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September 3, 1982

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division Of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Docket Nos: 50-352
50-353

Subject: Limerick Generating Station Units 1 and 2
Requests For Additional Information Relating
To Supplementary Cooling Water Supply

Reference: (1) Letter, A. Schwencer to E. G. Bauer, Jr. dated August 11, 1982: "Request For Additional Information - Limerick EROL"

(2) Letter, A. Schwencer to E. G. Bauer, Jr. dated August 11, 1982: "Request for Additional Information - Limerick (Point Pleasant-Noise)"

Dear Mr. Schwencer:

Enclosed herewith are our responses to the reference requests for additional information which relate to supplementary cooling water supply issues, as further specified in the enclosure. The enclosure also addresses questions provided to us by your staff at the August 18, 1982 Environmental Site Meeting in Pottstown, Pennsylvania.

Normally we would provide this information formally as an amendment to the Application. However, in order to accommodate your needs for the information as soon as possible, it is being provided in this fashion. If you wish, the material may be subsequently included in a revision to the EROL.

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As our counsel has discussed with staff counsel, in the event members of your staff would like to meet with any individuals associated with the project to discuss these matters, we would be pleased to arrange a meeting to provide further explanations.

Very truly yours,

E. J. Bradley

HDH/pb/M-14

Enclosure

cc: See attached service list

cc: Judge Lawrence Brenner (w/enclosure)
Judge Richard F. Cole (w/enclosure)
Judge Peter A. Morris (w/enclosure)
Troy B. Conner, Jr., Esq. (w/enclosure)
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Mr. Thomas Gerusky
Director, Pennsylvania Emergency Management Agency
Mr. Steven P. Hershey
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Atomic Safety and Licensing Appeal Board
Atomic Safety and Licensing Board Panel
Docket and Service Section (w/enclosure)

PHILADELPHIA ELECTRIC COMPANY

Limerick Generating Station
Units No. 1 and 2

Responses To Requests For Additional Information (RAI)
Relating To Supplemental Cooling Water Supply

RAI	REFERENCE	RAI	REFERENCE
E100.2	(1)	E290.26	(2)
E240.24	(1)	E290.27	(2)
E240.25	(1)	E290.28	(3)
E240.26	(3)	E290.38	(3)
E240.27	(3)	E290.39	(3)
E240.28	(3)	E291.1	(1)
E290.17	(2)	E291.2	(1)
E290.18	(2)	E291.3	(1)
E290.19	(2)	E291.4	(1)
E290.20	(2)	E291.12	(1)
E290.21	(2)	E291.13	(1)
E290.22	(2)	E291.17	(1)
E290.23	(2)	E291.19	(1)
E290.24	(2)	E291.20	(1)
E290.25	(2)		

References

(1) Letter, A. Schwencer to E. G. Bauer, Jr. dated August 11, 1982 "Request for Additional Information - Limerick EROL"

(2) Letter, A. Schwencer to E. G. Bauer, Jr. dated August 11, 1982 "Request for Additional Information - Limerick (Point Pleasant-Noise)"

(3) Environmental Site Meeting, August 18, 1982, Pottstown, Pennsylvania

QUESTION E240.24

Please provide the following information regarding the bradshaw Reservoir of the Point Pleasant Diversion Plan:

a) A drawing(s) of the reservoir showing deimensions, water level, impervious liner, drains and filters.

b) The thickness and permeability of the imperviuos liner on the bottom of the reservoir.

c) Calculations of seepage through the reservoir and the path of the seepage (downstream or into ground).

d) A drawing of the stratigraphy underneath the reservoir showing ambient water table elevation, potable aquifers, confining layers, and any other data pertinent to determining the potential for groundwater contamination from the reservoir.

e) A map showing the location of groundwater users near Bradshaw Reservoir that could be affected by seepage from the reservoir.

RESPONSE

a) Figure E240.24-1 shows a plan view of Bradshaw Reservoir. Figure E240.24-2 shows elevations of the dikes, the high and low water levels, and the location of the impervious liner. Details of the drains and filters are shown in Figure E240.24-3.

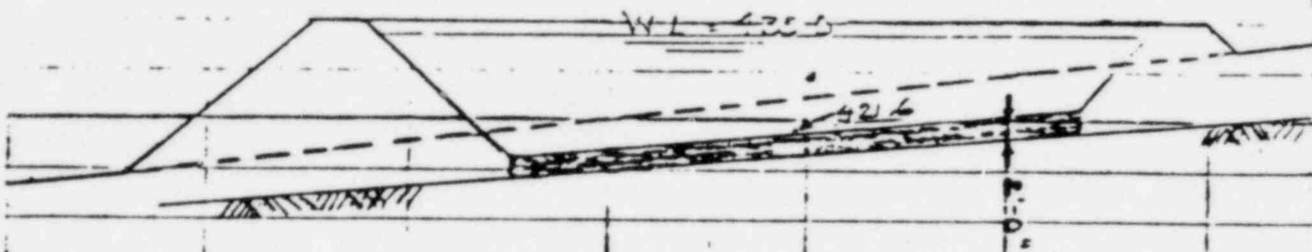
b) The thickness of the impervious liner as shown in Figure E240.24-2 is to be a minimum of 2 feet. The maximum permability of the liner material will be 5 x 10-6 cm/sec (0.014 fpd).

c) Calculations of seepage through the reservoir bottom are shown in Exhibit E240.24-1, the calculated seepage rate is .67 cfs. The seepage will flow to the northeast of the reservoir and into the tributary of Geddes Run as shouwn in Figure E240.24-5.

d) Figure E240.24-4 shows the stratigraphy below the reservoir. It should be noted that there are no confining beds or separate aquifiers present. Figure E240.24-5 shows water table elevations.

e) Figure E240.24-5 shows the location of groundwater users near Bradshaw Reservoir; however, since they are located south of the reservoir and the seepage will flow to the north, they will not be affected. It has been concluded that there will be no reversal of the direction of groundwater flow, and there will be no new recharge to existing wells in the area.

PROJECT: BRADSHAW RESERVOIR
SUBJECT: Seepage Thru Bottom Lining
COMPUTED BY: DATE: CHECKED:



Normal High Water Level	435.0
Aver. Elev. Bot of Reservoir	421.6
Aver. Head on Bottom	13.4 ft

Bottom Area = 825 × 575 + 725 × 200
474,375 + 145,000
619,375 Say 620,000 sq. ft.

Permeability Coefficient
Natural Residual Soil. 5×10^{-5} cm/sec
Rolled & Consolidated – 5×10^{-6} cm/sec
– 0.014 fpd

Q = K i A   i = 13.4 ÷ 2
= 6.7 ft/ft
= 0.014 × 6.7 × 620,000
= 58,156 cu. ft / day
= 436,170 gpd = 0.67 cfs.

Note – This will be a conservative estimate as it assumes free flow under lining, with no back pressure. Pond on site with relatively constant level indicates very limited flow thru overburden or thru underlying weathered rock

EXHIBIT E 240.24-1

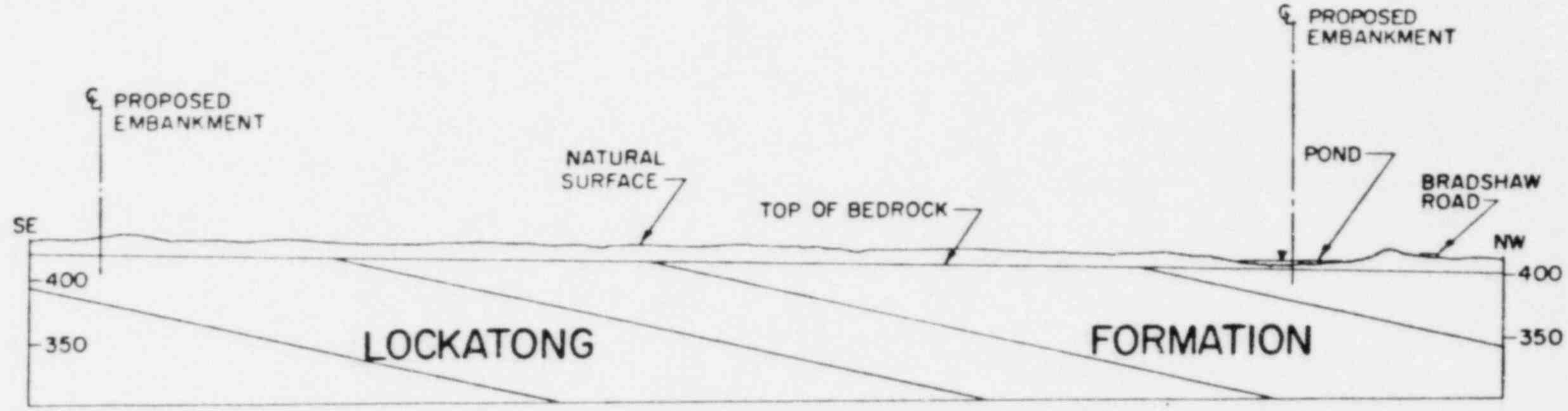
SEE

APERTURE

CARDS

AVAILIBILITY ____ PDR ________ CF ________ HOLD ________

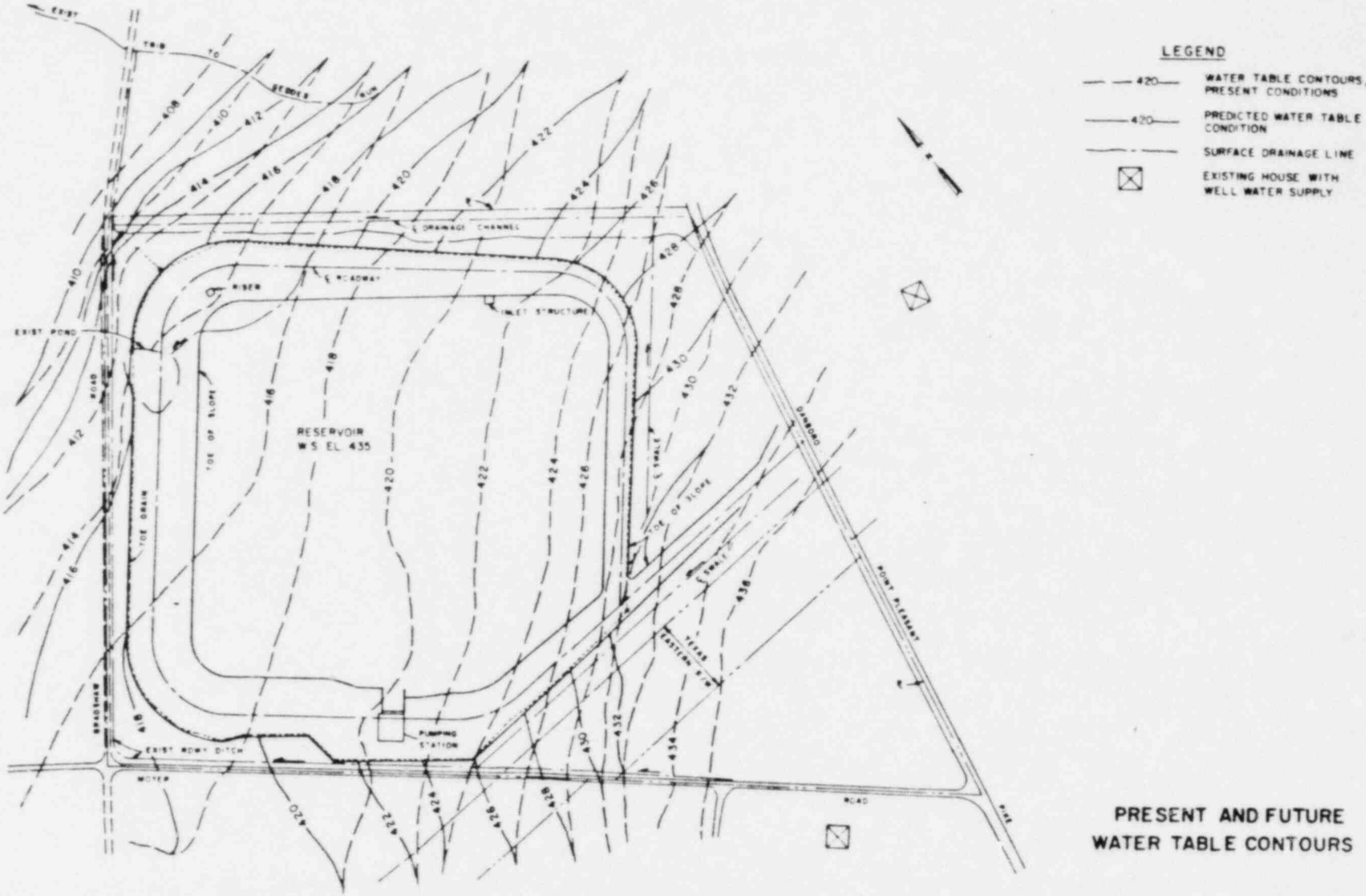
NUMBERS OF PAGES. ______ 3 ______________



SCALE: 1 INCH = 100 FEET
VERTICAL AND HORIZONTAL

GEOLOGIC
CROSS SECTION AT
BRADSHAW RESERVOIR

FIGURE E 240.24-4



PRESENT AND FUTURE WATER TABLE CONTOURS

FIGURE E 240.24-5

QUESTION E240.25

a) From a review of the Duration Table of Daily Flows for the Schuylkill River, Perkiomen Creek, and Delaware River (Table 2.4-7) and Low flow Frequency Curves for the same streams (Figures 2.4-4, 4a, and 4b) it appears that there could be many days during the operating life of the plant in which none of the streams meet the DRBC conditions for water withdrawal and the plant would have to be shutdown or run at a reduced power output due to lack of water availability. Provide an analysis showing the number of days per year over a simulated typical 40 year period that the plant would be shutdown due to flow and temperature conditions in the various water sources. Tabulate the results of this analysis to show the number of days per month that the plant cannot operate for the median year, and for the worst year in 5 years, 10 years, 20 years, and 40 years. If the plant will continue to operate at a reduced power level when there is some water available but not enough for full power operation also include the average power output in your monthly tabulations. Clearly state any assumptions made regarding factors affecting water availability over the life of the plant that are not reflected in the historical flow data.

b) For one unit operation, use the above analysis to demonstrate the additional power output provided by use of the Point Pleasant Diversion System over use of the Schuylkill River alone.

RESPONSE

This matter was reviewed by the Commission at the construction permit stage (see ALAB-262, 1975) and upheld by the United States Court of Appeals in 1976.

As stated in our response to question 240.9, there is little likelihood that Limerick Generating Station will be shut down due to a lack of makeup water after the Merrill Creek Reservoir is completed late in 1985. Merrill Creek Reservoir will store sufficient water to provide consumptive makeup for the most severe drought of record; therefore, except for the summer of 1985, the plant will not have to be shut down or run at reduced power level due to lack of water.

The Cooling Water Supply Report for Limerick, prepared by Tippetts-Abbett-McCarthy-Stratton, dated May, 1973, and included in the record of the construction permit proceeding, gives a month by month account of the unavailability of the Delaware River for the years 1928 through 1970, based upon the flow and temperature constraints in the various streams as specified in DRBC Docket No. D-69-210CP and the projected upstream demand in the year 2010, and assuming the absence of Merrill Creek. The number of days of unavailability for the median year in a 40 year period (1931-1970) is 22 days.

Table E240.25-1 lists the unavailability in days per month for the median year and for the worst year 5, 10, 20, and 40 years.

Based upon the data in Tippetts-Abbett-McCarthy-Stratton (TAMS) report entitled Cooling Water Supply For Limerick Nuclear Power Station, dated May, 1973, water is available from the Schuylkill River for consumptive makeup for an average about 180 days per year. This is assuming two unit operation; however, it would change very little for one unit for the following reasons: 1) The primary constraint prohibiting withdrawal from the Schuylkill during the summer months is river temperature. As stated in DRBC Docket D-69-210CP, water may not be withdrawn for consumptive use whenever the river temperature is greater than 15°C (59°F), except during April, May, and June if the flow is greater than 1791 cfs. The temperature normally raises above this temperature in the spring and remains there until fall; therefore it does not matter whether one or two units are operating, no consumptive water may be withdrawn from the Schuylkill. 2) Docket D-69-210CP prohibits withdrawal from the Schuylkill for consumptive use whenever the flow at Pottstown is less than 530 cfs with one unit operating or 560 cfs with two units operating. Most of the time, the flow is greater than 560 cfs or less than 530 cfs. The amount of time that it is between these values, permitting only one unit to withdraw, is low. Therefore, the availability of the Schuylkill can be considered approximately the same for one or two units.

The average number of days per year that water may not be withdrawn from the Schuylkill River for consumptive use is approximately 185. Since it is expected that the plant will be shut down approximately 35 days per year for scheduled outages, water must be provided from the Point Pleasant Diversion System for about 150 days. Cons

TABLE E240.25-1

Days of Water Unavailability at Limerick
Without Merrill Creek

Month	Median yrs. 1935	Worst in 5 yrs. 1966	Worst in 10 yrs. 1963	Worst in 20 yrs. 1957	Worst 'n 40 yrs. 64
Jan.	0	0	0	0	0
Feb.	0	0	0	0	1
March	0	0	0	0	0
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	3	0	2
July	10	23	15	20	12
Aug.	1	23	20	30	29
Sept.	2	20	27	27	30
Oct.	9	13	29	24	28
Nov.	0	2	12	9	26
Dec.	0	0	0	0	10
Totals	22	81	106	110	138

QUESTION E240.26

A. It is our understanding that you plan to provide some erosion protection along East Branch Perkiomen Creek near the discharge of the line from the Bradshaw Reservoir. Do you plan to monitor the East Branch to check for additional downstream erosion and provide additional erosion protection if required? If so, please discuss?

B. Do you plan to remove any of the fluvial deposits downstream of the discharge in East Branch Perkiomen Creek in order to lower the amount of suspended sediment flushed downstream when the diversion is initially operated? If so, how far downstream of the discharge do you plan to remove these deposits? Estimate the amount of suspended sediment that will be carried downstream due to initial operation of the diversion facility and compare this value to what would normally be expected in the Creek for that time of year.

RESPONSE

A. The riprap that will be placed to provide erosion protection along the East Branch Perkiomen Creek where the pipeline discharges into the creek is shown on figure E291.20-1. Although erosion downstream is not expected, the creek will be monitored after pumping commences. As required under the conditions of DRBC Docket No. D-79-52CP, the creek will be inspected and monitored immediately below the discharge on a regular basis and following any significant period of flood flows. If significant erosion is found, appropriate erosion control measures will be provided, in consultation with the DRBC.

B. There are not plans to remove fluvial deposits downstream of the discharge into the East Branch Perkiomen Creek. The commencement of pumping in the spring will be shortly after the annual spring high flow period. These high spring flows will flush the streambed of loose deposits. Since the maximum pumping rate is small compared to the spring flows, the pumping will not cause additional sediment to be washed downstream.

QUESTION E240.28

Please provide a discussion and/or analysis to support your conclusion that siltation will not be a problem at the Delaware intake.

RESPONSE

The cross section of the Delaware River in the vicinity of the Point Pleasant intake has historically not changed significantly, indicating that silt deposition has not been occurring. The intake will be located above the river bed and aligned parallel to the river flow. It will, therefore, not create an obstruction and is not expected to cause any silt buildup.

Due to the position of the intake structure near the middle of the River, there is little chance of any deposition taking place at this location. The only likely source of such deposition would be bed load material carried by the stream during flood flows. In order to avoid erosion and deposition at the intake, the underlying area will be rock riprapped. Flow velocities during the falling stages of a flood should sweep the area clean. Other items which confirm this characteristic of the site were the borings completed in 1981; the channel bottom grades at the holes differed little from a River section taken in 1967, a 14-year time span. Also, the cross-sectional area of the intake structure above the channel bottom will be only 1.1% of the water section when the River water level is at Elevation 70.0. Thus, the intake will be a minimal obstruction to flow and should cause little, if any, deposition.

QUESTION E290.17

What equipment is in operation during the intake back-flush operation?

RESPONSE

In addition to the normally operating equipment, the only other equipment in operation during the intake back-flush operation would be the air compressors.

QUESTION E290.18

Concerning the compressors at the pumphouse:

(1) What are their number, type, HP, and RPM rating?

(2) How are these compressors driven (diesel, electric motor, turbines) and what are the specs on their drive engines (frame type, HP, RPM)?

RESPONSE

There are two, two-stage reciprocating compressors, each rated at 25 horsepower and 1035 revolutions per minute. These compressors are driven by electric motors. The motors are type 256T frame, open drip proof, and are rated at 25 horsepower and 1750 revolutions per minute.

QUESTION E290.19

For the pumphouse transformers:

(a) What is the KVA rating?
(b) Breakdown insulation level (BIL)?
(c) Type of cooling system?
(d) If there is a three-phase transformer system, is each phase in a separate tank?

RESPONSE

The pumphouse transformers will have a KVA rating of 7500. The BIL will be at least 150 KV on the high side and at least 30 KV on the low side. The transformers will be oil immersed, self cooled. The transformer system will be three-phase, and will be housed in one tank.

QUESTION E290.20

For the pumphouse pumps, what are the number, type, number of stages (if multi-stage) and HP or RPM of the pumps? What are the noise specs on the vertical motors that drive the pumps?

RESPONSE

Initially, there will be three pumps. A fourth pump will be added in the future. The pumps will be vertical diffuser-bowl, enclosed line shaft, multi-stage centrifugal pumps. The number of stages is not yet known and will depend upon the pump manufacturer selected. The pumps will be rated at 2250 horsepower and 900 revolutions per minute. Motor sound level is specified to be 86 dB as measured by IEEE Standard 85.

QUESTION E290.22

What noise control features were used to minimize noise emanating from the pumphouse? What are the dimensions of the pumphouse (length, width, and height) and the material from which the walls, ceiling, and floor are built? Where are the windows located, and what are their dimensions?

RESPONSE

In order to minimize noise emanating from the pumphouse, the following are specified. Sound attenuators will be installed on the inlets and outlets of the ventilating system. Exhaust fans will have acoustically insulated housings. Outside air ducts and air conditioning supply and return ducts will be acoustically lined galvanized steel. Silencers will be installed on compressor inlets. Two sides of the building will be constructed using double walls with a plenum chamber between the walls.

The pumphouse dimensions are roughly 85.5 feet by 60.5 feet by 44.5 feet in height.

Two sides of the pumphouse will be concrete with 6 inch thick stone veneer, and the other two sides will be concrete with 12 inch wide vertical wood boards. The ceiling will be suspended Gypsum Board or concrete. The floors will be concrete. There will be no windows.

QUESTION E290.23

What noise sources are present from the quarry located about 1000 ft. from the pumphouse?

RESPONSE

The noise sources present from the quarry consist of trucks, front-end loaders, rock crushers, and blasting.

QUESTION E290.24

Provide a copy of the ambient noise measurement study sponsored by the Applicant and done for the region near the pumphouse.

RESPONSE

There has been no ambient noise measurement study sponsored by the Applicant; however, a copy of the survey report sponsored by the Owner of the Point Pleasant facility, Neshaminy Water Resources Authority, is hereto attached as Exhibit E290.24-1. The recommendations in the report concerning the diesel generator are no longer applicable because this item has been deleted from the design.

SITE NOISE SURVEY
POINT PLEASANT PUMPING STATION

SUBMITTED TO:

Robler Associates
621 Kutcher Road
Southampton, Pa. 18966

Att: Mr. Mel Stevens

PREPARED BY:

Cerami & Associates, Inc.
42-15 Crescent Street
Long Island City, N.Y. 11101

REPORT NO: 5127

DATE: October 20, 1981

SIGNED: Neil Moiseev
NEIL MOISEEV

Cerami AND ASSOCIATES, INC.

EXHIBIT E 290.24-1

1. INTRODUCTION

In order to assure quiet design of the pumping station and its equipment, the ambient noise levels at the site need to be documented. This report presents the results of a 24 hour noise level survey conducted October 14 to October 15, 1981 at the proposed site of the Point Pleasant Pumping Station. In addition to 24-hour statistical A-weighted sound levels, minimum octave band noise level measurements were obtained.

2. MEASUREMENT LOCATION

The measurements were obtained on the proposed site of the pumping station at a location 30 feet north of the southern property line and 100 feet east of Pa. Route 32 (River Road). This location is representative of the noise levels found on adjacent private property. It was not located near the rushing water of the canal or too close to the road.

3. OBSERVATIONS

3.1 Natural Environment

The weather conditions during the period were:

Wind Velocity - not measurable

Temperature - 32 - 64° F

Sky was clear

3.2 Man-Made Environment

During the survey traffic proceeded normally on River Road. Resident activities remained at normal levels.

3.3 Noise Sources

The principal noise source in the area is traffic on River Road. River traffic is limited. Noise from birds and insects dominates the background levels. No aircraft were observed in the area.

4. MEASUREMENT EQUIPMENT

The equipment used to obtain the A-weighted sound level measurements were as follows:

1 GenRad Community Noise Analyzer, Type 1945

1 GenRad Sound Level Calibrator, Type 1562-A

2 GenRad 1/2" Electret - Condenser Microphone, Type 1962-9602

2 GenRad Preamplifier Type 1560-P42

2 Calibrated GenRad Microphone Windscreen

1 GenRad Type 1558 Octave Band Analyzer.

The Community Noise Analyzer with 1/2" Electret - Condenser Microphone satisfies the requirements of American National Standard Specifications for Type 1 Sound Level Meter S 1.4 - 1971. The instrument was used on the slow time-averaging setting, and A-frequency weighting was used for the measurements. The instrument was calibrated in accordance with the manufacturers instructions immediately before and after the survey. The readings reported here are mean-square A-weighted sound levels reference 20 micropascals.

5. MEASUREMENT PROCEDURE

5.1 Statistical Sound Levels

The sound level measurements were obtained over a 24 hour period by the Community Noise Analyzer which sampled the sound levels in 1 dB intervals at a rate of 5 samples per second.

The windscreen of acoustically transparent polyurethane foam was placed over the microphone to eliminate possible effects of wind on the microphone.

5.2 Octave Band Noise Levels

Octave band noise levels were obtained by observing the meter of the GR Type 1558 for a period of 5 to 10 minutes at each frequency. A minimum reading was recorded when no noise sources were clearly distinguishable. Measurements were obtained in 9 octave bands from 31.5 Hertz to 8000 Hz. as well as the A-weighted sound level.

6. SOUND LEVEL DATA

6.1 Table 1 presents the cumulative distribution of sound levels obtained during three periods during the 24-hour noise level measurements. They are presented as three measurements, daytime, 6 AM to 6 PM (12 hours); evening, 6 PM to 10 PM (4 hours); and night time, 10 PM to 6 AM (8 hours). The cumulative distribution gives the A-weighted sound levels exceeded for certain percentages of the measurement period.

L_{eq} is the equivalent sound level and is the constant sound level (A-weighted), that is equal in energy content for the period as the actual time-varying sound level.

6.2 Figure 2 presents the octave band sound pressure levels measured in the afternoon as described in section 5.2 above. These levels are extremely low.

7. REVISIONS TO NOISE CONTROL RECOMMENDATIONS

In originally reviewing and analyzing the noise control requirements of the project, we assumed ambient noise levels for daytime and night time perods. Our assumption for night time noise levels were conservative and still stand. Daytime ambient levels, however, are considerably below our estimates.

The measured daytime levels are extremely low. They are not significantly different from night time levels. In addition, we understand that there is some local opposition to the project as a whole and thus a potential public relations noise problem. We are therefore recommending additional noise attenuation for the emergency generator which will need to be tested periodically. These recommendations are as follows:

A. Provide a manufacturer's Hospital-type silencer on the exhaust side of the emergency generator.

B. Line the emergency generator room with 2" thick, 6 lb. density fiberglass insulation.

C. Provide a plenum for the intake air with 2" thick acoustical lining.

D. Provide Type 3Ms as manufactured by Industrial Acoustics Co., or equal sound traps on the inlet side. Since most manufacturers only permit a pressure drop of 1/2" on the radiator fan of the generators, a supplementary fan will be required to overcome the additional pressure drop due to the added attenuation.

E. Provide acoustical louvers such as Type LP Noiseshield Louvers manufactured by Industrial Acoustics for all unsilenced, unducted louver openings in the building exterior wall.

F. Provide mufflers for all exterior air intakes to air compressors. These mufflers shall provide the maximum attenuation such that the noise level from each compressor is no more than 50 dB(A) at 50 feet from the air intake. We recommend that a statement like this be included in the specifications.

TABLE 1

CUMULATIVE DISTRIBUTION OF A-WEIGHTED SOUND LEVELS SITE OF POINT PLEASANT PUMPING STATION

Descriptor	Date: / Time of Start: / Period:	10/14/81 6 P.M. 4 Hrs.	10/14/81 10 P.M. 8 Hrs.	10/15/81 6 A.M. 12 hrs.
L_{Max}		68	65	94
$L_{0.1}$		65	62	67
L_1		60	56	61
L_2		59	52	60
L_5		56	47	57
L_{10}		53	45	55
L_{20}		49	45	51
L_{50}		46	45	46
L_{90}		45	44	45
L_{99}		44	44	44
L_{Min}		44	44	44
L_{eq}		50	46	53

Cerami AND ASSOCIATES, INC.

Cerami

AND ASSOCIATES, INC.

ACOUSTICAL CONSULTANTS

PROJECT Point Pleasant Pumping Station

SHEET 1 OF 1

DATE 10/20, 19 81

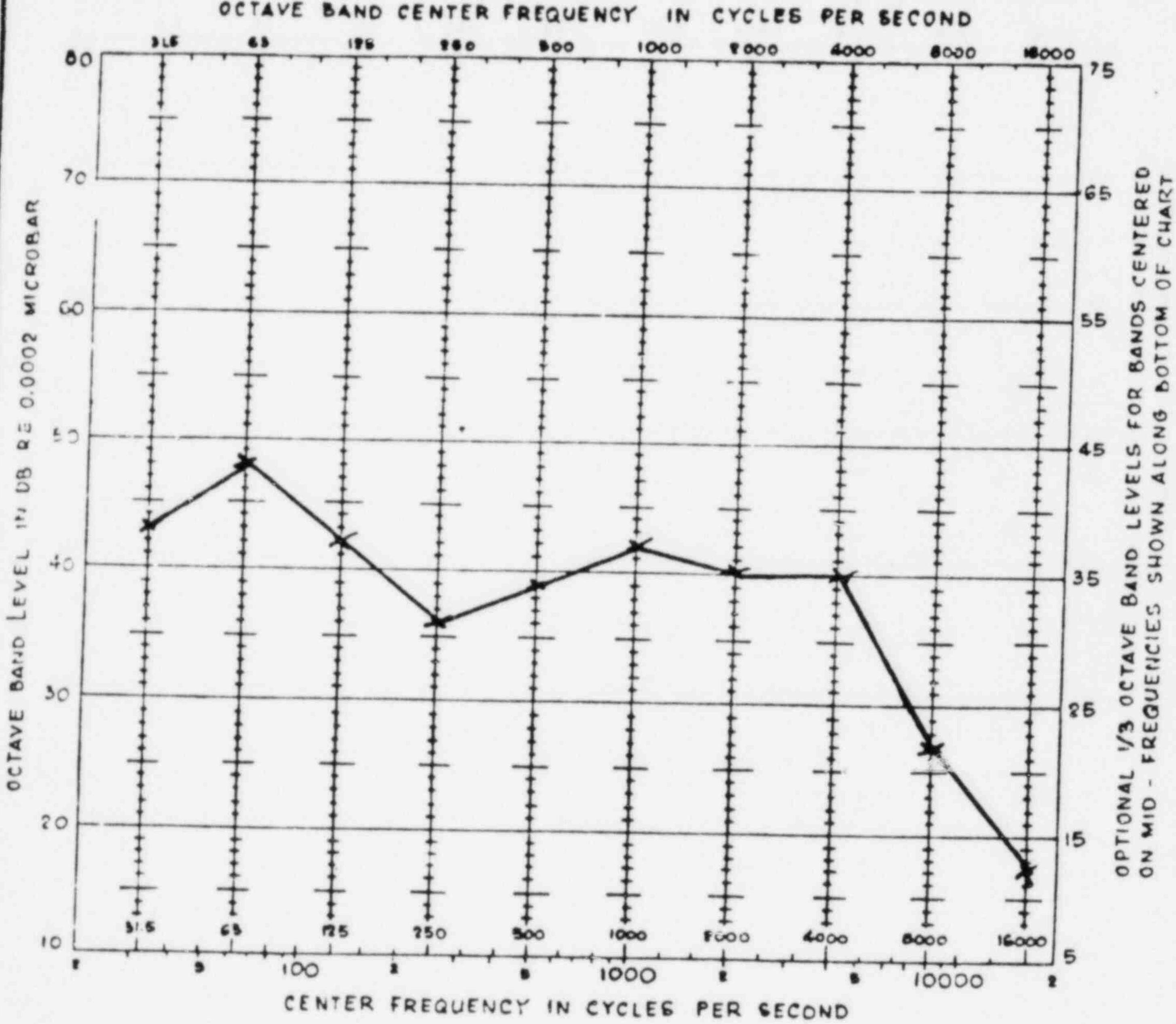


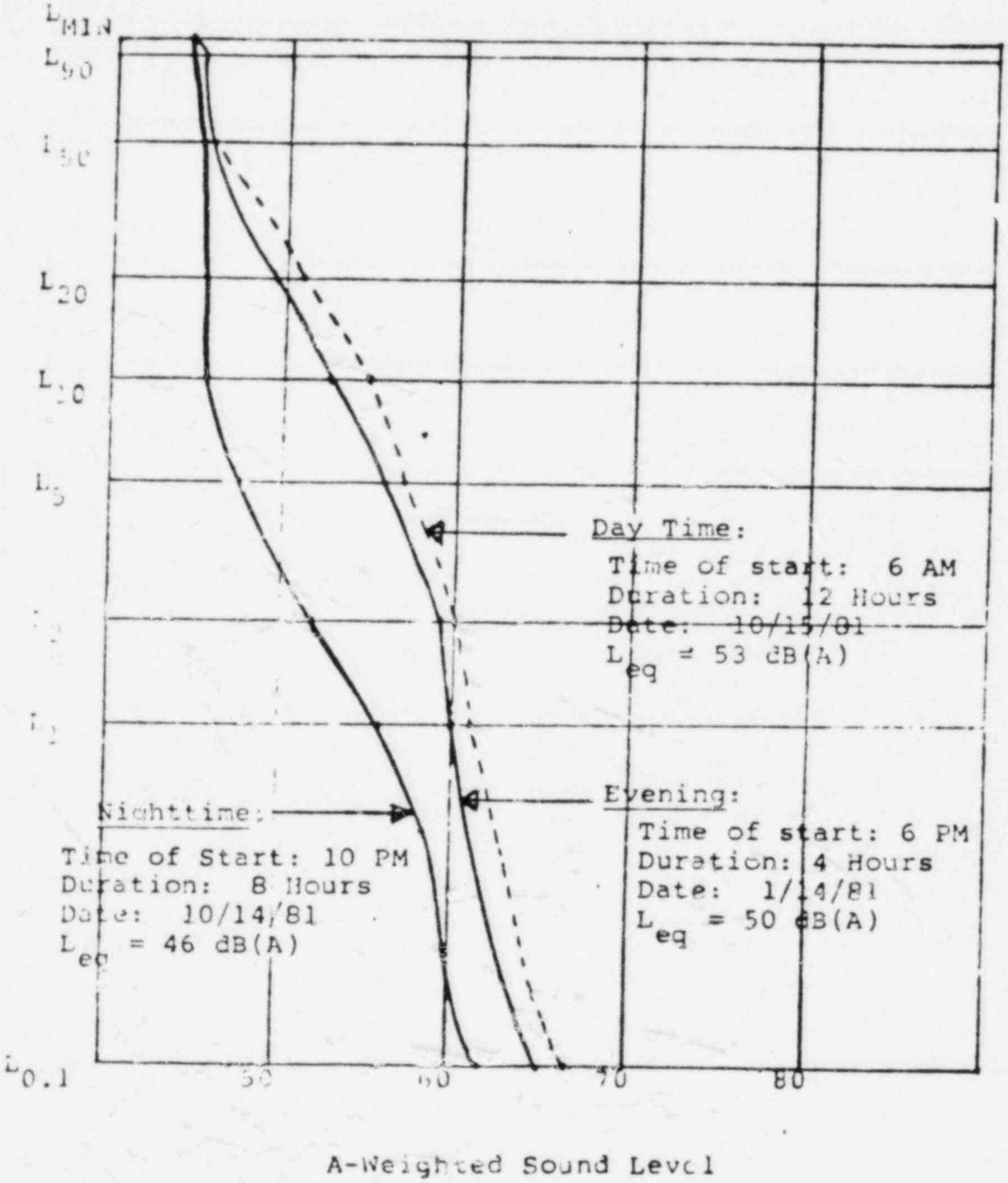
FIGURE 1: Ambient Octave Band Sound Pressure Levels, 45 dB(A)

Cerami

AND ASSOCIATES, INC.
ACOUSTICAL CONSULTANTS

PROJECT Point Pleasant Pumping Station

SHEET 1 OF 1
DATE 10/20, 19 81



CUMULATIVE DISTRIBUTION

FIGURE 1: Cumulative Distribution of Ambient Sound Levels

QUESTION E290.25

(A) Which noise sources are present during construction of:

(a) the intake
(b) the pumphouse, and
(c) pipeline in the region of the pumphouse

(B) Please provide overall sound power level and octave band sound pressure levels for those sources, if known, from manufacturer's specifications.

(C) Also state which sources are present during the different stages of construction.

RESPONSE

The noise sources present during the construction of the intake will be dredging equipment, construction and excavating equipment, blasting, compressors, diesel engines, boats, and trucks.

The noise sources present during the construction of the pumphouse will be construction and excavating equipment, blasting, compressors sheet, pile driving equipment, and trucks.

The noise sources present during the construction of the pipeline near the pumphouse will be construction and excavating equipment, blasting, compressors, and trucks.

The overall sound power level and octave band sound pressure levels for these sources are unknown at this time.

The noise sources expected during the different stages of construction of the pumphouse are listed below. Please note that the stages of construction shown will more than likely overlap.

Stage of Construction	Noise Sources
1. Site clearing and excavation	Excavating equipment, blasting, compressors, trucks, and pile driving equipment.
2. Concrete placement	Trucks and cranes.
3. Backfill and grading	Excavating equipment and trucks.
4. Equipment installation	Trucks, cranes, and equipment handling equipment.

The sound levels at the proposed pumping station vary from 43 to 51 dBA.

The noise sources present during the construction of the reservoir, pumphouse, and pipeline near the pumphouse will consist of construction and excavating equipment, blasting, compressors, sheet pile drivers, and trucks.

The overall sound power level and octave band sound pressure levels for these sources are unknown at this time.

The noise sources expected during the different stages of construction of the pumphouse are listed below. Please note that the stages of construction shown will more than likely overlap.

Stage of Construction	Noise Sources
1. Site clearing and excavation	Excavating equipment, blasting, compressors, trucks, and pile driving equipment.
2. Concrete placement	Trucks and cranes.
3. Backfill and grading	Excavating equipment, and trucks.
4. Equipment installation	Trucks, cranes, and equipment handling equipment.

QUESTION E290.26

Are any local or state standards governing the region about the pumphouse?

RESPONSE

Article XII, Section 1213, Page 103 of the Plumstead Township Zoning Ordinance, as amended to October, 1980 establishes maximal permitted sound levels for the township.

QUESTION E290.21

Provide general arrangement and structural drawings along with locations of the mechanical service system (HVAC system) in the pumphouse.

RESPONSE

The general arrangement and structural drawings are shown on Figures E290.21-1, E290.21-2, E290.21-3, and E290.21-4. The HVAC system is shown on Figures E290.21-5, E290.21-6, and E290.21-7.

SEE

APERTURE

CARDS

AVAILIBILITY ____ PDR ________ CF ________ HOLD ________

NUMBERS OF PAGES. ______7______

QUESTION E240.27

A. Please provide all velocity profiles that were taken under various flow conditions in the Delaware River along the centerline of the intake. Please provide a cross section profile of the bottom bathymetry across the entire width of the river at this point. Where velocity measurements exist across the entire width of the river, calculate the river discharge using the measurements and compare this value with the measured discharge at the Trenton gage.

B. Provide a curve of velocity at the intake screen versus depth over the range of flows during which you plan to withdraw water showing measured velocities, as well as calculated velocities on this curve. Describe the assumptions and data used in your calculations.

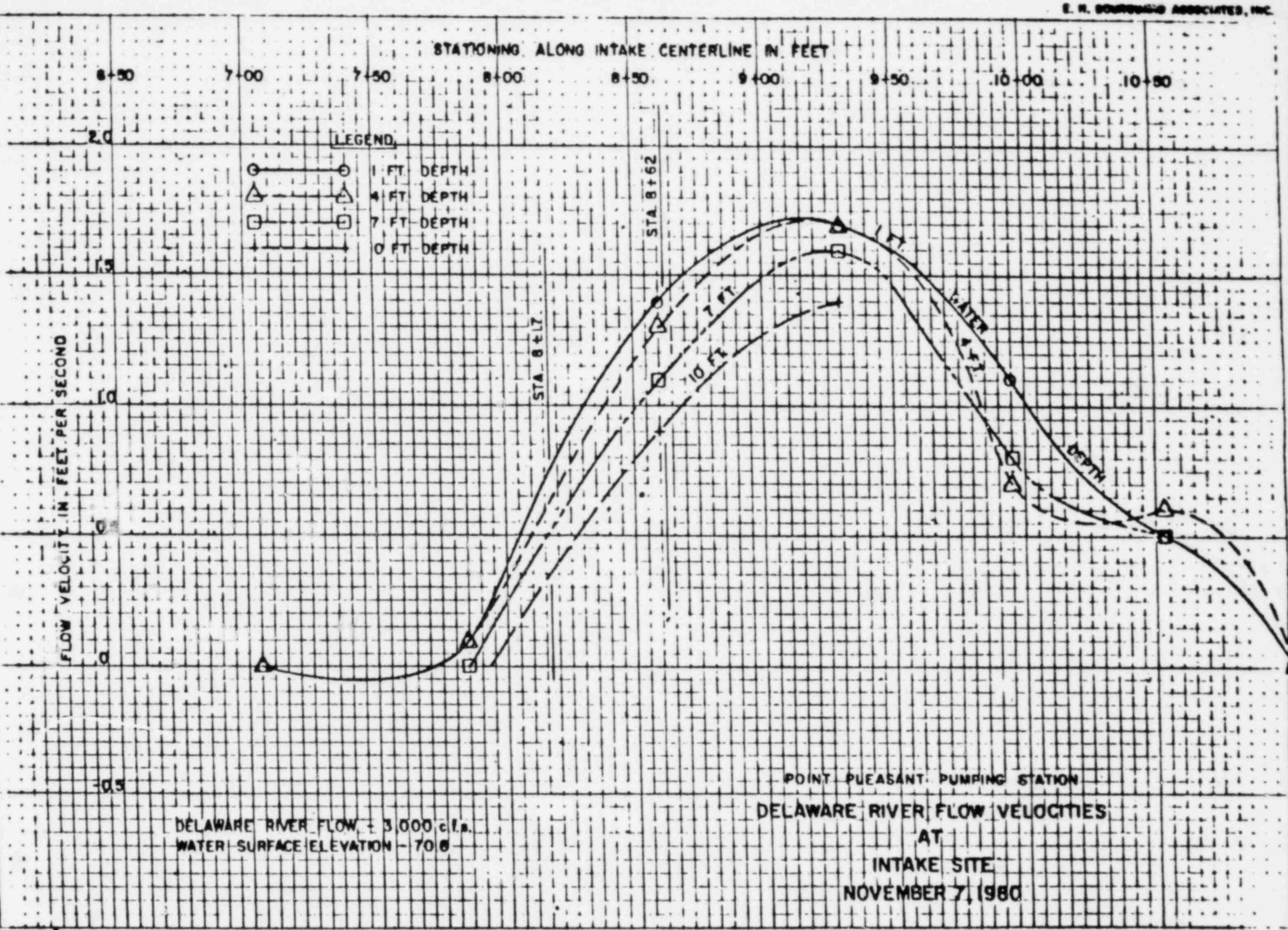
RESPONSE

A. Two velocity profiles were taken in the Delaware River along the centerline of the intake. One profile was taken November 7, 1980, when the river flow was approximately 3000 cfs. Figure E240.27-1 is a plot of stationing along the intake centerline versus flow velocity at 4 different depths on this date. Profile number two was taken July 23, 1981, when the river flow was approximately 4500 cfs. Figure E240.27-2 is a plot of stationing along the intake centerline versus flow velocity at 4 depths on this date. A cross section of the Delaware River at the Point Pleasant intake is shown in Figure E240.27-4.

The November 7, 1980, velocity measurements were made for the full width of the river. The calculated discharge on this date was 2840 cfs. The measured flow at Trenton was 2950 cfs.

B. Figure E240.27-3 is a plot of measured velocity versus depth at the locations of the east and west screens on November 7, 1980, and July 23, 1981.

EXHIBIT NO. 1



Shore Line 6+25

FIGURE E 240.27-1

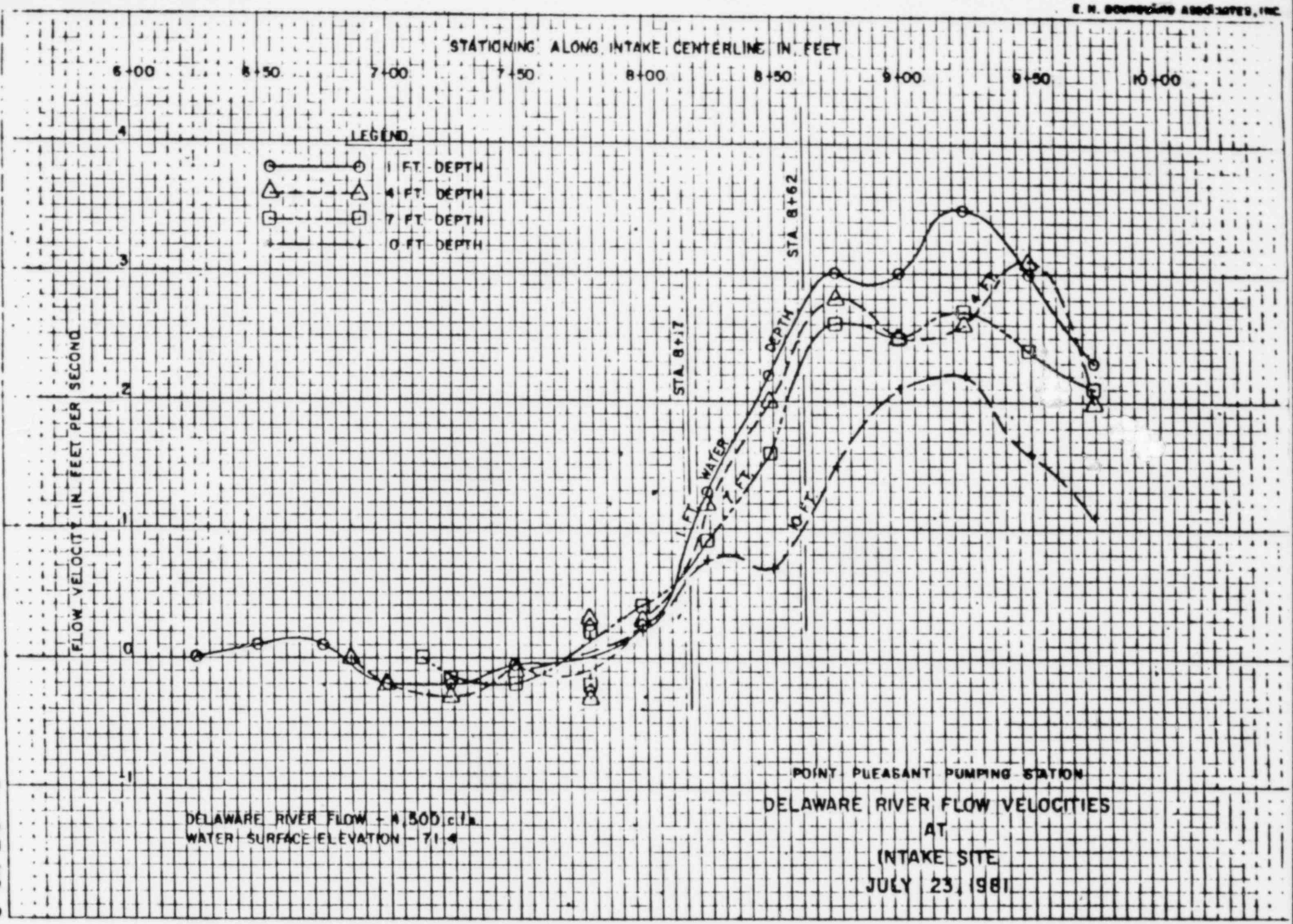


EXHIBIT NO. 2

FIGURE E 240.27-2

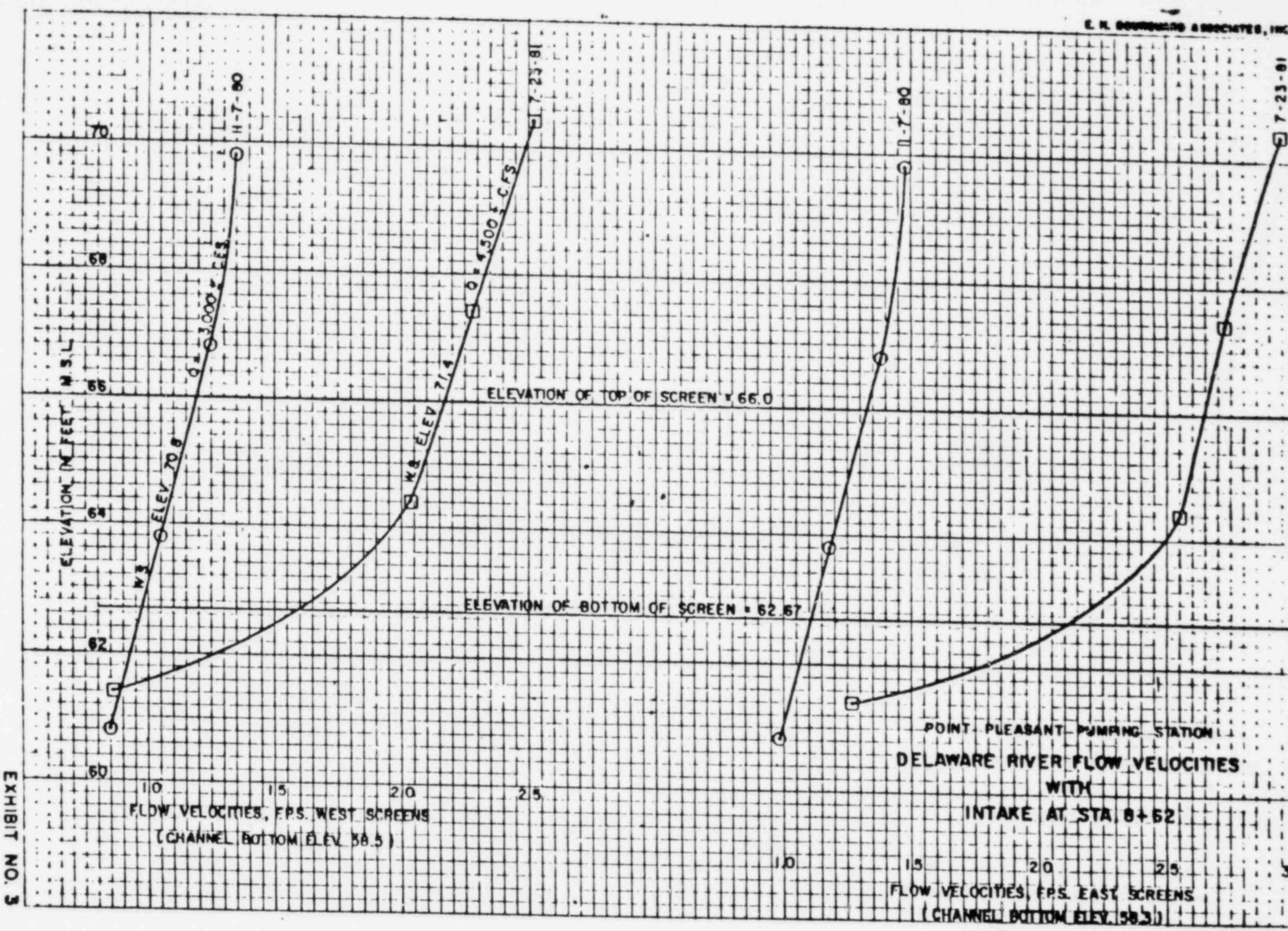


EXHIBIT NO. 3

FIGURE E 240.27-3