



Duquesne Light

435 Sixth Avenue
Pittsburgh, Pennsylvania
15219

(412) 456-6000

August 27, 1979

Director of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, D.C. 20555

ATTENTION: MR. JOHN F. STOLZ, CHIEF
LW Reactors Branch 1

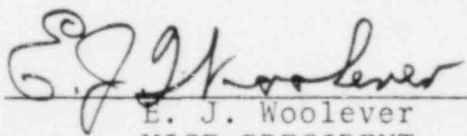
SUBJECT: Beaver Valley Power Station - Unit No. 2
Reactor Containment Structure Founding Material
Docket No. 50-412

Gentlemen:

Forwarded herewith are 40 copies of 18 boring logs (2002, 2003, 2005, 2009, 2013, 2015, 2021, 2022, 2023, 2025, 3005, 3007, 3009, 3013, 3019, 3021, 3024 and 5011) inadvertently omitted from "Amendment No. 3", dated July 6, 1979, to "Report on Soil Densification Program, Beaver Valley Power Station Unit No. 2", dated September 23, 1976.

This will complete your copy of Amendment No. 3.

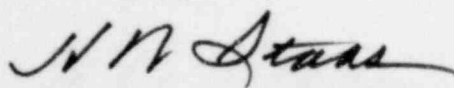
DUQUESNE LIGHT COMPANY

By 
E. J. Woolever
VICE PRESIDENT

cc: Mr. B. H. Grier
Mr. J. Angelo

(CORPORATE SEAL)

Attest:


H. W. Staas
Secretary

7909 050 316

911001

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF ALLEGHENY)

On this 27th day of August, 1979 before me,
ROBERT J. MONROE, a Notary Public in and for said
Commonwealth and County, personally appeared E. J. Woolever,
who being duly sworn, disposed, and said that (1) he is Vice
President of Duquesne Light Company, (2) he is duly authorized
to execute and file the foregoing Information on behalf of
said Company, and (3) the statements set forth in the Information
are true and correct to the best of his knowledge, information
and belief.

WITNESS my hand and seal the day and year first above
written.



ROBERT J. MONROE, Notary Public
PITTSBURGH, ALLEGHENY COUNTY, PA.
MY COMMISSION EXPIRES
FEBRUARY 7, 1983

311002

SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT 2</u>		J.O. NO. <u>12241</u>	BORING <u>B-2002</u>
COORDINATES <u>N 3972.6</u>	<u>E 8116.6</u>	GROUND ELEV. (1) <u>680 FEET</u>	SHEET 1 OF <u>2</u>
INCLINATION <u>VERTICAL</u>		BEARING _____	LOGGED BY <u>REYNOLDS/McCAIN</u>
DATE: START / FINISH <u>7/5/76</u> / <u>7/6/76</u>		CONTRACTOR / DRILLER <u>PENNA DRILLING</u>	
STATIC GROUNDWATER DEPTH / DATE <u>13 FEET</u> / <u>7/5/76</u>		DRILL RIG TYPE _____	
DEPTH TO BEDROCK _____		TOTAL DEPTH DRILLED <u>41.5 FEET</u>	
METHODS:			
DRILLING SOIL <u>3 1/8" HOLLOW BIT TO ADVANCE HOLE</u>		_____	
SAMPLING SOIL <u>2" O.D. SPLIT SPOON</u>		_____	
DRILLING ROCK <u>NONE</u>		_____	
SPECIAL TESTING OR INSTRUMENTATION _____			
REMARKS _____			

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR U.S. PENETRATION (3)	SPT N VALUES OR U.S. REC (4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS
680	0							
				% REC				
675	5	S	1	6-14 17%	18	SC	BLOWS/INCH: 1-1-1-1-1-1/2" -1-1/2-1-2-1-1/2"-5-5 CLAYEY SAND, WIDELY GRADED, 42% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM; COARSE TO FINE SAND, 16% SLIGHTLY PLASTIC FINES, BROWN, SLIGHT REACTION TO HCL.	
670	10	S	2	11-11-15 61%	26	SP-SM	BLOWS/INCH: 1-3-2-2-2-1, 2-2-1-2-2-2-, 1-3-3-2-3-3 SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBANGULAR GRAVEL TO 1.2 INCH MAXIMUM, 35-45% COARSE TO FINE SAND, MOSTLY MEDIUM TO FINE, 8-12% NONPLASTIC FINES, BROWN, WITH A FEW POCKETS OF SANDY SILT, NO REACTION TO HCL.	
665	15							

LEGEND / NOTES S_ SPLIT BARREL SAMPLE UNDISTURBED SAMPLES (U.D.S.) US_ SHELBY TUBE UF_ FIXED PISTON UO_ OSTERBERG UD_ DENISON UP_ PITCHER N_ STD. PENETRATION RESISTANCE BLOWS/FT GROUNDWATER ** RECOVERY INFORMATION NOT AVAILABLE	1. DATUM IS MEAN SEA LEVEL UNLESS OTHERWISE INDICATED 2. BLOWS REQUIRED TO DRIVE 2" O.D. SAMPLE SPOON 6" OR DISTANCE SHOWN USING 140 lb. HAMMER FALLING 30" * INDICATES USE OF 300 lb HAMMER 3. DENOTES INCHES OF PENETR. OF UNDISTURBED SAMPLER 4. DENOTES INCHES OF UNDISTURBED SAMPLE RECOVERY 5. UNIFIED SOIL CLASSIFICATION SYSTEM	BORING LOG BEAVER VALLEY POWER STATION - UNIT 2 DUQUESNE LIGHT COMPANY PITTSBURGH, PENNSYLVANIA 12241-GSK-124A STONE & WEBSTER ENG. CORP. <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>ISSUED BY <u>cap</u></td> <td>DATE <u>9/13/76</u></td> <td>BORING NO. <u>2002</u></td> <td>SHEET <u>1 OF 2</u></td> </tr> </table>	ISSUED BY <u>cap</u>	DATE <u>9/13/76</u>	BORING NO. <u>2002</u>	SHEET <u>1 OF 2</u>
ISSUED BY <u>cap</u>	DATE <u>9/13/76</u>	BORING NO. <u>2002</u>	SHEET <u>1 OF 2</u>			

BORING B-2002									
SHEET 2 OF 2									
SITE / LOCATION					BEAVER VALLEY POWER STATION - UNIT 2				
J.O. NO.					12241				
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS	PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS
665	15	S	3	5-9-11 11%		20	SM	SILTY SAND, WIDELY GRADED, 42% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, 16% SLIGHTLY PLASTIC FINES, BROWN, SLIGHT REACTION TO HCL.	
660	20	S	4	14-16-18		34		NO RECOVERY. PIECE OF GRAVEL IN TIP OF SPOON.	
		S	5	11-12-10 50%		22	SP-SM	BLOWS/INCH: 2-2-2-1-3-1, 2-2-2-2-3-1, 2-2-2-1-2 GRAVELLY SAND, POORLY GRADED, 6% GRAVEL TO 4 INCH MAXIMUM COARSE TO FINE SAND, MOSTLY MEDIUM AND FINE, 9% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.	
655	25	S	6	13-22-21		43		BLOWS/INCH: 1-2-3-2-3-2-4-3-4-4-3-4-3-4-3-4-4 NO RECOVERY. PIECE OF GRAVEL IN TIP OF SPOON.	
		S	7	8-7-5 40%		12	GP-GM	BLOWS/INCH: 1-1-1-2-1-2, 1-1-1-2-1-1/2", 1-1/2"-1-2-1 SANDY GRAVEL, POORLY GRADED SUBANGULAR TO 0.9 INCH MAXIMUM, 40% COARSE TO FINE, MOSTLY MEDIUM SAND, 6% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.	
		S	8	9-12-12 17%		24	GP	BLOWS/INCH: 1-1-2-2-1-2, 2-2-2-2-3-1, 2-2-2-1-2-3 SANDY GRAVEL, SAME AS ABOVE.	
650	30	S	9	9-10-12 28%		22	GP	BLOWS/INCH: 1-1-1-2-2-2 2-2-1-2-1-2 3-2-1-2-2-2 SANDY GRAVEL, POORLY GRADED, TO 1 3/8" MAXIMUM, 20-40% MOSTLY FINE SAND, 2-5% NONPLASTIC FINES, COMPACT, MOIST, BROWN.	
		S	10	10-8-7 40%		15	GP-GM	BLOWS/INCH: 2-2-2-1-1-2 1-1-2-1-1-2 1-1-1-2-1-1 SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO 0.9 INCH MAXIMUM, 41% COARSE TO FINE MOSTLY MEDIUM SAND, 9% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.	
645	35	S	11	6-7-6 22%		13	GP-GM	BLOWS/INCH: 2-1-1/2"-1-1 1-1-2-1-1-1 1-1-1-1-1-1 SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED TO 1.0 INCH MAXIMUM, 41% COARSE TO FINE, MOSTLY MEDIUM SAND, 11% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.	
		S	12	8-8-10 56%		18	SP-SM	BLOWS/INCH: 2-1-1-2-1-1 2-1-2-1-1-1 1-2-1-2-2-2 TOP 8" SAND, POORLY GRADED, 5-10% GRAVEL TO 1/2 INCH COARSE TO FINE SAND MOSTLY MEDIUM TO FINE, 2-3% NONPLASTIC FINES, COMPACT, WET, BROWN.	
		S	13	7-32-27 61%			SP	BOTTOM 2" SILTY SAND, POORLY GRADED, MOSTLY MEDIUM TO FINE, 10-20% NONPLASTIC FINES, COMPACT, DAMP, BROWN.	
640	40	S	14	32-31-33 72%		64	SP	BLOWS/INCH: 1-1-1-1-1-2 4-7-5-7-5-4 4-5-5-3-4-6 GRAVELLY SAND, POORLY GRADED, 20-40% SUBROUNDED GRAVEL TO 3/4 INCH - INCLUDES PLATY FRAGMENTS DARK GRAY LIMESTONE, COARSE TO FINE SAND, MOSTLY MEDIUM TO FINE, 2-5% NONPLASTIC FINES, DENSE, MOIST, BROWN.	
								BLOWS/INCH: 4-5-5-6-8-4 4-5-6-5-6-5 5-6-6-5-6-5 GRAVELLY SAND, POORLY GRADED, 40-60% GRAVEL TO 1 1/2 INCH, MOSTLY FINE SAND, 2-5% NONPLASTIC FINES, VERY DENSE, MOIST, BROWN.	
								END OF BORING AT 41.5 FEET	

NOTE: FOR BORING SUMMARY AND LEGEND INFO SEE SHEET 1.

STONE & WEBSTER ENG. CORP

ISSUED BY *CSH* DATE *9/12/96*

BORING NO. 2002 SHEET 2 OF 2

SITE / LOCATION BEAVER VALLEY POWER STATION - UNIT NO. 2 J.O. NO. 12241 BORING B-2003
 COORDINATES N 3971.5 E 8128.8 GROUND ELEV. (1) 680 FEET SHEET : OF 2
 INCLINATION VERTICAL BEARING _____ LOGGED BY McCain/REYNOLDS
 DATE : START / FINISH 7/4/76 / 7/4/76 CONTRACTOR / DRILLER PENNA DRILLING
 STATIC GROUNDWATER DEPTH / DATE 13 FEET / 7/4/76 DRILL RIG TYPE _____
 DEPTH TO BEDROCK _____ TOTAL DEPTH DRILLED 37.5 FEET

METHODS :

DRILLING SOIL 3 1/8" ROLLER BIT TO ADVANCE HOLE

SAMPLING SOIL 2" O.D. SPLIT TUBES

DRILLING ROCK _____

SPECIAL TESTING OR INSTRUMENTATION _____

REMARKS _____

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS(2) OR U.D.S. PENETRATION(3)	SPT N VALUES OR U.D.S. REC(4)	GROUP SYMBOL(5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS
680	0							
675	5	S	1	6-8-7 33%	15	SC	CLAYEY SAND - WIDELY GRADED, 41% MOSTLY ANGULAR GRAVEL TO 1.0 INCH MAXIMUM, COARSE TO FINE SAND, 12% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL	
670	10	S	2	17-18-17 **	35	SP	GRAVELLY SAND - POORLY GRADED, 10-20% SUBANGULAR-SUBROUNDED GRAVEL TO 1 1/2 INCHES MAXIMUM, MOSTLY FINE SAND, 5-7% NONPLASTIC FINES, DENSE, DAMP, BROWN, NO REACTION TO HCL	
665	15							

LEGEND / NOTES

S_ SPLIT BARREL SAMPLE
 UNDISTURBED SAMPLES (U.D.S.)
 US_ SHELBY TUBE
 UF_ FIXED PISTON
 UO_ OSTERBERG
 UD_ DENISON
 UP_ PITCHER
 N_ STD PENETRATION
 RESISTANCE BLOWS/FT
▽ GROUNDWATER
 ** RECOVERY INFORMATION
 NOT AVAILABLE

1. DATUM IS MEAN SEA LEVEL
 UNLESS OTHERWISE INDICATED
 2. BLOWS REQUIRED TO DRIVE
 2" O.D. SAMPLE SPOON 6" OR
 DISTANCE SHOWN USING 140 lb.
 HAMMER FALLING 30"
 * INDICATES USE OF 300 lb
 HAMMER
 3. DENOTES INCHES OF PENETR.
 OF UNDISTURBED SAMPLER
 4. DENOTES INCHES OF
 UNDISTURBED SAMPLE
 RECOVERY
 5. UNIFIED SOIL CLASSIFICATION
 SYSTEM

BORING LOG

BEAVER VALLEY POWER STATION - UNIT NO. 2
 DUQUESNE LIGHT COMPANY
 PITTSBURGH, PENNSYLVANIA

12241-GSK-125A

 **STONE & WEBSTER ENG. CORP.**

ISSUED BY <i>John</i>	DATE 8/5/1976	BORING NO. B-2003	SHEET 1 OF 2
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BORING <u>B-2003</u>										
SHEET <u>2</u> OF <u>2</u>										
SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT NO. 2</u> J.O. NO. <u>12241</u>										
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYM(5)	SAMPLE DESCRIPTION			FIELD AND LAB. TEST RESULTS / COMMENTS
665	15	S	3	13-13-9	22	GW-GP	SILTY GRAVEL - WELL GRADED, SUBROUNDED TO ANGULAR GRAVEL TO 1.3 INCHES MAXIMUM, 27% COARSE TO FINE SAND, 8% NONPLASTIC TO SLIGHTLY PLASTIC FINES, BROWN, SLIGHT REACTION TO HCl			
660	20	S	4	10-13-13	26	GW-GM	BLOWS/INCH 1-1-2-1-3-2-2-2-2-3-2-2-2-2-2-3-2 SILTY GRAVELLY SAND - SIMILAR TO ABOVE, NO REACTION TO HCl			
		S	5	15-17-13	30		BLOWS/INCH 2-2-2-3-3-3/3-3-3-3-2-3/2-2-3-2-2-2 NO RECOVERY			
655	25	S	6	11-12-14	26	SM	BLOWS/INCH 1-1-2-3-2-2/2-2-2-2-2/2-2-3-2-3-2 SILTY SAND - UNIFORM, 17% MOSTLY ANGULAR GRAVEL TO 1.1 INCHES MAXIMUM, MOSTLY FINE SAND, 13% NONPLASTIC FINES, BROWN, NO REACTION TO HCl			
		S	7	10-7-8	15	GW-GM	BLOWS/INCH 2-2-1-2-1-2/1-1-1-2-1-1/1-2-1-1-2-1 SANDY GRAVEL - WELL GRADED, SUBROUNDED TO SUBANGULAR GRAVEL TO 1.0 INCH MAXIMUM, 44% COARSE TO FINE SAND, 11% NONPLASTIC FINES, BROWN, SLIGHT REACTION TO HCl			
		S	8	8-10-10	20	GP-GM	1-2-1-2-1-1/2-1-2-1-2-2/2-2-2-1-1-2 SANDY GRAVEL - POORLY GRADED ANGULAR (FRESHLY FRACTURED) TO 1.3 INCHES MAXIMUM, 38% COARSE TO FINE, MOSTLY FINE SAND, 9% NONPLASTIC FINES, BROWN, NO REACTION TO HCl			
650	30	S	9	9-9-12	21		BLOWS/INCH 2-1-2-2-1-1-1-2-1-1-2-2-3-1-2-2-2-2 NO RECOVERY - PIECE OF GRAVEL IN TIP OF SPOON			
		S	10	15-14-11	25	C	2-2-2-2-3-2-2-3-3-2-2-2-2-1-2-2-2-2 NO RECOVERY			
645	35	S	11	17-15-10	25	GM	BLOWS/INCH 1-2-2-3-3-2/2-2-3-3-2-3/2-2-2-1-1-2 SILTY GRAVEL - WIDELY GRADED, ANGULAR (FRESHLY FRACTURED) TO 0.8 INCH MAXIMUM, 41% COARSE TO FINE SAND, 12% NONPLASTIC FINES, BROWN, NO REACTION TO HCl			
		S	12	20-14-20	34	SM	SILTY SAND - UNIFORM, FINE, 15% NONPLASTIC FINES, BROWN, NO REACTION TO HCl, ONE PIECE OF 0.8 INCH IN GRAVEL BLOWS/INCH 3-4-4-3-3-3/2-2-2-2-3-3/2-2-3-4-3-6 SILTY SAND - WIDELY GRADED, 10-15% SUBROUNDED GRAVEL TO 1.2 INCHES MAXIMUM, COARSE TO FINE SAND MOSTLY FINE, 10-15% NONPLASTIC FINES, BROWN, NO REACTION TO HCl			
642.5	37.5	END OF BORING AT 37.5 FEET								

311006

NOTE: FOR BORING SUMMARY AND
LEGEND INFO. SEE SHEET 1.



STONE & WEBSTER ENG. CORP.

ISSUED BY AK

DATE 8/5/1976

BORING NO. B-2003

SHEET 2 OF 2

SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT NO. 2</u>		J.O. NO. <u>12241</u>	BORING <u>B-2005</u>
COORDINATES <u>N 3969.3</u>	<u>S 8112.0</u>	GROUND ELEV. (I) <u>680</u>	SHEET <u>1</u> OF <u>2</u>
INCLINATION <u>VERTICAL</u>		BEARING <u></u>	LOGGED BY <u>R.S. SKRYNNESS/W. OLSZEWSKI</u>
DATE: START / FINISH <u>7/4/76</u> / <u>6/76</u>		CONTRACTOR / DRILLER <u>PENNA DRILLING</u>	
STATIC GROUNDWATER DEPTH / DATE <u>13 FEET</u> / <u>7-6-76</u>		DRILL RIG TYPE <u></u>	
DEPTH TO BEDROCK <u></u>		TOTAL DEPTH DRILLED <u>41.5 FEET</u>	
METHODS:			
DRILLING SOIL <u>3 1/8" TOLLER BIT TO ADVANCE HOLE, MUD</u>			
SAMPLING SOIL <u>2.0" O.D. SPLIT SPOON</u>			
DRILLING ROCK <u>NONE</u>			
SPECIAL TESTING OR INSTRUMENTATION <u></u>			
REMARKS <u></u>			

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS(2) OR U.D.S. PENETRATIONS(3)	SPT N VALUES OR U.D.S. REC(4)	GROUP SYMBOL	SAMPLE DESCRIPTION	FIELD AND LAB TEST RESULTS / COMMENTS
680	0							
							BLOWS/INCH: 1-1-2-1-1-2/1-1-1-2-1-1/1-1-2-2-2-2	
		S	1	8-7-10 **	17	GP	SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.2 INCH MAXIMUM, 35% COARSE TO FINE SAND, 9% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL.	
		S	2	6-6-6 **	12	GP	BLOWS/INCH: 1-1-1-1-1-1/1-1-1-1-1-1/1-1-1-1-1-1 SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, 37% COARSE TO FINE SAND, 9% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL.	
675	5						BLOWS/INCH: 1-1-2-1-2-1/2-1-1-1-2-1/3-3-3-3-4-4	
		S	3	8-8-20 56%	28	GP	SANDY GRAVEL, POORLY GRADED, MEDIUM GRAVEL 30-35% COARSE TO FINE SAND, MOSTLY MEDIUM, STRONG REACTION TO HCL.	
		S	4	17-22-18 50%	40	GP	BLOWS/INCH: 2-3-3-3-3-3/3-3-4-5-4-3/3-3-2-3-3-4 SANDY GRAVEL, POORLY GRADED, FINE TO MEDIUM GRAVEL, 30-35% COARSE TO FINE SAND, MOSTLY MEDIUM, 5-10% NONPLASTIC FINES, MEDIUM BROWN, STRONG REACTION TO HCL.	
670	10						BLOWS/INCH: 2-2-2-2-2-2/2-3-2-3-2-2/3-2-2-1-5-3	
		S	5	12-14-16 22%	30	GP	SILTY GRAVEL, WIDELY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.1 INCH MAXIMUM, 42% COARSE TO FINE SAND, 13% NONPLASTIC TO SLIGHTLY PLASTIC FINES, BROWN, SLIGHT REACTION TO HCL.	
		S	6	10-14-17 50%	31	GP-QM	BLOWS/INCH: 1-1-2-2-2-2/2-3-3-2-2-2/3-3-3-2-2-4 SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBROUNDED GRAVEL TO 1.4 INCH MAXIMUM, 20-30% COARSE TO FINE SAND, 5-10% FINES, BROWN, NO REACTION TO HCL.	
665	15						BLOWS/INCH: 1/2"-1-2-2-2/1-3-3-2-2-2/2-2-3-3-2-3	
		S	7	8-13-15 22%	28		SAMPLE INADEQUATE, NOT REPRESENTATIVE. INCLUDED PIECES OF ANGULAR GRAVEL TO 1 INCH.	

LEGEND / NOTES

S_ SPLIT BARREL SAMPLE
UNDISTURBED SAMPLES (U.D.S.)
US_ SHELBY TUBE
UF_ FIXED PISTON
UO_ OSTERBERG
UD_ DENISON
UP_ PITCHER
N_ STD. PENETRATION
RESISTANCE BLOWS/FT
▽
GROUNDWATER

** RECOVERY INFORMATION
NOT AVAILABLE

1. DATUM IS MEAN SEA LEVEL
UNLESS OTHERWISE INDICATED

2. BLOWS REQUIRED TO DRIVE
2" O.D. SAMPLE SPOON 6" OR
DISTANCE SHOWN USING 140 lb
HAMMER FALLING 30"
* INDICATES USE OF 300 lb
HAMMER

3. DENOTES INCHES OF PENETR.
OF UNDISTURBED SAMPLER

4. DENOTES INCHES OF
UNDISTURBED SAMPLE
RECOVERY

5. UNIFIED SOIL CLASSIFICATION
SYSTEM

BORING LOG

BEAVER VALLEY POWER STATION - UNIT NO. 2
DUQUESNE LIGHT COMPANY
PITTSBURGH, PENNSYLVANIA

12241-GSK-126A

STONE & WEBSTER ENG. CORP.

ISSUED BY <i>CAL</i>	DATE <i>2/15/1996</i>	BORING NO. B-2005	SHEET 1 OF 2
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BORING B-2005									
SHEET 2 OF 2									
SITE / LOCATION BEAVER VALLEY POWER STATION - UNIT NO. 2 J.O. NO. 12241									
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL	SAMPLE DESCRIPTION	FIELD AND LAB TEST RESULTS / COMMENTS	
665	15								
		S	8	11-13-19 45%	32	SP	BLOWS/INCH: 1-1-2-3-2-2/2-2-2-2-2-3/3-3-3-3-4 TOP 6 INCHES: GRAVEL, SIMILAR TO ABOVE. BOTTOM 2 INCHES: GRAVELLY SAND, POORLY GRADED, 30-40% GRAVEL, COARSE TO FINE SAND, LESS THAN 5% FINES, BROWN.		
		S	9	9-15-16 40%	31	GP-GM	BLOWS/INCH: 1-1-1.5-1.5-1-3/2-3-2-2-3/2-3-2-3-3 SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, 39% COARSE TO FINE SAND, 8% NONPLASTIC FINES, BROWN.		
660	20								
		S	10	15-19-16 45%	35	SP	BLOWS/INCH: 1-2-3-3-3-3/2-2-3-4-4-4/2-3-3-2-3-3 GRAVELLY SAND, POORLY GRADED, 35-45% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.6 INCH MAXIMUM, COARSE TO FINE MOSTLY MEDIUM SAND, LESS THAN 5% FINES, BROWN, NO REACTION TO HCL.		
		S	11	14-15-25 40%	40	GP-GM	BLOWS/INCH: 1-3-3-3-2-2/2-2-2-3-2-4/3-4-4-5-4-5 SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, COARSE TO FINE MOSTLY MEDIUM SAND, 5-10% NONPLASTIC FINES, BROWN, MANY GRAVEL SIZED SANDSTONE FRAGMENTS, NO REACTION TO HCL.		
655	25								
		S	12	20-26-22	48		BLOWS/INCH: 2-3-3-4-4-4/3-4-4-5-5-5/4-4-3-4-3-4 NO RECOVERY		
		S	13	10-11-12 56%	23	SM-SP	BLOWS/INCH: 1-2-2-2-2-1/2-2-2-2-1-2/2-2-2-2-2-2 SILTY SAND, 10-20% GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, 10-20% NONPLASTIC FINES, BROWN, NO REACTION TO HCL. TOP OF SPOON SANDSTONE.		
		S	14	16-11-9 50%	20	GP-GM	BLOWS/INCH: 2-3-3-2-3-3/2-2-2-2-2-1/2-1-2-1-1-2 SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.1 INCH MAXIMUM, 38% COARSE TO FINE SAND, 8% NONPLASTIC FINES, BROWN.		
650	30								
		S	15	8-13-11 28%	24		BLOWS/INCH: 1-1-1-1-2-2/3-2-2-2-2-2/2-2-2-2-3/2" 2 INCHES: SANDSTONE, IN BOTTOM OF SPOON		
		S	16	10-9-11 11%	20	SM	BLOWS/INCH: 2-1-2-2-2-1/2-1-2-1-2-1/2-2-2-1-2-2 SILTY SAND, WIDELY GRADED, 34% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.7 INCH MAXIMUM, COARSE TO FINE SAND, 13% NONPLASTIC FINES, BROWN.		
645	35								
		S	17	9-6-9 45%	15	GP-GM	BLOWS/INCH: 1-3-2-1-1-1/1-1-1-1-1-1/1-1-2-1-2-2 SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, 32% COARSE TO FINE SAND, 11% NONPLASTIC FINES, YELLOWISH GRAY.		
		S	18	10-12-11	23		BLOWS/INCH: 1-1-2-1-2-3/2-2-2-2-2-2/2-2-2-2-2-1 NO RECOVERY		
640	40								
		S	19	9-34-30 83%	64	SP	BLOWS/INCH: 1-2-1-2-1-2/6-5-6-7-5-5/4-6-7-7-6 TOP 6 INCHES: SAND, UNIFORM, FINE, LESS THAN 5% FINES, BROWN, NO REACTION TO HCL.		
638.5	41.5								
		S	20	21-34-31 50%	65	ML	BLOWS/INCH: 3-3-3-4-3-5/6-6-5-6-5-6/4-6-5-4-5-7 SANDY SILT, NONPLASTIC, 25-35% FINE SAND, BROWN, FRAGMENTS OF LIMESTONE THROUGHOUT, STRONG REACTION TO HCL.		
635	45						END OF BORING AT 41.5 FEET		

NOTE: FOR BORING SUMMARY AND
LEGEND INFO SEE SHEET 1

STONE & WEBSTER ENG. CORP.

ISSUED BY: *[Signature]*
 DATE: 9/15/1996

BORING NO.
B-2005

SHEET
2 OF 2

911008

SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT NO. 2</u>		J.O. NO <u>12241</u>	BORING <u>B-2009</u>
COORDINATES <u>N 3971.5</u>	<u>B 8118.7</u>	GROUND ELEV. (I) <u>680 FEET</u>	SHEET 1 OF <u>2</u>
INCLINATION <u>VERTICAL</u>		BEARING _____	LOGGED BY <u>MALDEN</u>
DATE : START / FINISH <u>7/11/76</u> / <u>7/11/76</u>		CONTRACTOR / DRILLER <u>PENNA DRILLING/SORBA</u>	
STATIC GROUNDWATER DEPTH / DATE <u>13 FEET</u> / <u>7/11/76</u>		DRILL RIG TYPE _____	
DEPTH TO BEDROCK _____		TOTAL DEPTH DRILLED <u>22.3 FEET</u>	
METHODS :			
DRILLING SOIL <u>3 1/8" ROLLER BIT TO ADVANCE HOLE</u>		_____	
SAMPLING SOIL <u>2" O.D. SPLIT SPOON</u>		_____	
DRILLING ROCK _____		_____	
SPECIAL TESTING OR INSTRUMENTATION _____			
REMARKS _____			

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR U.D.S. PENETRATION (3)	SPT N VALUES OR U.D.S. REC. (4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB TEST RESULTS / COMMENTS
680	0							
		S	1	7-8-9 67%	17	SP-SM	GRAVELLY SAND - POORLY GRADED, COARSE TO FINE, MOSTLY COARSE AND FINE, 35-45% SUBROUNDED TO SUBANGULAR (FRACTURED) GRAVEL TO 1.25 INCHES MAXIMUM, 5-10% SLIGHTLY PLASTIC FINES, BROWN, STRONG REACTION TO HCl	
		S	2	8-8-8 61%	16	SM	BLOWS/INCH 2-1-1-2-1-1-2-1-1-2-1-1-2-1-1-2-1 SILTY SAND - WIDELY GRADED, 26% SUBROUNDED GRAVEL TO 0.7 INCH MAXIMUM, COARSE TO FINE SAND, 1% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl	
675	5	S	3	11-13-11 56%	24	SM	BLOWS/INCH 1-2-2-2-2-2-3-2-2-2-3-1-2-2-1-2-2-2 GRAVELLY SAND - SIMILAR TO ABOVE	
		S	4	30-14-11 50%	25	SM	BLOWS/INCH 2-4-4-7-8-5-4-2-2-2-2-2-2-1-2-2-2 SILTY SAND - WIDELY GRADED, 35% SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, 16% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl	
670	10	S	5	14-15-15 72%	30	SM	BLOWS/INCH 2-3-2-2-1 3-2-3-2-3-2-3-3-2-2-3-2-3 GRAVELLY SAND - SIMILAR TO ABOVE	
		S	6	26-27-13 100%	50	SM	BLOWS/INCH 5-4-4-5-4-4-5-4-5-5-4-4-4-5-3-4-3-4 SILTY SAND - WIDELY GRADED, 23% GRAVEL TO 0.9 INCH MAXIMUM, COARSE TO FINE SAND, 19% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl	
665	15	S	7	15-16-17 56%	33	SM	BLOWS/INCH 2-3-2-3-3-2-3-2-3-3-3-2-3-3-2-3-3 SILTY SAND - WIDELY GRADED, 29% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, 14% NONPLASTIC FINES, BROWN, SMALL POCKET OF BLACK, STRONG REACTION TO HCl	

LEGEND / NOTES

S_ SPLIT BARREL SAMPLE
UNDISTURBED SAMPLES (U.D.S.)
US_ SHELBY TUBE
UF_ FIXED PISTON
UO_ OSTERBERG
UD_ DENISON
UP_ PITCHER
N_ STD. PENETRATION
RESISTANCE BLOWS/FT
G_ GROUNDWATER
** RECOVERY INFORMATION
NOT AVAILABLE

- DATUM IS MEAN SEA LEVEL UNLESS OTHERWISE INDICATED
- BLOWS REQUIRED TO DRIVE 2" O.D. SAMPLE SPOON 6" OR DISTANCE SHOWN USING 140 lb HAMMER FALLING 30"
* INDICATES USE OF 300 lb HAMMER
- DENOTES INCHES OF PENETR. OF UNDISTURBED SAMPLER
- DENOTES INCHES OF UNDISTURBED SAMPLE RECOVERY
- UNIFIED SOIL CLASSIFICATION SYSTEM

BORING LOG

BEAVER VALLEY POWER STATION - UNIT NO. 2
DUQUESNE LIGHT COMPANY
PITTSBURGH, PENNSYLVANIA

12241-GSK-129A

STONE & WEBSTER ENG. CORP.

ISSUED BY <u>aw</u>	DATE <u>8/5/94</u>	BORING NO. <u>B-2009</u>	SHEET <u>1 OF 2</u>
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BORING <u>B-2009</u> SHEET <u>2</u> OF <u>2</u>									
SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT NO. 2</u> J.O. NO. <u>12241</u>									
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS	
% REC									
665	15								
		S	8	33-28-19 67%	47	SM	BLOWS/INCH 3-4-3-7-9-7-8-5-4-4-4-3-4-3-3-3-3 GRAVELLY SAND - SIMILAR TO ABOVE		
		S	9	76/6" 33%		SM	BLOWS/INCH 3-4-8-13-23-25 GRAVELLY SAND - SIMILAR TO ABOVE EXCEPT 20-30% GRAVEL TO 0.75 INCH MAXIMUM.		
660	20	S	10	50-44-30 90%	74	SM	BLOWS/INCH 5-6-9-10-10-10-9-9-6-5-6-6-5-5-4-5-5 SILTY SAND - WIDELY GRADED, 29% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.7 INCH MAXIMUM, COARSE TO FINE SAND, 18% NONPLASTIC FINES, BROWN, LIGHTLY SPOTTED WITH BLACK LIGNITE, STRONG REACTION TO HCl		
657.2	22.3	S	11	30-49-51 72%	100	SM	BLOWS/INCH 4-4-6-5-6-5-9-6-10-7-5-12-20-5-13-12 1/2" GRAVELLY SAND - SIMILAR TO ABOVE		
END OF BORING AT 22.3 FEET									

911010

NOTE: FOR BORING SUMMARY AND LEGEND INFO. SEE SHEET 1.	STONE & WEBSTER ENG. CORP.	ISSUED BY <i>[Signature]</i>	DATE 8/5/1946	BORING NO. B-2009	SHEET 2 OF 2
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SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT NO. 2</u>		J.O. NO. <u>12241</u>	BORING <u>B-2013</u>
COORDINATES <u>N 3969.4</u>	<u>E 8114.9</u>	GROUND ELEV. (I) <u>680 FEET</u>	SHEET <u>1</u> OF <u>2</u>
INCLINATION <u>VERTICAL</u>		BEARING _____	LOGGED BY <u>W. J. Olszewski/M. E. Dwyer</u>
DATE : START / FINISH <u>7-12-76</u> / <u>7-12-76</u>		CONTRACTOR / DRILLER <u>PENNA DRILLING/B. GOLLIHUE</u>	
STATIC GROUNDWATER DEPTH / DATE <u>13 FEET</u> / <u>7/13/76</u>		DRILL RIG TYPE _____	
DEPTH TO BEDROCK _____		TOTAL DEPTH DRILLED <u>41.5 FEET</u>	
METHODS :			
DRILLING SOIL <u>3 1/8" ROLLER BIT TO ADVANCE HOLE</u>		_____	
SAMPLING SOIL <u>2" O.D. SPLIT SPOON</u>		_____	
DRILLING ROCK <u>NONE</u>		_____	
SPECIAL TESTING OR INSTRUMENTATION _____			
REMARKS _____			

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR U.D.S. PENETRATION (3)	SPT N VALUES OR U.D.S. REC (4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS
680	0	S	1	5-6-8 45%	14	GW- GM	SANDY GRAVEL, WELL GRADED, SUBANGULAR TO ANGULAR, TO 1.1 INCHES MAXIMUM, 41% COARSE TO FINE SAND, 11 % NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl	
		S	2	8-6-12	18		BLOWS/INCH 1-3-1-1-1-1/1-1-1-1-1-1/2-1-2-2-2-3 NO RECOVERY	
675	5	S	3	7-7-7 17%	14	GM- GM	BLOWS/INCH 1-1-2-1-1-1/1-2-1-1-1-1/1-1-2-1-1-1 SANDY GRAVEL, WELL GRADED, ANGULAR, TO 0.8 INCH MAXIMUM, 44% COARSE TO FINE SAND, 13% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl	
		S	4	8-6-8 28%	14	SM	BLOWS/INCH 2-1-1-1-2-1/1-1-1-1-1-1/1-1-1-1-2-2 SILTY SAND, WIDELY GRADED, 41% ANGULAR GRAVEL TO 0.9 INCH MAXIMUM, COARSE TO FINE SAND, 13% NONPLASTIC FINES, BROWN, SLIGHT REACTION TO HCl	
670	10	S	5	11-36-25 45%	61	SM	1-1-1-1-4-3/4-5-9-6-6-6/6-3-5-5-3-3 SILTY SAND, SAME AS ABOVE	
		S	6	17-23-29 45%	52	SM	BLOWS/INCH 1-2-3-4-3-4/3-4-4-4-4-4/4-4-3-5-7-6 SILTY GRAVEL, WIDELY GRADED, ANGULAR, TO 1.0 INCH MAXIMUM, 40% COARSE TO FINE SAND, 14% NONPLASTIC FINES, BROWN, SLIGHT REACTION TO HCl	
		S	7	31-24-23 6%	47		BLOWS/INCH 1-4-3-5-3-3-3/5-3-3-4-5-4/6-4-3-4-3-3 SANDSTONE	
665	15	S	8	20-24-25 45%	49	GM	BLOWS/INCH 3-3-3-3-4-4/4-4-4-4-4-4/4-4-4-5-4-4 SILTY GRAVEL, WIDELY GRADED, ANGULAR TO SUBROUND GRAVEL TO 1.0 INCH MAXIMUM, 25-35% COARSE TO FINE SAND, 15-20% NONPLASTIC FINES, BROWN, NO REACTION TO HCl	

LEGEND / NOTES	S. SPLIT BARREL SAMPLE	1. DATUM IS MEAN SEA LEVEL	BORING LOG BEAVER VALLEY POWER STATION - UNIT NO. 2 DUQUESNE LIGHT COMPANY PITTSBURGH, PENNSYLVANIA 12241-GSK-130A STONE & WEBSTER ENG. CORP.			
	UNDISTURBED SAMPLES (U.D.S.)	UNLESS OTHERWISE INDICATED				
	US. SHELBY TUBE	2. BLOWS REQUIRED TO DRIVE				
	UF. FIXED PISTON	2" O.D. SAMPLE SPOON 6" OR				
UO. OSTERBERG	DISTANCE SHOWN USING 140 lb	3. DENOTES INCHES OF PENETR.	ISSUED BY <u>ad</u>	DATE <u>8/6/1916</u>	BORING NO. <u>B-2013</u>	SHEET <u>1</u> OF <u>2</u>
UD. DENISON	HAMMER FALLING 30"	OF UNDISTURBED SAMPLER				
UP. PITCHER	*INDICATES USE OF 300 lb	HAMMER				
N. STD. PENETRATION	HAMMER	4. DENOTES INCHES OF				
RESISTANCE BLOWS/FT		UNDISTURBED SAMPLE				
<u>▽</u> GROUNDWATER		RECOVERY				
** RECOVERY INFORMATION NOT AVAILABLE		5. UNIFIED SOIL CLASSIFICATION SYSTEM				

91204

BORING <u>B-2013</u>										
SHEET <u>2</u> OF <u>2</u>										
SITE / LOCATION <u>DEAVER VALLEY POWER STATION - UNIT NO. 2</u> J.O. NO. <u>12241</u>										
LEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS RECI(4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION			FIELD AND LAB. TEST RESULTS / COMMENTS
% REC										
665	15	S	9	14-16-30 22%	46	GM	BLOWS/INCH 2-2-2-2-4/5-2-3-1-3-2/2-2-4-7-7-8 SILTY GRAVEL, SAME AS ABOVE EXCEPT GRAVEL TO 0.7 INCH SANDSTONE, IN SHOE OF SPOON			
		S	10	39-32-40 45%	72	SM	BLOWS/INCH 5-5-7-8-8-6/6-6-6-4-5-5/6-7-5-7-3-7 SILTY SAND, WIDELY GRADED, 35% GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, 16% NONPLASTIC FINES, BROWN, NO REACTION TO HCl			
660	20	S	11	30-37-31 50%	68	GM	BLOWS/INCH 4-3-5-6-6-6/6-6-7-6-7-5/6-6-4-5-5-5 SILTY GRAVEL, SAME AS ABOVE EXCEPT GRAVEL TO 0.8 INCH, NO REACTION TO HCl			
		S	12	47-10-37 61%	77	GM	BLOWS/INCH 6-9-8-7-11-6/7-8-7-6-6-6/5-6-5-5-5-6 SILTY GRAVEL, SAME AS ABOVE EXCEPT GRAVEL TO 1.0 INCH MAXIMUM, NO REACTION TO HCl			
655	25	S	13	27-80-61 72%	141	SM	BLOWS/INCH 1-2-2-4-6-12/15-15-16-18-10-6/12-9-9-11-11 SILTY SAND, WIDELY GRADED, 34% GRAVEL TO 1.2 INCHES MAXIMUM, COARSE TO FINE SAND, 14% NONPLASTIC FINES, BROWN, NO REACTION TO HCl			
		S	14	25-37-32 72%	69	GM	BLOWS/INCH 1-3-5-5-6-5/9-6-7-7-4-4/4-5-4-5-6-8 SILTY GRAVEL, WIDELY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, 32% COARSE TO FINE SAND, 20% NONPLASTIC FINES, BROWN, NO REACTION TO HCl			
		S	15	43-55-38 67%	93	GM	BLOWS/INCH 4-7-11-8-6-7/9-11-9-9-10-7/7-6-6-6-6-7 SILTY GRAVEL, WIDELY GRADED, ANGULAR TO SUBROUNDED GRAVEL TO 1.0 INCH MAXIMUM, 25-35% COARSE TO FINE SAND, 10-25% SLIGHTLY PLASTIC FINES, BROWN, FEW SMALL POCKETS LIGNITE, NO REACTION TO HCl			
650	30	S	16	67-70-32 90%	102	GM	BLOWS/INCH 6-8-8-10-15-20/19-20-10-9-5-7/6-6-5-5-5-5 SILTY GRAVEL, WIDELY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, 25-35% COARSE TO FINE SAND, 10-25% SLIGHTLY PLASTIC FINES, BROWN, NO REACTION TO HCl			
		S	17	14-17-15 56%	32	GM	BLOWS/INCH 2-2-2-3-2-3/3-3-2-3-3-3/3-2-3-2-3-2 SILTY GRAVEL, WIDELY GRADED, SUBANGULAR TO SUBROUNDED, TO 1.0 INCH MAXIMUM, 39% COARSE TO FINE SAND, 13% NONPLASTIC FINES, BROWN, NO REACTION TO HCl			
645	35	S	18	23-20-26	46		BLOWS/INCH 3-3-4-3-6-4/4-4-3-2-4-3/4-5-5-4-4-4 NO RECOVERY			
		S	19	54-52-30 78%	82	GM	BLOWS/INCH 6-5-5-11-9-18/15-11-9-5-6-6/5-4-6-4-6-5 SILTY GRAVEL, WIDELY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 0.5 INCH MAXIMUM, 20-35% COARSE TO FINE SAND, 15-30% SLIGHTLY PLASTIC FINES, BROWN, NO REACTION TO HCl, 3 INCH LIGNITE SEAM			
		S	20	83/4.5" 28%		SM	BLOWS/INCH 3-5-13-12-50/0.5" SILTY SAND, WIDELY GRADED, 24% GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, 27% NONPLASTIC FINES, BROWN, NO REACTION TO HCl			
640	40	S	21	62-66-82 83%	148	GM	TOP 9 INCHES: SILTY GRAVEL, SAME AS ABOVE BOTTOM 7 INCHES: SILTY GRAVEL, SIMILAR TO ABOVE EXCEPT 10-20% NONPLASTIC TO SLIGHTLY PLASTIC FINES			
END OF BORING AT 41.5 FEET										

NOTE: FOR BORING SUMMARY AND
LEGEND INFO SEE SHEET 1



STONE & WEBSTER ENG. CORP

ISSUED BY

DATE

8/6/1916

BORING NO

B-2013

SHEET

2 OF 2

AMENDMENT 3

12241-GSK-130B

911012

SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT NO. 2</u>		J.O. NO. <u>12241</u>	BORING <u>B-2015</u>
COORDINATES <u>N 3971.4</u>	<u>E 8114.9</u>	GROUND ELEV. (I) <u>680 FEET</u>	SHEET 1 OF <u>2</u>
INCLINATION <u>VERTICAL</u>		BEARING _____	LOGGED BY <u>C.R. MAULDIN/W.J. OLSZEWSKI</u>
DATE: START / FINISH <u>7-12-76</u> / <u>7-12-76</u>		CONTRACTOR / DRILLER <u>PENNA DRILLING/SWEDE</u>	
STATIC GROUNDWATER DEPTH / DATE <u>13 FEET</u> / <u>7-12-76</u>		DRILL RIG TYPE _____	
DEPTH TO BEDROCK _____		TOTAL DEPTH DRILLED <u>39.5 FEET</u>	
METHODS:			
DRILLING SOIL <u>3 1/8" ROLLER BIT TO ADVANCE HOLE</u>		_____	
SAMPLING SOIL <u>2" O.D. SPLIT SPOON</u>		_____	
DRILLING ROCK <u>NONE</u>		_____	
SPECIAL TESTING OR INSTRUMENTATION _____			
REMARKS _____			

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR U.S. PENETRATION (3)	SPT N VALUES OR U.S. REC. (4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS
680	0							
		S	1	8-8-7 61%	15	SW- GW	BLOWS/INCH 2-1-1-1-1-2/2-1-1-2-1-1/1-1-1-1-2 GRAVELLY SAND, WELL GRADED, 30-45% GRAVEL TO 1.5 INCHES MAXIMUM, 3-8% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL	
		S	2	6-9-9 45%	18	FA- SM	BLOWS/INCH 1/2-1-2-1-1/2-1-2-2-1-1/2-1-2-1-2-1 GRAVELLY SAND, SIMILAR TO ABOVE EXCEPT 25-40% GRAVEL	
675	5	S	3	9-7-9 40%	16	GM	BLOWS/INCH 2-1-1-2-2-1/1-1-2-1-1-1/2-1-1-1-3-1 SILTY GRAVEL, WIDELY GRADED, ANGULAR TO SUBANGULAR GRAVEL TO 1.0 INCH MAXIMUM, 38% COARSE TO FINE SAND, MOSTLY COARSE, 14% SLIGHTLY PLASTIC FINES, BROWN, SLIGHT REACTION TO HCL	
		S	4	16-17-17 56%	36	SP	BLOWS/INCH 3-2-2-3-3-3/3-3-2-3-3-3/3-3-3-3-4-3 GRAVELLY SAND, POORLY GRADED, 20-30% ANGULAR TO SUBROUNDED GRAVEL TO 0.6 INCH MAXIMUM, COARSE TO FINE, MOSTLY MEDIUM SAND, 5% FINES, BROWN, NO REACTION TO HCL	
670	10	S	5	11-15-21 50%	36	GM	BLOWS/INCH 2-1-2-2-2-2/2-2-3-3-2-3/3-3-4-3-4-4 SILTY GRAVEL, WIDELY GRADED, ANGULAR TO SUBROUND GRAVEL TO 0.7 INCH MAXIMUM, 25-35% COARSE TO FINE SAND, 10-15% SLIGHTLY PLASTIC FINES, BROWN, NO REACTION TO HCL, DROVE THROUGH SANDSTONE AND LIMESTONE 2 INCHES FROM BOTTOM	
		S	6	14-17-17 33%	34	SP- SM	BLOWS/INCH 3-2-2-2-2-3/2-2-4-3-3-3/3-2-3-2-3-4 GRAVELLY SAND, POORLY GRADED, 36% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY COARSE, 12% NONPLASTIC FINES, BROWN, SLIGHT REACTION TO HCL	
665	15	S	7	7-12-12 40%	24	SP- SM	BLOWS/INCH 2-1-1-1-1-2/2-2-2-2-2-2/2-1-2-2-2-3 GRAVELLY SAND, POORLY GRADED, 20-30% SUBANGULAR GRAVEL TO 1.0 INCH MAXIMUM, COARSE TO FINE, MOSTLY MEDIUM SAND, 5-10% FINES, BROWN, NO REACTION TO HCL	

LEGEND / NOTES	S_ SPLIT BARREL SAMPLE UNDISTURBED SAMPLES (U.S.) US_ SHELBY TUBE UF_ FIXED PISTON UD_ OSTERBERG UD_ DENISON UP_ PITCHER N_ STD PENETRATION RESISTANCE BLOWS/FT <u>▽</u> GROUNDWATER ** RECOVERY INFORMATION N/T AVAILABLE	1. DATUM IS MEAN SEA LEVEL UNLESS OTHERWISE INDICATED 2. BLOWS REQUIRED TO DRIVE 2" O.D. SAMPLE SPOON 6" OR DISTANCE SHOWN USING 140 lb HAMMER FALLING 30" * INDICATES USE OF 300 lb HAMMER 3. DENOTES INCHES OF PENETR. OF UNDISTURBED SAMPLER 4. DENOTES INCHES OF UNDISTURBED SAMPLE RECOVERY 5. UNIFIED SOIL CLASSIFICATION SYSTEM	BORING LOG BEAVER VALLEY POWER STATION - UNIT NO. 2 DUQUESNE LIGHT COMPANY PITTSBURGH, PENNSYLVANIA 12241-GSK-131A STONE & WEBSTER ENG. CORP.	
			ISSUED BY <u> </u>	DATE <u>9/13/1916</u>
			BORING NO. <u>B-2015</u>	SHEET <u>1 OF 2</u>

BORING <u>B-2015</u>									
SHEET <u>2</u> OF <u>2</u>									
SITE / LOCATION		BEAVER VALLEY POWER STATION - UNIT NO. 2				J.O. NO. <u>12241</u>			
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL (5)	FIELD AND LAB. TEST RESULTS / COMMENTS		
665	15	S	8	25-21-26 **	47	SP- SM	BLOWS/INCH 3-4-3-5-5-5/5-5-3-3-2/4-3-4-4-6-5 GRAVELLY SAND, SAME AS ABOVE, BUT WITH ORANGE-BROWN AND YELLOW-BROWN SANDSTONE FRAGMENTS		
		S	9	21-25-22 45%	47	GP- GM	BLOWS/INCH 2-3-4-4-4-4/4-4-4-4-5-4/3-3-2-4-4-6 SILTY GRAVEL, WIDELY GRADED, ANGULAR TO SUBROUNDED GRAVEL TO 1.4 INCHES MAXIMUM, 38% COARSE TO FINE, MOSTLY COARSE SAND, 13% NONPLASTIC FINES, BROWN, NO REACTION TO HCL		
660	20	S	10	18-23-26 56%	49	SP- SM	BLOWS/INCH 1-1-4-3-4-5/4-3-3-5-5/6-4-3-5-4-4 GRAVELLY SAND, POORLY GRADED, 25-35% SUBANGULAR TO SUBROUND GRAVEL TO 0.7 INCH MAXIMUM, COARSE TO FINE, MOSTLY MEDIUM SAND, 5-10% NONPLASTIC FINES, BROWN, 0.3 INCH LAYER LIGNITE, NO REACTION TO HCL		
		S	11	5-18-25 45%	43	GP	BLOWS/INCH 1-2-2-1-1-1/2-2-2-3-4-5/5-4-4-4-4-4 SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBROUND GRAVEL TO 1.3 INCHES MAXIMUM, 30-40% COARSE TO FINE, MOSTLY MEDIUM SAND, 5% FINES, BROWN, FEW PIECES FRACTURED SANDSTONE, NO REACTION TO HCL		
655	25	S	12	13-15-18 50%	33	SM	BLOWS/INCH 2-2-2-2-2-3/2-2-3-2-3-3/3-3-3-3-3-3 SILTY SAND, UNIFORM, 16% ANGULAR TO SUBROUNDED GRAVEL TO 1.5 INCHES MAXIMUM, FINE SAND, 14% NONPLASTIC FINES, BROWN, NO REACTION TO HCL		
		S	13	12-24-24 50%	48	SM	BLOWS/INCH 1-2-2-2-2-3/3-4-5-4-4-4/3-3-3-5-5-5 SILTY SAND, WIDELY GRADED, 15-25% GRAVEL TO 1.0 INCH MAXIMUM, COARSE TO FINE SAND, 10-20% NONPLASTIC FINES, BROWN, NO REACTION TO HCL		
650	30	S	14	21-34-30 67%	64	SM	BLOWS/INCH 1-3-4-4-4-5 SILTY SAND, WIDELY GRADED, 34% SUBANGULAR TO SUBROUNDED GRAVEL TO 1.0 INCH MAXIMUM, COARSE TO FINE SAND, 19% NONPLASTIC FINES, BROWN, NO REACTION TO HCL		
		S	15	19-45-47 33%	92		BLOWS/INCH 1-2-3-3-5-5/6-10-7-7-6-9/8 10-8-6-7-8 RECOVERY ALMOST ALL SANDSTONE, SOME SAND AND GRAVEL		
		S	16	22-33-35 **	68		BLOWS/INCH 1-4-3-4-5-5/5-6-6-5-5-6/6-5-7-5-6-5 RECOVERY INSUFFICIENT TO DESCRIBE. LARGEST PIECE OF GRAVEL FOUND IN SHOE.		
645	35	S	17	18-20-28 45%	48	GM	BLOWS/INCH 2-3-3-3-3-4/3-4-4-2-4-2/4-3-3-6-5-7 SILTY GRAVEL, WIDELY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, 39% COARSE TO FINE SAND, 17% NONPLASTIC FINES, BROWN, NO REACTION TO HCL		
		S	18	15-28-42 45%	70	GM	BLOWS/INCH 2-2-3-2-3-3/4-4-4-5-6-5/4-7-2-7-9-7 SILTY GRAVEL, SAME AS ABOVE, EXCEPT 2 INCH LAYER SANDSTONE		
		S	19	65-89-179 90%	268	GM	BLOWS/INCH 5-9-7-9-19-16/14-14-13-16-14-18/25-25-22-27-40-40 SILTY GRAVEL, SAME AS ABOVE, DROVE THROUGH SANDSTONE AT BOTTOM		
END OF BORING AT 39.5 FEET									
311014									

NOTE: FOR BORING SUMMARY AND LEGEND INFO. SEE SHEET 1

STONE & WEBSTER ENG. CORP.

ISSUED BY [Signature]

DATE 5/13/1976

BORING NO. B-2015

SHEET 2 OF 2

AMENDMENT 3
 12241-GSK-131B

SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT NO. 2</u>		J.O. NO. <u>12241</u>	BORING <u>B-2021</u>
COORDINATES <u>N 3967.2</u>	<u>E 8118.8</u>	GROUND ELEV. (I) <u>680 FEET</u>	SHEET <u>1</u> OF <u>2</u>
INCLINATION <u>VERTICAL</u>		BEARING _____	LOGGED BY <u>S. P. REYNOLDS/R. E. HIKE</u>
DATE : START / FINISH <u>7-14-76</u> / <u>7-14-76</u>		CONTRACTOR / DRILLER <u>PENNA.DRILLING</u>	
STATIC GROUNDWATER DEPTH / DATE <u>13 FEET</u> / <u>7-14-76</u>		DRILL RIG TYPE _____	
DEPTH TO BEDROCK _____		TOTAL DEPTH DRILLED <u>40.5 FEET</u>	
METHODS :			
DRILLING SOIL <u>3 1/8" ROLLER BIT TO ADVANCE HOLE</u>		_____	
SAMPLING SOIL <u>2" O.D. SPLIT SPOON</u>		_____	
DRILLING ROCK <u>NONE</u>		_____	
SPECIAL TESTING OR INSTRUMENTATION _____			
REMARKS _____			

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR U.S. PENETRATION (3)	SPT N VALUES OR U.S. REC (4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS
							1 REC	
680	0	S	1	7-10-11 56%	21	SP-SM	GRAVELLY SAND, POORLY GRADED, 20-25% SUBANGULAR TO SUBROUNDED GRAVEL TO 1.5 INCHES MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE 5-8% NONPLASTIC FINES, BROWN, QUICK REACTION TO HCl.	
		S	2	10-11-15 17%	26	SP-SM	GRAVELLY SAND, SIMILAR TO ABOVE, EXCEPT GRAVEL TO 0.5 INCHES MAXIMUM.	
		S	3	15-16-17	33		NO RECOVERY	
675	5	S	4	7-8-9 56%	17	SP-SM	SANDY GRAVEL, WELL GRADED, SUBANGULAR TO ANGULAR GRAVEL TO 1.1 INCHES MAXIMUM (SOME FRESHLY FRACTURED GRAVEL) 40% COARSE TO FINE SAND, 12% NONPLASTIC FINES, GRAYISH BROWN, STRONG REACTION TO HCl.	
		S	5	12-24-29 67%	53	SM-SP	GRAVELLY SAND, POORLY GRADED, 20-25% SUBANGULAR AND SUBROUNDED GRAVEL TO 1.3 INCHES MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 8-12% NONPLASTIC FINES, BROWN, SLIGHT REACTION TO HCl.	
670	10	S	6	38-50-36 67%	86	SP-SM	GRAVELLY SAND, POORLY GRADED, 30-35% SUBANGULAR AND SUBROUNDED GRAVEL TO 1.3 INCHES MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 5-10% NONPLASTIC FINES, BROWN, NO REACTION TO HCl.	
		S	7	19-22-23 50%	45	SP-SM	GRAVELLY SAND, POORLY GRADED, 30-35% SUBANGULAR TO SUBROUNDED GRAVEL TO 1.4 INCHES MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 5-8% NONPLASTIC FINES, BROWN, MODERATE REACTION TO HCl.	
665	15	S	8	25-14-15 50%	29	SP-SM	SANDY GRAVEL, WELL GRADED, SUBANGULAR TO ANGULAR GRAVEL TO 1.2 INCHES MAXIMUM (SOME FRESHLY FRACTURED GRAVEL) 40% COARSE TO FINE SAND, 12% NONPLASTIC FINES, MEDIUM, BROWN, SLIGHT REACTION TO HCl.	

LEGEND / NOTES	S_ SPLIT BARREL SAMPLE UNDISTURBED SAMPLES (U.S.) US_ SHELBY TUBE UF_ FIXED PISTON UO_ OSTERBERG UD_ DENISON UP_ PITCHER N_ STD PENETRATION RESISTANCE BLOWS/FT <u>13</u> GROUNDWATER ** RECOVERY INFORMATION NOT AVAILABLE	1. DATUM IS MEAN SEA LEVEL UNLESS OTHERWISE INDICATED 2. BLOWS REQUIRED TO DRIVE 2" O.D. SAMPLE SPOON 6" OR DISTANCE SHOWN USING 140 lb HAMMER FALLING 30" * INDICATES USE OF 300 lb HAMMER 3. DENOTES INCHES OF PENETR. OF UNDISTURBED SAMPLER 4. DENOTES INCHES OF UNDISTURBED SAMPLE RECOVERY 5. UNIFIED SOIL CLASSIFICATION SYSTEM	BORING LOG BEAVER VALLEY POWER STATION - UNIT NO. 2 DUQUESNE LIGHT COMPANY PITTSBURGH, PENNSYLVANIA 12241-GSK-134A STONE & WEBSTER ENG. CORP.	
	ISSUED BY <u>SM</u>	DATE <u>9/13/94</u>	BORING NO. <u>B-2021</u>	SHEET <u>1</u> OF <u>2</u>

BORING B-2021									
SHEET 2 OF 2									
SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT NO. 2</u> J.O. NO. <u>12241</u>									
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS	
				% REC					
665	15	S	9	11-9-11 45%	20	SP-SM	GRAVELLY SAND, POORLY GRADED, 34% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCHES MAXIMUM, (SOME FRESHLY FRACTURED GRAVEL) COARSE TO FINE, MOSTLY FINE SAND 12% NONPLASTIC FINES, MEDIUM BROWN, NO REACTION TO HCL.		
		S	10	10-18-25 50%	43	GP	BLOWS/INCH 1-1-1-3-2-2/2-3-4-3-3-3/4-5-3-4-4-5 SANDY GRAVEL, POORLY GRADED SUBANGULAR TO 1.4 INCHES MAXIMUM, 40-45% COARSE TO FINE SAND, MOSTLY MEDIUM TO FINE, 3-5% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.		
			11	28-29-22 61%	51	GP	BLOWS/INCH 5-6-5-4-4-4/5-6-5-6-3-4/4-4-3-2-5-4 SANDY GRAVEL, SIMILAR TO ABOVE, EXCEPT SUBANGULAR TO SUBROUNDED TO 1.1 INCHES MAXIMUM.		
660	20	SS	12	9-21-25 50%	46	GP	BLOWS/INCH 1-1-1-3-1-2/4-3-4-5-2-3/4-4-3-5-5-4 SANDY GRAVEL, SIMILAR TO ABOVE, EXCEPT GRAVEL TO 1.2 INCHES MAXIMUM.		
		S	13	12-14-16 50%	30	SP-SM	BLOWS/INCH 2-1-2-2-3-2/3-3-2-2-2-2/2-2-2-3-3-4 GRAVELLY SAND, POORLY GRADED, 40-45% SUBANGULAR AND SUBROUNDED GRAVEL TO 1.2 INCHES MAXIMUM, COARSE TO FINE SAND, 5-10% SLIGHTLY PLASTIC FINES, BROWN, NO REACTION TO HCL.		
655	25	S	14	12-14-16 33%	30	SM-SP	SILTY GRAVEL, WIDELY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.3 INCHES MAXIMUM, 42% COARSE TO FINE SAND, 14% NONPLASTIC FINES, MEDIUM BROWN, NO REACTION TO HCL.		
		S	15	11-21-25 33%	46	GP	BLOWS/INCH 1-1-1-3-2-3/4-4-2-3-5-3/5-3-3-5-5-4 SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO 1.4 INCHES MAXIMUM, 20-25% COARSE TO FINE SAND, 3-5% NONPLASTIC FINES, BROWN, NO REACTION TO HCL, WITH LAYER OF LIGNITE		
		S	16	18-17-23 67%	37	SP	BLOWS/INCH 3-3-3-3-3/3-2-2-3-2-2/2-3-3-4-5-6 GRAVELLY SAND, POORLY GRADED, 35-45% SUBROUNDED GRAVEL TO 1.2 INCHES MAXIMUM, COARSE TO FINE SAND, LESS THAN 5% NONPLASTIC FINES, BROWN.		
650	30	S	17	27-23-22 67%	45	GP-SP	BLOWS/INCH 4-7-4-4-4-4/4-4-3-3-4-5/4-3-4-3-3-5 SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBROUNDED GRAVEL TO 1.3 INCHES MAXIMUM, 40-50% COARSE TO FINE SAND, LESS THAN 5% NON TO SLIGHTLY PLASTIC FINES, BROWN, NO REACTION TO HCL.		
		S	18	15-16-12 45%	29	SM	SILTY SAND, WIDELY GRADED, 37% MOSTLY SUBANGULAR GRAVEL TO 0.9 INCHES MAXIMUM, COARSE TO FINE SAND, 17% NON TO SLIGHTLY PLASTIC FINES, MEDIUM BROWN, NO REACTION TO HCL.		
645	35	S	19	10-16-18 40%	34	GM-SM	BLOWS/INCH 1-2-1-2-2-2/3-2-3-2-3-3/3-2-4-3-3-3 SILTY GRAVEL, WIDELY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.3 INCHES MAXIMUM, 30-40% COARSE TO FINE SAND, 15-20% NON TO SLIGHTLY PLASTIC FINES, BROWN, NO REACTION TO HCL, TRACE OF LIGNITE.		
		S	20	16-23-26 83%	49	SM	BLOWS/INCH 2-3-2-3-3-3/3-3-3-4-6-4/5-5-4-4-3-5 SILTY SAND, WIDELY GRADED, 37% MOSTLY SUBANGULAR GRAVEL TO 1.2 INCHES MAXIMUM, COARSE TO FINE SAND, 16% SLIGHTLY PLASTIC FINES, MEDIUM BROWN, SLIGHT REACTION TO HCL.		
640	40	S	21	58-49-52 83%	101	GM	BLOWS/INCH 5-9-12-13-11-8/9-7-7-7-9-10/9-11-9-8-7-8 SILTY GRAVEL, WIDELY GRADED, MOSTLY SUBANGULAR GRAVEL TO 1.2 INCHES MAXIMUM (SOME FRESHLY FRACTURED GRAVEL) 35% COARSE TO FINE SAND, 16% NONPLASTIC FINES, DARK BROWN, STRONG REACTION TO HCL.		
END OF BORING AT 40.5 FEET									
311016									

NOTE: FOR BORING SUMMARY AND
LEGEND INFO. SEE SHEET 1.

STONE & WEBSTER ENG. CORP

ISSUED BY CH

DATE 9/13/94

BORING NO. B-2021

SHEET 2 OF 2

SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT 2</u>		J.O. NO. <u>12241</u>	BORING <u>2022</u>
COORDINATES <u>N 3968.3</u>	<u>E 8120.5</u>	GROUND ELEV. (I) <u>680 FEET</u>	SHEET <u>1</u> OF <u>2</u>
INCLINATION <u>VERTICAL</u>		BEARING _____	LOGGED BY <u>S. REYNOLDS</u>
DATE : START / FINISH <u>7-15-76</u> / <u>7-16-76</u>		CONTRACTOR / DRILLER <u>PENNA DRILLING</u>	
STATIC GROUNDWATER DEPTH / DATE <u>13 FEET</u> / <u>7-16-76</u>		DRILL RIG TYPE _____	
DEPTH TO BEDROCK _____		TOTAL DEPTH DRILLED <u>40.5 FEET</u>	
METHODS :			
DRILLING SOIL <u>3 1/8" ROLLER BIT TO ADVANCE HOLE</u>		_____	
SAMPLING SOIL <u>2.0" O.D. SPLIT SPOON</u>		_____	
DRILLING ROCK <u>NONE</u>		_____	
SPECIAL TESTING OR INSTRUMENTATION _____			
REMARKS _____			

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR U.D.S. PENETRATIONS (3)	SPT N VALUES OR U.D.S. REC (4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS
680	0							
		S	1	8-13-12 56%	25	SP	BLOWS/INCH: 1-1-1-2-1-2 / 2-2-2-2-3-2 / 1-2-1-3-3-2 <u>GRAVELLY SAND</u> , POORLY GRADED, 40-45% SUBANGULAR TO SUBROUNDED GRAVEL TO 1.2 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY MEDIUM TO FINE, 5% NON-PLASTIC FINES, BROWN, QUICK REACTION TO HCL.	
		S	2	11-14-12 50%	26	GP	BLOWS/INCH: 1-2-2-2-2-2 / 2-2-3-2-2-3 / 2-2-2-2-2-2 <u>SANDY GRAVEL</u> , POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.0 INCH MAXIMUM, 30-35% COARSE TO FINE SAND, MOSTLY MEDIUM TO FINE, 3-5% NONPLASTIC FINES, BROWN, QUICK REACTION TO HCL.	
67	5	S	3	12-16-18	34		BLOWS/INCH: 1-2-2-3-2-2 / 3-3-3-2-2-3 / 3-3-2-3-4-3 <u>NO RECOVERY</u> .	
		S	4	11-26-24 40%	50	GP	BLOWS/INCH: 1-2-1-2-2-3 / 6-5-3-3-4-5 / 4-3-4-5-4-4 <u>SANDY GRAVEL</u> , POORLY GRADED, SUBANGULAR TO 1.1 INCH MAXIMUM, 35-40% COARSE TO FINE SAND, MOSTLY MEDIUM TO FINE, 3-5% NONPLASTIC FINES, BROWN, SLOW REACTION TO HCL.	
670	10	S	5	22-26-30 61%	56	SP-SM	BLOWS/INCH: 1-3-4-5-5-4 / 4-4-5-4-5-4 / 4-5-5-6-5-5 <u>GRAVELLY SAND</u> , POORLY GRADED, 40-45% SUBANGULAR GRAVEL TO 1.1 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 5-8% NONPLASTIC FINES, BROWN, QUICK REACTION TO HCL.	
		S	6	11-14-12 45%	26	GP	BLOWS/IN: 1-2-2-2-2-2 / 2-2-3-2-2-3 / 2-2-2-2-2-2 <u>SANDY GRAVEL</u> , POORLY GRADED, ANGULAR TO SUBANGULAR GRAVEL TO 1.0 INCH MAXIMUM, 30-35% COARSE TO FINE SAND, MOSTLY MEDIUM TO FINE, 3-5% NON-PLASTIC FINES, BROWN, QUICK REACTION TO HCL.	
665	15	S	7	6-10-12 33%	22	GP	BLOWS/INCH: 1-1-1/2"-2-1 / 2-2-2-2-1-1 / 2-2-2-2-1-3 <u>SANDY GRAVEL</u> , POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.4 INCH MAXIMUM, 30-35% COARSE TO FINE SAND, MOSTLY MEDIUM TO FINE, 3-5% FINES, BROWN, NO REACTION TO HCL.	

LEGEND / NOTES	S_ SPLIT BARREL SAMPLE UNDISTURBED SAMPLES (U.D.S.) US_ SHELBY TUBE UF_ FIXED PISTON UO_ OSTERBERG UD_ DENISON UP_ PITCHER N_ STD. PENETRATION RESISTANCE BLOWS/FT GROUNDWATER ** RECOVERY INFORMATION NOT AVAILABLE	1. DATUM IS MEAN SEA LEVEL UNLESS OTHERWISE INDICATED 2. BLOWS REQUIRED TO DRIVE 2" O.D. SAMPLE SPOON 6" OR DISTANCE SHOWN USING 140lb HAMMER FALLING 30" *INDICATES USE OF 300lb HAMMER 3. DENOTES INCHES OF PENL TR. OF UNDISTURBED SAMPLER 4. DENOTES INCHES OF UNDISTURBED SAMPLE RECOVERY 5. UNIFIED SOIL CLASSIFICATION SYSTEM	BORING LOG BEAVER VALLEY POWER STATION - UNIT 2 DUQUESNE LIGHT COMPANY PITTSBURGH, PENNSYLVANIA 12241-GSK-135A STONE & WEBSTER ENG. CORP.
	ISSUED BY <u>CAN</u> DATE <u>2/3/2016</u> BORING NO. <u>2022</u> SHEET <u>1</u> OF <u>2</u>		

SITE LOCATION										BEAVER VALLEY POWER STATION - UNIT 2		J.O. NO. 12241		BORING 2022		SHEET 2 OF 2	
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL(5)	SAMPLE DESCRIPTION			FIELD AND LAB. TEST RESULTS / COMMENTS							
665	15	S	8	12-19-11 33%	30	GP	BLOWS/INCH: 1-1-3-2-2-3 / 2-5-5-1-3-3 / 3-2-2-1-1-2 SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.4 INCH MAXIMUM, 30-35% COARSE TO FINE SAND, MOSTLY MEDIUM TO FINE, 3-5% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.										
		S	9	13-21-30 67%	51	SP- SM	BLOWS/INCH: 1-1-3-2-3-3 / 3-2-3-3-4-6 / 4-5-5-7-4-5 GRAVELLY SAND, POORLY GRADED, SUBANGULAR TO 1.2 INCH MAXIMUM, 25-30% COARSE TO FINE SAND, MOSTLY FINE, 5-10% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.										
		S	10	27-24-27 45%	51	GP	BLOWS/INCH: 3-5-5-5-5-4 / 2-4-4-5-4-5 / 6-4-3-4-6-4 SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.25 INCH MAXIMUM, 35-45% COARSE TO FINE SAND, LESS THAN 5% NONPLASTIC FINES, BROWN, SANDSTONE GRAVEL CRUMBLES INTO SAND, NO REACTION TO HCL.										
660	20	S	11	12-15-17 40%	32	SP	BLOWS/INCH: 1-2-2-2-2-3 / 2-3-3-2-2-3 / 2-3-3-3-4-2 GRAVELLY SAND, POORLY GRADED, 35-45% SUBANGULAR TO SUBROUNDED GRAVEL TO 1.25 INCH MAXIMUM, COARSE TO FINE SAND, LESS THAN 7% NONPLASTIC FINES, BROWN, OCCASIONAL VERY THIN LAYERS OF LIGNITE, NO REACTION TO HCL.										
		S	12	19-15-17 56%	32	SP	BLOWS/INCH: 3-3-3-3-4-3 / 3-3-2-2-2-3 / 3-2-3-3-3-3 SAME AS ABOVE.										
		S	13	19-19-24 61%	43	SP	BLOWS/INCH: 2-3-3-4-3-4 / 4-3-3-3-3-3 / 4-4-4-3-4-5 SAMPLE A (TOP 4") SAME AS ABOVE. SAMPLE B (BOTTOM 7") GRAVELLY SAND, POORLY GRADED, 20-25% SUBROUNDED GRAVEL TO 1.0 INCH MAXI- MUM, COARSE TO FINE SAND, LESS THAN 3% NONPLASTIC FINES, BROWN, NO REAC- TION TO HCL, TRACE OF LIGNITE.										
655	25	S	14	15-20-22 67%	42	SP- SM	BLOWS/INCH: 2-3-2-3-2-3 / 4-3-4-3-3-3 / 5-4-3-4-3-3 GRAVELLY SAND, WIDELY GRADED, 40-50% SUBROUNDED TO SUBANGULAR GRAVEL TO 1.25 INCH MAXIMUM, COARSE TO FINE SAND, 7-12% SLIGHTLY PLASTIC TO NON- PLASTIC FINES, BROWN, TRACE OF LIGNITE, NO REACTION TO HCL.										
		S	15	15-18-31 72%	49	SP- SM	BLOWS/INCH: 3-2-2-3-2-3 / 2-4-3-3-3-3 / 3-4-5-6-6-7 SAME AS ABOVE, WITHOUT LIGNITE.										
		S	16	24-27-37 78%	64	GP	BLOWS/INCH: 4-3-4-4-5-4 / 3-4-4-4-6-6 / 6-6-6-6-7-6 SANDY GRAVEL, POORLY GRADED, SUBROUNDED TO SUBANGULAR GRAVEL TO 1.25 INCH MAXIMUM, 30-40% COARSE TO FINE SAND, LESS THAN 7% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.										
650	30	S	17	19-19-16 40%	35	GP- GM	BLOWS/INCH: 3-3-3-3-3-4 / 4-4-3-3-3-2 / 3-2-3-3-2-3 SANDY GRAVEL, WIDELY GRADED, SUBROUNDED TO SUBANGULAR GRAVEL TO 1.25 INCH MAXIMUM, 20-25% COARSE TO FINE SAND, 7-12% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.										
		S	18	25-22-24 67%	46	GP- GM	BLOWS/INCH: 3-5-5-4-5-3 / 6-3-3-4-3-3 / 4-4-4-4-4-4 SAME AS ABOVE, EXCEPT 25-35% COARSE TO FINE SAND, MOTTLED LIGHT GREEN, BROWN AND REDDISH BROWN, SLIGHT REACTION TO HCL.										
		S	19	34-53-69 83%	122	SW- SM	BLOWS/INCH: 2-4-4-5-7-12 / 1-4-15-11-4-4-5 / 5-4-5-5-20-30 SAMPLE A, SAND, WELL GRADED, 20-25% SUBROUNDED GRAVEL TO 1.25 INCH MAXIMUM, COARSE TO FINE SAND, 7-12% NONPLASTIC FINES, MOTTLED BROWN AND LIGHT GREEN, NO REACTION TO HCL.										
645	35	S	20	65-81-88 94%	SP	SAMPLE B, SAND, POORLY GRADED, 5-15% GRAVEL TO 0.5 INCH MAXIMUM, LESS THAN 15% COARSE SAND, MOSTLY MEDIUM AND FINE SAND, LESS THAN 3% FINES, BROWN, NO REACTION TO HCL.											
		S	20	65-81-88 94%	SP	SAMPLE C, SILTY SAND, WIDELY GRADED, 30-35% SUBROUNDED GRAVEL TO 0.5 INCH MAXIMUM, COARSE TO FINE SAND, 15-20% NONPLASTIC FINES, MOTTLED ORANGE AND BROWN AND GREEN, NO REACTION TO HCL.											
		S	20	65-81-88 94%	SP	BLOWS/INCH: 8-3-4-14-10-9-10 / 18-12-15-17-11-13 / 13-15-21-17-11-11 GRAVELLY SAND, POORLY GRADED, 15-25% SUBROUNDED GRAVEL TO 1.25 INCH MAX- IMUM, COARSE TO FINE SAND, MOSTLY FINE WITH VERY FINE, LESS THAN 7% NONPLASTIC FINES, BROWN, VERY COMPACT.											
END OF BORING AT 40.5 FEET.																	

NOTE: FOR BORING SUMMARY AND
LEGEND INFO SEE SHEET 1.



STONE & WEBSTER ENG. CORP

ISSUED BY

DATE

2/15/2022

BORING NO.

2022

SHEET

2 OF 2

511018

SITE / LOCATION										BORING 2023	
HEAVER VALLEY POWER STATION UNIT 2										SHEET 2 OF 2	
J.O. NO. 12241											
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS RECI(4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION		FIELD AND LAB TEST RESULTS / COMMENTS		
665		S	10	21-26-15 45%	41	SP	2-3-4-4-4-1 / 3-4-5-5-4-3 / 3-2-3-2-3-2 BLOWS/INCH GRAVELLY SAND, POORLY GRADED, 30-40% SUBROUNDED TO WELL ROUNDED GRAVEL TO GREATER THAN 2 IN. MANY PIECES BROKEN INTO TABULAR FRAGMENTS LIGHT BROWN SS COARSE TO FINE SAND, MOSTLY MEDIUM TO FINE, 5-10% NONPLASTIC FINES, DENSE, DAMP, BROWN				
		S	11	11-18-26	44		1-2-2-2-2-2 / 2-2-3-4-3-4 / 4-5-5-4-4-4 BLOWS/INCH NO RECOVERY, SAMPLER BLOCKED BY 1 1/2 IN. PEBBLE.				
660	20	S	12	12-18-24 56%	42	SP	1-2-2-3-2-2 / 2-2-4-4-3-7 / 3-5-3-4-4-5 BLOWS/INCH GRAVELLY SAND, POORLY GRADED, 30-40% SUBROUNDED TO ROUNDED GRAVEL TO GREATER THAN 1 IN. COARSE TO FINE SAND, MOSTLY MEDIUM, 2-8% NONPLASTIC FINES, DENSE, DAMP, BROWN				
		S	13	17-27-24 50%	51	SP	2-2-3-3-3-4 / 4-4-4-5-5-5 / 5-3-3-5-4-4 BLOWS/INCH GRAVELLY SAND, SIMILAR TO ABOVE EXCEPT 5-10% FINES, OCCASIONAL POCKETS OF DARK BROWN SILT FEW FRAGMENTS, DETRITAL LIGNITE				
		S	14	18-22-24 50%	46	SP	2-3-3-3-4-3 / 3-4-4-3-4-4 / 4-4-5-4-3-4 BLOWS/INCH GRAVELLY SAND, SIMILAR TO ABOVE.				
655	25	S	15	21-40-35 56%	75	SP	2-2-3-4-5-5 / 5-5-7-8-7-8 / 10-7-4-4-5-5 BLOWS/INCH SAND, POORLY GRADED, 5-10% ROUNDED TO WELL ROUNDED GRAVEL TO 3/4 IN. MOSTLY QUARTZ PEBBLES, MOSTLY FINE SAND, LESS THAN 2% NONPLASTIC FINES, NEAR TOP INCREASING DOWNWARD TO 2.5% FINES, DENSE, WET, DARK BROWN, TRACE LIGNITE.				
		S	16	17-19-20 61%	39	SP SM	SANDY GRAVEL, POORLY GRADED, SUBROUNDED GRAVEL TO GREATER THAN 1 1/2 IN. 20-60% MOSTLY FINE SAND, 10-20% NONPLASTIC TO SLIGHTLY PLASTIC FINES, DENSE, DAMP, BROWN/ORANGE BROWN				
		S	17	25-22-26 56%	48	SP SM	2-4-3-3-2-3 / 4-3-3-4-3-2 / 3-2-3-5-4-3 BLOWS/INCH SILTY SAND, WIDELY GRADED, 32% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, 16% NONPLASTIC FINES, BROWNISH GRAY NO REACTION WITH HCL				
650	30	S	18	22-25-27 50%	52	SP SM	2-5-4-4-4-3 / 6-3-4-4-4-4 / 6-5-4-4-4-4 BLOWS INCH GRAVELLY SAND, SIMILAR TO ABOVE.				
		S	19	22-21-28 67%	49	SP	GRAVELLY SAND, WELL GRADED, 37% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, COARSE TO FINE SAND 11% NONPLASTIC FINES, BROWN, NO REACTION WITH HCL				
645	35	S	20	17-13-17 67%	30	SP	3-3-4-2-3-2 / 2-2-2-3-2-3 / 3-3-3-3-3 BLOWS INCH SILTY GRAVEL, POORLY GRADED, SUBROUNDED TO ROUNDED GRAVEL TO GREATER THAN 1 1/4 IN. 20-30% MOSTLY FINE SAND, 20-40% NONPLASTIC TO SLIGHTLY PLASTIC FINES, DENSE, DAMP, BROWN/ORANGE BROWN				
		S	21	14-17-23 50%	35	SM GM	SAND, NEARLY UNIFORM, FINE, TRACE GRAVEL TO 1 IN., 2-5% NONPLASTIC FINES, FEW FRAGMENTS LIGNITE COMPACT TO DENSE, SATURATED, BROWN. GRAVELLY SAND, WIDELY GRADED, 15-25% WELL ROUNDED GRAVEL TO 3/4 IN. COARSE TO FINE SAND, 2-5% NONPLASTIC FINES, DENSE, BROWN SILTY SAND, POORLY GRADED, 30-40% SUBANGULAR TO SUBROUNDED GRAVEL TO 1 IN., MOSTLY FINE SAND, 20-25% NONPLASTIC TO SLIGHTLY PLASTIC FINES, DENSE, DAMP, BROWN/ORANGE BROWN INCLUDES FEW GRAVEL SIZE FRAGMENTS DETRITAL LIGNITE				
640	40	S	22	34-88-100 71%		SP	3-5-4-5-7-10 / 16-10-14-19-15-14 / 14-8-18-22-38 BLOWS/INCH GRAVELLY SILTY SAND, POORLY GRADED, 20-40% GRAVEL TO GREATER THAN 2" COARSE TO FINE SAND, MOSTLY FINE, 15-20% NONPLASTIC FINES, FRAGMENTS LIGNITE, DENSE, DARK BROWN, INCLUDES LARGE PEBBLES FRIABLE LIGHT BROWN SAND TONE.				
END OF BORING AT 40.4 FEET											
311020											

NOTE: FOR BORING SUMMARY AND
LEGEND INFO SEE SHEET 1



STONE & WEBSTER ENG. CORP

ISSUED BY

DATE

9/13/2016

BORING NO

SHEET

B 2023

2 OF 2

SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT NO. 2</u>		J.O. NO. <u>12241</u>		BORING <u>B-2025</u>
COORDINATES <u>N 3962.83</u>	<u>E 8126.25</u>	GROUND ELEV. (I) <u>680 FEET</u>		SHEET <u>1</u> OF <u>2</u>
INCLINATION <u>VERTICAL</u>		BEARING _____		LOGGED BY <u>R. McCain</u>
DATE : START / FINISH <u>7-25-76</u> / <u>7-25-76</u>		CONTRACTOR / DRILLER <u>PENNA DRILLING</u>		
STATIC GROUNDWATER DEPTH / DATE <u>13 Feet</u> / <u>7-25-76</u>		DRILL RIG TYPE _____		
DEPTH TO BEDROCK _____		TOTAL DEPTH DRILLED <u>39.3 FEET</u>		
METHODS :				
DRILLING SOIL <u>3 1/8" ROLLER BIT TO ADVANCE HOLE</u>				
SAMPLING SOIL <u>2.0" O.D. SPLIT SPOON</u>				
DRILLING ROCK _____				
SPECIAL TESTING OR INSTRUMENTATION _____				
REMARKS _____				

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR U.S. PENETRATION(S)	SPT N VALUES OR U.S. REC. (4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS
680	2	S	1	2-9-9 33%	18	SM	1/4.5-1/1.5/2-2-1-2-1-1/2-2-1-2-2 BLOWS/INCH SILTY SAND, WIDELY GRADED, 38% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, 13% NONPLASTIC FINES BROWN, STRONG REACTION WITH HCL.	
		S	2	7-9-11 78%	20	SM	1/1.5-1 1-2-1/1-1-2-3-1-1/2-2-2-2-1-2 BLOWS/INCH SILTY SAND, SIMILAR TO ABOVE EXCEPT 25-35% GRAVEL. SHOE BLOCKED BY 2" PEBBLE.	
675	5	S	3	10-12-12 56%	24	GW-GM	2-1-1-2-2-2/2-2-2-2-2/2-2-2-2-2/2-2-2-2-2 BLOWS/INCH SANDY GRAVEL, WELL GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.0 INCH MAXIMUM, 37% COARSE TO FINE SAND, 11% NONPLASTIC FINES, BROWN, STRONG REACTION WITH HCL.	
		S	4	8-11-11 67%	22	GW-GM	1-1-2-1-2-1/2-2-2-1-2-2/1-2-2-2-2-2 BLOWS/INCH SANDY GRAVEL, SAME AS ABOVE	
670	10	S	5	23-35-27 72%	62	SM	1-2-4-5-5-6/7-6-5-6-6-5/5-4-4-5-4-5 BLOWS/INCH GRAVELLY SILTY SAND, POORLY GRADED, 15-25% SUBANGULAR TO SUBROUNDED GRAVEL TO GREATER THAN 1 IN. MOSTLY MEDIUM TO FINE SAND, 10-20% NONPLASTIC FINES, BROWN, STRONG REACTION WITH HCL.	
		S	6	17-21-31 50%	52	SP	1-2-2-4-4-4-3-4-3-1-4-4-5-4-5 BLOWS/INCH GRAVELLY SAND, POORLY GRADED, 20-50% SUBANGULAR TO SUBROUNDED GRAVEL TO GREATER THAN 1 IN. INCLUDING TABULAR FRAGMENTS FRIABLE GRAY SANDSTONE, COARSE TO FINE SAND, MOSTLY MEDIUM TO FINE, 5-10% NONPLASTIC FINES, SLIGHT REACTION TO HCL, DENSE, DAMP, BROWN	
		S	7	40-18-24 67%	42	SM-GM	2-7-11-12-5-3/3-2-4-3-3-1/3-4-4-4-4-5 BLOWS/INCH SAND, WIDELY GRADED, 10-15% SUBANGULAR TO WELL ROUNDED GRAVEL TO 3/4 IN. COARSE TO FINE SAND, 6-8% NONPLASTIC FINES, NO REACTION TO HCL, DENSE, WET, BROWN	
		S	8	28%	51	GP-GM	GRAVELLY SAND, POORLY GRADED, 15-20% GRAVEL TO 3/4 IN. MOSTLY FINE SAND, 2-7% NONPLASTIC FINES, SLIGHT REACTION TO HCL, DENSE, DAMP, BROWN	
665	15	S	8	17-23-28	51	GP-GM	GRAVELLY SAND, POORLY GRADED, 30-40% SUBANGULAR TO SUBROUNDED GRAVEL TO GREATER THAN 1 IN. MOSTLY MEDIUM TO FINE SAND, 2-7% NONPLASTIC FINES	

LEGEND / NOTES	S_ SPLIT BARREL SAMPLE UNDISTURBED SAMPLES (U.S.) US_ SHELBY TUBE UF_ FIXED PISTON UO_ OSTERBERG UD_ DENISON UP_ PITCHER N_ STD. PENETRATION RESISTANCE BLOWS/FT GROUNDWATER ** RECOVERY INFORMATION NOT AVAILABLE	1. DATUM IS MEAN SEA LEVEL UNLESS OTHERWISE INDICATED 2. BLOWS REQUIRED TO DRIVE 2" O.D. SAMPLE SPOON 6" OR DISTANCE SHOWN USING 140 lb HAMMER FALLING 30" * INDICATES USE OF 300 lb HAMMER 3. DENOTES INCHES OF PENETR. OF UNDISTURBED SAMPLER 4. DENOTES INCHES OF UNDISTURBED SAMPLE RECOVERY 5. UNIFIED SOIL CLASSIFICATION SYSTEM	BORING LOG BEAVER VALLEY POWER STATION - UNIT NO. 2 DUQUESNE LIGHT COMPANY PITTSBURGH, PENNSYLVANIA 12241-GSK-138A STONE & WEBSTER ENG. CORP.
	ISSUED BY <u>Cal</u> DATE <u>9/13/96</u> BORING NO. <u>B-2025</u> SHEET <u>1</u> OF <u>2</u>		

120176

[illegible]

SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT 2</u>		J.O. NO. <u>12241</u>	BORING <u>B-3005</u>
COORDINATES <u>N 3956.6</u>	<u>E 8142.0</u>	GROUND ELEV. (I) <u>680 FEET</u>	SHEET <u>1</u> OF <u>2</u>
INCLINATION <u>VERTICAL</u>		BEARING _____	LOGGED BY <u>S.P. REYNOLDS</u>
DATE : START / FINISH <u>7-8-76</u> / <u>7-8-76</u>		CONTRACTOR / DRILLER <u>PENNA DRILLING</u>	
STATIC GROUNDWATER DEPTH / DATE <u>13 FEET</u> / <u>7-8-76</u>		DRILL RIG TYPE _____	
DEPTH TO BEDROCK _____		TOTAL DEPTH DRILLED <u>39.5 FEET</u>	
METHODS :			
DRILLING SOIL <u>3 1/8" ROLLER BIT TO ADVANCE HOLE</u>		_____	
SAMPLING SOIL <u>2.0" O.D. SPLIT SPOON</u>		_____	
DRILLING ROCK <u>NONE</u>		_____	
SPECIAL TESTING OR INSTRUMENTATION _____			
REMARKS _____			

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR U.S. PENETRATIONS (3)	SPT N VALUES OR U.S. REC (4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS
% REC								
680	0						NO SAMPLES TAKEN FROM SURFACE TO 10.0 FEET	
675	5							
670	10	S	1	9-17-35 11%	52	GP- GM	SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBROUNDED GRAVEL TO 1.1 INCH MAXIMUM, 30-40% COARSE TO FINE SAND, MOSTLY FINE, 5-10% NONPLASTIC FINES, BROWN, MODERATE REACTION TO HCL	
665	15							

LEGEND / NOTES

S_ SPLIT BARREL SAMPLE
UNDISTURBED SAMPLES (U.S.)

US_ SHELBY TUBE

UF_ FIXED PISTON

UO_ OSTERBERG

UD_ DENISON

UP_ PITCHER

N_ STD. PENETRATION
RESISTANCE BLOWS/FT

∇ GROUNDWATER

** RECOVERY INFORMATION
NOT AVAILABLE

1. DATUM IS MEAN SEA LEVEL UNLESS OTHERWISE INDICATED
2. BLOWS REQUIRED TO DRIVE 2" O.D. SAMPLE SPOON 6" OR DISTANCE SHOWN USING 140 lb HAMMER FALLING 30"
- * INDICATES USE OF 300 lb HAMMER
3. DENOTES INCHES OF PENETR. OF UNDISTURBED SAMPLER
4. DENOTES INCHES OF UNDISTURBED SAMPLE RECOVERY
5. UNIFIED SOIL CLASSIFICATION SYSTEM

BORING LOG

BEAVER VALLEY POWER STATION - UNIT 2

DUQUESNE LIGHT COMPANY

PITTSBURGH, PENNSYLVANIA

12241 - GSK - 142A

STONE & WEBSTER ENG. CORP.

ISSUED BY	DATE <u>9/12/96</u>	BORING NO. <u>B-3005</u>	SHEET <u>1</u> OF <u>2</u>
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BORING B-3005										
SHEET 2 OF 2										
SITE / LOCATION					BEAVER VALLEY POWER STATION - UNIT 2					
					J.O. NO. 12241					
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION			FIELD AND LAB. TEST RESULTS / COMMENTS
665	15	S	2	9-13-29 67%	42	GP	SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBROUNDED GRAVEL TO 1.3 INCH MAXIMUM, 15-25% COARSE TO FINE SAND, MOSTLY FINE, 3-5% NONPLASTIC FINES, YELLOW BROWN, NO REACTION TO HCL			
660	20	S	3	8-13-12 39%	25	SM	SILTY SAND, WIDELY GRADED, 41% SUBROUNDED TO SUBANGULAR GRAVEL TO 1.2 INCH MAXIMUM, (SOME FRESHLY FRACTURED GRAVEL), COARSE TO FINE, MOSTLY FINE SAND, 13% NONPLASTIC FINES, BROWN, SLIGHT REACTION TO HCL.			
		S	4	6-11-13 22%	24	SM	BLOWS/IN. 1/1.5 1/1.5, 2-1-1, 2-1-2-2 -1-3, 2-2-2-2-3			
						SP-SM	TOP 2" SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8" MAX., 25-30% COARSE TO FINE SAND, 5-8% NONPLASTIC FINES, BROWN, NO REACTION TO HCL: SILTY SAND, UNIFORM, FINE, 8-12% NONPLASTIC FINES, BROWN.			
655	25	S	5	8-13-15 56%	28	SM	SAND, UNIFORM, 9% SUBROUNDED GRAVEL TO 0.4 IN. MAXIMUM, FINE SAND, 10% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.			
							BLOWS/IN. 1-1-1-2-1-2, 2-2-2-2-3-2, 3-2-3-2-3-2			
		S	6	8-12-15 28%	27	GP-GM	BLOWS/IN. 1/2"-2-1-2-2, 2-2-2-2-2-2, 2-3-3-2-2-3			
						SM	TOP 3" SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.2 IN. MAX., 35-45% COARSE TO FINE SAND, 5-8% NONPLASTIC FINES, BROWN.			
							SILTY SAND, UNIFORM, FINE, 12-15% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.			
		S	7	6-11-19 67%	30	SM	B 3/IN. 1-1/2"-2-1-1, -2-1-2-2-1-3, -2-3-3-3-4-4			
650	30						SILTY SAND, UNIFORM, FINE, 5-10% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.6 IN. MAXIMUM, 12-15% NONPLASTIC FINES, BROWN, THIN LENSES OF LIGNITE, NO REACTION TO HCL.			
		S	8	11-11-11 22%	22	SP-SM	BLOWS/IN. 1-2-2-2-2-2, -2-2-2-1-2-2-2, 1-2-2-2-2			
							GRAVELLY SAND, POORLY GRADED, 43% SUBROUNDED TO SUBANGULAR GRAVEL TO 1.3 IN. MAXIMUM, COARSE TO FINE, MOSTLY FINE SAND, 9% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.			
		S	9	41-11-12 28%	23	GP-GM	BLOWS/IN. 7-9-7-11-5-2, 2-2-2-2-2-1, 2-2-2-2-2-2			
							SANDY GRAVEL, POORLY GRADED ANGULAR GRAVEL TO 1.0 IN. MAXIMUM (SOME FRESHLY FRACTURED GRAVEL) 42% COARSE TO FINE, MOSTLY FINE SAND, 10% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.			
645	35	S	10	5-9-11	20		BLOWS/IN. 1/2"-2-1-1-1, 1-2-2-2-1-1, 1-2-1-2-2-3			
							NO RECOVERY-ONE PIECE OF GRAVEL IN TIP OF SPOON			
		S	11	11-32-53 50%	85	GM	BLOWS/IN. 2-1-1-2-3-2, 3-4-4-4-7-10, 7-4-7-10-12-13			
							SILTY GRAVEL, WIDELY GRADED, MOSTLY ANGULAR GRAVEL TO 0.8 IN. MAX., 39% COARSE TO FINE SAND, 16% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL.			
		S	12	59-49-56 67%	105	GM	BLOWS/IN. 8-11-9-13-10-8, 10-6-7-7-8-11, 7-10-12-7-11-9			
							SILTY GRAVEL, WIDELY GRADED, SUBANGULAR TO SUBROUNDED TO 1.2 IN. MAX., 20-30% COARSE TO FINE SAND, MOSTLY FINE, 10-20% NONPLASTIC FINES, BROWN, NO REACTION.			
640	40						END OF BORING 39.5 FEET			

311021

NOTE: FOR BORING SUMMARY AND
LEGEND INFO. SEE SHEET 1.



STONE & WEBSTER ENG. CORP.

ISSUED BY

DATE

9/21/96

BORING NO.

B-3005

SHEET

2 OF 2

LEGEND / NOTES	S_ SPLIT BARREL SAMPLE UNDISTURBED SAMPLES (U.D.S.) US_ SHELBY TUBE UF_ FIXED PISTON UO_ OSTERBERG UC_ DENISON UP_ PITCHER N_ STD PENETRATION RESISTANCE BLOWS/FT A_ GROUNDWATER ** RECOVERY INFORMATION NOT AVAILABLE	1. DATUM IS MEAN SEA LEVEL UNLESS OTHERWISE INDICATED 2. BLOWS REQUIRED TO DRIVE 2" O.D. SAMPLE SPOON 6" OR DISTANCE SHOWN USING 140 lb. HAMMER FALLING 30" * INDICATES USE OF 300 lb HAMMER 3. DENOTES INCHES OF PENETR. OF UNDISTURBED SAMPLER 4. DENOTES INCHES OF UNDISTURBED SAMPLE RECOVERY 5. UNIFIED SOIL CLASSIFICATION SYSTEM	BORING LOG BEAVER VALLEY POWER STATION UNIT NO. 2 DUQUESNE LIGHT COMPANY PITTSBURGH, PENNSYLVANIA 12241-GSK-143A  STONE & WEBSTER ENG. CORP. <table border="1"> <tr> <td>ISSUED BY <i>adw</i></td> <td>DATE 2/15/1976</td> <td>BORING NO. B-3007</td> <td>SHEET 1 OF 2</td> </tr> </table>	ISSUED BY <i>adw</i>	DATE 2/15/1976	BORING NO. B-3007	SHEET 1 OF 2
	ISSUED BY <i>adw</i>	DATE 2/15/1976	BORING NO. B-3007	SHEET 1 OF 2			

BORING B 3007									
SHEET 4 OF 2									
SITE / LOCATION BEAVER VALLEY POWER STATION UNIT NO. 2 J.O. NO. 12241									
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL (5)	FIELD AND LAB. TEST RESULTS / COMMENTS		
% REC									
665	15	S	9	18-16-17 22%	33	GF	2-3-3-3-3-4/3-3-3-2-2-3/3-3-3-2-3 BLOWS/INCH SANDY GRAVEL, POORLY GRADED, 20-30% SAND, MOSTLY FINE, 2-7% NON- PLASTIC FINES, GRAVEL TO 1.5 INCHES MAXIMUM, 20-30% COARSE TO FINE SAND, MOSTLY FINE, 2-7% NONPLASTIC FINES, BROWN, NO REACTION TO HCL		
		S	10	8-11-12 39%	23	SM	1-1-1-2-1-2/2-2-2-2-2-1/2-2-2-2-2 BLOWS/INCH GRAVELLY SAND, POORLY GRADED, 20-35% SUBROUNDED GRAVEL TO 1.25 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 5-10% NON TO SLIGHTLY PLASTIC FINES, BROWN, MOTTLED WITH BLACK (LIMONITE), NO REACTION TO HCL, 1.4 INCH DIAMETER PIECE OF SANDSTONE LODGED IN TIP OF SHOE		
660	20	S	11	11-17-13 44%	30	SM	1-2-2-2-2-2/2-3-4-2-3/2-2-2-3-2-2 BLOWS/INCH GRAVELLY SAND, SIMILAR TO ABOVE EXCEPT 15-30% GRAVEL, 2-7% NON- PLASTIC FINES, GRAVEL LODGED IN SHOE		
		S	12	12-16-16 50%	32	GF	SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBANGULAR GRAVEL TO 1.5 MAXIMUM, WEATHERED, 40-45% SAND, MOSTLY MEDIUM TO COARSE, 8-12% NONPLASTIC FINES, LIGHT BROWN		
655	25	S	13	13-14-17 39%	31	SM	1-3-2-2-3-2/2-3-2-3-2-2/2-3-3-3-3 BLOWS/INCH SILTY SAND, UNIFORM, 18% SUBROUNDED TO SUBANGULAR GRAVEL TO 1.2 INCH MAXIMUM, FINE SAND, 17% NONPLASTIC FINES, BROWN, NO REACTION TO HCL		
		S	14	13-18-19 33%	37	SF	2-2-2-3-2-2/3-3-3-3-4-2/3-4-3-3-3 BLOWS/INCH SAND, POORLY GRADED, 10-15% ANGULAR TO SUBANGULAR GRAVEL UP TO 1 INCH MAXIMUM, FINE TO COARSE SAND, MOSTLY FINE, 5-8% NONPLASTIC FINES, LIGHT BROWN		
		S	15	12-11-16 33%	27	SM	1-2-3-2-2-2/2-1-2-2-2/2-2-2-3-3-4 BLOWS/INCH SILTY SAND, WIDELY GRADED, 14% SUBROUNDED TO SUBANGULAR GRAVEL TO 1.1 INCHES MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 15% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.		
650	30	S	6	13-19-19 22%	38	SF- SM	1-2-2-2-3-3/3-3-3-3-3-4/3-3-3-3-4 BLOWS/INCH GRAVELLY SAND, POORLY GRADED, 21% SUBROUNDED TO SUBANGULAR GRAVEL TO 1.1 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 11% NONPLASTIC FINES, BROWN, NO REACTION TO HCL		
		S	17	13-15-13 28%	28	GF- SM	3-2-2-2-2-2/2-2-2-3-3-3/2-3-2-2-2-2 BLOWS/INCH SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBROUNDED GRAVEL TO 1.0 INCH MAXIMUM 30-40% COARSE TO FINE SAND, MOSTLY FINE, 10-15% NONPLASTIC FINES, BROWN		
		S	18	9-13-10 61%	23	GF- SM	1-1-1-2-2-2/2-3-2-2-2/1-2-1-2-2-2 BLOWS/INCH SILTY SAND, WIDELY GRADED, COARSE TO FINE SAND, MOSTLY MEDIUM 10-15% FINES, GREENISH GRAY (0-3")		
645	35	S	19	19-107 37% 75"		GF- SM	SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBROUNDED GRAVEL TO 0.75 MAXIMUM, 20-30% COARSE TO FINE SAND, LESS THAN 5% FINES GREENISH GRAY (0-3")		
		S	20	29-47-71 67%	118	SM	SANDY GRAVEL, SAME AS ABOVE WITH GRAVEL TO 1.5 INCHES MAXIMUM AND 5-10% FINES (0-3")		
640	40						SAND, UNIFORM, MEDIUM TO FINE SAND, MOSTLY FINE, 5-8% NONPLASTIC FINES, BROWN		
							2-2-3-3-3-4/6-6-7-27-61/3/4" BLOWS/INCH SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBROUNDED GRAVEL TO 1.0 INCH MAXIMUM, 30-40% COARSE TO FINE SAND, 10-15% SLIGHTLY PLASTIC FINES, BROWN		
							SILTY SAND, WIDELY GRADED, 10-15% ANGULAR TO SUBANGULAR GRAVEL TO 2.0 INCHES MAXIMUM, COARSE TO FINE SAND, 20-30% FINES, BROWN		
END OF BORING AT 39.5 FEET									
311026									

NOTE: FOR BORING SUMMARY AND
LEGEND INFO. SEE SHEET 1

STONE & WEBSTER ENG. CORP

ISSUED BY

DATE 9/15/916

BORING NO. 3007

SHEET 2 OF 2

SITE / LOCATION <u>BEAVER VALLEY POWER STATION UNIT 2</u>		J.O. NO. <u>12241</u>	BORING <u>B-3009</u>
COORDINATES <u>N 3958.6</u>	<u>E 8148.7</u>	GROUND ELEV. (I) <u>680 FEET</u>	SHEET 1 OF <u>2</u>
INCLINATION <u>VERTICAL</u>		BEARING _____	LOGGED BY <u>T. BENNER</u>
DATE: START / FINISH <u>7/13/71</u> / <u>7-13-76</u>		CONTRACTOR / DRILLER <u>PENNA DRILLING</u>	
STATIC GROUNDWATER DEPTH / DATE <u>13 FEET</u> / <u>5-20-76</u>		DRILL RIG TYPE _____	
DEPTH TO BEDROCK _____		TOTAL DEPTH DRILLED <u>26.55 FEET</u>	
METHODS:			
DRILLING SOIL <u>3 1/5 ROLLER BIT TO ADVANCE HOLE</u>		_____	
SAMPLING SOIL <u>2 INCH OD SPLIT SPOON</u>		_____	
DRILLING ROCK <u>NONE</u>		_____	
SPECIAL TESTING OR INSTRUMENTATION _____			
REMARKS _____			

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR U.D.S. PENETRATIONS (3)	SPT N VALUES OR U.D.S. REC (4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS
680	0						BLOWS PER INCH (1/5-1-1-1-1-1-1-1-1-2-1-2-1)	
		S	1	2-6-8 61%	14	SP-SM	GRAVELLY SAND, POORLY GRADED, 31% SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, COARSE TO FINE MOSTLY COARSE AND MEDIUM SAND, 11% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL	
675	5	S	2	10-12-16 39%	28	SM	BLOWS PER INCH (1-2-1-2-2-2-2-2-2-2-2-3-3-2-2-3-3)	
		S	3	9-11-11 33%	22	SM	SILTY SAND, WIDELY GRADED, 25-35% SUBANGULAR TO SUBROUNDED GRAVEL TO 1.0 INCH MAXIMUM, COARSE TO FINE SAND, 12-20% FINES, BROWN	
		S	4	9-12-14 33%	26	SM	BLOWS PER INCH (1-2-1-2-1-2-2-2-1-2-2-2-2-2-2-1-2-2)	
		S	5	11-15-15 33%	30	SM	SILTY SAND, WIDELY GRADED, 30% SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, COARSE TO FINE SAND, 15% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL	
670	10	S	6	11-15-18 33%	33	SM	BLOWS PER INCH (1-2-1-2-2-1-2-2-2-2-2-2-2-2-3-2-2-3-2)	
		S	7	15-21-28 39%	49	SM	SILTY SAND, WIDELY GRADED, 19% SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM COARSE TO FINE SAND, 18% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL	
665	15						BLOWS PER INCH (1-2-2-2-2-2-2-3-3-2-2-3-2-2-2-3-2-3-3)	
							SILTY SAND, WIDELY GRADED, 25-30% SUBANGULAR TO SUBROUNDED GRAVEL TO 1.1 INCH MAXIMUM, COARSE TO FINE SAND, 12-20% FINES, BROWN	
							BLOWS PER INCH (2-2-1-2-2-2-2-3-2-2-3-2-3-3-3-2-3-4-3)	
							SILTY SAND, SIMILAR TO SS-5, BUT 20-25% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM	
							BLOWS PER INCH (1-3-3-2-3-3-3-4-3-4-3-4-4-5-4-5-5-5)	
							SILTY SAND, WIDELY GRADED, 25-35% SUBANGULAR TO SUBROUNDED GRAVEL TO 1.3 INCH MAXIMUM, COARSE TO FINE SAND, 12-20% SLIGHTLY PLASTIC FINES, BROWN	

LEGEND / NOTES	S_ SPLIT BARREL SAMPLE	1. DATUM IS MEAN SEA LEVEL	BORING LOG	
	UNDISTURBED SAMPLES (U.D.S.)	UNLESS OTHERWISE INDICATED		
	US_ SHELBY TUBE	2. BLOWS REQUIRED TO DRIVE		
	UF_ FIXED PISTON	2" O.D. SAMPLE SPOON 6" OR		
	UO_ OSTERBERG	DISTANCE SHOWN USING 140 lb	BEAVER VALLEY POWER STATION UNIT 2	
	UD_ DENISON	HAMMER FALLING 30"		
	UP_ PITCHER	* INDICATES USE OF 300 lb		
	N_ STD. PENETRATION	HAMMER		
	RESISTANCE BLOWS/FT	3. DENOTES INCHES OF PENETR.	DUQUESNE LIGHT COMPANY PITTSBURGH, PENNSYLVANIA	
		OF UNDISTURBED SAMPLER		
		4. DENOTES INCHES OF		
		UNDISTURBED SAMPLE		
	GROUNDWATER	RECOVERY	12241-GSK-145A	
	** RECOVERY INFORMATION	5. UNIFIED SOIL CLASSIFICATION		
	NOT AVAILABLE	SYSTEM		

BORING <u>B-3009</u>										
SHEET <u>2</u> OF <u>2</u>										
SITE / LOCATION <u>BEAVER VALLEY POWER STATION UNIT 2</u>					J.O. NO. <u>12241</u>					
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL	SAMPLE DESCRIPTION			FIELD AND LAB. TEST RESULTS / COMMENTS
% REC										
665	15	S	7				BLOWS PER INCH (2-4-4-4-5-5-5-5-5-6-6-6-6-7-6-7) <u>SILTY SAND</u> , WIDELY GRADED, 21% SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, 20% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL BLOWS PER INCH (1-3-4-4-4-3-5-2-4-4-2-4-4-3-3-4-3-4)			
		S	8	24-34-39 44%	73	SM				
		S	9	19-21-21 56%	42	SM				
660	20						BLOWS PER INCH (2-2-4-3-4-3-4-4-3-3-3-4-3-4-3-4-3) <u>SILTY SAND</u> , WIDELY GRADED, 25-30% SUBANGULAR TO SUBROUNDED GRAVEL TO 1.0 INCH MAXIMUM, COARSE TO FINE SAND, 12-20% SLIGHTLY PLASTIC FINES, BROWN BLOWS PER INCH (1-2-2-2-2-3-2-3-2-3-3-3-3-3-4-3-4)			
		S	10	18-21-20 39%	41	SM				
		S	11	12-16-20 39%	36	SM				
655	25	S	12	28-24-23 56%	47	SM	BLOWS PER INCH (7-5-5-4-4-3 5-3-4-4-4-4 4-3-4-5-3-4) <u>SILTY SAND</u> , WIDELY GRADED, 25-35% SUBANGULAR TO SUBROUNDED GRAVEL, 1.1 INCH MAXIMUM, COARSE TO FINE SAND, 12-20% SLIGHTLY PLASTIC FINES, BROWN (5-15-30/0.5): BLOWS PER INCH (5-15-30/0.5): <u>SILTY SAND</u> , WIDELY GRADED, 25-30% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.7 INCH MAXIMUM, COARSE TO FINE SAND, 12-20% FINES, BROWN			
		S	13	50/24		SM				
END OF BORING AT 26.55 FEET										

311028

NOTE: FOR BORING SUMMARY AND
LEGEND INFO. SEE SHEET 1

STONE & WEBSTER ENG. CORP

ISSUED BY

DATE 9/19/1916

BORING NO. B-3009

SHEET 2 OF 2

SITE / LOCATION		BEAVER VALLEY POWER STATION - UNIT 2		J.O. NO.	12241	BORING	B-3013
COORDINATES		N 3956.4	E 8145.0	GROUND ELEV. (1)	680 FEET	SHEET 1 OF 2	
INCLINATION		VERTICAL	BEARING	LOGGED BY		S. REYNOLDS/R. HIXE	
DATE: START / FINISH		7/16/76	/ 7/16/76	CONTRACTOR / DRILLER		PENNA DRILLING	
STATIC GROUNDWATER DEPTH / DATE		13 FEET	/ 7/16/76	DRILL RIG TYPE			
DEPTH TO BEDROCK				TOTAL DEPTH DRILLED		39.5 FEET	
METHODS:							
DRILLING SOIL		3 1/8" ROLLER BIT TO ADVANCE HOLE					
SAMPLING SOIL		2" O.D. SPLIT SPOON					
DRILLING ROCK		NONE					
SPECIAL TESTING OR INSTRUMENTATION							
REMARKS							

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR U.D.S. PENETRATIONS (3)	SPT N VALUES OR U.D.S. REC. (4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS
680	0							
		S	1	4-6	10		NO RECOVERY. BLOWS/INCH: 2/3"-2/3"-2/3"-1-1-1-1-1	
675	5	S	2	7-8 67%	14	GW-GM	SANDY GRAVEL, WELL GRADED, SUBANGULAR TO 1.2 INCH MAXIMUM, 39% COARSE TO FINE SAND, 11% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL, SLIGHT TRACE OF MICA. BLOWS/INCH: 1-1-1-2-1-1 / 1-1-1-1-1-1 / 1-2-1-1-1-2	
		S	3	10-12-12 56%	24	GW	SANDY GRAVEL, SAME AS ABOVE, EXCEPT LESS THAN 7% FINES, PIECE OF SANDSTONE IN SHOE. BLOWS/INCH: 2-2-1-2-2-1 / 2-3-2-2-2-1 / 2-2-2-2-2-2	
		S	4	9-15-18 72%	33	GW	SANDY GRAVEL, SAME AS ABOVE, GRAVEL TO 1.0 INCH MAXIMUM. BLOWS/INCH: 1-2-1-1-2-2 / 2-3-2-3-2-3 / 3-4-2-3-3-3	
670	10	S	5	12-15-15 44%	30	SM	SILTY SAND, WIDELY GRADED, 37% SUBANGULAR GRAVEL TO 1.2 INCH MAXIMUM COARSE TO FINE SAND, 20% NONPLASTIC FINES, BROWN, SLIGHT REACTION TO HCL, SLIGHT TRACE OF MICA. BLOWS/INCH: 1-1-2-3-2-3 / 3-2-3-2-3-2 / 2-2-3-3-2-3	
		S	6	11-17-23 39%	40	SM	GRAVELLY SAND, SAME AS ABOVE, 5-8% NONPLASTIC FINES. BLOWS/INCH: 1-1-1-2-3-3 / 2-3-3-3-3-3 / 3-4-4-3-4-5	
		S	7	12-14-9 17%	23	SM	SILTY SAND, WIDELY GRADED, 42% SUBANGULAR GRAVEL TO 1.2 INCH MAXIMUM COARSE TO FINE SAND, 13% NONPLASTIC FINES, BROWN, POCKET OF LIGNITE, NO REACTION TO HCL. BLOWS/INCH: 1-2-2-2-2-3 / 2-3-2-3-2-2 / 2-2-1-1-1-2	

LEGEND / NOTES	S_ SPLIT BARREL SAMPLE	1. DATUM IS MEAN SEA LEVEL	BORING LOG			
	UNDISTURBED SAMPLES (U.D.S.)	UNLESS OTHERWISE INDICATED				
	US_ SHELBY TUBE	2. BLOWS REQUIRED TO DRIVE				
	UF_ FIXED PISTON	2" O.D. SAMPLE SPOON 6" OR				
	UO_ OSTERBERG	DISTANCE SHOWN USING 140 lb.	BEAVER VALLEY POWER STATION - UNIT 2 DUQUESNE LIGHT COMPANY PITTSBURGH, PENNSYLVANIA			
	UD_ DENISON	HAMMER FALLING 30"				
	UP_ PITCHER	*INDICATES USE OF 300 lb				
	N_ STD. PENETRATION	HAMMER				
	RESISTANCE BLOWS/FT	3. DENOTES INCHES OF PENETR.	12241-GSK-146A STONE & WEBSTER ENG. CORP.			
	∇ GROUNDWATER	OF UNDISTURBED SAMPLER				
		4. DENOTES INCHES OF				
		UNDISTURBED SAMPLE				
		RECOVERY	ISSUED BY	DATE	BORING NO.	SHEET
		5. UNIFIED SOIL CLASSIFICATION	<i>CMH</i>	8/13/1976	B-3013	1 OF 2
		SYSTEM				

SITE / LOCATION										BEAVER VALLEY POWER STATION - UNIT 2		J.C. NO. 12241		BORING R-3013		SHEET 2 OF 2	
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(S)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL	SAMPLE DESCRIPTION			FIELD AND LAB TEST RESULTS / COMMENTS							
665	15																
		S	8	11-27-26 44%	53	SP-SM	GRAVELLY SAND, POORLY GRADED, 35-45% SUBANGULAR GRAVEL TO 1.2 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY MEDIUM TO FINE, 3-5% NONPLASTIC FINES, BROWN AND LIGHT GRAY, (2) REACTION TO HCL. BLOWS/INCH: 1-1-2-3-2 / 3-8-5-3-3-5 / 3-6-4-5-5-5										
		S	9	7-14-16 56%	30	SM	SILTY SAND, WIDELY GRADED, 29% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, COARSE TO FINE SAND, 15% NONPLASTIC FINES, BROWN, NO REACTION TO HCL. BLOWS/INCH: 1-1-1-1-2-1 / 3-2-2-2-3-2 / 2-3-3-2-3-3										
660	20																
		S	10	9-15-17 56%	32	SM	GRAVELLY SAND, POORLY GRADED, 30-35% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 5-8% FINES, BROWN, NO REACTION TO HCL. BLOWS/INCH: 1-1-1-1-2-3 / 2-2-3-2-3-3 / 3-3-2-4-2-3										
		S	11	7-22-21 28%	43	GP-GM	SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBANGULAR TO 1.2 INCH MAXIMUM, 40-45% COARSE TO FINE SAND, 3-5% FINES, BROWN, NO REACTION TO HCL. BLOWS/INCH: 1-1-1-1-1-2 / 3-3-4-4-3-5 / 3-3-5-4-3-3										
655	25																
		S	12	9-18-24 72%	42	SM	SILTY SAND, UNIFORM, LESS THAN 5% SUBROUNDED GRAVEL TO 0.3 INCH MAXIMUM, FINE SAND, 8-12% NONPLASTIC FINES, BROWN, NO REACTION TO HCL. BLOWS/INCH: 1-1-1-2-2-2 / 3-3-2-3-3-4 / 4-4-3-5-3-5										
		S	13	15-25-29 50%	54	SM	GRAVELLY SAND, POORLY GRADED, 30-35% SUBANGULAR TO SUBROUNDED TO 1.0 INCH MAXIMUM COARSE TO FINE SAND, MOSTLY FINE, 5-8% FINES, BROWN, NO REACTION TO HCL. BLOWS/INCH: 1-2-2-3-4-3 / 4-3-4-5-5-4 / 6-4-5-4-5-5										
		S	14	10-12-22 67%	34	SM	SILTY SAND, WIDELY GRADED, 12% SUBROUNDED GRAVEL TO 0.3 INCH MAXIMUM COARSE TO FINE, MOSTLY FINE, SAND, 20% NONPLASTIC FINES, BROWN, WITH A FEW POCKETS OF BLACK LIGNITE, NO REACTION TO HCL. BLOWS/INCH: 1-2-2-2-2-1 / 2-2-2-1-3-2 / 2-3-3-5-4-5 TOP 5": LIGNITE										
650	30																
		S	15	18-20-196 61%	316	SM	BOTTOM 6": SILTY SAND, WIDELY GRADED, 15-20% SUBANGULAR AND SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 10-15% NONPLASTIC FINES, BROWN, NO REACTION TO HCL. BLOWS/INCH: 1-2-3-2-5-5 / 5-8-7-23-23-54 / 53-43-39-26-22-13										
		S	16	11-19-23 67%	42	SP-SM	GRAVELLY SAND, POORLY GRADED, 15-20% SUBROUNDED GRAVEL TO 1.3 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 5-10% NONPLASTIC FINES, BROWN, NO REACTION TO HCL. BLOWS/INCH: 1-1-2-2-2-3 / 4-3-3-3-3-3 / 4-3-4-4-3-5										
645	35																
		S	17	20-26-25 67%	51	SP-SM	GRAVELLY SAND, POORLY GRADED, 20-30% SUBANGULAR TO SUBROUNDED TO 1.0 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 5-8% NONPLASTIC FINES, BROWN, NO REACTION TO HCL. BLOWS/INCH: 1-2-3-4-5-5 / 5-4-5-4-3-5 / 3-4-3-5-5-5										
		S	18	26-79-65 67%	164	GP	SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO 1.0 INCH MAXIMUM, 40-45% COARSE TO FINE SAND, MOSTLY FINE, 3-5% FINES, BROWN, NO REACTION TO HCL. BLOWS/INCH: 1-1-3-3-9-9 / 18-27-26-15-10-8 / 12-9-10-11-10-13										
		S	19	40-66-39 56%	105	SP-SM	GRAVELLY SAND, POORLY GRADED, 40-45% SUBANGULAR GRAVEL TO 1.3 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 5-8% NONPLASTIC FINES, BROWN, QUICK REACTION TO HCL. BLOWS/INCH: 1-3-6-9-9-12 / 15-11-18-8-6-8 / 6-7-7-6-6-7										
640.5	39.5	END OF BORING AT 39.5 FEET															
911030																	

NOTE: FOR BORING SUMMARY AND LEGEND INFO. SEE SHEET 1.

STONE & WEBSTER ENG. CORP.

ISSUED BY *AMC* DATE *9/13/96*

BORING NO. B-3013 SHEET 2 OF 2

12241-GSK-126B

SITE / LOCATION		BEAVER VALLEY POWER STATION - UNIT 2		J.O. NO.	12241	BORING	B-3019
COORDINATES		N 3962.83	E 8148.25	GROUND ELEV. (1)	680 FEET	SHEET 1 OF 2	
INCLINATION		VERTICAL	BEARING	LOGGED BY		MWCOOPER/WJOLESZEMSKI	
DATE : START / FINISH		7-24-76	/	7-25-76	CONTRACTOR / DRILLER		PENNA DRILLING/GOLLIHUE
STATIC GROUNDWATER DEPTH / DATE		13 Feet	/	7/25/76	DRILL RIG TYPE		
DEPTH TO BEDROCK				TOTAL DEPTH DRILLED		39.5 FEET	
METHODS :							
DRILLING SOIL		3 1/8 " ROLLER BIT TO ADVANCE HOLE					
SAMPLING SOIL		2" O.D. SPLIT SPOON					
DRILLING ROCK		NONE					
SPECIAL TESTING OR INSTRUMENTATION							
REMARKS							

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR U.S. PENETRATIONS (3)	SPT N VALUES OR U.S. REC (4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS
680	0							
		S	1	4-6-9 44%	15	SM	1/1.5-3/4.5/1-1-1-1-1/2-1-1-2-1-2 BLOWS/INCH SILTY SAND, WIDELY GRADED, 15% SUBANGULAR GRAVEL TO 1 INCH MAXIMUM, 12-15% NONPLASTIC FINES, DARK BROWN, STRONG REACTION TO HCL.	
		S	2	6-6-7 44%	13		1-1-1-1-1/1-1-1-1-1/1-1-2-1-1-1 BLOWS /INCH SANDY GRAVEL, WELL GRADED, 45% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, 44% COARSE TO FINE SAND, 11% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL	
675	5	S	3	6-10-11 33%	21	GW GM	1-1-1-1-1/2-1-2-2-1-2/2-2-2-1-2-2 BLOWS/INCH SANDY GRAVEL, SIMILAR TO ABOVE	
		S	4	12-10-15 39%	25	SM	1-2-2-3-1-3/2-1-2-2-1-2/1-1-3-3-3-4 BLOWS/INCH SANDY GRAVEL, WELL GRADED, MOSTLY SUBANGULAR GRAVEL TO 1.2 INCH MAXIMUM (SOME FRESHLY FRACTURED GRAVEL), 36% COARSE TO FINE SAND, 11% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL	
		S	5	16-17-16 67%	33	SP	1-1-2-4-3-5/2-3-3-2/3-3-3-2-3-2 BLOWS/INCH GRAVELLY SAND, 1 Y GRADED, 25-35% SUBROUNDED TO SUBANGULAR GRAVEL TO 1.3 INCH MAXIMUM, COARSE TO FINE SAND, LESS THAN 5% NONPLASTIC FINES, DARK BROWN, NO REACTION TO HCL.	
670	10	S	6	13-11-14 73%	25	SP	2-2-2-3-2-2/2-2-2-2-1/3-3-2-2-2-2 BLOWS/INCH GRAVELLY SAND, SIMILAR TO ABOVE EXCEPT 30-40% GRAVEL TO 1 INCH MAXIMUM.	
		S	7	10-16-18 47%	34	SM	1-2-1-2-2-2/3-2-2-3-2-4/3-3-3-3-3-3 BLOWS/INCH SILTY SAND, WIDELY GRADED, 36% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, 14% NONPLASTIC FINES, BROWN, NO REACTION TO HCL	
664	15	S	8	14-16-18 **	34	SM	2-2-3-2-2-3/3-2-2-3-2-4/3-2-3-3-4-3 BLOWS/INCH SILTY SAND, SIMILAR TO ABOVE.	

LEGEND / NOTES	S_ SPLIT BARREL SAMPLE UNDISTURBED SAMPLES (U.S.) US_ SHELBY TUBE UF_ FIXED PISTON UO_ OSTERBERG UD_ DENISON UP_ PITCHER N_ STD. PENETRATION RESISTANCE BLOWS/FT GROUNDWATER ** RECOVERY INFORMATION NOT AVAILABLE	1. DATUM IS MEAN SEA LEVEL UNLESS OTHERWISE INDICATED 2. BLOWS REQUIRED TO DRIVE 2" O.D. SAMPLE SPOON 6" OR DISTANCE SHOWN USING 140 lb HAMMER FALLING 30" *INDICATES USE OF 300 lb HAMMER 3. DENOTES INCHES OF PENETR. OF UNDISTURBED SAMPLER 4. DENOTES INCHES OF UNDISTURBED SAMPLE RECOVERY 5. UNIFIED SOIL CLASSIFICATION SYSTEM	BORING LOG BEAVER VALLEY POWER STATION - UNIT 2 DUQUESNE LIGHT COMPANY PITTSBURGH, PENNSYLVANIA 12241-GSK-148A STONE & WEBSTER ENG. CORP.	ISSUED BY 	DATE 9/12/96	BORING NO. B-3019	SHEET 1 OF 2
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91001

SITE / LOCATION BEAVER VALLEY POWER STATION - UNIT 2 J.O. NO. 12241										BORING <u>B-3019</u>
										SHEET <u>2</u> OF <u>2</u>
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS		
1 REC										
665	15	S	8				5-12% NONPLASTIC FINES.			
		S	9	12-15-24 56%	39		GP- 1-2-2-2-3-2/2-2-2-3-2-4/3-2-4-5-4-6 BLOWS/INCH GM SANDY GRAVEL, POORLY GRADED, ANGULAR TO SUBROUNDED GRAVEL TO 1.3 INCH MAXIMUM, 35-45% COARSE TO FINE SAND, 7-12% NONPLASTIC FINES, BROWN, FEW SMALL POCKETS LIGNITE, NO REACTION TO HCL. SHOES BLOCKED BY SANDSTONE			
		S	10	14-13-15 56%	28		GP- 2-2-3-3-2-2/2-3-2-2-2/2-2-2-3-3 BLOWS/INCH GM TOP 4": SANDY GRAVEL, SIMILAR TO ABOVE. BOTTOM 6": SAND, UNIFORM, MEDIUM, 5-10% FINES, BROWN, NO REACTION TO HCL.			
660	20	S	11	9-20-20 50%	40		SP- 1-2-1-2-2-1/3-3-3-3-5-2/5-3-3-3-3 BLOWS/INCH SM SAND, UNIFORM, 5% GRAVEL, FINE SAND (FEW PIECES OF COARSE SAND), 10% NON- PLASTIC FINES, BROWN, NO REACTION TO HCL			
		S	12	11-14-16 56%	30		GP- 1-2-2-2-2-2/3-2-2-3-2-2/2-2-3-2-3-4 BLOWS/INCH GM SANDY GRAVEL, POORLY GRADED, SUBROUND GRAVEL TO 1.0 INCH MAXIMUM, 35-45% COARSE TO FINE SAND, 7-12% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.			
655	25	S	13	14-20-28 56%	48		SP- 2-2-2-2-3-3/3-2-3-4-4-4/4-5-5-5-4-5 BLOWS/INCH SAND, UNIFORM, FINE, LESS THAN 5% FINES, BROWN, NO REACTION TO HCL.			
		S	14	11-24-23 61%	47		GP- 1-2-2-2-2-2/3-4-3-5-5/3-3-4-4-5-4 BLOWS/INCH GM SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.3 INCH MAXIMUM, 20-30% COARSE TO FINE SAND, 5-10% NONPLASTIC FINES, BROWN, NO REACT- ION TO HCL.			
		S	15	15-14-18 56%	32		SP- 2-3-3-3-2-2/2-1-4-2-2-3/2-3-4-3-2-4 BLOWS/INCH LIGNITE, INTERBEDDED WITH SMALL LAYERS OF UNIFORM, FINE, SAND.			
650	30	S	16	13-27-34 67%	61		SP- 1-2-2-2-3-3/4-5-3-5-5/5-5-5-5-7 BLOWS/INCH TOP 4": SAND, UNIFORM, FINE, LESS THAN 5% FINES, BROWN, NO REACTION TO HCL. SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.1 INCH MAXIMUM, 35-45% COARSE TO FINE SAND, 5-10% FINES, BROWN, NO REACTION TO HCL. ROLLER BIT THROUGH BOULDER 31.7-32.3			
		S	17	5-16-21 72%	37		SM 1/3"-1-1-2-1-2-3-3-4-3/4-3-3-4-3-4 BLOWS/INCH SILTY SAND, UNIFORM, 3% GRAVEL, FINE SAND, (FEW PIECES OF COARSE SAND), 21% NONPLASTIC FINES, BROWN, NO REACTION TO HCL			
645	35	S	18	8-10-15 61%	25		SM 1-1-1-1-2-2/2-1-2-1-2-2/2-2-2-2-3-4 BLOWS/INCH SILTY SAND, SIMILAR TO ABOVE EXCEPT FEW PIECES GRAVEL			
		S	19	19-33-33 56%	66		SM- 1-2-3-4-4-5/8-6-6-6-4-3/3-4-8-8-5-5 BLOWS/INCH SP SILTY SAND, POORLY GRADED, 15-25% SUBANGULAR GRAVEL TO 1.2 INCH MAXIMUM, COARSE TO FINE MOSTLY FINE SAND, 10-20% SLIGHTLY PLASTIC FINES, LIGHT YELLOWISH BROWN, NO REACTION TO HCL. BOTTOM 2": LIMESTONE, FRESHLY FRACTURED, COATED WITH DEEP REDDISH BROWN MATRIX.			
		S	20	43-37-66 78%	103		SM 2-6-9-8-10-8/5-5-5-9-6-7/10-11-12-11-12-10 SILTY SAND, WIDELY GRADED, 31% MOSTLY SUBANGULAR GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE, MOSTLY FINE SAND 22% NONPLASTIC FINES, BROWN, SLIGHT REACTION TO HCL			
END OF BORING AT 39.5 FEET										
911032										

NOTE: FOR BORING SUMMARY AND
LEGEND INFO. SEE SHEET 1

STONE & WEBSTER ENG. CORP

ISSUED BY
CAF

DATE
2/12/2016

BORING NO.
B-3019

SHEET
2 OF 2

SITE / LOCATION										BORING B-3021	
BEAVER VALLEY POWER STATION - UNIT NO. 2										SHEET 2 OF 2	
J.O. NO. 12241											
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS	PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL	SAMPLE DESCRIPTION	FIELD AND LAB. TEST RESULTS / COMMENTS		
665	15	S	9	9-15-12	50%	27	GP-QM	1-1-1-2-2-2/2-3-3-2-2-3/2-3-2-2-1-2 SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.35 INCH MAXIMUM, 35-40% COARSE TO FINE SAND, 5-10% FINES, BROWN, NO REACTION TO HCL.			
		S	10	10-12-14	72%	26	GC	1-2-2-2-1-2/2-2-2-2-2/2-2-2-2-3 CLAYEY SAND, WIDELY GRADED, 39% SUBROUNDED TO SUBANGULAR GRAVEL TO 1.0 INCH MAXIMUM, (MUCH FRESHLY FRACTURED GRAVEL), COARSE TO FINE SAND, 16% MODERATELY PLASTIC FINES, BLACKISH BROWN, NO REACTION TO HCL.			
660	20	S	11	8-12-15	67%	27	SP	1-1-1-2-1-2/2-2-1-2-2-3/3-2-2-3-3-2 GRAVELLY SAND, POORLY GRADED, 23% MOSTLY SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, COARSE TO FINE, MOSTLY MEDIUM AND FINE SAND, 9% NONPLASTIC FINES, BROWN, NO REACTION TO HCL; SANDY GRAVEL, POORLY GRADED, SUBANGULAR GRAVEL TO 1.1 INCH MAXIMUM, 28% COARSE TO FINE, MOSTLY COARSE AND MEDIUM SAND, 8% MODERATELY PLASTIC FINES, BROWN, NO REACTION TO HCL.			
		S	12	11-15-15	56%	30	SP-SM	2-2-2-2-1-2/3-2-2-2-3/3-2-2-2-3-3 GRAVELLY SAND, POORLY GRADED, 44% SUBANGULAR GRAVEL TO 1.4 INCH MAXIMUM, (SOME FRESHLY FRACTURED GRAVEL) COARSE TO FINE, MOSTLY FINE SAND, 8% NONPLASTIC FINES, BROWN, NO REACTION TO HCL.			
		S	13	15-12-16	67%	28	SP	TOP 7 INCH: GRAVELLY SAND, POORLY GRADED, 10-15% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.6 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE LESS THAN 5% FINES, BROWN, NO REACTION TO HCL; BOTTOM INCH: SANDY GRAVEL POORLY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 0.9 INCH MAXIMUM, 35-45% COARSE TO FINE SAND, 3-8% FINES, BROWN, WITH TRACE LIGNITE, NO REACTION TO HCL.			
655	25	S	14	10-25-29	89%	54	GP-QM	2-3-2-3-2-3/3-2-2-2-1/2-3-2-3-3-3 TOP: GRAVELLY SAND, POORLY GRADED, 10-15% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.6 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, LESS THAN 5% FINES, BROWN, NO REACTION TO HCL; BOTTOM: GRAVELLY SAND, SIMILAR TO ABOVE, EXCEPT 30-40% GRAVEL TO 1.4 INCH MAXIMUM.			
		S	15	15-18-15	78%	33	SP	2-2-2-3-3-3/2-3-4-3-3-3/2-2-3-3-2-3 GRAVELLY SAND, SIMILAR TO ABOVE, EXCEPT GRAVEL TO 1.1 INCH MAXIMUM, AND MOSTLY COARSE TO MEDIUM SAND, WITH ONE 3.0 INCH LAYER OF:			
		S	16	7-26-38	78%	64	SM	SILTY SAND, WIDELY GRADED, 10-15% GRAVEL, MOSTLY VERY FINE SAND, 12-20% FINES, BROWN			
650	30	S	17				SP	1-1-1-2-1-2/2-2-4-5-6-6-5/5-6-6-5-7-9 TOP 4 INCH: SILTY SAND WIDELY GRADED, LESS THAN 5% GRAVEL TO 0.3 INCH MAXIMUM, MOSTLY FINE TO VERY FINE SAND, 10-30% NON TO SLIGHTLY PLASTIC FINES, MOTTLED BROWN AND BLACK, SLIGHT REACTION TO HCL. MIDDLE 3 INCH: LIGNITE, NO REACTION TO HCL. BOTTOM 7 INCH: GRAVELLY SAND, POORLY GRADED, 35-45% SUBANGULAR TO SUBROUNDED GRAVEL TO 1.1 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY COARSE TO MEDIUM, 5-12% FINES, BROWN, VERY SLIGHT REACTION TO HCL.			
		S	18	12-14-17	72%	31	SP	1-2-2-2-3-2/3-2-2-2-2-3/3-3-3-3-2-3 GRAVELLY SAND, POORLY GRADED, 30-40% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, LESS THAN 5% FINES, LIGHT BROWN, NO REACTION TO HCL.			
645	35	S	19	13-15-39	56%	54	SP-GP-QM	2-2-2-3-2-2/2-2-2-3-2-4/6-5-5-6-10-7 TOP: SAND, UNIFORM, LESS THAN 2% GRAVEL TO 0.4 INCH MAXIMUM, FINE SAND, LESS THAN 5% FINES, LIGHT BROWN, NO REACTION TO HCL. BOTTOM: SANDY GRAVEL, POORLY GRADED, GRAVEL TO 1.0 INCH MAXIMUM, 25-35% COARSE TO FINE SAND, 5-10% FINES, NO REACTION TO HCL.			
		S	20	26-39-28	67%	67	QM	3-4-4-6-5-6/5-5-7-7-2/7/5-5-5-1-6-5 TOP: SILTY GRAVEL, WIDELY GRADED, SUBANGULAR TO ANGULAR GRAVEL, 10-25% COARSE TO FINE SAND, 12-20% SLIGHTLY PLASTIC FINES, BROWN, NO REACTION TO HCL. BOTTOM: SILTY SAND, WIDELY GRADED, 10-20% SUBROUNDED GRAVEL TO 1.0 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY COARSE AND MEDIUM, 20-30% NONPLASTIC FINES, BROWN, NO REACTION TO HCL 8.8 FEET			
				25-60	84		GP	1-2-3-5-6-7/8-10-12-9-11-12/10-11-13-50/0.4 INCHES 20A TOP: SANDY GRAVEL, SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, 30-35% COARSE TO FINE, MOSTLY COARSE AND MEDIUM SAND, 8-12% NONPLASTIC FINES, BROWN, MODERATE REACTION TO HCL. - VERY SMALL SAMPLE			
				81%	4"		QM	20A BOTTOM: SILTY GRAVEL, WIDELY GRADED, 38% MOSTLY ANGULAR GRAVEL TO 1.3 INCH MAXIMUM, (SOME FRESHLY FRACTURED GRAVEL) 37% COARSE TO FINE SAND, 25% NON TO SLIGHTLY PLASTIC FINES, BROWN, STRONG REACTION TO HCL.			
							QM	20B: SANDY SILT, NON TO SLIGHTLY PLASTIC, 17% SUBANGULAR GRAVEL TO 0.8 INCH MAXIMUM, 18% COARSE TO FINE SAND, BROWN, STRONG REACTION TO HCL.			
END OF BORING AT 38.8 FEET											

NOTE: FOR BORING SUMMARY AND LEGEND INFO. SEE SHEET 1.



STONE & WEBSTER ENG. CORP

ISSUED BY

DATE

2/10/10

BORING NO.

B-3021

SHEET

2 OF 2

SITE / LOCATION		BEAVER VALLEY POWER STATION - UNIT 2		J.O. NO.	12241	BORING	B-3024
COORDINATES		N 3962.83	E 8133.75	GROUND ELEV. (I)	680	SHEET 1 OF 2	
INCLINATION		VERTICAL		BEARING		LOGGED BY R. McGAIN / T. BENNER	
DATE : START / FINISH		7-26-76 / 7-26-76		CONTRACTOR / DRILLER		PENNA DRILLING	
STATIC GROUNDWATER DEPTH / DATE		13 FEET / 7-26-76		DRILL RIG TYPE			
DEPTH TO BEDROCK				TOTAL DEPTH DRILLED		39 FEET	
METHODS :							
DRILLING SOIL		3 1/8" HOLLOW BIT TO ADVANCE HOLE					
SAMPLING SOIL		2.0" O.D. SPLIT SPOON					
DRILLING ROCK		NONE					
SPECIAL TESTING OR INSTRUMENTATION							
REMARKS							

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR U.D.S. PENETRATION (3)	SPT N VALUES OR U.D.S. REC (4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION	FIELD AND LAB TEST RESULTS, COMMENTS
680	0							
		S	1	7-7-10 50%	19	SM	SILTY SAND, WIDELY GRADED, 30-40% SUBANGULAR TO SUBROUNDED GRAVEL TO GREATER THAN 1.5 INCH INCLUDING LARGE FRAGMENTS ORANGE SANDSTONE, COARSE TO FINE SAND, MOSTLY COARSE, 10-15% NONPLASTIC FINES, MODERATE REACTION TO HCL, ESPECIALLY IN ORANGE SANDSTONE, MOTTLED DARK BROWN/ORANGE BROWN. BLOWS/INCH: 1-2-1-1-1-1 / 2-1-1-2-1-2 / 2-2-2-1-2-1	
675	5	S	2	6-10-12 44%	22	SM	SILTY SAND, WIDELY GRADED, 35% SUBANGULAR GRAVEL TO 1.0 INCH MAXIMUM COARSE TO FINE SAND, 15% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCL. BLOWS/INCH: 1-1-1-1-1-1 / 2-2-1-2-2-1 / 2-2-2-2-2-2	
		S	3	12-18-16 44%	34	SM	SILTY SAND, SIMILAR TO ABOVE. BLOWS/INCH: 1-1-3-2-3-2 / 4-3-3-3-3-3 / 2-3-3-3-3-2-3	
		S	4	26-30-31 33%	61	SM	GRAVELLY SILTY SAND, WIDELY GRADED, 20-40% SUBROUNDED TO ROUNDED GRAVEL TO 1 INCH, COARSE TO FINE SAND, 15-20% NONPLASTIC TO SLIGHTLY PLASTIC FINES, FRAGMENTS LIGNITE, SLIGHT REACTION TO HCL, MOSTLY DARK BROWN, DENSE. BLOWS/INCH: 4-3-4-4-5-6 / 4-6-6-5-5-6 / 5-7-6-5-6-6	
670	10	S	5	14-17-15 28%	32	SP-SM	SAND, POORLY GRADED, 5-10% GRAVEL TO 1 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY FINE, 5-10% NONPLASTIC FINES, DENSE, BROWN. BLOWS/INCH: 2-2-2-2-3-3 / 3-2-3-4-3-2 / 3-2-3-2-2-3	
		S	6	20-15-15 39%	30	GM	SILTY GRAVEL, WIDELY GRADED, ANGULAR TO 1.0 INCH MAXIMUM, 29% COARSE TO FINE SAND, 12% NONPLASTIC FINES, YELLOWISH BROWN, SLIGHT REACTION TO HCL. BLOWS/INCH: 2-3-4-3-4-4 / 3-2-3-2-3-2 / 2-2-2-2-4-3	
665	15	S	7	50% 16-20-18	38	SP	GRAVELLY SAND, POORLY GRADED, 30-40% SUBROUNDED TO ROUNDED GRAVEL TO GREATER THAN 1 INCH. COARSE TO FINE SAND, MOSTLY FINE, 5-10% NONPLASTIC FINES, DENSE, BROWN, SLIGHT REACTION TO HCL.	

LEGEND / NOTES	S_ SPLIT BARREL SAMPLE UNDISTURBED SAMPLES (U.D.S.) US_ SHELBY TUBE UF_ FIXED PISTON UO_ OSTERBERG UC_ DENISON UP_ PITCHER N_ STD. PENETRATION RESISTANCE BLOWS/FT GROUNDWATER ** RECOVERY INFORMATION NOT AVAILABLE	1. DATUM IS MEAN SEA LEVEL UNLESS OTHERWISE INDICATED 2. BLOWS REQUIRED TO DRIVE 2" O.D. SAMPLE SPOON 6" OR DISTANCE SHOWN USING 140 lb HAMMER FALLING 30" * INDICATES USE OF 300 lb HAMMER 3. DENOTES INCHES OF PENETR OF UNDISTURBED SAMPLER 4. DENOTES INCHES OF UNDISTURBED SAMPLE RECOVERY 5. UNIFIED SOIL CLASSIFICATION SYSTEM	BORING LOG BEAVER VALLEY POWER STATION - UNIT 2 DUQUESNE LIGHT COMPANY PITTSBURGH, PENNSYLVANIA 12241-GEX-153A STONE & WEBSTER ENG. CORP.
	ISSUED BY DATE 2/13/10		
	BORING NO. B-3024 SHEET 1 OF 2		

BORING B-3024									
SHEET 2 OF 2									
SITE / LOCATION BEAVER VALLEY POWER STATION - UNIT 2 J.O. NO. 12241									
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP SYMBOL (5)	FIELD AND LAB. TEST RESULTS / COMMENTS		
665	15	S	7				BLOWS/INCH: 1-2-4-3-3-3 / 3-3-3-4-3-4 / 3-3-2-3-4-3		
		S	8	15-13-16 44%	29	SP	SAND, UNIFORM, 2-5% ROUNDED GRAVEL TO 1 INCH, MOSTLY FINE SAND. 2-5% NONPLASTIC FINES. VERY THIN INTERBEDS DETRITAL LIGNITE, COMPACT TO DENSE BROWN. BLOWS/INCH: 2-3-3-3-2-2 / 1-2-3-3-2-2 / 2-3-3-3-2-3		
660	20	S	9	18-13-22 44%	35	SP-SM	GRAVELLY SAND, POORLY GRADED, 20-30% SUBROUNDED TO ROUNDED GRAVEL TO 1 INCH, MOSTLY FINE SAND, 10-15% NONPLASTIC TO SLIGHTLY PLASTIC FINES, NO REACTION TO HCL, DENSE, BROWN/ORANGE - BROWN. BLOWS/INCH: 2-2-3-2-2-2 / 2-2-2-2-2-3 / 4-3-4-3-4-4		
		S	10	15-16-21 50%	38	SP	GRAVELLY SAND, POORLY GRADED, 15-25% SUBROUNDED TO ROUNDED GRAVEL TO 1 INCH, MOSTLY MEDIUM TO FINE SAND, LESS THAN 5% NONPLASTIC FINES, SLIGHT REACTION TO HCL, DENSE, WET, BROWN. BLOWS/INCH: 2-2-3-3-2-3 / 3-3-2-3-2-3 / 2-3-4-5-4-4		
		S	11	16-16-15 61%	31	SP-SM	GRAVELLY SAND, POORLY GRADED, 30-40% SUBROUNDED TO ROUNDED GRAVEL, MOSTLY FINE TO GREATER THAN 1 INCH, COARSE TO FINE SAND, MOSTLY COARSE, 5-10% NONPLASTIC FINES, WITH OCCASIONAL SMALL POCKETS DARK BROWN SANDY SILT, NO REACTION TO HCL, DENSE, DAMP, BROWN. BLOWS/INCH: 2-3-2-3-4 / 3-2-3-2-3-3 / 2-3-2-3-2-3		
655	25	S	12	21-18-24 61%	42	SM	SILTY SAND, UNIFORM, COARSE TO FINE, MOSTLY FINE, 13% NONPLASTIC FINES, BROWN, NO REACTION TO HCL. BLOWS/INCH: 2-4-5-4-3-4 / 2-3-3-3-4-3 / 3-4-3-5-4-5		
		S	13	20-22-20 **	42	SP-GF	GRAVELLY SAND, POORLY GRADED, 40-50% SUBROUNDED TO ROUNDED GRAVEL TO GREATER THAN 1 1/2 INCH, COARSE TO FINE SAND, 5-10% NONPLASTIC TO SLIGHTLY PLASTIC FINES, COMPACT TO DENSE, MOIST, SLIGHT REACTION TO HCL, OCCASIONAL POCKETS DARK BROWN SILT, BROWN. BLOWS/INCH: 2-4-3-4-4-3 / 4-3-3-4-4-4 / 3-4-3-3-4-3		
650	30	S	14	44-38-29 44%	67	GM-GP	TOP 4": SILTY GRAVEL, WIDELY GRADED, SUBANGULAR, ANGULAR, SUBROUNDED GRAVEL TO 1.35 INCH MAXIMUM, 15-30% COARSE TO FINE SAND, 10-15% FINES, BROWN. BOTTOM 4": SILTY GRAVEL, SIMILAR TO ABOVE BUT DAMP, NOT WET AND FLUID, GRAVEL SUBANGULAR TO SUBROUNDED, NOT ANGULAR. BOTH LAYERS, NO APPARENT REACTION TO HCL. BLOWS/INCH: 3-7-13-9-5-7 / 7-6-7-7-5-6 / 7-4-5-5-4-4		
		S	15	23-20-22 72%	42	SW-SM	GRAVELLY SAND, WELL GRADED, 31% SUBANGULAR GRAVEL TO 0.9 INCH MAXIMUM COARSE TO FINE SAND, 12% NONPLASTIC FINES, BROWN, SLIGHT REACTION TO HCL. BLOWS/INCH: 3-4-4-4-4-4 / 3-4-3-4-3-3 / 4-3-4-3-4-4		
		S	16	22-27-30 72%	57	GP-GM	TOP 4": GRAVEL, POORLY GRADED, BROKEN ANGULAR TO SUBROUNDED TO 1.3 INCH MAXIMUM, 10-15% COARSE TO FINE SAND, 5-10% FINES, BROWN, VERY WET AND SOUPY FINES. GP-GM BOTTOM 8": SANDY GRAVEL, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.0 INCH MAXIMUM, 35-45% COARSE TO FINE SAND, MOSTLY COARSE, 3-8% FINES, NO REACTION TO HCL. BLOWS/INCH: 1-2-3-4-6-6 / 3-4-4-4-5-7 / 4-5-5-5-4-7		
645	35	S	17	21 - 50 5 1/2"			NO RECOVERY. BLOWS/INCH: 3-3-4-3-4-4 / 4-6-5-6-7-22 / 1/2"		
		S	18	18-29-44 61%	73	SM-SP	SILTY SAND, WIDELY GRADED, 30-40% SUBANGULAR TO SUBROUNDED GRAVEL TO 1.0 INCH MAXIMUM, COARSE TO FINE SAND, 10-15% SLIGHTLY PLASTIC FINES, BROWN, VERY SLIGHT REACTION TO HCL. BLOWS/INCH: 2-4-3-3-2-4 / 3-3-3-7-6-7 / 7-7-6-8-8-8		
641	39	S	19	48-74/6" 8.7%		GM	SILTY GRAVEL, WIDELY GRADED, SUBANGULAR TO SUBROUNDED GRAVEL TO 1.0 INCH MAXIMUM, 25-35% COARSE TO FINE SAND, 20-30% SLIGHTLY PLASTIC FINES, BROWN, MODERATE REACTION TO HCL. BLOWS/INCH: 6-5-7-10-11 / 11-11-14-12-11-15		
640	40						END OF BORING AT 39.0 FEET.		

311036

NOTE: FOR BORING SUMMARY AND LEGEND INFO SEE SHEET 1.



STONE & WEBSTER ENG. CORP.

ISSUED BY

DATE

2/13/96

BORING NO.

B-3024

SHEET

2 OF 2

12241-GSK-1538

AMENDMENT 3

S / LOCATION BEAVER VALLEY POWER STATION - UNIT NO. 2 J.O. NO. 12241 BORING B-5011
 COORDINATES N 3892.7 E 8022.5 GROUND ELEV (H) 716.5 SHEET 1 OF 4
 INCLINATION VERTICAL BEARING _____ LOGGED BY W. HANSMIRE/R. J. VET
 DATE : START / FINISH 8/6/76 / 8/8/76 CONTRACTOR / DRILLER PENN DRILLING
 STATIC GROUNDWATER DEPTH / DATE 49.5 FEET / 8/8/76 DRILL RIG TYPE _____
 DEPTH TO BEDROCK _____ TOTAL DEPTH DRILLED 78.0 FEET
 METHODS :
 DRILLING SOIL 3 1/8" ROLLER BIT TO ADVANCE HOLE
 SAMPLING SOIL 2.0" O.D. SPLIT SPOON
 DRILLING ROCK _____
 SPECIAL TESTING OR INSTRUMENTATION _____
 REMARKS _____

ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS(2) OR U.D.S. PENETRATION(3)	SPT N VALUES OR U.D.S. REC(4)	GROUP SYMBOL(5)	SAMPLE DESCRIPTION	FIELD AND LAB TEST RESULTS / COMMENTS
				% REC.	BLOWS/INCH 1/16, 2/3, 2-2-2/3-4-4-4-4			
715		S	1	1-8-23 33%	31	GW- GM	SANDY GRAVEL, WELL GRADED, SUBROUNDED (SOME FRESHLY FRACTURED) TO 1.2 INCH MAXIMUM, 39% COARSE TO FINE SAND, 7% NONPLASTIC FINES, DARK BROWN, STRONG REACTION TO HCl	
		S	2	10-21-28 78%	49	SP	BLOWS/INCH 1-1-2-2-2-2/3-3-3-3-3-3-4-5-5-5-4-5 GRAVELLY SAND, BOTTOM 4 INCHES BROKEN PIECES OF GRAVEL TO 1.5 INCHES, TOP 10 INCHES MEDIUM SAND, POORLY GRADED; BROWN	
5		S	3	24-33-45 67%	78	SP	BLOWS/INCH 24/6, 5-6-5-5-5-7/8-9-7-7-7-7 GRAVELLY SAND, POORLY GRADED, 30% GRAVEL, 0.25 INCH TO 1 INCH, ROUNDED, LIGHT BROWN	
710		S	4	12-30-23 67%	53	GP GM	BLOWS/INCH 12/6, 5-5-5-5-5-5/4-4-4-4-3-4-4 SANDY GRAVEL, POORLY GRADED, SUBROUNDED TO 1.0 INCH MAXIMUM, 33% COARSE TO FINE, MOSTLY FINE SAND, 6% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl	
		S	5	18-34-35 61%	69	SW	BLOWS/INCH 18/6, 5-5-5-6-7-6/7-5-6-6-6-5 GRAVELLY SAND, WELL GRADED, 10 TO 25% GRAVEL TO 1 INCH, FINE TO COARSE SAND, LESS THAN 5% NONPLASTIC FINES, BROWN, 0.2 INCH LIGNITE LAYER, BLACK (LAB SAMPLE CONTAINS LIGNITE)	
10			6	23-23-31 67%	54	SP	BLOWS/INCH 23/6, 4-4-5-3-3-3/4-4-4-5-5-7-6 GRAVELLY SAND, POORLY GRADED; 30% ROUNDED AND SUBANGULAR GRAVEL TO 1 INCH; MEDIUM TO COARSE SAND, BROWN, 1 INCH LIGNITE LAYER AT BOTTOM OF SAMPLE, LESS THAN 10% NONPLASTIC FINES	
705		S	7	17-24-22 67%	46	GP- GM	BLOWS/INCH 2-3-2-3-4-3/4-3-4-4-5-4/4-3-4-3-4-4 SANDY GRAVEL, POORLY GRADED, SUBANGULAR TO SUBROUNDED (SOME FRESHLY FRACTURED) TO 1.0 INCH MAXIMUM, 38% COARSE TO FINE, MOSTLY FINE SAND, 8% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl	
15		S	8				BLOWS/INCH 4-3-3-4-3-3/2-3-5-6-5-9/8-5-6-7-8-8 GRAVELLY SAND, POORLY GRADED; 3 INCHES OF BROKEN UP ROCK	
LEGEND / NOTFS							BORING LOG	
S_ SPLIT BARREL SAMPLE UNDISTURBED SAMPLES (U.D.S) US_ SHELBY TUBE UF_ FIXED PISTON UO_ OSTERBERG UD_ DENISON UP_ PITCHER N_ STD PENETRATION RESISTANCE BLOWS/FT v GROUNDWATER							1. DATUM IS MEAN SEA LEVEL UNLESS OTHERWISE INDICATED 2. BLOWS REQUIRED TO DRIVE 2" O.D. SAMPLE SPOON 6" OR DISTANCE SHOWN USING 140lb HAMMER FALLING 30" * INDICATES USE OF 300lb HAMMER 3. DENOTES INCHES OF PENETR OF UNDISTURBED SAMPLER 4. DENOTES INCHES OF UNDISTURBED SAMPLE RECOVERY 5. UNIFIED SOIL CLASSIFICATION SYSTEM	
							BEAVER VALLEY POWER STATION - UNIT NO. 2 DUQUESNE LIGHT COMPANY PITTSBURGH, PENNSYLVANIA 12241-GSK-157A STONE & WEBSTER ENG. CORP.	
ISSUED BY							DATE	BORING NO.
[Signature]							8/15/1916	B-5011
							SHEET	1 OF 4

SITE / LOCATION <u>BEAVER VALLEY POWER STATION - UNIT NO. 2</u> J.O. NO. <u>12241</u>										BORING <u>2-5011</u>	
										SHEET <u>2</u> OF <u>4</u>	
ELEV. (FEET)	DEPTH (FEET)	SAM. TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS	PENETRATION(3)	SPT N VALUES OR UDS REC(4)	GROUP S. (5)	SAMPLE DESCRIPTION	FIELD AND LAB TEST RESULTS / COMMENTS		
700	15	S	8	20-30-42 56%	72	SP		(WHITE WITH STRONG HCl REACTION); MEDIUM SAND, SOME SILTY FINE SAND AT BOTTOM OF SAMPLE; .25 INCH LIGNITE LAYER IMMEDIATELY ABOVE PIECE OF ROCK; SAND PORTIONS OF SAMPLE BROWN.			
		S	9	17-23-39 56%	62	SM		BLOWS/INCH 2-2-4-4-2-3/3-2-3-4-5-6/5-8-7-5-7-7 GRAVELLY SAND, GRAVEL TO 1.5 INCHES, FINE SAND, 5 TO 25% NONPLASTIC FINES, BROWN AND GRAY; STRONG HCl REACTION			
		S	10	29-26-42 56%	68	GM		BLOWS/INCH 5-5-4-4-5-6/6-3-4-5-3-5/6-6-5-8-8-9 SANDY GRAVEL, POORLY GRADED, ANGULAR (FRESHLY FRACTURED) TO 0.9 INCH MAXIMUM, 38% COARSE TO FINE, MOSTLY COARSE AND FINE SAND, 9% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl NOTE: THE HIGH AMOUNT OF COARSE SAND IS DUE TO THE FRACTURED GRAVEL			
695	20	S	11	23-26-47 67%	75	SM		BLOWS/INCH 3-4-4-3-4-4/4-5-5-5-4-5/7-7-9-9-8 SILTY, GRAVELLY SAND, POORLY GRADED; GRAVEL 0.2 INCH TO 1 INCH, MEDIUM SAND; 25% NONPLASTIC FINES; BROWN, HIGH HCl REACTION			
		S	12	23-18-14 56%	32	SM		BLOWS/INCH 4-3-4-4-4-4/4-4-3-2-3-2/2-2-3-2-2-3 SILTY SAND, UNIFORM, FINE, 23% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl			
	25	S	13	22-28-34 56%	62	SW		BLOWS/INCH 1-3-6-4-4-4/5-4-4-4-6-5/5-5-6-5-6-7 GRAVELLY SAND, WELL GRADED; 30% ROUNDED GRAVEL TO .75 INCH; MEDIUM TO COARSE SAND; SOME SILTY FINE SAND IN POCKETS, LESS THAN 10% PLASTIC FINES IN BOTTOM PART OF SAMPLE.			
690		S	14	22-18-17 50%	35	GP		BLOWS/INCH 1-5-4-4-4-4/3-4-3-3-2-3/3-2-3-4-2 SANDY GRAVEL, POORLY GRADED; 70% SUBROUNDED GRAVEL TO 1.25 INCH, FINE TO COARSE SAND, LESS THAN 10% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl.			
		S	15	18-23-20 67%	43	GM		BLOWS/INCH 2-3-3-4-3-3/3-3-5-4-4-4/4-2-4-4-3-3 SANDY GRAVEL, POORLY GRADED, ANGULAR (FRESHLY FRACTURED) TO 1.3 INCH MAXIMUM, 29% COARSE TO FINE, MOSTLY FINE SAND, 7% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl, SOME LIGNITE			
	30	S	16	16-22-41 56%	63	GP		BLOWS/INCH 2-4-3-3-2-2/1-2-2-4-7-6/6-8-7-6-6-8 TOP 7.0 INCHES - SAND, UNIFORM, FINE SAND, 3 TO 8% NONPLASTIC FINES, BROWN			
685		S	17	18-19-18 56%	37	GM		BLOWS/INCH 1-4-3-3-4-3/4-4-3-3-2-3/3-3-2-3-4-4 SANDY GRAVEL, WELL GRADED, ANGULAR, TO 1.1 INCH MAXIMUM, 42% COARSE TO FINE SAND, 10% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl, POCKET OF LIGNITE			
		S	18	28-25-26 **	51	SP		BLOWS/INCH 6-5-4-4-5-4/5-5-4-4-5-5/5-4-3-4-4-4 NO RECOVERY - 2 INCHES GRAVEL IN TIP OF SPOON SECOND DRIVE - GRAVELLY SAND, POORLY GRADED, 20-35% GRAVEL TO 0.75 INCHES MAXIMUM, MOSTLY MEDIUM TO COARSE SAND, 3-8% NON-PLASTIC FINES, LIGHT BROWN, MODERATE HCl REACTION TO FINES AND SOME PARTICLES			
	35	S	19	33-41-40 61%	81	GM		BLOWS/INCH 4-6-6-5-6-6/8-8-7-7-6-6/6-6-7-6-6-9 SANDY GRAVEL, WIDELY GRADED, FRESH TO HIGHLY WEATHERED GRAVEL TO 1.5 INCHES MAXIMUM, COARSE TO FINE SAND, MOSTLY MEDIUM TO COARSE, 8-12% NONPLASTIC TO VERY SLIGHTLY PLASTIC FINES (WEATHERED GRAVELS), BROWN, SLIGHT REACTION OF HCl IN FINES			
680		S	20	27-28-27 61%	55	GM		BLOWS/INCH 3-5-5-4-5/6-6-5-4-4-5/5-3-6-5-4-4 SANDY GRAVEL, POORLY GRADED, ANGULAR (FRESHLY FRACTURED) TO 0.9 INCH MAXIMUM, 33% COARSE TO FINE, MOSTLY FINE SAND, 12% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl			
	40	S	21	23-26-21 44%	47	SP		BLOWS/INCH 2-3-3-5-4-6/5-4-4-4-5-4/4-3-3-4-3-4 GRAVELLY SAND, POORLY GRADED, 20-30% GRAVEL TO 1.0 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY MEDIUM TO COARSE, 5-10% NONPLASTIC FINES, BROWN, SLIGHT REACTION TO HCl			
	675		S	22	18-25-35 56%	60	GM		BLOWS/INCH 3-4-3-3-2-3/5-3-3-5-4-5/5-5-6-7-6-6 SANDY GRAVEL, WELL GRADED, SUBANGULAR TO 1.3 INCHES MAXIMUM, 44% COARSE TO FINE SAND, 10% NONPLASTIC FINES, BROWN, STRONG REACTION TO HCl, SOME LIGNITE		
45		S	23	14-16-22 61%	38	SP		BLOWS/INCH 2-2-2-3-2-3/2-2-3-2-3-4/4-2-4-4-4-4 SAND, UNIFORM, ONE 0.5 INCH GRAVEL, FINE SAND, 2 TO 5% FINES, LIGHT BROWN			

NOTE: FOR BORING SUMMARY AND LEGEND INFO SEE SHEET 1



STONE & WEBSTER ENG. CORP

ISSUED BY

DATE

9/15/1976

BORING NO

B-5011

SHEET

2 OF 4

SITE / LOCATION										BEAVER VALLEY POWER STATION - UNIT NO. 2		J.O. NO. 12241		BORING B-5011		SHEET 3 OF 4	
ELEVATION (FEET)	DEPTH (FEET)	SAMPLE TYPE	SAMPLE NUMBER	BLOWS (2) OR UDS PENETRATION(3)	SPT N VALUES OR UDS RECI(4)	GROUP SYMBOL (5)	SAMPLE DESCRIPTION			FIELD AND LAB. TEST RESULTS / COMMENTS							
670	45	S	24	19-28-31 56%	59	SP	BLOWS/INCH 2-3-3-3-4-4/4-4-5-5-6-6/6-6-4-5-5-5 SAND, UNIFORM, FINE SAND, 2 TO 5% FINES, LIGHT BROWN, FEW THIN LAYERS WITH 5 TO 10% FINES, NO REACTION TO HCL										
		S	25	23-20-18 56%	38	SM	BLOWS/INCH 4-3-5-4-3-4/3-3-3-4-3-4/3-3-3-3-3-3 TOP: SILTY SAND, WIDELY GRADED, 31% MOSTLY SUBANGULAR GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE, MOSTLY MEDIUM TO FINE SAND, 14% NONPLASTIC FINES, BROWN, SLIGHT REACTION TO HCL, SOME LIGNITE										
						SC	BOTTOM: CLAYEY SAND, WIDELY GRADED, 19% SUBANGULAR TO SUBROUNDED GRAVEL TO 0.8 INCH MAXIMUM, COARSE TO FINE SAND, 23% SLIGHTLY PLASTIC FINES, BROWN, NO REACTION TO HCL										
66	50	S	26	23-25-29 11%	54	GC	BLOWS/INCH 4-4-3-3-5-4/3-5-3-4-6-4/5-4-5-5-5-5 CLAYEY GRAVEL, WIDELY GRADED, MOSTLY COARSE, ANGULAR TO 1.2 INCH MAXIMUM, 41% COARSE TO FINE, MOSTLY FINE SAND, 17% SLIGHTLY PLASTIC FINES, BROWN, SLIGHT REACTION TO HCL										
		S	27	26-27-26 67%	53	GP	BLOWS/INCH 2-4-5-5-4-6/5-5-5-4-4-4/6-4-3-4-5-4 SANDY GRAVEL, POORLY GRADED, ROUNDED AND SHATTERED GRAVEL TO 1.25 INCH MAXIMUM, 30 TO 40% COARSE TO FINE SAND, MOSTLY COARSE TO MEDIUM, 2 TO 5% NONPLASTIC FINES, LIGHT BROWN WITH MULTICOLORED GRAVEL, SOME GRAVEL MODERATELY WEATHERED, NO REACTION TO HCL										
		S	28	32-46-33 56%	79	GP-GM	BLOWS/INCH 4-4-5-7-6-6/9-8-8-8-6-7/6-5-6-6-6-4 SANDY GRAVEL, POORLY GRADED, ANGULAR, TO 1.3 INCH MAXIMUM, 34% COARSE TO FINE, MOSTLY FINE SAND, 8% NONPLASTIC FINES, BROWN, SLIGHT REACTION TO HCL										
660		S	29	34-39-48 56%	87	GP-GM	BLOWS/INCH 5-6-6-6-5/7-5-7-7-7-6/7-8-7-9-8-9 SANDY GRAVEL, POORLY GRADED, ROUNDED AND SHATTERED GRAVEL TO 1.5 INCH MAXIMUM, 30 TO 40% COARSE TO FINE SAND, MOSTLY COARSE TO MEDIUM, 8 TO 12% VERY SLIGHTLY PLASTIC FINES TOP TO 3 TO 5% FINES, BOTTOM, LIGHT BROWN WITH MULTICOLORED GRAVELS, MANY MODERATELY WEATHERED GRAVEL PARTICLES, NO REACTION TO HCL										
		S	30	35-35-31 **	66	GP-GM	BLOWS/INCH 5-5-5-5-5/5-5-5-5-5/6-5-6-6-4-7/4-5-5-6-6-5 SANDY GRAVEL, POORLY GRADED, MOSTLY ROUNDED GRAVEL TO 1.25 INCH MAXIMUM, COARSE TO FINE SAND, MOSTLY COARSE TO MEDIUM, 3 TO 8% NONPLASTIC FINES, LIGHT BROWN, NO REACTION TO HCL, FEW MODERATELY WEATHERED GRAVEL PARTICLES										
655	60	S	31	74-55-34 17%	89	GP	BLOWS/INCH 10-16-13-13-12-10/12-9-9-9-8-8/8-4-6-6-5-5 GRAVEL, ROUNDED 1.5 INCH PIECE OF GRAVEL (POOR RECOVERY)										
		S	32	37-49-25 22%	74	SM	BLOWS/INCH 4-9-5-3-8-8/16-10-7-6-6-4/4-5-4-5-4-3 SILTY SAND, WIDELY GRADED, 27% SUBROUNDED GRAVEL TO 0.7 INCH MAXIMUM, COARSE TO FINE, MOSTLY FINE SAND, 23% SLIGHTLY PLASTIC FINES, BROWN, SLIGHT REACTION TO HCL										
65		S	33	26-29-26 67%	55	SP-SM	BLOWS/INCH 3-4-4-5-5-5/6-5-5-4-4-5/5-4-4-4-5-4 GRAVELLY SAND, POORLY GRADED, 25% GRAVEL TO 1.5 INCH MAXIMUM, MOSTLY LESS THAN 0.5 INCH ROUNDED, SOME BROKEN ANGULAR PIECES, MEDIUM SAND, 5 TO 12% NONPLASTIC FINES, BROWN, NO REACTION TO HCL										
650		S	34	25-29-26 11%	55	GW-GM	BLOWS/INCH 1-3-5-6-4-6/7-5-4-5-4-4/4-4-4-5-5-4 SANDY GRAVEL, WELL GRADED, SUBANGULAR TO SUBROUNDED TO 1.3 INCH MAXIMUM, 76% COARSE TO FINE SAND, 9% NONPLASTIC FINES, LIGHT BROWN, SLIGHT REACTION TO HCL										
		S	35	27-31-23 11%	54	GW-GM	BLOWS/INCH 3-3-6-4-6-5/6-5-6-5-5-4/4-4-4-3-5-3 SANDY GRAVEL (SIMILAR TO ABOVE SAMPLE - SAMPLE POSSIBLY NOT REPRESENTATIVE OF SOIL AT DEPTH - POSSIBLY MOSTLY WASH, 1.5 INCH GRAVEL WEDGED IN SHOE)										
645	70	S	36	39-52-60 78%	112	SP	BLOWS/INCH 6-6-6-7-8-6/7-8-9-9-9-10/10-9-9-1-10-10 GRAVELLY SAND, POORLY GRADED, GRAVEL ROUNDED AND SUBANGULAR TO 0.5 INCH MAXIMUM SIZE; MEDIUM TO FINE SAND, BROWN, TRACE FINES, NO REACTION TO HCL										
		S	37	30-48-44 9%	92	GP	BLOWS/INCH 3-5-8-6-4-4/4-6-8-14-10-6/6-7-7-8-7-9 GRAVEL, 1.5 INCH GRAVEL WEDGED IN BOTTOM OF SHOE: FINE SAND, TRACE SILT, BROWN										
75		SS	38	12-17-25 78%	42	ML	BLOWS/INCH 1-2-3-2-2-2/3-2-3-3-3-3/3-4-5-4-3-4 SANDY SILT, NONPLASTIC TO SLIGHTLY PLASTIC, 5% GRAVEL TO 0.8 INCH MAXIMUM, 28% FINE SAND, VERY STIFF, BROWN, STRONG REACTION TO HCL NOTE: GRAVEL CONSISTS OF JUST ONE PIECE										

NOTE: FOR BORING SUMMARY AND
LEGEND INFO SEE SHEET 1



STONE & WEBSTER ENG. CORP.

ISSUED BY
C.A.

DATE
2/15/1976

BORING NO.
B-5011

SHEET
3 OF 4

12241-GSK-1570

AMENDMENT 3

911039

