



WATER-RIGHT DOCKET

Delaware Water Gap National Recreation Area

Docket No: 2

SLATEFORD CREEK WELL.

Supporting Hydro Data

00-00-0000: sample log of slateford creek borehole;np-584.

Table 1.--Sample log of Slateford Creek borehole--Np-584

Interval (feet)	Thickness (feet)	Description	Remarks
0 - 5	5	Gravel, sand, and silt.	
5 - 7	2	Weathered rock; pieces of slate.	Set 8-inch casing (pulled later).
7 - 50	43	Slate, dark gray to black, highly fissile, silty.	
50 - 75	25	Slate, black; claystone, carbonaceous, dolomitic, some pyrite, hard--conchoidal fracturing.	1 gpm water at 67 feet; much black "graphite" float; effervesces with strong hydrochloric acid. Slow drilling.
75 - 107	32 (<1)	Slate, dark gray to black, very silty; vein calcite (translucent). Sandstone, very fine-grained, silty.	Readily effervescent with weak hydrochloric acid.
107 - 110	3	Siltstone, dark gray, quartz veins, dolomitic veins and crystals (opaque white); highly fractured; finely disseminated pyrite.	15 gpm water at 107 feet and odor of H ₂ S.
110 - 124	14	Claystone, brown to dark gray, calcareous; large fragments recovered from drill. Calcite crystals in voids. Friable.	Total of 20 gpm water at 124 feet. Fast drilling.
124 - 150	26	Slate, dark gray to black, fissile, dolomitic, and calcareous: much vein material (white).	Water level 24.7 feet below land surface. Total of 24 gpm water measured with bucket.
150 - 198	48	Slate, dark gray to black, extremely fissile and very friable; less vein material than above; soft.	Fast drilling.
198 - 199	1	Sandstone, light brown, fine grained.	
199 - 227	28	Slate, black, silty and sandy, fine grained.	Slow drilling.

Table .--Sample log of Slateford Creek borehole--Np-584

Interval (feet)	Thickness (feet)	Description	Remarks
227 - 275	48	Slate, black or dark gray with vein material, very calcareous; silty, hard.	Total of 30 gpm water at 250 feet by bucket. Slow drilling. Water level 25.8 feet below land surface. Six inch diameter steel casing to 81 feet; cased 73 feet into consolidated rock.
275 - 300	25	Slate, black, calcareous; some pyrite, interbedded dark gray and black shale or slate, moderately hard.	Grouted with 3 sacks of concrete; packed cuttings around casing to land surface.

Physical Characteristics of Well Np-584

Depth of well	300 feet		
Diameter of well	8 inches to a depth of 80 feet 6 inches below depth of 80 feet		
Depth of casing	80 feet		
Diameter of casing	6 inches		
Water-bearing zones	Depth to zone (feet)	Yield of zone (gpm)	Total yield (gpm)
	67	1	1
	107	14	15
	124	5	20
	227	10	30

Well Completion

The well was reamed to 8-inches in diameter to a depth of 80 feet. Six-inch diameter casing, to which a drive shoe was attached, was driven into the formation to seal off water encountered at 67 feet that was very high in iron and manganese. Three sacks of concrete grouting were forced into the annular space outside the casing from the bottom of the casing upward for about 15 feet. Drill cuttings were then packed firmly over the top of the grout and around the casing to land surface. The well is 6-inches in diameter below the casing.

Pumping Tests

On September 28, 1970, the well was test-pumped with a submersible pump set at 63 feet below the top of casing which is 37 feet below static level of 26 feet. The initial pumping rate of 23.5 gpm (gallons per minute) drew the water level down to the pump in about 14 minutes. The pump was then throttled back to 18 gpm, so the water level could be maintained just above the pump, and the test was continued for a total pumping period of 65 minutes. (See table 2 and figs. 5 and 6.)

Figures 5 and 6.--(Captions on next page) belong near here.

On September 29, 1970, the well was retested with the pump set at a depth of 87 feet. The well was pumped at a rate of 21.5 gpm for 100 minutes, and the water level was drawn down 45 feet below the static level. The specific capacity computed from the data for 1 hour of pumping was about 0.5 gpm per foot of drawdown. (See table 3 and fig. 7.) As long as

Figure 7.--(Caption on next page) belongs near here.

the drawdown increases and the yield remains constant, the specific capacity will continue to decrease with time. An extrapolation of drawdown in figure 7 indicates the well can be pumped for 200 hours or more at 21.5 gpm before the water level is drawn down below the major water-bearing zone at 107 feet below land surface. The specific capacity can be increased significantly (fig. 5) by a modest lowering of the pumping rate.

Data obtained during drilling (see log) suggest that the well can be pumped at 30 to 35 gpm for as much as 4 hours. The pumping tests made subsequently are too short to give firm yield data, but the well probably can be pumped at about 20 gpm for more than 24 hours. Utilization of the maximum available water-level drawdown and well-bore storage will help insure 20 gpm yield under continuous pumping conditions by inducing maximum possible flow to the well. Therefore, it is recommended that the pump be set at least 230 feet below land surface.

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GEOLOGY AND GROUND WATER RESOURCES OF THE SLATEFORD CREEK AREA IN
THE DELAWARE WATER GAP NATIONAL RECREATIONAL AREA

By

Charles W. Poth, Hydrologist

U.S. Geological Survey

The Slateford Creek area is located on the southern slope of Kittatinny Mountain and is underlain by the Ramseyburg Member of the Martinsburg Formation of Late Ordovician age. The Ramseyburg consists of alternating beds of claystone slate and gray to brown sandstone or siltstone. The beds range in thickness from less than an inch to more than 4 feet and average about one foot. They tend to be lenticular and of uneven thickness, and dip generally northwestward at angles ranging from 10 to about 50 degrees.

A veneer of glacial debris (generally less than 20 feet thick) covers the bedrock. The thickness of the glacial material increases toward the valley and exceeds 50 feet in thickness downslope from the area.

Water occurs in and moves through openings along bedding planes and fracture systems in the Ramseyburg. A well must intersect one or more of these openings in order to yield water. However, as the openings are irregularly distributed throughout the rock, yields of wells may be expected to range widely.

Yields of a half dozen wells in the Ramseyburg within about a mile of the Slateford Creek area ranged from 10 to 150 gpm (gallons per minute). Two of these wells are owned by the Borough of Portland. They are reported to be 500 to 800 feet deep and to yield 17 and 150 gpm, respectively. The other four wells were drilled for domestic use. They are reported to range from 80 to 140 feet in depth and to yield from 10 to 55 gpm. All six wells are farther from the crest of the mountain than the Slateford Creek area and penetrate greater thicknesses of glacial material than is generally present there.

Four to five miles southwest of the area and along the slope of the mountain are a group of public-supply wells owned by the boroughs of Bangor and East Bangor. These wells are slightly farther from the crest of the mountain than the Slateford Creek area and penetrate a greater thickness of glacial material than is present there. The bedrock in this area consists of slate and is called the Pen Argyl Member of the Martinsburg Formation. It overlies the Ramseyburg stratigraphically. The wells are reported to range from 135 to 517 feet in depth and to yield from 50 to 360 gpm.

The static water level of the Bangor and East Bangor group of wells is reported to fluctuate annually from above land surface to about 50 feet below the surface. This large annual fluctuation controls the amount of available drawdown in the wells at a given time and, hence, affects the sustained rate at which these wells may be pumped. The yield of some of the wells is reported to decrease by 50 percent from spring to fall.

In summary, wells drilled in the Slateford Creek area may be expected to yield small supplies of water (probably less than 25 gpm). Wells drilled lower on the slopes of the mountain, where the glacial material is thicker, will have a higher static water level and probably a greater yield.

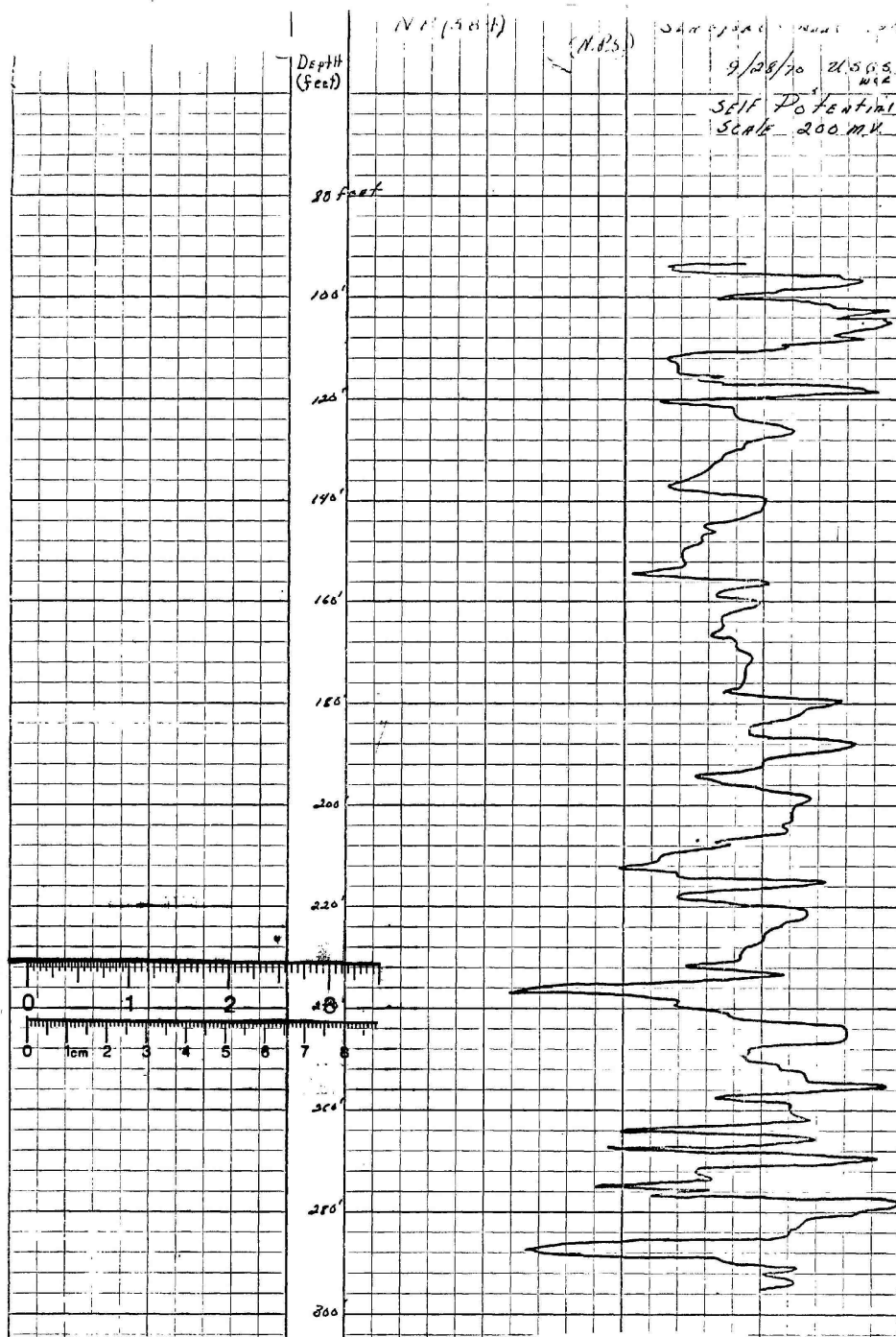


Figure 2.--Self-potential log.

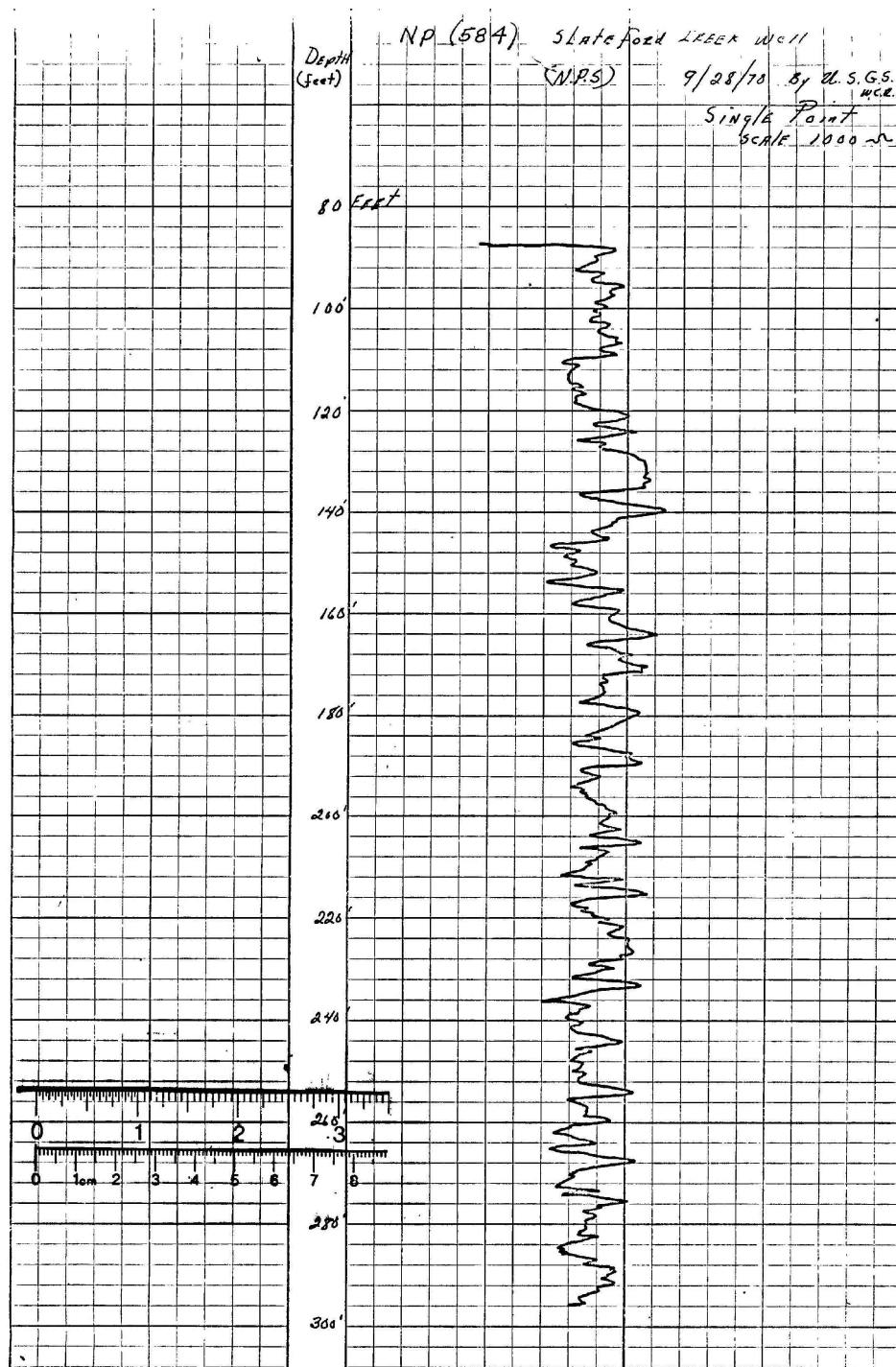
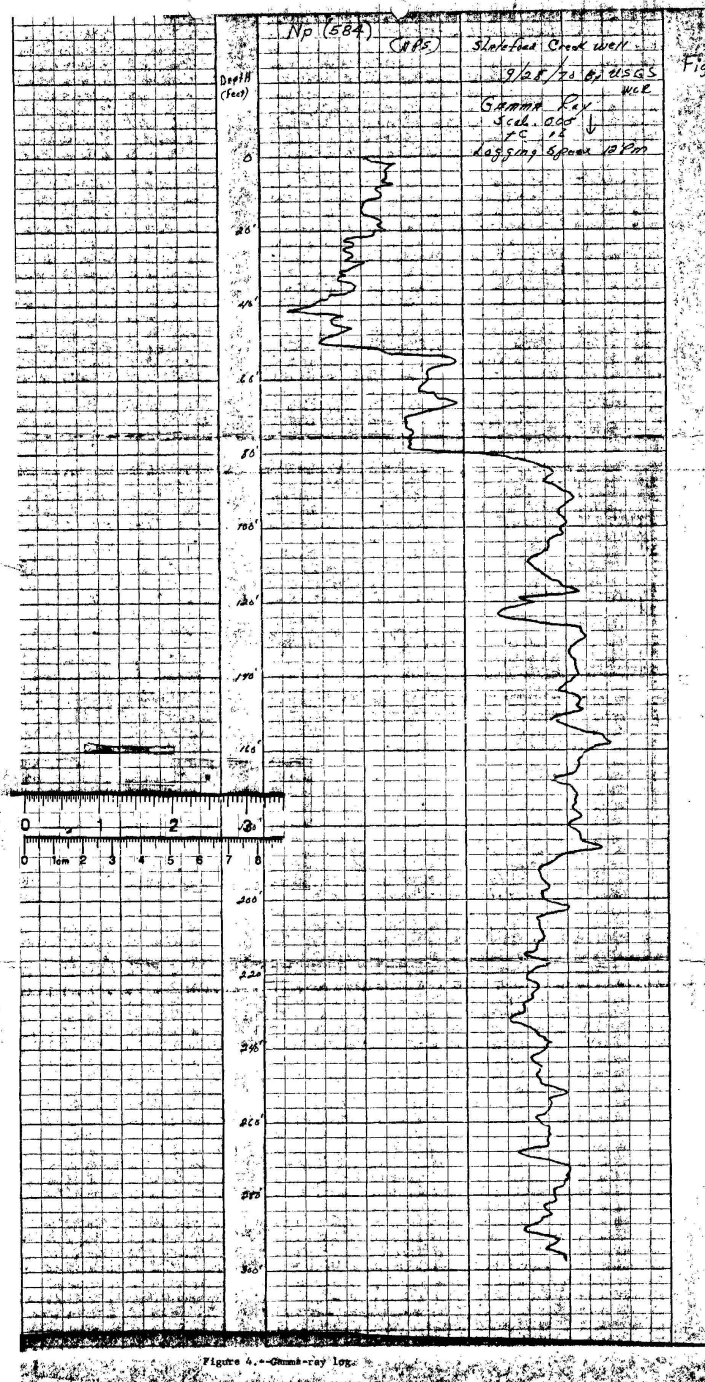


Figure 3.--Single point-resistivity log.



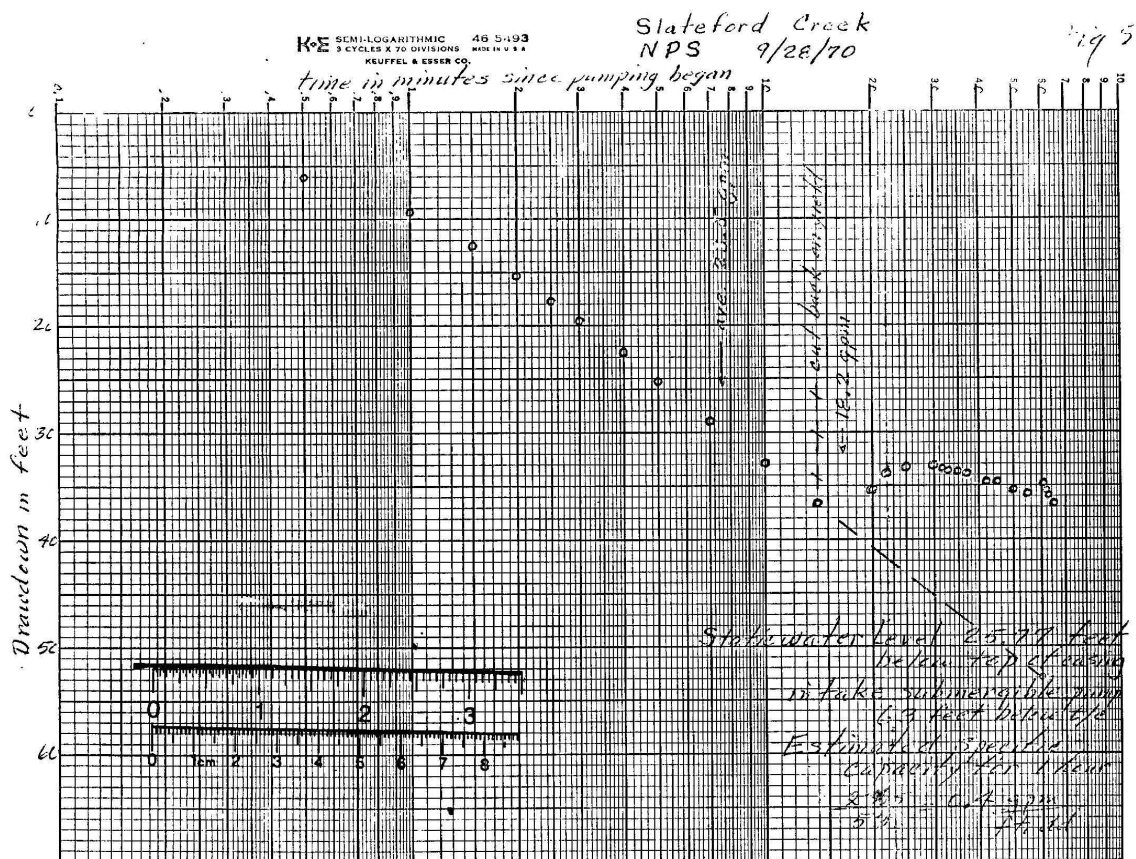


Figure 5.--Pumping water level of Slateford Creek well Np-584, September 28, 1970.

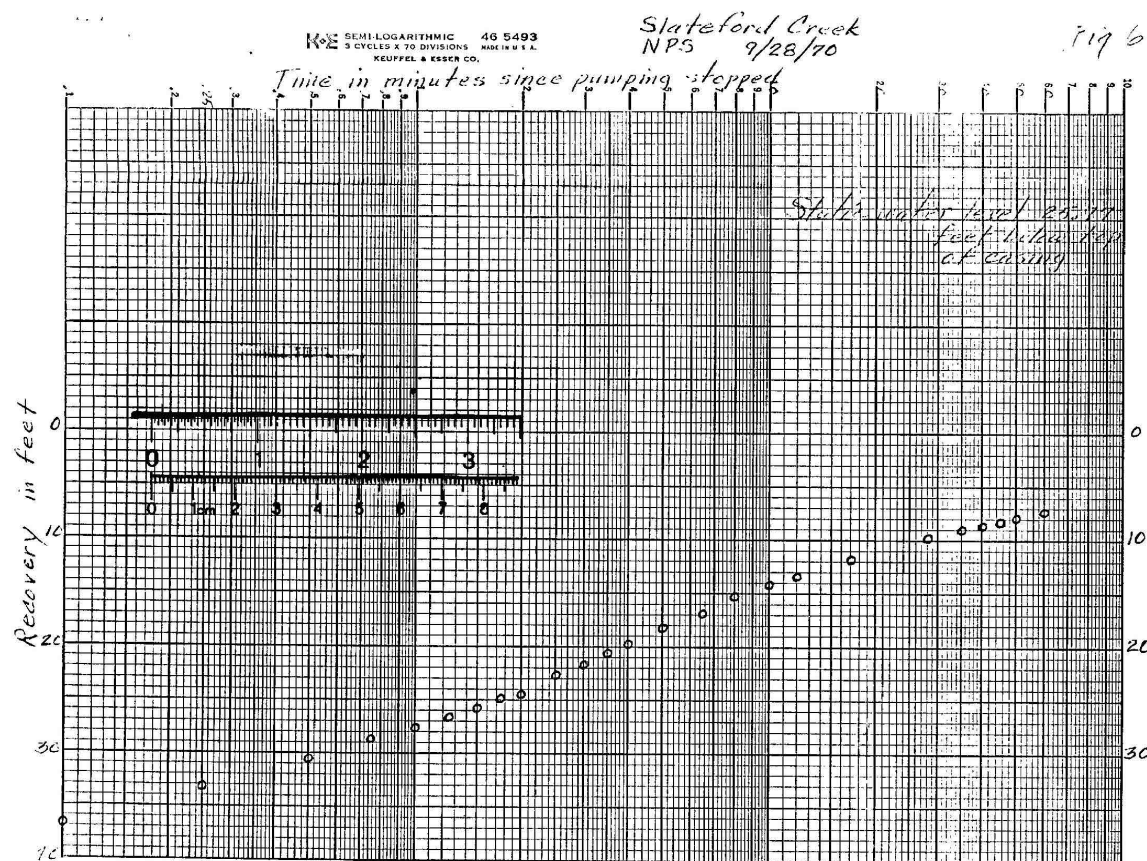


Figure 6.--Recovery of water level in Slateford Creek well Np-584, September 28, 1970.

Other Supporting Information

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WATER-SUPPLY TEST WELLS AT SLATEFORD CREEK, NORTHAMPTON COUNTY
AND MOUNT MINSI, MONROE COUNTY, PENNSYLVANIA

By
Harry E. Koester, Hydrologist

Prepared for the National Park Service
by the
U.S. Geological Survey

ADMINISTRATIVE REPORT FOR U.S. GOVERNMENT USE ONLY

1970

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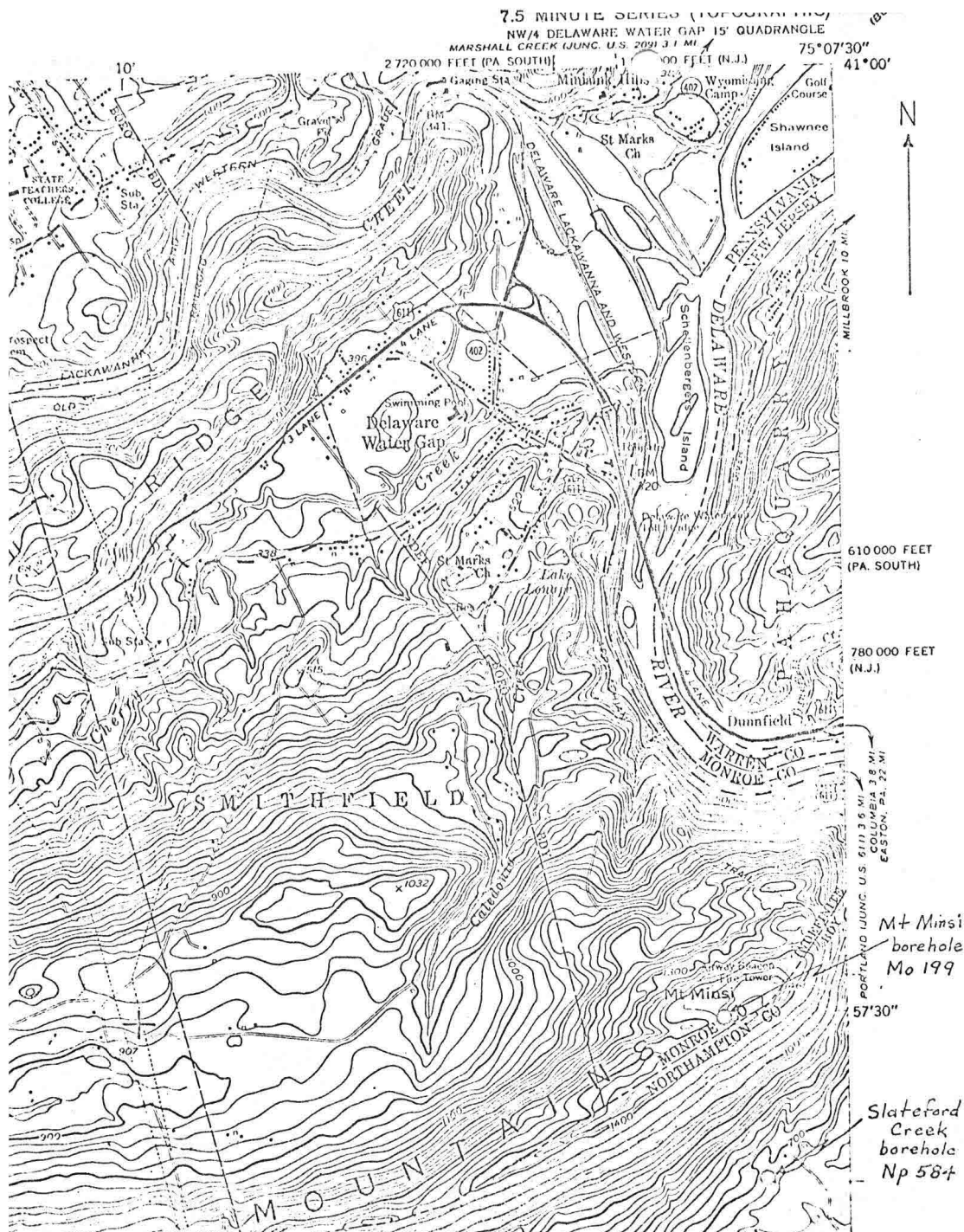


Figure 1.--Map showing location of test wells in the Delaware Water Gap National

WATER-SUPPLY TEST WELLS AT SLATEFORD CREEK, NORTHAMPTON COUNTY
AND MOUNT MINSI, MONROE COUNTY, PENNSYLVANIA

By

Harry E. Koester, Hydrologist

INTRODUCTION

This report sets forth the results of test drilling and hydrologic studies that were conducted on two wells at the request of the National Park Service. The wells were drilled by Greening Bros., of Milford, Pa., on sites in the Delaware Water Gap National Recreation Area, Pennsylvania. (See fig. 1.)

Figure 1.--(Caption on next page) belongs near here.

The well at the Slateford Creek site is on the upper slope of a small valley near the base of Kittatinny Mountain in Northampton County. Drilling was started on September 21, 1970, and was completed on September 23, 1970. The well at the Mount Minsi site is on the top of the ridge of Kittatinny Mountain. It is near the southern border of Monroe County about 800 feet southwest of the Airway Beacon fire tower. Drilling was started on September 25, 1970, and was completed on September 30, 1970. Both wells were drilled to a depth of 300 feet below land surface by an air-compression rotary drilling machine.

Figure 1.--Map showing location of test wells in the Delaware Water
Gap National Recreation Area.

SLATEFORD CREEK SITE

(North Latitude 40°57'30", West Longitude 75°07'45")

Geologic and Hydrologic Environment

The Slateford Creek well site is underlain by 6 to 7 feet of glacial till composed of silt, sand, and gravel, and by the Ramseyburg Member of the Martinsburg Formation of Ordovician age. The Ramseyburg dips to the north at about 40 degrees and extends to great depths. The member is estimated to be 2,800 feet thick. The lithologic (sample) log shows the bedrock consists of dark-gray to black slate and claystone with thin interbedded siltstones and sandstones, and contains numerous carbonate veins. Sample logs are shown in table 1, and the self-potential, single-point resistivity and gamma-ray properties of the rocks are shown in figures 2, 3, and 4.

Figure 2, 3, and 4.--(Captions on next page) belong near here.

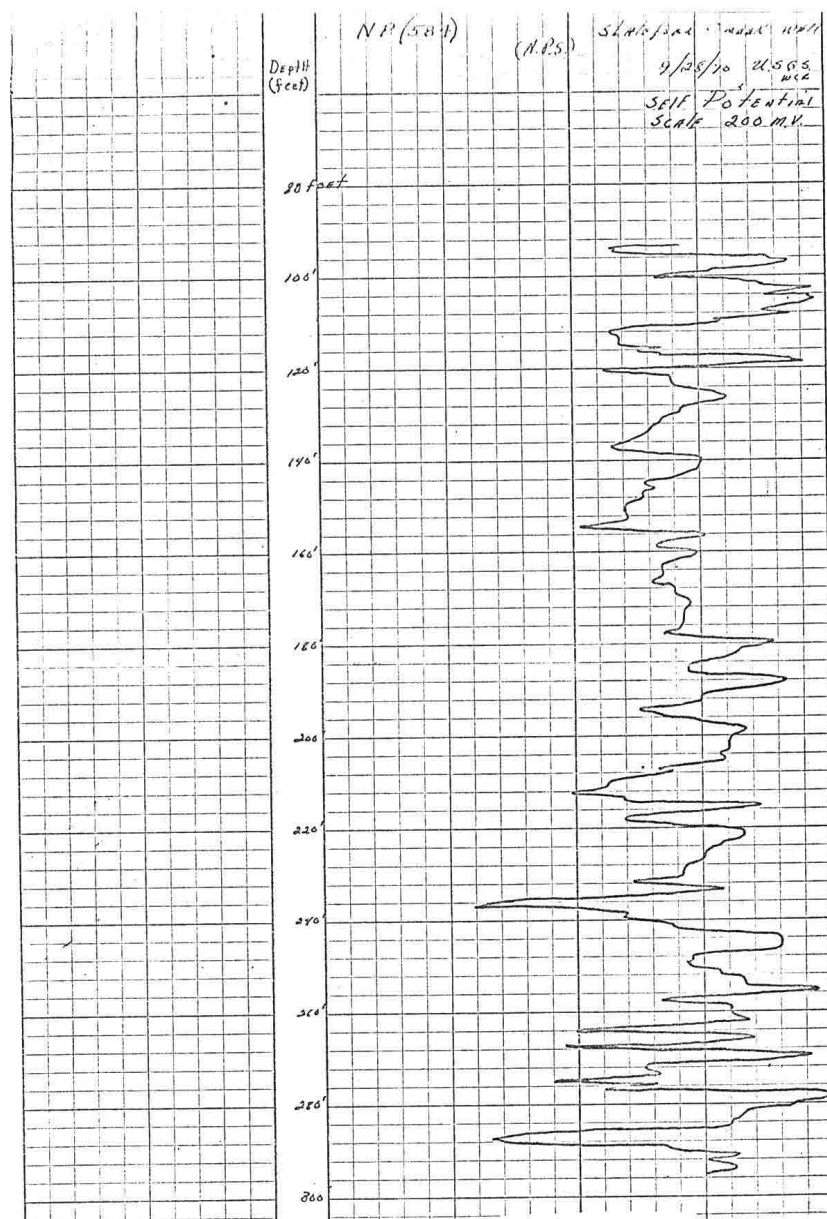


Figure 2.--Self-potential log.

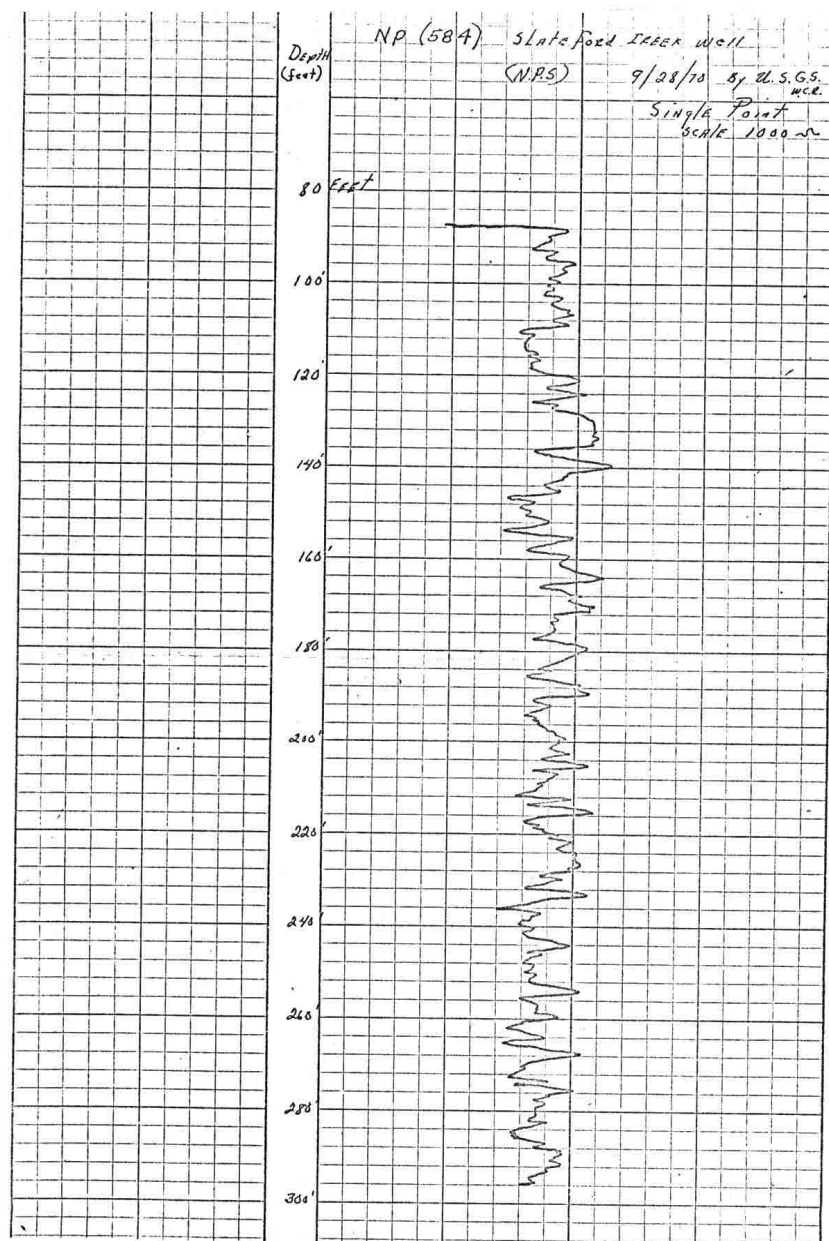


Figure 3.--Single point-resistivity log.

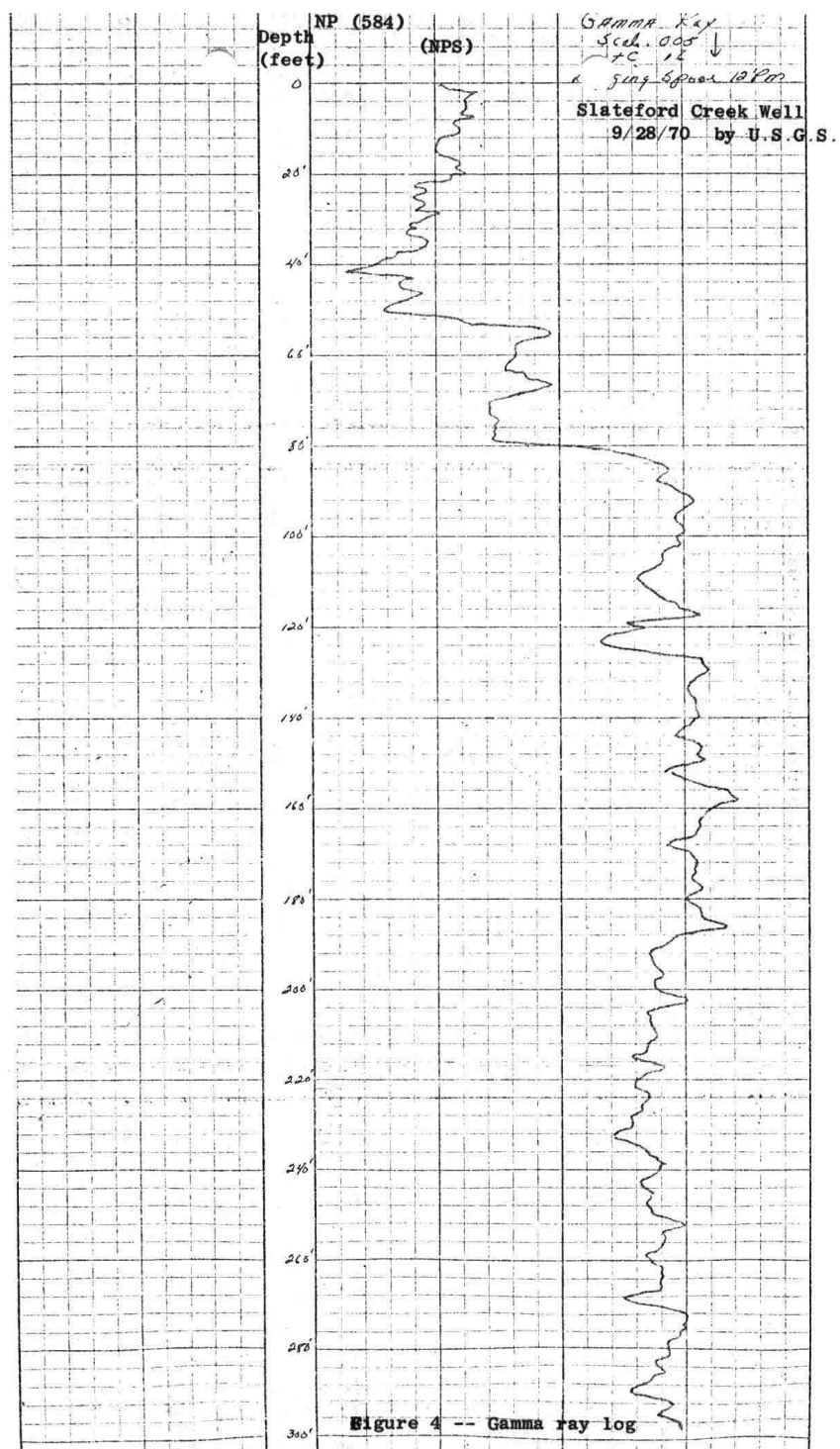


Table 1.--Sample log of Slateford Creek borehole--Np-584

Interval (feet)	Thickness (feet)	Description	Remarks
0 - 5	5	Gravel, sand, and silt.	
5 - 7	2	Weathered rock; pieces of slate.	Set 8-inch casing (pulled later).
7 - 50	43	Slate, dark gray to black, highly fissile, silty.	
50 - 75	25	Slate, black; claystone, carbonaceous, dolomitic, some pyrite, hard--conchoidal fracturing.	1 gpm water at 67 feet; much black "graphite" float; effervesces with strong hydrochloric acid. Slow drilling.
75 - 107	32 (<1)	Slate, dark gray to black, very silty; vein calcite (translucent). Sandstone, very fine-grained, silty.	Readily effervescent with weak hydrochloric acid.
107 - 110	3	Siltstone, dark gray, quartz veins, dolomitic veins and crystals (opaque white); highly fractured; finely disseminated pyrite.	15 gpm water at 107 feet and odor of H ₂ S.
110 - 124	14	Claystone, brown to dark gray, calcareous; large fragments recovered from drill. Calcite crystals in voids. Friable.	Total of 20 gpm water at 124 feet. Fast drilling.
124 - 150	26	Slate, dark gray to black, fissile, dolomitic, and calcareous: much vein material (white).	Water level 24.7 feet below land surface. Total of 24 gpm water measured with bucket.
150 - 198	48	Slate, dark gray to black, extremely fissile and very friable; less vein material than above; soft.	Fast drilling.
198 - 199	1	Sandstone, light brown, fine grained.	
199 - 227	28	Slate, black, silty and sandy, fine grained.	Slow drilling.

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Interval (feet)	Thickness (feet)	Description	Remarks
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			Water level 25.8 feet below land surface. Six inch diameter steel casing to 81 feet; cased 73 feet into consolidated rock.
275 - 300	25	Slate, black, calcareous; some pyrite, interbedded dark gray and black shale or slate, moderately hard.	Grouted with 3 sacks of concrete; packed cuttings around casing to land surface.

Physical Characteristics of Well Np-584

Depth of well	300 feet		
Diameter of well	8 inches to a depth of 80 feet 6 inches below depth of 80 feet		
Depth of casing	80 feet		
Diameter of casing	6 inches		
Water-bearing zones	Depth to zone (feet)	Yield of zone (gpm)	Total yield (gpm)
	67	1	1
	107	14	15
	124	5	20
	227	10	30

Well Completion

The well was reamed to 8-inches in diameter to a depth of 80 feet. Six-inch diameter casing, to which a drive shoe was attached, was driven into the formation to seal off water encountered at 67 feet that was very high in iron and manganese. Three sacks of concrete grouting were forced into the annular space outside the casing from the bottom of the casing upward for about 15 feet. Drill cuttings were then packed firmly over the top of the grout and around the casing to land surface. The well is 6-inches in diameter below the casing.

Pumping Tests

On September 28, 1970, the well was test-pumped with a submersible pump set at 63 feet below the top of casing which is 37 feet below static level of 26 feet. The initial pumping rate of 23.5 gpm (gallons per minute) drew the water level down to the pump in about 14 minutes. The pump was then throttled back to 18 gpm, so the water level could be maintained just above the pump, and the test was continued for a total pumping period of 65 minutes. (See table 2 and figs. 5 and 6.)

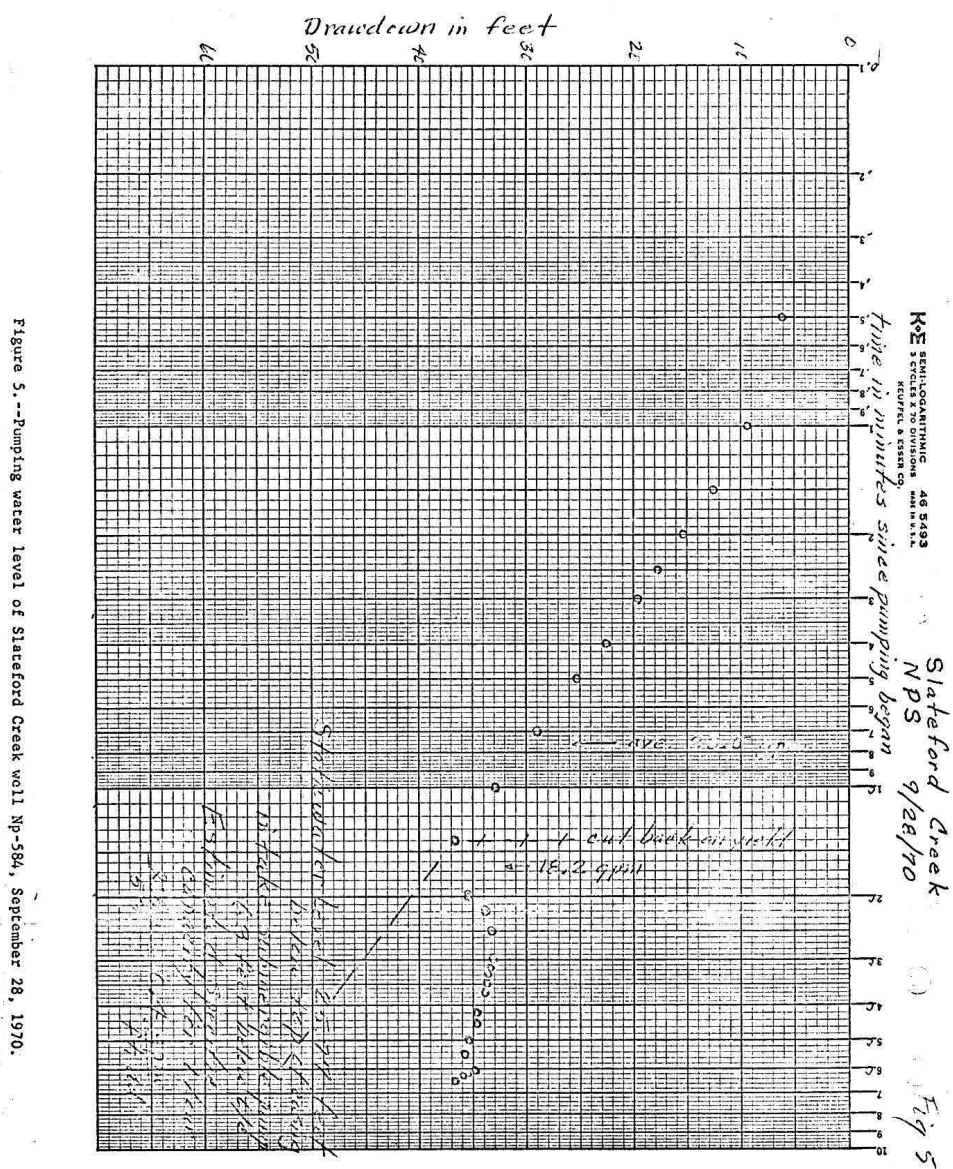
Figures 5 and 6.--(Captions on next page) belong near here.

On September 29, 1970, the well was retested with the pump set at a depth of 87 feet. The well was pumped at a rate of 21.5 gpm for 100 minutes, and the water level was drawn down 45 feet below the static level. The specific capacity computed from the data for 1 hour of pumping was about 0.5 gpm per foot of drawdown. (See table 3 and fig. 7.) As long as

Figure 7.--(Caption on next page) belongs near here.

the drawdown increases and the yield remains constant, the specific capacity will continue to decrease with time. An extrapolation of drawdown in figure 7 indicates the well can be pumped for 200 hours or more at 21.5 gpm before the water level is drawn down below the major water-bearing zone at 107 feet below land surface. The specific capacity can be increased significantly (fig. 5) by a modest lowering of the pumping rate.

Data obtained during drilling (see log) suggest that the well can be pumped at 30 to 35 gpm for as much as 4 hours. The pumping tests made subsequently are too short to give firm yield data, but the well probably can be pumped at about 20 gpm for more than 24 hours. Utilization of the maximum available water-level drawdown and well-bore storage will help insure 20 gpm yield under continuous pumping conditions by inducing maximum possible flow to the well. Therefore, it is recommended that the pump be set at least 230 feet below land surface.



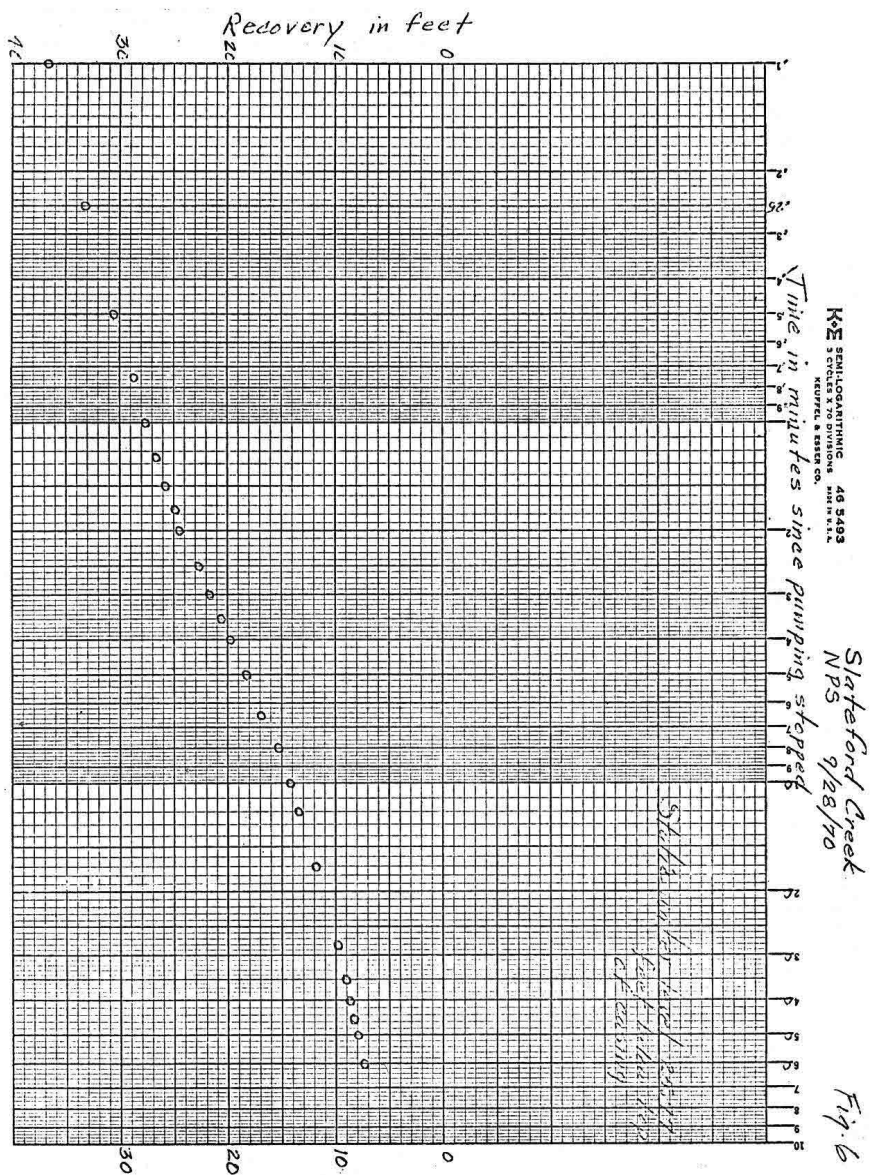


Figure 6. --Recovery of water level in Slateford Creek well Np-584, September 28, 1970.

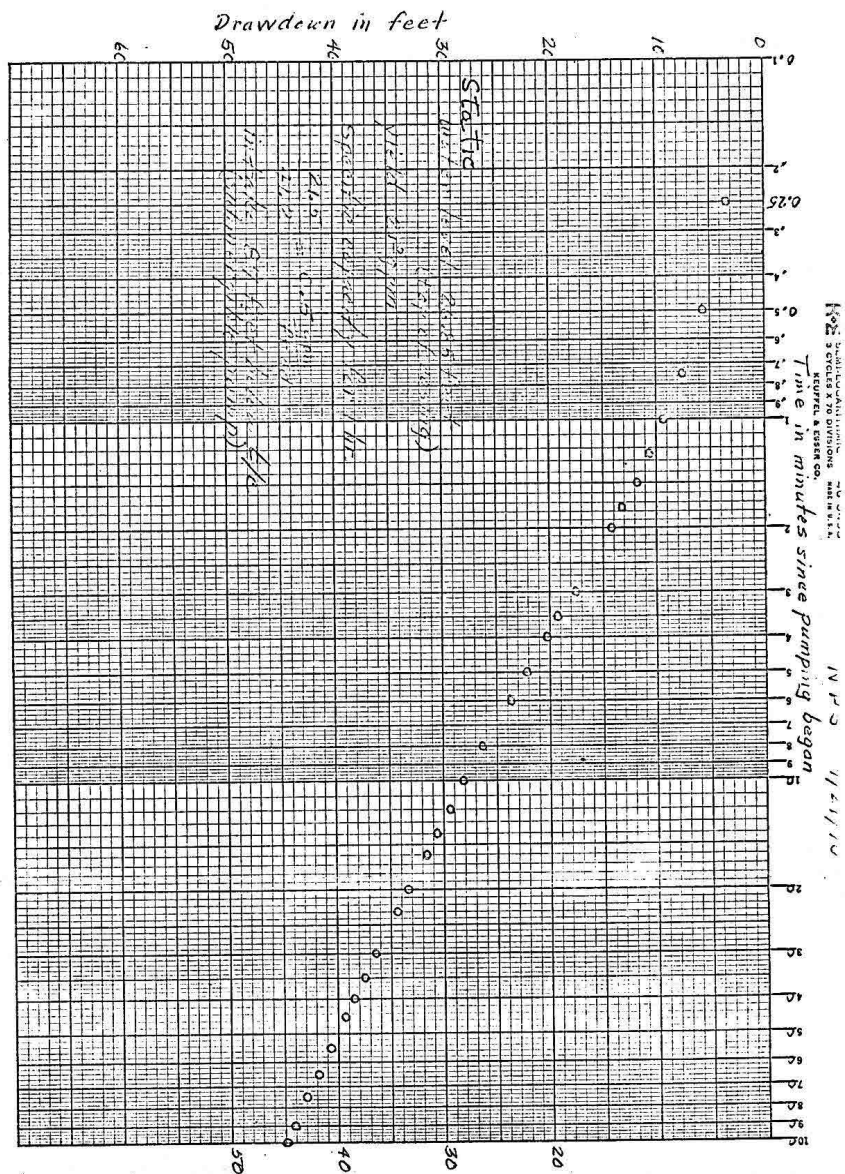


Figure 7.--Pumping water level of Slateford Creek well No-584, September 29, 1970.

Table 2

NATIONAL PARK SERVICE

PUMP TEST-- SLATEFORD CREEK, NORTHAMPTON COUNTY

(WELL Np-584)

Date: September 28, 1970

Time: 1:00 p.m.

Static water level: 25.77 feet below top of casing.

Intake: 63 feet below top of casing.

Duration: 65 minutes.

Amount of water pumped: 1,300 gallons.

Specific capacity: Estimated 0.4 gallon per minute per foot of drawdown for
1 hour, projected. (See fig. 5.)

Time in minutes since pumping started	Drawdown in feet	Pump rate (gallons per minute)	Time in minutes since pumping stopped	Recovery in feet
.5	6.01		.0	36.58
1	9.38		.25	33.01
1.5	12.69		.5	30.41
2	15.36		.75	28.64
2.5	17.91		1	27.55
3	19.71	24.5	1.25	26.51
4	22.53		1.5	25.65
5	25.11		1.75	24.86
7	28.99		2	24.18
10	32.96		2.5	22.62
14	36.65	22.3	3	21.51
			3.5	20.41
Throttled back			4	19.60
			5	18.07
20	35.11	18.2	6.5	16.86
22	33.85	do.	8	15.05
25	33.18		10	14.03
30	33.18	18.2	12	13.13
32	33.37		17	11.75
33	33.48		28	9.81
35	33.67		35	8.91
37	33.87		40	8.51
42	34.49	18.0	45	8.07
45	34.77		50	7.84
50	35.34		60	7.27
55	35.91			
61	34.83			
62	35.43			
63	35.91	18.2		
65	36.58			

Pump turned off.

Table 3

NATIONAL PARK SERVICE

PUMP TEST--SLATEFORD CREEK, NORTHAMPTON COUNTY

(Well Np-584)

Date: September 29, 1970

Time: 9:30 a.m.

Static water level: 26.85 feet below top of casing.

Intake: 87 feet below top of casing.

Duration: 1 hour, 40 minutes.

Pumping rate (average): 21.5 gpm (gallons per minute).

Amount of water pumped: 2,190 gallons

Total drawdown: 44.93 feet

Specific capacity: 0.5 gallon per minute per foot of drawdown for 1 hour.

Time in minutes since pumping started	Drawdown in feet	Time in minutes since pumping started	Drawdown in feet
.25	3.42	20	33.10
.5	5.75	23	34.19
.75	7.61	30	36.21
1	9.21	35	37.35
1.25	10.60	40	38.28
1.5	11.89	45	39.08
1.75	13.09	55	40.55
2	14.04	65	41.75
3	17.40	75	42.82
3.5	19.11	90	44.12
4	20.10	100	44.93
5	22.04		
6	23.78		
8	26.24		
10	28.02		
12	29.37		
14	30.58		
16	31.55		

Chemical Quality of Water

Water was sampled at several depths during drilling, and the following field determinations were performed:

Depth (feet)	Approximate yield (gpm)	Temperature °C	Specific conductance (micromhos at 25°C)	pH	Concentration milligrams per liter		
					Total hardness	Total iron	Total manganese
67	1	13.9	176	---	34	a/	a/
107	15	13.7	242	7.5	77	1.7	0.25
b/ 300	30	11.0	245	7.7	85	c/ .19	.00

a/ Test results uncertain because of turbidity of water; however, values were very high.

b/ Casing was installed and upper zone at 67 feet was grouted off; the well was pumped 1-hour before sampling and includes 0.8 mg/l of H₂S (hydrogen sulfide).

c/ Analysis includes 0.08 mg/l of Fe⁺² (ferrous iron).

Two water samples were collected, during different stages of drilling, for complete chemical analysis in the laboratory. Results of the two analyses are shown in table 4 and indicate a moderately hard, calcium bicarbonate type water. The completed well (September 28 analysis) yields water containing a total solids concentration of 161 mg/l (milligrams per liter), a hardness of 86 mg/l, and iron and manganese concentrations of 0.05 and 0.03 mg/l, respectively. With the exception of 0.8 mg/l hydrogen sulfide, the water is of good quality, and all constituents are below the maximum concentrations recommended by the U.S. Public Health Service for drinking water standards.

Table 4

NATIONAL PARK SERVICE

CHEMICAL ANALYSES--SLATEFORD CREEK, NORTHAMPTON COUNTY

(WELL Np-584)

(Results in milligrams per liter)		
	Date	
	9-22-70	9-28-70
Depth (feet)	125	300
Total yield (gpm)	20	30
Specific conductance (micromhos at 25°C)	246	261
pH	7.8	7.9
Color	4	1
Concentrations in milligrams per liter:		
Silica (SiO ₂)	12	12
Total iron (Fe)	22	.05
Manganese (Mn)	1.5	.03
Calcium (Ca)	26	22
Magnesium (Mg)	6.5	7.5
Sodium (Na)	19	23
Potassium (K)	3.1	.6
Bicarbonate (HCO ₃)	130	138
Carbonate (CO ₃)	0	0
Sulfate (SO ₄)	16	18
Chloride (Cl)	7.3	8.6
Fluoride (F)	.4	.4
Nitrate (NO ₃)	.1	.0
Phosphate (PO ₄)	.02	.01
Dissolved solids:		
Residue on evaporation	146	161
Sum of dissolved constituents	154	160
Hardness as CaCO ₃ :		
Total Ca+Mg	92	86
Noncarbonate	0	0

Contract

RELEASE OF CLAIMS

For and in consideration of the receipt of final payment in the amount of \$9,562.50 from the United States of America (hereinafter called the Government) under and pursuant to Contract No. 14-10-7:993-473 for drilling of a test well at Delaware Water Gap National Recreation Area, Pennsylvania, and for and in consideration of the receipt of final payment in the amount of \$2,800.00 from the Government under and pursuant to Contract No. 14-10-7:993-488 for drilling of a test well at Delaware Water Gap National Recreation Area, New Jersey, the undersigned hereby, does remise, release, and discharge the Government, its officers, agents, and employees of and from any and all claims and demands whatsoever under or arising from the said contracts, except specified claims in stated amounts listed as follows:

" NO EXCEPTIONS "

This release has been executed this 21 day of Dec 1970

Allen J. Greening
(Contractor)

By Allen J. Greening Jr.
owner
(Title)

Form 10-74
(Rev. 9/60)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Check One:

Monthly
Estimate☐EASTERN SERVICE CENTER

(Part)

UNIT PRICE CONTRACT **Proposed**Final
Estimate☒

ESTIMATE NO. 1		FOR (Period) August 16, 1970 - November 19, 1970		DATE December 7, 1970	
CONTRACT NO. 14-10-7:993-473		COMPLETION DATE October 5, 1970		EXTENDED DATE	
CONTRACTOR Allen J. Greening, Sr.				ORIGINAL CONTRACT \$ 3,980.00	
PROJECT Test well drilling, Delaware Water Gap National Recreation Area				CHANGE ORDERS* \$	
LOCATION Slateford, Pennsylvania				TOTAL CONTRACT \$	

ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
1	50'	Drill 6 inch hole, case and grout	81'	\$27.50	\$2,227.50
2	250'	Drill 6 inch open hole	300'	8.50	2,550.00
3	0	Did not accepted	0	120.00	00
4	8 hrs.	Develop by surging	8 hrs	20.00	160.00
5	8 hrs.	Standby time	0	20.00	00
6	Job	Plugging well hole	0	160.00	00

RECOMMENDED (Project Supervisor)		SUMMARY	
Signed		TOTAL TO DATE \$ 4,937.50	
Marvin Feldman, Hydrologist		LESS RETAINED AMOUNT..... 00	
Office of Land Acquisition & Water Resources, ESC		NET..... 4,937.50	
APPROVED (Contracting Officer)		LESS PREVIOUS PAYMENTS..... 00	
Signed		LESS LIQUIDATED DAMAGES..... 00	
Ray G. Martinez, Chief, Procurement and Contracting Officer		DUE THIS ESTIMATE..... \$4,937.50	
DATE DEC 29 1970		% COMPLETED TO DATE: 100%	

*Show Breakdown on Reverse

(See Reverse for Distribution)

MF
12/8/70
Paul

L54 ESC-LW

December 8, 1970

LETTER OF ACCEPTANCE

Mr. Allen J. Greening, Sr.
300 West Ann Street
Milford, Pennsylvania 18337

Dear Mr. Greening:

A final inspection of your contract No. 14-10-7:993-473 for drilling of a test well at Delaware Water Gap National Recreation Area, Pennsylvania, and of your contract No. 14-10-7:993-468 for the drilling of a test well at Delaware Water Gap National Recreation Area, New Jersey, was made on November 17, 1970, by Park Planner James L. Ischogle of Delaware Water Gap National Recreation Area.

This inspection revealed that the work was completed in accordance with specifications and is hereby accepted.

Sincerely yours,

(Sgd) RAY G. MARTINEZ

Ray G. Martinez
Chief, Procurement and Contracting
Officer

 Signed

By Marvin Feldman
Hydrologist, ESC

cc:
General Superintendent NCP Attn: Finance Office
Director, Northeast Region
Superintendent, Delaware Water Gap NRA
Chief, Division of Water Resources, WASO
ESC-Contracts
ESC-OPM

ESC-LW (Water Resources - DWG Contracts)
ESC-D

MFeldman:egz 12/8/70



IN REPLY REFER TO:

D52

United States Department of the Interior

NATIONAL PARK SERVICE
Delaware Water Gap National Recreation Area
Highway I-80
Columbia, New Jersey 07832

November 19, 1970

Memorandum

To: Director, Eastern Service Center
Attention: Garry Moore

From: Acting Superintendent, Delaware Water Gap

Subject: Contract #14-10-7-993-473, Mt. Minsi & Slateford Wells
Contract #14-10-7-993-488, Karamac Well

The following is a list of the work completed by Greening on the test wells covered under the above-mentioned contracts:

Slateford Creek Well:

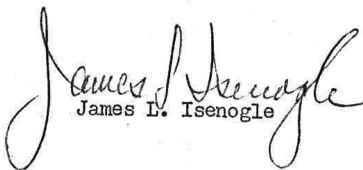
1. Installed 81' of casing
2. Drilled down 300'
3. No pump testing for yield, drawdown, and recovery of well.
4. 8 hrs. spent to develop well by surging.
5. No standby time.
6. Did not plug well hole.

Mt. Minsi Well:

1. Installed 74' of casing.
2. Drilled down 300'
3. No pump testing for yield, drawdown and recovery of well.
4. Did not develop well by surging.
5. 2 hrs. standby time for crew and equipment.
6. Did not plug well hole.

Karamac Well:

1. No casing installed.
2. Drilled down 300'
3. No pump testing for yield, drawdown and recovery of well.
4. No hours spent to develop well by surging.
5. No standby time for crew and equipment.
6. Well hole plugged.


James E. Isenogle

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GEOLOGY AND GROUND WATER RESOURCES OF THE SLATEFORD CREEK AREA IN
THE DELAWARE WATER GAP NATIONAL RECREATIONAL AREA

By

Charles W. Poth, Hydrologist

U.S. Geological Survey

The Slateford Creek area is located on the southern slope of Kittatinny Mountain and is underlain by the Ramseyburg Member of the Martinsburg Formation of Late Ordovician age. The Ramseyburg consists of alternating beds of claystone slate and gray to brown sandstone or siltstone. The beds range in thickness from less than an inch to more than 4 feet and average about one foot. They tend to be lenticular and of uneven thickness, and dip generally northwestward at angles ranging from 10 to about 50 degrees.

A veneer of glacial debris (generally less than 20 feet thick) covers the bedrock. The thickness of the glacial material increases toward the valley and exceeds 50 feet in thickness downslope from the area.

Water occurs in and moves through openings along bedding planes and fracture systems in the Ramseyburg. A well must intersect one or more of these openings in order to yield water. However, as the openings are irregularly distributed throughout the rock, yields of wells may be expected to range widely.

Yields of a half dozen wells in the Ramseyburg within about a mile of the Slateford Creek area ranged from 10 to 150 gpm (gallons per minute). Two of these wells are owned by the Borough of Portland. They are reported to be 500 to 800 feet deep and to yield 17 and 150 gpm, respectively. The other four wells were drilled for domestic use. They are reported to range from 80 to 140 feet in depth and to yield from 10 to 55 gpm. All six wells are farther from the crest of the mountain than the Slateford Creek area and penetrate greater thicknesses of glacial material than is generally present there.

Four to five miles southwest of the area and along the slope of the mountain are a group of public-supply wells owned by the boroughs of Bangor and East Bangor. These wells are slightly farther from the crest of the mountain than the Slateford Creek area and penetrate a greater thickness of glacial material than is present there. The bedrock in this area consists of slate and is called the Pen Argyl Member of the Martinsburg Formation. It overlies the Ramseyburg stratigraphically. The wells are reported to range from 135 to 517 feet in depth and to yield from 50 to 360 gpm.

The static water level of the Bangor and East Bangor group of wells is reported to fluctuate annually from above land surface to about 50 feet below the surface. This large annual fluctuation controls the amount of available drawdown in the wells at a given time and, hence, affects the sustained rate at which these wells may be pumped. The yield of some of the wells is reported to decrease by 50 percent from spring to fall.

In summary, wells drilled in the Slateford Creek area may be expected to yield small supplies of water (probably less than 25 gpm). Wells drilled lower on the slopes of the mountain, where the glacial material is thicker, will have a higher static water level and probably a greater yield.

Docket Information

Number of Documents in Docket 43

Documents Dated from 6/15/1970 to 12/8/1970

Docket Compiled: 3/3/2011