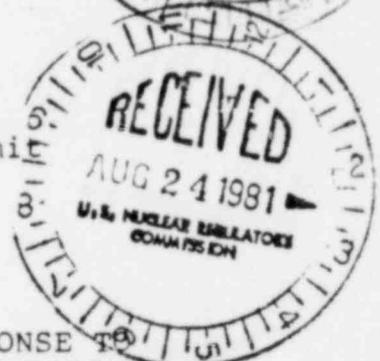


UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD



In the Matter of)	
)	Docket No. 50-367
NORTHERN INDIANA PUBLIC SERVICE COMPANY)	(Construction Permit Extension)
(Bailly Generating Station, Nuclear-1))	August 19, 1981

NORTHERN INDIANA PUBLIC SERVICE COMPANY'S RESPONSE TO PORTER COUNTY CHAPTER INTERVENORS' FOURTH SET OF INTERROGATORIES

For answer to Porter County Chapter Intervenors' (PCCI) Fourth Set of Interrogatories, Northern Indiana Public Service Company (NIPSCO) states as follows:

1. (a) What extended period of construction does NIPSCO request?
- (b) For what period of time and at what rate will the Bailly site be dewatered if the extended period of construction time requested by NIPSCO is granted?
- (c) For what period of time and at what rate was the Bailly site dewatered between May 1, 1974, and September 1, 1979?
- (d) What period of dewatering and what rate of dewatering of the Bailly site were analyzed critically by the Atomic Energy Commission in connection with issuance of Construction Permit No. CPPR-104?
- (e) By what period and what rates do the sums of your answers to 1(b) and 1(c) exceed your answers to 1(d)?

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- (f) Please provide the bases for your answers to 1(b), 1(c) and 1(d).

ANSWER:

- (a) Until December 1, 1989.
- (b) General construction dewatering is now being conducted and will be required for the period of time necessary to bring the facility foundations to grade level. This is estimated to be between 18 to 30 months after construction resumes. Localized dewatering will be required for short periods of time in small areas, e.g., for installation of the pump house.

Approximately 1,872,000 gallons per day is estimated to be the maximum amount of groundwater removed from the excavation during peak periods of dewatering.

- (c) NIPSCO began dewatering on 3/17/77. The pumping rate varies and is submitted periodically to the NRC as part of NIPSCO's groundwater monitoring program. These submittals were provided in response to PCCI's second request to NIPSCO for production of documents.
- (d) The rate of dewatering considered was approximately 2,000 gallons per minute. No specific period of dewatering was analyzed by the AEC.

- (e) The time periods cannot be compared because the AEC did not analyze a specific time period. To sum the rates of 1.(b) and 1.(c) is meaningless, however, the sum of the rates of 1.(b) and 1.(c) do not exceed the rate of 1.(d).
 - (f) C. F. Braun's detailed master schedule, revised 2/22/80. Page 25 of the August 27, 1979 Sargent & Lundy Report titled "Supplementary Information, Hydrogeologic Evaluation of Construction Dewatering", Water meter readings, Construction Permit hearing transcript p. 4669, and logic.
- 2.
- (a) What total volume of water will be removed from the Bailly site as a result of dewatering during the extended period of construction time sought by NIPSCO if such an extension is granted?
 - (b) What total volume of water was removed from the Bailly site as a result of dewatering between May 1, 1974, and September 1, 1979?
 - (c) What was the total volume of water removal from the Bailly site which was analyzed critically by the Atomic Energy Commission in connection with issuance of Construction Permit No. CPPR-104?
 - (d) By what volume does the sum of your answers to 2(a) and 2(b) exceed your answer to 2(c)?

- (e) Please provide the bases for your answers to 2(a), 2(b) and 2(c).

ANSWER:

- (a) NIPSCO has made no such determination.
 - (b) Approximately 325,000,000 gallons.
 - (c) No specific total volume of water removal was considered by the AEC.
 - (d) Not determinable.
 - (e) Water meter readings.
- 3.
- (a) To what elevation was dewatering critically analyzed by the Atomic Energy Commission at the construction permit stage?
 - (b) For what period of time is dewatering to the elevation specified in your answer to 3(a) contemplated?
 - (c) Please provide the bases for your answer to 3(a) and 3(b).
 - (d) What is the lowest elevation to which the Bailly excavation will be dewatered if an extension to the Bailly construction permit is granted?

ANSWER:

- (a) -4 ft. station datum except for localized areas enclosed by sheet piling.
- (b) NIPSCO estimates dewatering will occur for a period of 18 to 30 months once construction starts.
- (c) Initial decision in the Bailly Construction Permit Hearing. (7 AEC 557, 589).
C. F. Braun's Detailed Master Schedule, Revised 2/22/80.

- (d) -4 ft. station datum, except in localized areas enclosed by sheet piling.
- 4.
- (a) If the Bailly site is continuously dewatered to the elevation specified in your answer to 3(a), how long after the onset of such dewatering will the groundwater levels in the Bailly site area reach equilibrium as a result of dewatering (discounting variations in the groundwater levels from factors other than dewatering)?
 - (b) Please specify the depth of drawdown of the groundwater levels in the area around the Bailly site which would result from continuous dewatering to the elevation specified in your answer to Interrogatory 3(a) at distances of 700 feet, 1/2 mile, and 1 mile from the center point of the excavation.
 - (c) Please specify that rate of dewatering (vol/min.) which would occur as a result of continuous dewatering to the elevation specified in your answer to Interrogatory 3(a).
 - (d) If the Bailly site is continuously dewatered to the elevation specified in your answer to 3(d), how long after the onset of such dewatering would the groundwater levels in the Bailly site area reach equilibrium as a result of dewatering (discounting variations in the groundwater levels from factors other than dewatering)?

- (e) Please specify the depth of drawdown of the groundwater levels in the area around the Bailly site which would result from continuous dewatering to the elevation specified in your answer to Interrogatory 3(d) at distances of 700 feet, 1/2 mile, and 1 mile from the center point of the Bailly excavation.
- (f) Please specify the rate of dewatering (vol/min.) which would occur as a result of continuous dewatering to the elevation specified in your answer to Interrogatory 3(d).

ANSWER:

- (a) Approximately 4 weeks.
- (b) In responding to this Interrogatory, NIPSCO has estimated drawdowns based on a dewatering program for the construction of the Bailly N-1 plant consisting of sheet piling and a wellpoint system within the unconfined aquifer. This was the dewatering program which was critically analyzed by the AEC at the construction permit stage. NIPSCO did not calculate the drawdown at distances of 700 feet, 1/2 mile and 1 mile from the center point of the excavation for these conditions. However, in the Construction Permit Hearing, NIPSCO's consultants stated that at distances of 600 and 3000 feet from the excavation, drawdowns of approximately 4.6 and 1.2 feet respectively could occur.

- (c) The rate of dewatering considered for the conditions specified in Interrogatory 4(b) above at the construction permit stage was 2000 gpm.
 - (d) The time required, after the onset of construction dewatering, for the groundwater levels to reach equilibrium would be as provided in response to Interrogatory 4(a) above.
 - (e) In responding to this Interrogatory, NIPSCO has estimated drawdowns based on a dewatering program for the construction of the Bailly N-1 plant involving a slurry wall, sheet piling, an unconfined aquifer dewatering system, a confined aquifer depressurization system and recharge systems for both the unconfined and confined aquifers. NIPSCO has not calculated the drawdown at a distance of 700 feet from the center point of the excavation. However, at the NIPSCO/National Park Service property line, a distance of approximately 900 feet from the center point of the excavation, NIPSCO estimates drawdowns of 1 foot. No drawdown will occur at distances of 1/2 mile and 1 mile from the center point of the excavation.
 - (f) Approximately 1300 gallons per minute.
5. (a) If the Bailly site is continuously dewatered to the elevation specified in your answer to Interrogatory 3(a), how long after the onset of such

dewatering will the environmental impacts as a result of such dewatering reach an equilibrium (discounting variations in environmental impacts from factors other than dewatering)?

- (b) If the Bailly site is continuously dewatered to the elevation specified in your answer to Interrogatory 3(d), how long after the onset of such dewatering will the environmental impacts as a result of such dewatering reach an equilibrium (discounting variations in environmental impacts from factors other than dewatering)?

ANSWER:

- (a) There will be no detectable environmental impacts on the Indiana Dunes National Lakeshore as a result of continuous dewatering at the Bailly site.
- (b) There will be no detectable environmental impacts on the Indiana Dunes National Lakeshore as a result of continuous dewatering at the Bailly site.

6. Do your answers to Interrogatory 4(a), 4(b), 4(c), and 5(a) bound the results which would be obtained if the Bailly site is dewatered to an elevation higher than that specified in your answer to Interrogatory 3(a)?

ANSWER: Yes.

7. (a) If the extension sought by NIPSCO is granted, will any environmental impact during the extended period of construction time result from:
- (i) Dewatering during the extended period of construction time sought by NIPSCO?
 - (ii) Dewatering during the period specified in your answer to Interrogatory 1(d)?
 - (iii) Dewatering of the volume of water specified in your answer to Interrogatory 2(d)?
 - (iv) Other causes? If yes, please specify the cause(s).
- (b) Please describe in detail the environmental impact which will result from each of the causes specified in your answer to Interrogatory 7(a).
- (c) If your answer to Interrogatory 7(a)(i) through (iv) is no, please state the basis for your answer.

ANSWER:

- (a) (i) No.
- (ii) No period of dewatering is specified in response 1(d).
- (iii) No volume of water is specified in response 2(d).
- (iv) None other than those reviewed by the Atomic Safety and Licensing Board during the Bailly Construction Permit proceedings.
- (b) Not applicable.

- (c) NIPSCO dewatering system design and the Initial Decision of the Atomic Safety and Licensing Board in the Bailly Construction Permit proceedings, 7 AEC 557.

8. Are the environmental impacts described in your answer to Interrogatory 7(b) irreversible in whole or part once dewatering during the extended period of construction time sought by NIPSCO is completed?

ANSWER: Not applicable.

9. If your answer to Interrogatory 8 is yes, please specify which impacts are irreversible.

ANSWER: Not applicable.

10. If the environmental impacts described in your answer to Interrogatory 7(b) are reversible in whole or part once dewatering during the extended period of construction time sought by NIPSCO is completed:

- (a) Please specify which impacts are reversible in whole or part;
- (b) Please specify the degree to which the impacts are reversible;
- (c) Please specify the time required to complete the reversal process for each impact.

ANSWER: Not applicable.

11. If the extension sought by NIPSCO is granted,
 - (a) Will dewatering of Bailly during the extended period of construction cause different groundwater levels at distances of 700 feet, 1/2 mile, and 1 mile from the center of the Bailly excavation than occurred as a result of dewatering prior to September 1, 1979?
 - (b) Will dewatering of Bailly during the extended period of construction sought by NIPSCO cause different direction or rates of groundwater flow at distances of 700 feet, 1/2 mile, and 1 mile from the center of the Bailly excavation than occurred as a result of dewatering prior to September 1, 1979?
 - (c) Will dewatering of Bailly during the extended period of construction sought by NIPSCO cause the groundwater at distances of 700 feet, 1/2 mile, and 1 mile from the center of the Bailly excavation to exhibit different chemical characteristics than occurred as a result of dewatering prior to September 1, 1979?
 - (d) Will dewatering of Bailly during the extended period of construction sought by NIPSCO cause the groundwater to be different in any other respects than occurred as a result of dewatering prior to September 1, 1979?

- (e) If your answers to Interrogatories 11(a), 11(b), 11(c) and 11(d) are yes,
- (i) Please describe each difference, specifying, e.g., its magnitude, geographic extent, and duration;
 - (ii) Please describe the bases for contending that each difference will occur;
 - (iii) Please describe the environmental impact which will be caused by each difference.
- (f) If your answers to Interrogatories 11(a), 11(b), 11(c), and 11(d) are no, please state the bases for your answer, including but not limited to the data concerning groundwater flow rates, characteristics and levels on which you rely.

ANSWER:

- (a) Yes, dewatering for the construction of the Bailly N-1 plant during the extended period of construction will cause different groundwater levels at distances of 700 feet from the center of the Bailly N-1 excavation than occurred as a result of dewatering prior to September 1, 1979. However, groundwater levels at distances of 1/2 mile and 1 mile will not change.
- (b) Yes, dewatering for the construction of the Bailly N-1 plant during the extended period of construction will cause different direction and rates of groundwater flow at a distance of 700 feet from the

center of the Bailly excavation than occurred as a result of dewatering prior to September 1, 1979. However, groundwater direction and rates of flow at distances of 1/2 mile and 1 mile will not change.

- (c) No detectable differences in the chemical characteristics of the groundwater will result at distances of 700 feet, 1/2 mile and 1 mile from the center of the Bailly N-1 excavation as a result of dewatering during the extended period of construction than occurred as a result of dewatering prior to September 1, 1979.
 - (d) No.
 - (e)
 - (i) NIPSCO does not know the specific magnitude, geographic extent or duration of these differences.
 - (ii) Increased dewatering rates to lower the water levels within the Bailly N-1 excavation.
 - (iii) There will be no detectable environmental effects caused by these differences.
 - (f) The flow rates of the groundwater will not change significantly.
12. (a) Has dewatering of the Bailly site caused any differences in groundwater levels at distances of 700 feet, 1/2 mile, and 1 mile from the center of the Bailly excavation than occurred prior to May 1, 1974?

- (b) Has dewatering of the Bailly site caused any differences in direction or rates of groundwater flow at distances of 700 feet, 1/2 mile, and 1 mile from the center of the Bailly excavation than occurred prior to May 1, 1974?
- (c) Has dewatering of the Bailly site caused the groundwater at distances of 700 feet, 1/2 mile, and 1 mile from the center of the Bailly excavation to exhibit any different chemical characteristics than occurred prior to May 1, 1974?
- (d) Has dewatering of the Bailly site caused the groundwater to be different in any other respects than it was prior to May 1, 1974?
- (e) If your answer to Interrogatories 12(a), 12(b), 12(c) or 12(d) is yes,
 - (i) Please describe each difference, specifying, e.g., its magnitude, geographic extent, and duration;
 - (ii) Please describe the bases for your positions that each difference has occurred;
 - (iii) Please describe the environmental impact caused by each difference.
- (f) If your answers to Interrogatories 12(a), 12(b), 12(c) and 12(d) are no, please state the bases for your answer including but not limited to the data concerning groundwater flow rates, characteristics and levels occurring prior to May 1, 1974 on which you rely.

ANSWER:

- (a) Yes, dewatering for the construction of Bailly N-1 has caused differences in groundwater levels at a distance of 700 feet from the center of the Bailly N-1 excavation. However, no differences in groundwater levels at distances of 1/2 mile and 1 mile have occurred.
- (b) Yes, dewatering for the construction of Bailly N-1 has caused differences in direction and rates of groundwater flow at a distance of 700 feet from the center of the Bailly excavation. However, no differences in groundwater levels at distances of 1/2 mile and 1 mile have occurred.
- (c) No.
- (d) No.
- (e) (i) The only differences at 700' occur on NIPSCO's property. No differences are identified at 1/2 mile and 1 mile. The differences listed in the above responses are documented in the groundwater monitoring data which NIPSCO periodically submitted, and continues to submit, to the NRC. These documents were provided to PCCI in response to previous requests for documents.
 - (ii) See response to Interrogatory 12(e)(i) above.

(iii) No environmental impacts have been detected.

(f) The bases for the answers provided above are the documents described in response to Interrogatory 12(e)(i) above.

13. (a) If the extension sought by NIPSCO is granted, will dewatering during the extra period of dewatering (as distinct from any changes in the parameters of the groundwater which will occur after September 1, 1979, as a result of dewatering during the extended period of construction) cause any environmental impact?
- (b) If your answer to Interrogatory 13(a) is yes,
- (i) Please describe the impact;
 - (ii) Please provide the bases for your contention.
- (c) If your answer to Interrogatory 13(a) is no, please state the bases for your answer.

ANSWER:

- (a) No; and no changes in the parameters of the groundwater will occur.
- (b) Not applicable.
- (c) Because the mitigation program will minimize drawdown from dewatering, no environmental impact can occur.

14. Is it your position that construction and dewatering during the additional period of construction and/or the additional period of dewatering sought by NIPSCO is not sufficient to cause

any impact on any species of plant in the Indiana Dunes National Lakeshore?

- (a) If your answer is that such period is not sufficient to cause any impact, please provide the bases for your contention.
- (b) If your answer is that such period is sufficient to cause any impact;
 - (i) Describe in detail the impact;
 - (ii) State whether you contend the impact is reversible or irreversible;
 - (iii) If you contend the impact is reversible, state what period of time after all dewatering has ceased will be necessary for complete reversal of such impact; and
 - (iv) State the bases for your responses to 14(b)(i) through (iii).

ANSWER: Yes.

- (a) NIPSCO's mitigation system design will prevent any significant drawdown and consequently no impacts on any species of plant in the Indiana Dunes National Lakeshore will occur.
- (b) Not applicable.

15. (a) Is it your position that the Indiana Dunes National Lakeshore would not be adversely affected by

- (i) A deficiency of water;
 - (ii) A surplus of water;
 - (iii) A change in water characteristics;
 - (iv) A change in the rate of water flow;
 - (v) A change in the direction of water flow;
 - (vi) Dilution of the existing water in the Indiana Dunes National Lakeshore?
- (b) Please specify the numerical values for the parameters of the water which you are using as a reference in order to determine whether a deficiency, surplus, or a change in the water occurs.
- (c) Using the values specified in your answer to Interrogatory 15(b) as a reference, please specify the magnitude of change in the following parameters of the groundwater of the Indiana Dunes National Lakeshore which can occur before any adverse impact will result in the Indiana Dunes National Lakeshore:
- (i) Groundwater level;
 - (ii) Groundwater flow rate;
 - (iii) Groundwater flow direction;
 - (iv) Groundwater characteristics.
- (d) Using the values specified in your answer to Interrogatory 15(b) as a reference, please specify the magnitude of change in the following parameters of the groundwater in the Indiana Dunes National

Lakeshore which you allege will occur as a result of dewatering during the extended period of construction time sought by NIPSCO:

- (i) Groundwater level;
 - (ii) Groundwater flow rate;
 - (iii) Groundwater flow direction;
 - (iv) Groundwater characteristics.
- (e) Please describe any environmental impact which will result from the change in items specified in Interrogatory 15(d).
- (f) Please identify all documents upon which you relied and persons whom you consulted in answering Interrogatories 15(a) through 15(e).
- (g) Please provide calculations upon which your answers to Interrogatories 15(b) through 15(g) are based.

ANSWER:

- (a) No.
- (b) NIPSCO does not have any such numerical values and none are required as NIPSCO's mitigation system will prevent any water deficiency, or surplus, change in water characteristics, flow rates, change in direction of water flow or water dilution in the Indiana Dunes National Lakeshore.
- (c) No values are specified in response to 15(b) and no such determination has been made as it is unnecessary.

- (d) None, other than a one foot drawdown at the NIPSCO property line.
- (e) None.
- (f) The following documents were relied upon in preparing the response to this Interrogatory.
 - (i) All groundwater monitoring data which is submitted to the NRC on a periodic basis.
 - (ii) "Hydrogeologic Evaluation of Construction Dewatering, Bailly Generating Station N-1" dated March 30, 1978 and prepared by Sargent & Lundy Engineers, Chicago, Illinois. This report was transmitted to Mr. G. Knighton of the NRC by Mr. R. J. Bohn of NIPSCO with a letter dated April 13, 1978.
 - (iii) Letter of July 20, 1978 to Mr. R. L. Ballard of the NRC from Mr. R. J. Bohn of NIPSCO with attachments.
 - (iv) "Supplementary Information, Hydrogeologic Evaluation of Construction Dewatering, Bailly Generating Station, Nuclear-I" dated August 27, 1979 and prepared by Sargent & Lundy Engineers, Chicago, Illinois; Dames & Moore, Park Ridge, Illinois, and Ground/Water Technology, Denville, New Jersey. This report was transmitted to Mr. R. Ballard of the NRC by Mr. R. J. Bohn of NIPSCO with a letter dated August 27, 1979.

NIPSCO did not consult with any persons in answering Interrogatories 15(a) through 15(e).

- (g) None.
16. (a) Is it your position that NIPSCO or its contractors or subcontractors did not perform any action in an incompetent manner in connection with the application for and issuance of the Bailly construction permit, and in its attempt to build the Bailly plant?
- (b) If your answer to Interrogatory 16(a) is yes, state the bases for your answer.
- (c) If your answer to Interrogatory 16(a) is no, state:
- (i) What actions were performed in an incompetent manner;
 - (ii) By whom the actions were performed;
 - (iii) In what manner the actions were incompetently performed.

ANSWER:

- (a) Yes.
 - (b) NIPSCO has not identified any such action.
 - (c) Not applicable.
17. (a) Over what extended period of time does NIPSCO propose to engage in construction dewatering at the Bailly site?
- (b) Do you contend that NIPSCO's proposed water mitigation program will prevent all impacts upon the Indiana Dunes National Lakeshore resulting from NIPSCO's proposed extended period of construction dewatering?

- (c) If your answer to Interrogatory 17(b) is yes, please:
- (i) Identify all impacts on the Indiana Dunes National Lakeshore which you contend NIPSCO's proposed mitigation program will prevent;
 - (ii) State the manner in which you contend NIPSCO's proposed mitigation program will prevent each impact; and
 - (iii) State the bases for your answers to Interrogatories 17(b), (c)(i), and (c)(ii).
- (d) If your answer to Interrogatory 17(b) is no, please identify all impacts which NIPSCO's proposed mitigation program will not prevent.

ANSWER:

- (a) See response to Interrogatory 1(b).
- (b) No.
- (c) Not applicable.
- (d) A possible one foot drawdown at the property line.

18. With reference to NIPSCO's proposed water mitigation program:

- (a) Will NIPSCO's proposed program be capable of maintaining natural water levels within all areas of the Indiana Dunes National Lakeshore while maintaining a dry excavation to the depth needed for construction during the additional period of construction time sought by NIPSCO?

- (b) Are the replacement water levels keyed to the natural water table levels?
 - (i) If your answer to Interrogatory 18(b) is yes, please state in what respect the replacement water levels are so keyed.
 - (ii) If your answer to Interrogatory 18(b) is no, state why the replacement water levels are not keyed to the natural water table levels.
 - (iii) Describe the natural water table levels to which you referred in answering Interrogatory 18(b).
- (c) Are the replacement water levels keyed to the natural interdunal pond levels?
 - (i) If your answer to Interrogatory 18(c) is yes, state in what respect the replacement water levels are so keyed.
 - (ii) If your answer to Interrogatory 18(c) is no, state why the replacement water levels are not keyed to the natural interdunal pond levels.
 - (iii) Describe the natural interdunal pond levels to which you referred in answering Interrogatory 18(c).
- (d) Are the replacement water levels keyed to the natural wetland water levels?

- (i) If your answer to Interrogatory 18(d) is yes, state in what respect the replacement water levels are so keyed.
 - (ii) If your answer to Interrogatory 18(d) is no, state why the replacement water levels are not keyed to the natural wetland water levels.
 - (iii) Describe the natural wetland water levels to which you referred in answering Interrogatory 18(d).
- (e) Does NIPSCO's proposed program include measures to maintain the natural seasonal variations within all areas of the Indiana Dunes National Lakeshore?
- (i) If your answer to Interrogatory 18(e) is yes, state what measures are included in the program.
 - (ii) If your answer to Interrogatory 18(e) is no, state why such measures are not included in the program.
 - (iii) Describe the natural seasonal variations to which you referred in answering Interrogatory 18(e).
- (f) Does NIPSCO's proposed program include measures to maintain the natural yearly variations within all areas of the Indiana Dunes National Lakeshore?

- (i) If your answer to Interrogatory 18(f) is yes, state what measures are included in the program.
- (ii) If your answer to Interrogatory 18(f) is no, state why such measures are not included in the program.
- (iii) Describe the natural yearly variations to which you referred in answering Interrogatory 18(f).

ANSWER:

- (a) No.
- (b) No, they are keyed to the ground water levels existing within the area surrounding the Bailly site.
 - (i) The manner in which the replacement water levels are keyed to the water table levels is described in the following documents:
 - (I) "Hydrogeologic Evaluation of Construction Dewatering, Bailly Generating Station - Nuclear-1" dated March 30, 1978 and prepared by Sargent & Lundy Engineers, Chicago, Illinois. This report was transmitted to Mr. G. Knighton of the NRC by Mr. R. J. Bohn of NIPSCO with a letter dated April 13, 1978 (Pages 12 to 14).

- (II) Letter of July 20, 1978 to Mr. R. L. Ballard of the NRC from Mr. R. J. Bohn of NIPSCO with attachments.
- (III) "Groundwater Monitoring Program Following Sealing of Settling Basins at Bailly Generating Station" dated December 27, 1979 and prepared by Sargent & Lundy Engineers, Chicago, Illinois. This report was transmitted to Mr. R. Ballard of the NRC by Mr. R. J. Bohn of NIPSCO with a letter dated December 27, 1979.

All of the above documents have been provided to PCCI in response to its second request for documents.

- (ii) Not applicable.
- (iii) "Natural" water table levels no longer exist in this industrialized and habited area. The existing water table levels are described in the groundwater monitoring data which is periodically submitted to the NRC. All such data has been provided to PCCI in response to previous requests for documents.

(c) No

- (i) Not applicable.
- (ii) The interdunal ponds are perched and, thus, give little indication of the groundwater level.

- (iii) The interdunal pond levels are described in the interdunal pond monitoring data which is periodically submitted to the NRC. All such data has been provided to PCCI in response to its second request for documents.
- (d) No.
 - (i) Not applicable.
 - (ii) The wetlands within the Indiana Dunes National Lakeshore are located far beyond the radius of influence of the dewatering required for construction of Bailly N-1.
 - (iii) The wetland water levels located in the Indiana Dunes National Lakeshore are described in the interdunal pond monitoring data which is periodically submitted to the NRC. All such data has been provided to PCCI in response to its second request for documents.
- (e) Yes.
 - (i) The measures which are included in the mitigation program are listed in the documents cited in the answer to Interrogatory 18(b)(i) above.
 - (ii) Not applicable.

(iii) The seasonal variations are described in the groundwater monitoring data which is periodically submitted to the NRC. All such data has been provided to PCCI in response to its second request for documents.

(f) Yes.

(i) The measures which were described in response to Interrogatory 18(e)(i) above will cause the yearly variations in groundwater levels to be maintained.

(ii) Not applicable.

(iii) The yearly variations are described in the groundwater monitoring data which is periodically submitted to the NRC. All such data has been provided to PCCI in response to its second request for documents.

19. Please specify what levels NIPSCO intends to use as a reference to determine whether there has been a change in the following:

- (a) Water levels in the interdunal ponds;
- (b) Groundwater levels at the NIPSCO/Indiana Dunes National Lakeshore boundary;
- (c) Any other water levels;

- (d) Natural seasonal variations of
 - (i) Water levels in the interdunal ponds;
 - (ii) Groundwater levels at the NIPSCO/Indiana Dunes National Lakeshore boundary;
 - (iii) Any other water levels.
- (e) Natural yearly variations of
 - (i) Water levels in the interdunal ponds;
 - (ii) Groundwater levels at the NIPSCO/Indiana Dunes National Lakeshore boundary;
 - (iii) Any other water levels.

ANSWER:

- (a) None.
 - (b) None.
 - (c) Groundwater levels in the monitoring wells.
 - (d) (i) None.
 - (ii) None.
 - (iii) None.
 - (e) (i) None.
 - (ii) None.
 - (iii) None.
20. (a) Please enumerate the historical and projected ranges of natural seasonal variations within the Indiana Dunes National Lakeshore of:
- (i) Natural water table levels;
 - (ii) Natural interdunal pond levels;
 - (iii) Natural wetland levels.

- (b) Please enumerate the historical and projected ranges of natural yearly variations within the Lakeshore of:
- (i) Natural water table levels;
 - (ii) Natural interdunal pond levels;
 - (iii) Natural wetland levels.
- (c) Please state the bases of your responses to Interrogatories 20(a) and 20(b).

ANSWER:

- (a) (i) NIPSCO has not determined the historical ranges of natural seasonal variations within the Indiana Dunes National Lakeshore (IDNL) of natural water table levels. The historical measurements of the water table levels which NIPSCO has made are a composite of natural water table levels, seepage of the ash ponds, dewatering activities, and additional recharge or dewatering activities that are beyond NIPSCO's control such as the drainage pipe under Mineral Springs Road or local wells providing water for residential use and recharge from residential septic systems such as those located in Dune Acres.

NIPSCO has not projected ranges of natural seasonal variations within the IDNL of natural water table levels.

(a) (ii) NIPSCO has not determined the historical ranges of natural seasonal variations within the IDNL of natural interdunal pond levels. The historical measurements of the interdunal pond levels which NIPSCO has made are a composite of natural interdunal pond levels and seepage of the ash ponds.

NIPSCO has not projected ranges of natural seasonal variations within the IDNL of natural interdunal pond levels.

(a) (iii) NIPSCO has not determined the historical ranges of natural seasonal variations within the IDNL of natural wetland levels. The historical measurements of the wetland levels which NIPSCO has made are a composite of natural wetland levels and additional recharge or dewatering activities that are beyond NIPSCO's control such as the drainage pipe under Mineral Springs Road or local wells providing water for residential use.

NIPSCO has not projected ranges of natural seasonal variations within the IDNL of natural wetland levels.

- (b) (i) NIPSCO's response to enumerate the historical and projected ranges of natural yearly variations within the lakeshore of natural water table levels is the same as our response for the seasonal variations in Interrogatory 20(a)(i).
- (b) (ii) NIPSCO's response to enumerate the historical and projected ranges of natural yearly variations within the lakeshore of natural interdunal pond levels is the same as our response for the seasonal variations in Interrogatory 20(a)(ii).
- (b) (iii) NIPSCO's response to enumerate the historical and projected ranges of natural yearly variations within the lakeshore of natural wetland levels is the same as our response for the seasonal variations in Interrogatory 20(a)(iii).
- (c) The basis for NIPSCO's responses to Interrogatories 20(a) and 20(b) which provides the historical periodic measurements of the water table, interdunal pond and wetland levels were provided to PCCI in response to its Second Request for Documents.

21. With reference to NIPSCO's proposed water mitigation program:

- (a) Is it your position that replacement water will have the same characteristics as the water removed?

- (b) Please describe those characteristics of the replacement water which are the same as the characteristics of the water removed.
- (c) Please describe each characteristic of the replacement water which will differ from the water removed, and specify in what respect they differ.
- (d) Is it your position that the characteristics described in your answer to Interrogatory 21(c) will have no impact on the Indiana Dunes National Lakeshore?
- (e) State the bases for your responses to Interrogatories 21(a) through 21(d).

ANSWER:

- (a) Yes.
 - (b) All characteristics of the replacement water will be the same as the characteristics of the water which is removed.
 - (c) Not applicable.
 - (d) Not applicable.
 - (e) NIPSCO will use the water which is removed by the dewatering system to recharge the ground water.
22. (a) Is it your position that the natural water, defined as that water in the Indiana Dunes National Lakeshore as it would be in the absence of all NIPSCO activities, does not have a low flow rate and a long term turnover during which time the water is conditioned by natural processes?

- (b) What do you contend is the rate of flow of the groundwater in the Lakeshore adjacent to the Bailly site? If the rate is different at different locations, please specify the rate at each location.
- (c) What do you contend is the rate of flow of the groundwater on the Bailly site? If the rate is different at different locations, please specify the rate at each location.
- (d) What do you contend will be the rate of flow of replacement water of NIPSCO's proposed mitigation system at each point of introduction of replacement water, and at each location identified in your answer to Interrogatories 22(b) and 22(c)?
- (e) Is it your position that the flow rate of replacement water from NIPSCO's proposed mitigation system will be slow enough to permit conditioning through organic decay?
- (f) If your answer to Interrogatory 22(e) is yes, please state the bases for your conclusion.
- (g) If your answer to Interrogatory 22(e) is no, what is the significance of flow rate to the suitability of the proposed water replacement plan?
- (h) Please identify all natural processes which condition the water and state whether the replacement water will be conditioned by those processes.
- (i) State the bases for your response to Interrogatory 22(h).

ANSWER:

- (a) Groundwater flow rates within the Indiana Dunes National Lakeshore, as defined, analyzed and understood by a hydrologist, are rather high and do not provide a particularly long term turnover.
 - (b) See response to Interrogatory 17(b) of Illinois' First Set of Interrogatories to NIPSCO.
 - (c) NIPSCO has made no determination of the rate of groundwater flow at the Bailly site.
 - (d) The rate of flow of replacement water has not been determined.
 - (e) Yes.
 - (f) The flow rate of replacement water will be within the seasonal and yearly variations.
 - (g) Not applicable.
 - (h) NIPSCO has not identified any of the natural processes which condition the water. However, the replacement water will be conditioned by those processes which are active in the soils.
 - (i) The flow rate of replacement water will be within the seasonal and yearly variations.
23. (a) Do water characteristics, both on the Bailly site and in the Indiana Dunes National Lakeshore, vary:
- (i) From one location to another;
 - (ii) From strata to strata, or
 - (iii) From near surface to greater depths?

- (b) If your responses to Interrogatory 23(a)(i) through (iii) are yes, state those characteristics, both in the Indiana Dunes National Lakeshore and on the Bailly site, which vary:
 - (i) From one location to another;
 - (ii) From strata to strata; and
 - (iii) From near surface to greater depths.
- (c) State the bases for your answers to Interrogatories 23(a) and 23(b).

ANSWER:

- (a) NIPSCO has no data regarding the water characteristics, and variations thereof, within the Indiana Dunes National Lakeshore. In regards to the variation of water characteristics on the Bailly site.
 - (i) Yes.
 - (ii) Yes.
 - (iii) Yes.
- (b) NIPSCO has no data regarding the variation, or lack of variation, of the groundwater characteristics within the Indiana Dunes National Lakeshore. However, variations within the groundwater characteristics on the Bailly site are detailed in the documents described in the response to Interrogatories 26(a) and 26(c) of the Porter County Chapter Intervenor's Third Set of Interrogatories to NIPSCO.

(c) The bases for the answer to Interrogatories 23(a) and 23(b) is provided in the response to Interrogatory 23(b) above.

24. (a) Please state whether any of the characteristics specified in your answers to Interrogatory 23 will potentially be affected by:
- (i) NIPSCO's dewatering in the absence of its proposed mitigation plan, if NIPSCO's request for an extension of the Bailly construction permit is granted;
 - (ii) NIPSCO's proposed mitigation plan, if NIPSCO's request for an extension of the Bailly construction permit is granted.
- (b) Identify each characteristic referred to in your answer to Interrogatory 24(a).
- (c) Please specify how, if at all, NIPSCO's proposed mitigation plan will mitigate the effects described in your answer to Interrogatory 24(a)(ii).
- (d) Please enumerate the historical and projected ranges of variations within the Lakeshore and on the Bailly site for each characteristic described in your answer to:
- (i) Interrogatory 23(b)(i) through 23(b)(iii)
and
 - (ii) Interrogatory 24(b).

ANSWER:

- (a) (i) Water characteristics will not be significantly affected by dewatering as planned without use of the mitigation system.
 - (ii) See the response to Interrogatory 21 above.
 - (b) The water characteristics considered by NIPSCO in the response to Interrogatory 24(a) are described in the documents listed in the response to Interrogatories 26(a) and 26(c) of the Porter County Chapter Intervenors' Third Set of Interrogatories to NIPSCO.
 - (c) Not applicable.
 - (d) NIPSCO does not have any data for water characteristic variations within the Indiana Dunes National Lakeshore. The data regarding water characteristics on the Bailly site are provided in the documents listed in the response to Interrogatories 26(a) and 26(c) of the Porter County Chapter Intervenors' Third Set of Interrogatories to NIPSCO.
25. (a) Is it your position that removal of groundwater through dewatering and replacement of water through NIPSCO's proposed mitigation program will not result in an increased rate of groundwater movement?
- (b) State the bases for your answer.

ANSWER:

- (a) Within the Indiana Dunes National Lakeshore, the rate of groundwater movement will not be significantly altered by the dewatering and mitigation programs. However, within the Bailly site, between the dewatering and mitigation systems, increased rates of groundwater movement are expected.
 - (b) The mitigation system will be operated to maintain seasonal groundwater levels, and thus, seasonal flow rates, within the Indiana Dunes National Lakeshore. Operation of the mitigation system will increase the rates of groundwater movement on the Bailly site.
26. (a) Is it your position that removal of groundwater through dewatering and replacement of water through NIPSCO's proposed mitigation program will not dilute the existing groundwater?
- (b) State the bases for your answer.

ANSWER:

- (a) Yes.
- (b) As stated in the response to Interrogatory 21(e), the replacement water will be the same as the groundwater and, thus, no dilution can occur.

27. (a) What do you contend is the present rate of groundwater movement at the Bailly site?
- (b) What do you contend will be the rate of movement of the water injected through NIPSCO's proposed mitigation program at the Bailly site?
- (c) Will the difference in the rate of movement of the groundwater described in your answers to 27(a) and 27(b) have any impact on the Indiana Dunes National Lakeshore?
- (d) State the bases for your answer to 27(a), 27(b) and 27(c).

ANSWER:

- (a) See the response to Interrogatory 22(c) above.
- (b) See the response to Interrogatory 22(d) above.
- (c) No.
- (d) The flow rate of the replacement water, if required, must be slightly higher than the flow rates at the points of injection to achieve the desired mitigation. However, since these increased flow rates are within the seasonal and yearly variations in groundwater flow rates, there will be no detectable effects within the Indiana Dunes National Lakeshore.
28. (a) What do you contend is the present rate of groundwater movement in the Indiana Dunes National Lakeshore?

- (b) What do you contend will be the rate of movement of the water from NIPSCO's proposed mitigation program?
- (c) Will the difference in the rate of movement described in your answers to 28(a) and 28(b) have any impact on the Indiana Dunes National Lakeshore?
- (d) State the basis for your answers to Interrogatories 28(a), 28(b) and 28(c).

ANSWER:

- (a) See the response to Interrogatory 22(b) above.
- (b) See the response to Interrogatory 27(b) above.
- (c) No. There will be no injection of replacement water within the Indiana Dunes National Lakeshore.
- (d) The flow rate of the replacement water, if necessary, must be slightly higher than the seasonal flow rates to achieve the desired mitigation. However, since there will be no injection of replacement water within the Indiana Dunes National Lakeshore and any increased flow rates will be within the seasonal and yearly variations in groundwater flow rates at the area of injection, there will be no detectable effects within the Indiana Dunes National Lakeshore.

29. With reference to those aquifers described as "Unit 1" and "Unit 3" in USGS reports 78-128 and 80-1105,

- (a) Describe what you contend are the location, depth, and physical dimensions of "Unit 3."
- (b) Are there any direct or indirect connections between Unit 3 and "Unit 1"?
- (c) Please specify the precise locations of each direct or indirect connection referred to in your answer to Interrogatory 29(b).
- (d) Does NIPSCO intend to remove any water from "Unit 3"?
- (e) If your answer to 29(d) is yes, state how much water you contend will be removed, and over what period of time.
- (f) If your answer to 29(d) is yes, state whether NIPSCO's proposed mitigation program includes mitigation of effects of removing water from Unit 3.
- (g) If your answer to 29(f) is yes, state in what respect the mitigation program proposes to mitigate those effects.

ANSWER:

- (a) The location, depth and physical dimensions of the confined aquifer, i.e. Unit 3, are described in the following documents:
 - (i) "Preliminary Review, Soil Parameters Used in USGS Report 78-138, Effects of Seepage from Fly-Ash Settling Ponds and Construction Dewatering on Ground Water Levels in the

Cowles Unit, Indiana Dunes National Lakeshore, Indiana" dated May, 1980 and prepared by D'Appolonia Consulting Engineers, Chesterton, Indiana.

(ii) "Supplementary Information, Hydrogeologic Evaluation of Construction Dewatering, Bailly Generating Station, Nuclear-1" dated August 27, 1979 and prepared by Sargent & Lundy Engineers, Chicago, Illinois; Dames & Moore, Park Ridge, Illinois and Ground/Water Technology, Denville, New Jersey. (Pages 4, 5 and 25).

(b) Yes.

(c) The approximate locations of the direct and indirect connections between the confined and unconfined aquifers are shown in the reports referenced in Interrogatory 29(a) above.

(d) Yes.

(e) NIPSCO estimates that a maximum of 750 gpm will be removed over a period of at least 18 months.

(f) Yes.

(g) See the response to Interrogatories 4 and 5 of the Porter County Chapter Intervenors' Third Set of Interrogatories to NIPSCO.

30. Please give the following information for the person swearing to the answers to these Interrogatories:

- (a) Name
- (b) Address
- (c) Title
- (d) Capacity

ANSWER:

- (a) R. J. Bohn.
- (b) R.R. 3, Box 501, Chesterton, Indiana 46304.
- (c) Manager, Nuclear Staff.
- (d) In charge of the engineering and construction of the nuclear project.

31. Please give the following information of each person who has provided or furnished information to the person identified in Interrogatory 30, consulted with that person in the preparation of the responses to these Interrogatories, or otherwise aided in the preparation of the responses:

- (a) Name
- (b) Address
- (c) Title
- (d) Number (including subpart) of each Interrogatory with respect to which that person consulted, aided or provided or furnished information; and
- (e) The nature of the information or aid furnished.

ANSWER:

- (a) Alan P. Severance.
- (b) R.R. 3, Box 501, Chesterton, Indiana 46304.

- (c) Mechanical/Nuclear Supervisor.
 - (d) Interrogatories 7, 8, 9, 10, 16, 20.
 - (e) Research and draft response.
-
- (a) Mark V. Kaldenberg.
 - (b) R.R. 3, Box 501, Chesterton, Indiana 46304.
 - (c) Nuclear Systems Engineer.
 - (d) Interrogatories 1, 2, 3, 5.
 - (e) Research and draft response.
-
- (a) Mark T. Maassel.
 - (b) R.R. 3, Box 501, Chesterton, Indiana 46304.
 - (c) Civil/Structural Engineer.
 - (d) Interrogatories 2(b), 4, 6, 11 through 15, 17, 18, 19, 21 through 29, 32.
 - (e) Research and draft response.
-
- (a) Richard F. Brissette.
 - (b) Canonic Environmental Services Corp., 1408 N. Tremont Road, Chesterton, Indiana 46304.
 - (c) President.
 - (d) Interrogatory 4(a).
 - (e) Time period.
-
- (a) Mark R. Granback.
 - (b) R.R. 3, Box 501, Chesterton, Indiana 46304.
 - (c) Licensing Supervisor.
 - (d) Interrogatory 31.
 - (e) Research and draft response.

William H. Eichhorn, Counsel for NIPSCO and Russell J. Bohn, Manager, Nuclear Staff assisted in the wording and preparation of all Answers to Interrogatories.

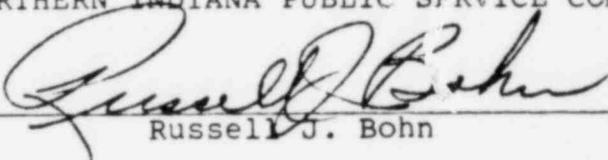
32. For each of the above Interrogatories, please describe each document referred to or relied on in formulating your responses.

ANSWER: In addition to the documents described within the above responses to PCCI's Fourth Set of Interrogatories to NIPSCO, the documents listed here were referred to or relied on in formulating NIPSCO's responses.

- (i) "Hydrogeologic Evaluation of Construction Dewatering, Bailly Generating Station Nuclear-1", dated March 30, 1978 and prepared by Sargent & Lundy Engineers, Chicago, Illinois.
- (ii) Letter of July 20, 1978 to Mr. R. L. Ballard of the NRC from Mr. R. J. Bohn of NIPSCO with attachments.
- (iii) "Supplementary Information - Hydrogeologic Evaluation of Construction Dewatering" dated August 27, 1979 and prepared by Sargent & Lundy Engineers, Chicago, Illinois; Dames & Moore, Park Ridge, Illinois; and Ground/Water Technology, Denville, New Jersey.

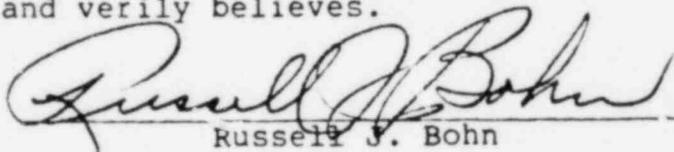
- (iv) "Assessment of the Influence of Dewatering at Bailly N-1" dated November, 1980, and prepared by D'Appolonia Consulting Engineers, Chesterton, Indiana.
- (v) Groundwater data which is collected by NIPSCO and submitted periodically to the NRC.

NORTHERN INDIANA PUBLIC SERVICE COMPANY

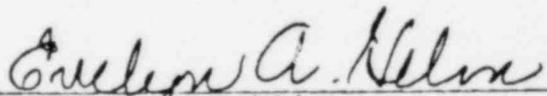
By 
 Russell J. Bohn

STATE OF INDIANA)
) SS:
 COUNTY OF LAKE)

The undersigned, Russell J. Bohn, being duly sworn upon his oath states that he is employed by Northern Indiana Public Service Company as Manager, Nuclear Staff, for the Bailly Nuclear Plant; that he is informed on the matters of inquiry of Porter County Chapter Intervenors' interrogatories; that in answering the above and foregoing interrogatories he has personally reviewed or caused others to review the files and records of Northern Indiana Public Service Company and has caused information to be gathered from employees and officers of Northern Indiana Public Service Company, its contractors and consultants; that the answers to the above and foregoing interrogatories are true and correct as he has been informed and verily believes.


 Russell J. Bohn

Subscribed and sworn to before me, a Notary Public, this 17 day of August, 1981.


 Notary Public

My Commission expires:
2-6-83

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	Docket No. 50-367
)	
NORTHERN INDIANA PUBLIC)	(Construction Permit
SERVICE COMPANY)	Extension)
)	
(Bailly Generating Station,)	August 19, 1981
Nuclear-1))	

CERTIFICATE OF SERVICE

I hereby certify that copies of Northern Indiana Public Service Company's Response to Porter County Chapter Intervenors' Fourth Set of Interrogatories were served on the following by deposit in the United States mail, postage prepaid, on this 19th day of August, 1981:

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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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