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Docket No. 50-410

Niagara Mohawk Power Corporation  
 ATTN: Thomas J. Brosnan  
 Vice President and Chief Engineer  
 300 Erie Boulevard West  
 Syracuse, New York 13202

Gentlemen:

In connection with the preparation of the Environmental Statement for the Nine Mile Point Nuclear Station Unit 2, we have found that additional information is needed. The matters to be amplified or clarified are outlined in the enclosure to this letter.

We plan to discuss these items, and others that may be identified in the interim period, with your staff or your representatives during a visit to the Nine Mile Point site during September 19-20, 1972. Mr. Jan Norris, the Environmental Project Manager for the preparation of the Environmental Statement, will represent the regulatory staff at this visit. He will be accompanied by several members of the technical team from Argonne National Laboratory which is providing support in our environmental review.

In order to expedite the review, we request that information concerning the items covered in the enclosure to this letter be submitted to this office as early as possible subsequent to the site visit. Your reply should consist of three signed originals and 297 additional copies as a sequentially numbered supplement of your Environmental Report. Please forward 200 of these copies and retain the remaining 100 for future use.

Please feel free to telephone Mr. Norris at 301-973-7731 if additional information is required relating to the site visit or to the requested information.

Sincerely,

*Original signed by Daniel R. Muller*

Daniel R. Muller, Assistant Director  
 for Environmental Projects  
 Directorate of Licensing

Enclosure:

Additional Information Requested				
OFFICE ▶		L: EP-1 JNorris:dtc	L: EP-1 GKnighton	L: EP DMuller
SURNAME ▶		9/7/72	9/7/72	9/7/72
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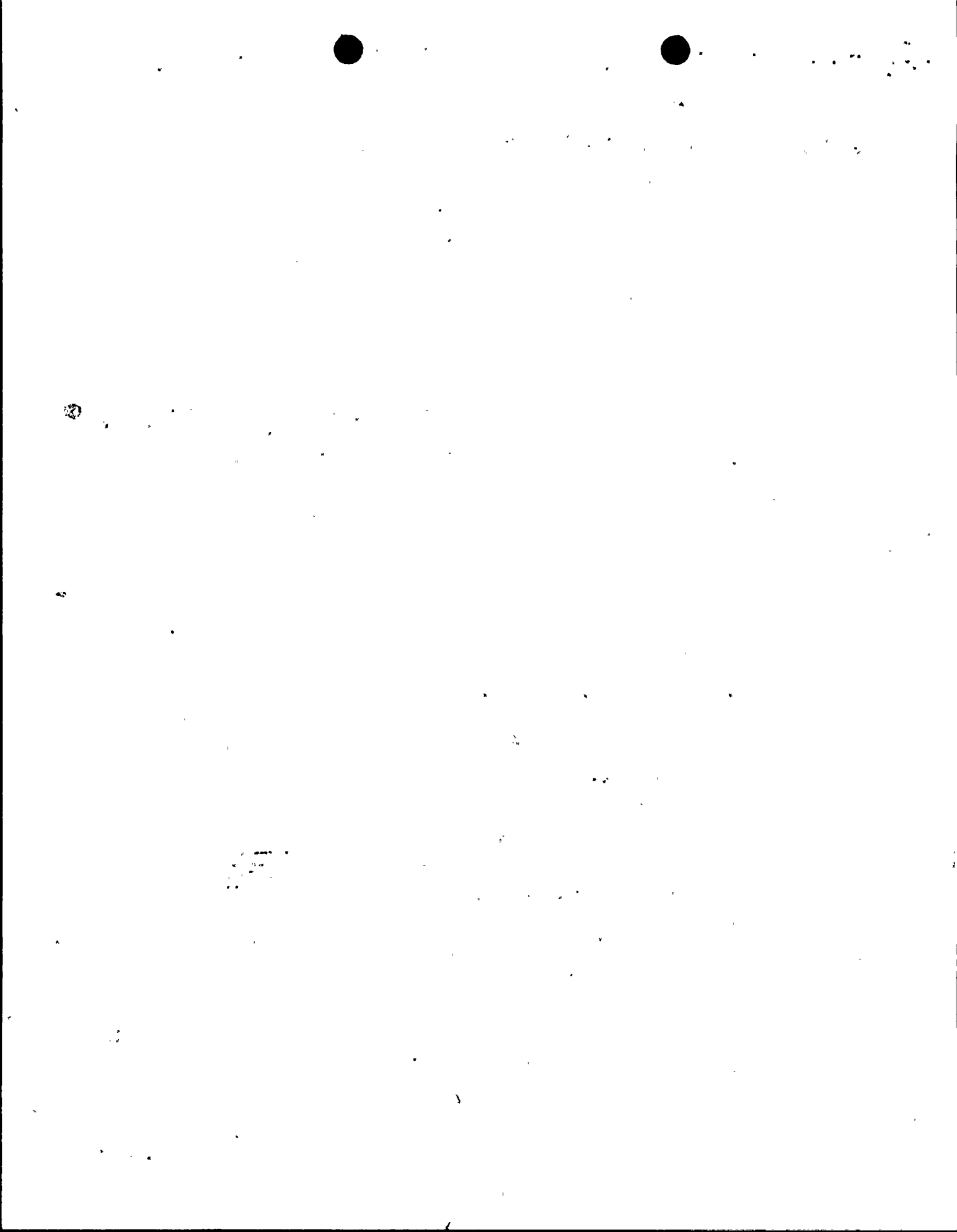
ADDITIONAL INFORMATION REQUESTED FOR THE  
NINE MILE POINT NUCLEAR STATION UNIT 2 ENVIRONMENTAL REVIEW

1. BIOLOGICAL

- 1.1 Behavioral responses to environmental stimuli in fish are species dependent. Identify available data to support the view that fish species abundant in the Nine Mile Point area will take advantage of the "positive velocity gradient" and the "turbulence and an up-current pressures wave" to avoid the intake.
- 1.2 Explain how does the "horizontal plane" design for water intake differ from conventional intake designs where excessive fish entrapment has occurred.
- 1.3 Provide information on the spacings between the horizontal and vertical bars of the bar racks to be installed at the offshore intake.
- 1.4 Provide complete anticipated velocity profile through the intake. Describe the method of velocity measurement and distance in front of the bar racks at which the velocity will be measured.
- 1.5 Describe what provisions will exist, if any, to reduce the intake velocity should it be considered necessary to do so for reducing the number of fish collected on the screens. Explain also the effect on  $\Delta T$  of such velocity reductions.
- 1.6 Provide complete details of the fish removal system which may be installed to protect fish.



- 1.7 Provide complete details of the traveling screen-wash monitoring program which has shown entrapment of very few fish, primarily alewives, in the on shore screen well of Unit 1.
- 1.8 Provide: a) the frequency of removal of fish from the traveling screen area should it be necessary to remove them. b) percentage of thus removed fish that are expected to survive in the lake. Support your figures with data, if available, from NMP Unit 1.
- 1.9 Describe the criteria used for establishing length of each transect.
- 1.10 Provide available quantitative data to support the view that "the quantity of plant and animal material found along the Nine Mile Point promontory is less than other areas in the lake". (p. 2.7-7).
- 1.11 Provide dimensions of the gill nets used, including the mesh size (s).
- 1.12 The gill nets are selective in catching certain size fish and may not be effective in catching all species of fish in the area whereas a fathometer will record presence of all objects under water (above a certain size at least certain distance above the bottom); explain how the results of these two techniques were correlated.
- 1.13 Explain the basis for the statement that species periodically found in the vicinity of the site "could include.....other species of sun fishes (family Centrarchidae), species of pike (family Esocidae), largemouth bass (Micropterus salmoides), sculpins (family Cottidae),



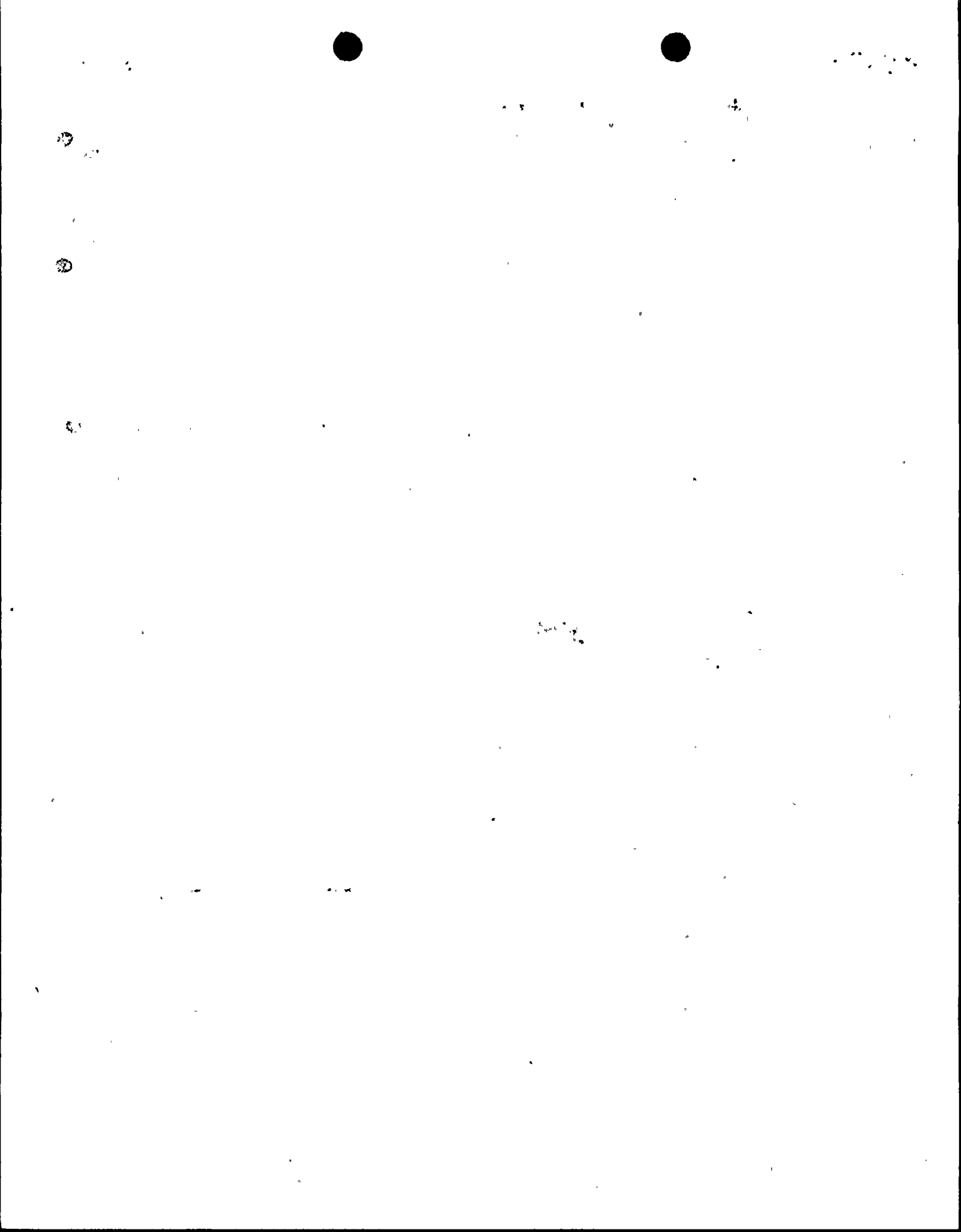
trout perches (family Percopsidae), sticklebacks (family Gasterosteidae), killifishes (family Cyprinodontidae), as well as occasional coldwater salmonids during the colder months".

1.14 Describe the efforts made to estimate fish larval abundance in the Nine Mile Point area, and the basis for the statement: "fish larval abundance appears to be quite low".

1.15 Depth distribution of plankton can be dependent on time of day. Indicate if samples were collected (in 1964) at various depths to observe abundance of plankton during night also.

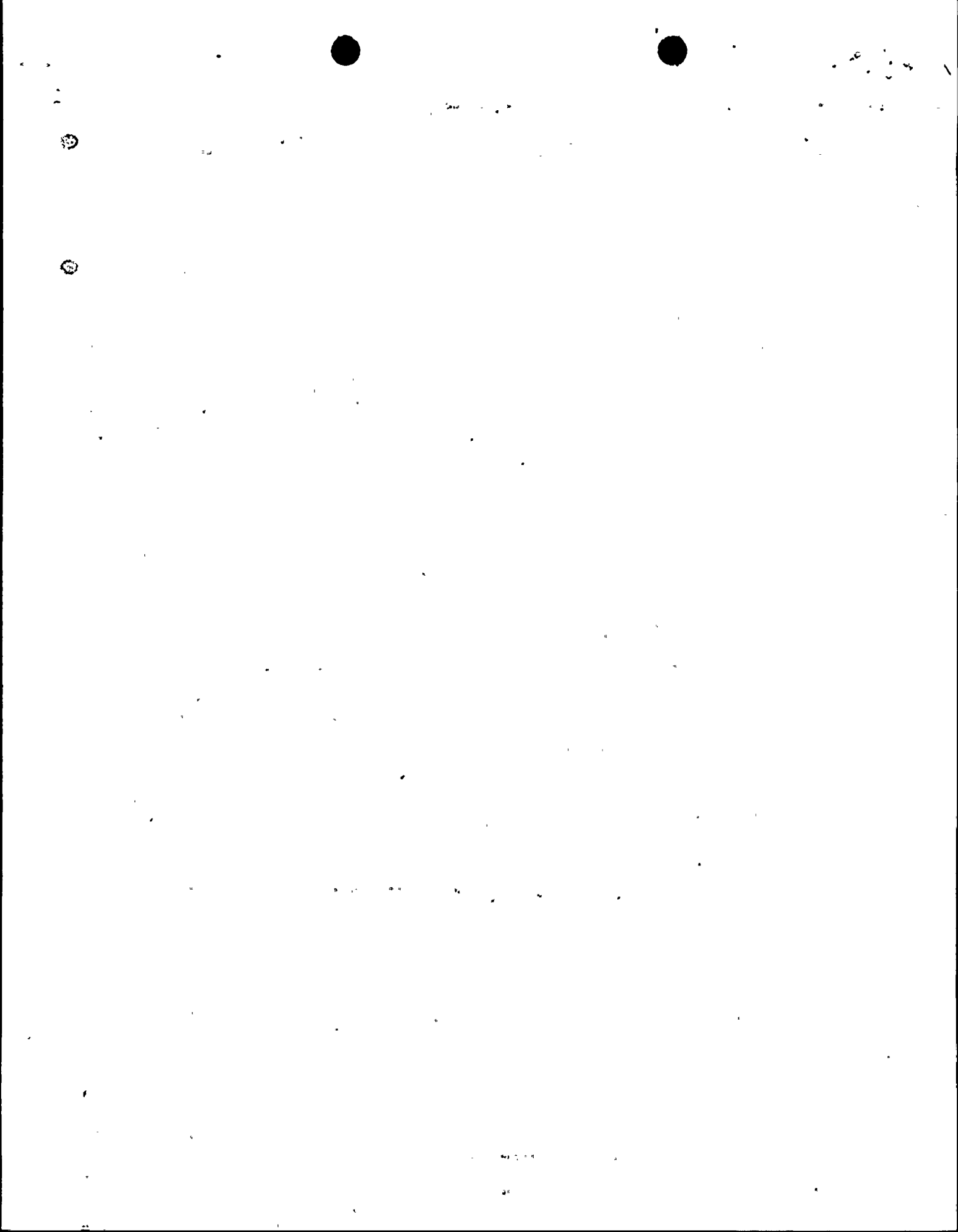
1.16 The entrained organisms - small fish, fish eggs and larvae, plankton - will be subjected to 16 minutes of mechanical and pressure stress and over 9 minutes of thermal shock of increased temperature (31.5°F above ambient). Indicate if the experiments conducted at NMP Unit 1 take into consideration the exposure to these time periods. Please provide details of the exact sampling locations for these experiments. Furnish data available to support the view that under summer conditions entrained organisms will suffer no more than 30% mortality after exposure to approximately 108.5°F for 9 minutes.

1.17 Samples collected in the screen house from intake and discharge for plankton survival study do not simulate the actual operating conditions as the plankton will be subjected to a further exposure to discharge temperature through the discharge tunnel. Please explain how the results obtained in this study can be extrapolated to provide estimates of





- 1.18 mortality that may occur due to this additional exposure to high temperature ( $\sim 108^{\circ}\text{F}$ ) during summer.
- 1.19 Please provide details of the calculations leading to the figures for percent reduction of fish larvae population as a result of entrainment as given in Table 5.1-1.
- 1.20 Please provide details of the proposed monitoring program for fish in the onshore intake area.
- 1.21 On the basis of the proposed experimental design and sampling frequency for the future laboratory and field monitoring programs, please discuss how a data base can be established for comparing the results of postoperational ecological studies. Also, please discuss the adequacy of the proposed program to detect acute and subtle changes in the aquatic ecosystem of the Nine Mile Point area as a result of the operation of the NMP Units 1 and 2.
- 1.22 The organisms entrained in the cooling water will be discharged through the nozzles at a velocity of 14 fps. The organisms on the periphery of the discharge jets will encounter "shearing forces" at the interface of the discharge jet and ambient water. Describe what studies, if any, have been conducted to estimate mechanical damage to organisms by such a high velocity discharge.



2. CHEMICAL AND SANITARY EFFLUENTS

2.1 Provide a complete list of chemicals, amounts, and periods of use, to be used in operation of the plant. Identify fates of these chemicals, giving times and rates of discharge of those that are released to the environment.

2.2 In view of the poor drainage properties in the area of the plant, what assurance is there that the temporary sanitary facility will not be dumping essentially raw sewage into the lake.

2.3 Provide, if available, the chlorine demand of nearby Lake Ontario water.

2.4 Supply complete chemical analysis of the lake water near the plant site.

3. TRANSMISSION LINES

3.1 Provide percentage breakdown of the line passing through (a) forest, (b) wetlands, (c) farmlands. How many homes will be displaced? Provide percentage of the completed line.

4. RADIOLOGICAL

4.1 Discuss the combined radiological effects of Nine Mile Point 1, Nine Mile Point 2, and FitzPatrick.

4.2 A significant source of direct radiation is the gamma de-excitation of  $O^{16}$  in the beta decay of  $N^{16}$  produced by the  $O^{16} (n,p) N^{16}$  reaction. Provide estimates of direct radiation doses that result from routine operation of the plant.



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4.3 Provide calculations of the doses resulting from transportation of spent fuel and radwaste.

5. COOLING SYSTEM

5.1 Provide data on ambient near shore current persistence.

5.2 Provide rationale for operating the main condenser circulating pump continuously:

5.3 Describe how you are going to model near and far field simultaneously.

5.4 Indicate which hydraulic model studies were used to obtain estimates of nozzle center line submergence.

5.5 Describe what aspect of the mathematical model resulted in lack of comparison with hydraulic model.

5.6 If available, provide details of the mathematical model.

5.7 Indicate if the jets are expected to interact before they reach the surface. If so, describe the effect this will have on the temperature distribution.

6. GENERAL

6.1 Provide the estimated contribution of the plant to the county taxes.

6.2 Furnish the estimated date of the thermal modeling being completed and available.

