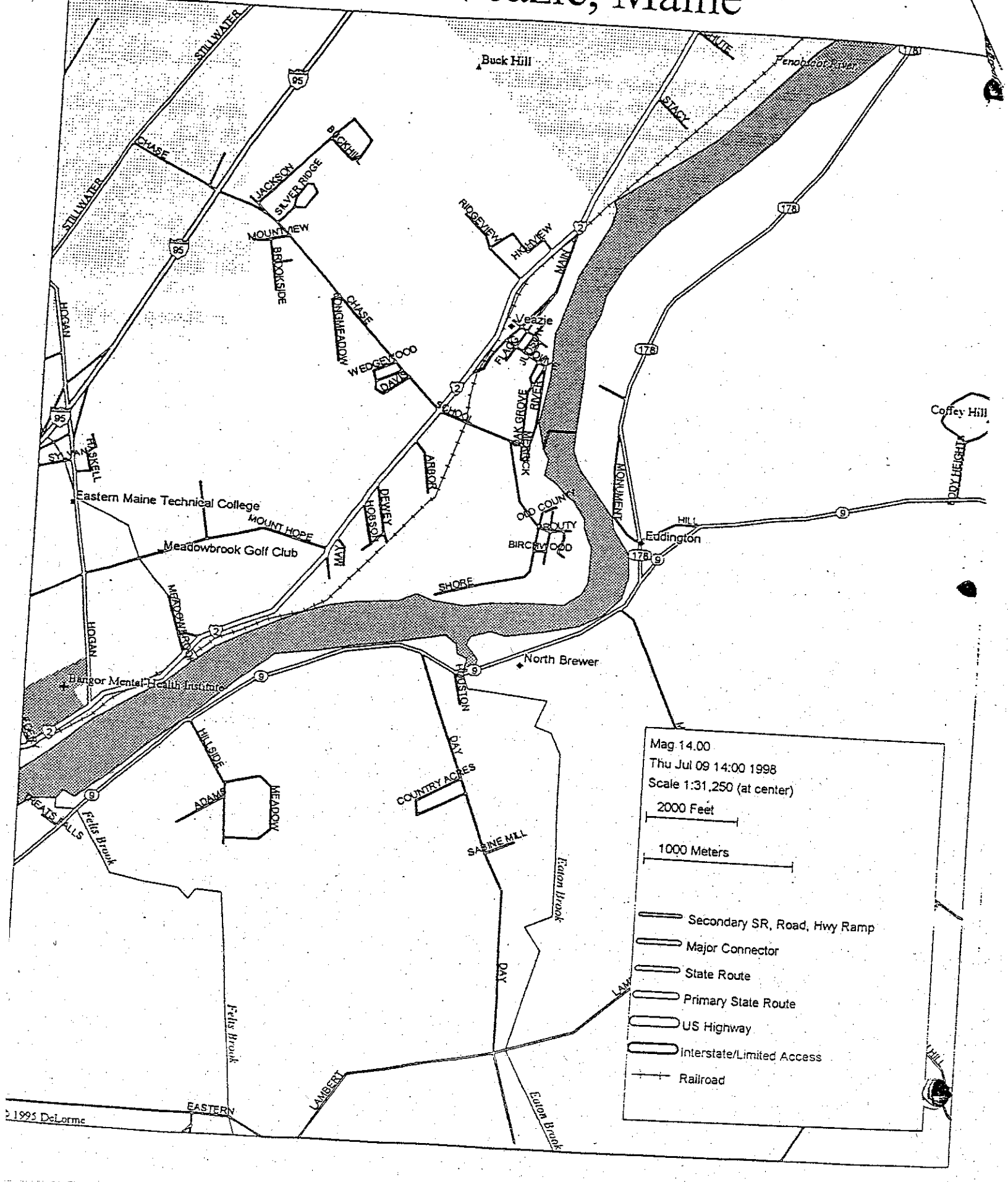
9. RESPONSE TO COMMENTS

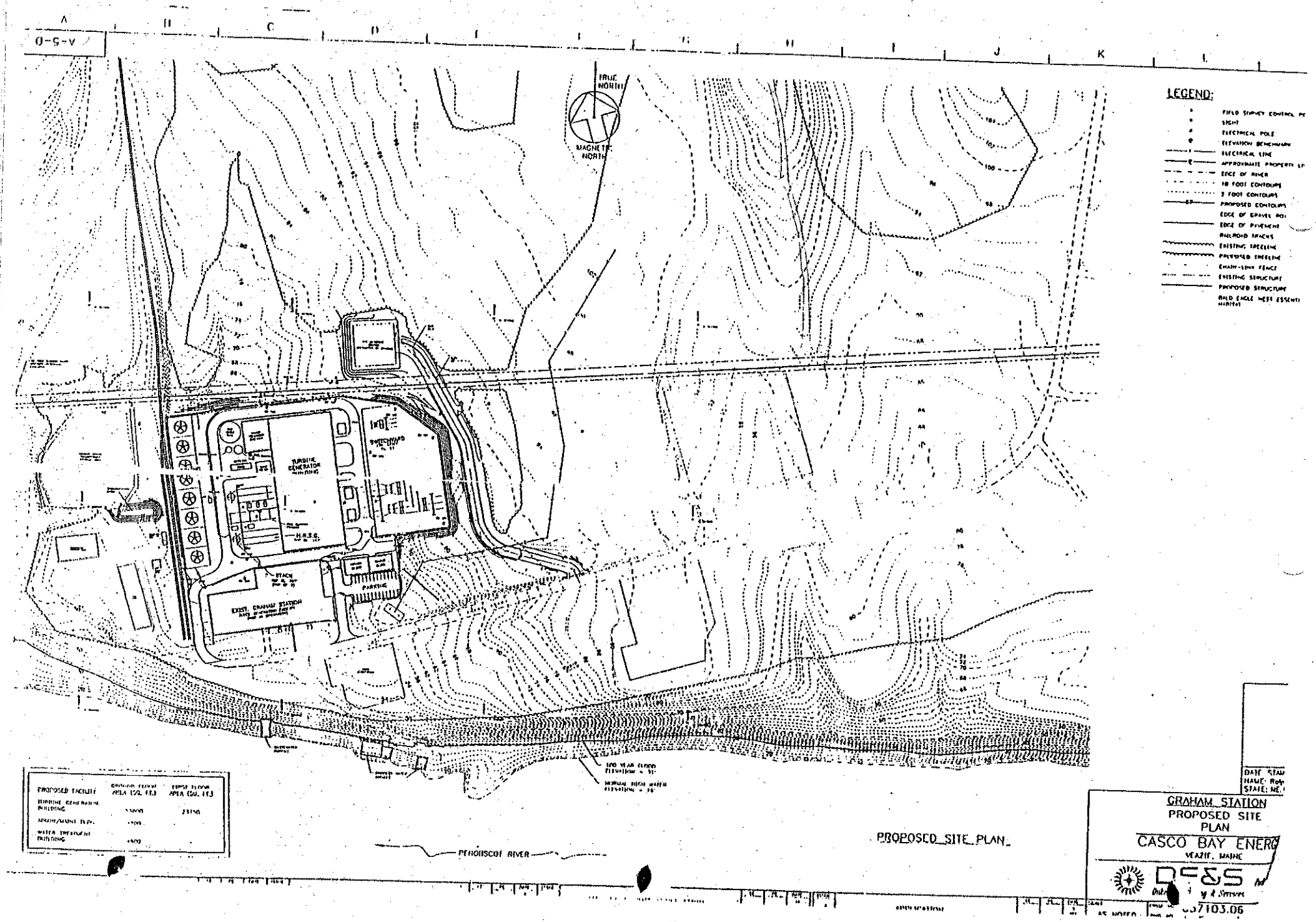
During the period of October 10, 2003 through issuance of the permit, the Department solicited comments from the permittee, state and federal agencies and interested parties on the proposed draft MEPDES permit and Maine WDL to be issued for the discharge from the Casco Bay Energy Company LLC power plant located in Veazie. The Department did not receive any comments from any party. Therefore, no Response to Comments has been prepared.



MAINE INDEPENDENCE STATION
SITE LOCATION MAP
VEAZIE QUADRANGLE

MIS Veazie, Maine





A-5-0
TRUE NORTH
MAGNETIC NORTH
LEGEND:
FIELD SURVEY CONTROL PO
LIGHT
ELECTRICAL POLE
ELEVATION BENCHMARK
ELECTRICAL LINE
APPROXIMATE PROPERTY LI
EDGE OF RIVER
10 FOOT CONTOURS
2 FOOT CONTOURS
PROPOSED CONTOURS
EDGE OF GRAVEL RO
EDGE OF PAVEMENT
RAILROAD TRACKS
EXISTING TREELINE
PROPOSED TREELINE
CHAIN-LINK FENCE
EXISTING STRUCTURE
PROPOSED STRUCTURE
BALD EAGLE NEST ESSENTI HABITAT
TURBINE GENERATOR BUILDING
SWITCHYARD
H.R.S.G.
STACK
PARKING
EXIST. GRAHAM STATION
100 YEAR FLOOD ELEVATION = 31'
NORMAL HIGH WATER ELEVATION = 26'
PROPOSED FACILITY
GROUND FLOOR AREA (SQ. FT.)
FIRST FLOOR AREA (SQ. FT.)
TURBINE GENERATOR BUILDING
ADMIN/MAINT BLDG.
WATER TREATMENT BUILDING
PENOBSCOT RIVER
PROPOSED SITE PLAN
DATE STAM
NAME: Rob
STATE: ME
GRAHAM STATION
PROPOSED SITE PLAN
CASCO BAY ENERG
VEAZIE, MAINE
DF&S
AS NOTED
37103.06