BEDROCK MAP OF THE HACKENSACK MEADOWS

GEOLOGIC REPORT SERIES NO. 1

NEW JERSEY GEOLOGICAL SURVEY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Department of Environmental Protection
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BEDROCK MAP

HACKENSACK MEADOWS

1959

Bureau of Geology and Topography
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HACKENSACK MEADOWS

This summary of the bedrock conditions underlying the Hackensack Meadows was undertaken because of the current interests in reclamation in the area. A statement was made at a Hackensack Meadows reclamation meeting that very little was known about the depth to bedrock. Since this was somewhat contrary to the opinions of the staff of the Bureau of Geology, who had in the past been called upon to solve problems with regard to wells drilled in the Meadows area, it was decided to see how much information was actually available in the files of the Bureau. This report is the first compilation of that work. The area of investigation has been extended both north and south of the area shown on the map. New information is continuing to come in and an interpretation of the geology and geologic history of the area is not being made at present because certain key areas, with respect to the geologic history, are still under investigation. Since information is of very little use as long as it remains buried and unused in the files, this report has been prepared.

The map and sections are as accurate as the available information will permit. The exact position of the inferred contour lines on bedrock will change as new information is received. Only the logs of wells and borings used in constructing the cross-sections are given in this report. Information about other borings shown on the map, but not occurring on the section line are, therefore, not listed. This data, when available, may be secured from this Bureau. Since the information about these borings was secured from a wide variety of sources, there is both an overlapping of terminology and of degrees of information. In some cases, only the depth of the hole and whether or not rock was penetrated is available. In other cases the records are complete.

As stated above, this does not represent the final views of the Bureau and the map should be used with care in the area between Bayonne and Newark. Information at hand indicates that some of the contours may have to be changed radically in this area. If the hypothesis under investigation proves correct, it may be that the two deep channels between Bayonne and Newark have a cross-connection in this general area.

The excellent cooperation of all the individuals and companies who have been approached in the search for data is greatly appreciated by the Bureau. So many sources were involved in gathering this information that it is believed it is better to thank all and sundry as a group, rather than try to list the individuals who contributed and thereby commit a sin of omission.

Kemble Widmer
State Geologist

May 12, 1959

Section A - A

1. Alexander Summer & Company test boring.

1 - 4	fine brown sand-trace of clay
4 - 7	soft brown sandy clay
7 - 40	soft brown and gray clay w/thin layers of sand.
130 -	red sandstone

2. Bendix Corporation test hole.

0 - 190	soft clay
190 - 220	fine and coarse sand
220 -	red sandstone

3. Bendix Corporation test hole.

0 - 168	soft clay with hardpan last 5'
168 -	red sandstone

4. Port of New York Authority test boring.

at 100' red sandstone.

5. Spinnerin Yarn water well.

0 - ?	varved clay
? - 160	sand and gravel above bedrock
160 -	Triassic sandstone and shale.

6. Detroy Press water well.

62' to Triassic shale and sandstone.

7. Detroy Press water well.

0 - 67	sandy clay
67 -	Triassic sandstone and shale.

8. Stage Coach Inn (well).

0 - 10	soil
10 - 60	clay
60 - 75	gravel and sand
75 -	sandstone

9. Mauraydi (well).

0 - 5	soil
5 - 48	red clay and sand
48 -	red shale

10. State Highway Department boring.

at 28' red shale.

11. Lincoln Paper Company (well).

0 - 15	fill
15 - 95	mud
95 - 117	clay
117 -	red shale

12. New Jersey Turnpike Authority test boring.

+3.4 - 1.6	meadow bog
1.6 - 8.6	gray fine sand
8.6 - 13.6	gray fine sand and clay
13.6 - 77.6	red soft silty clay
77.6 -132.6	red fine sand

13. New Jersey Turnpike Authority test boring.

+5 - 0	fill
0 - 3	sand and clay
3 - 45	gray to red silty clay with fine sand
45 - 52	red medium sand
52 - 67	red fine sand
67 - 75	silty sand
75 - 92	silty sand and coarse gravel
92 - 96	red shale and sandstone

14. Highway Department test boring.

0 - 5	soft silt
5 - 12	gray clay
12 - 54	yellow clay
54 - 69	red clay
69 - 75	red sand and gravel
75 -	red shale

15. Highway Department test boring.

0 - 18	creek
18 - 23	soft silt
23 - 30	gray clay
30 - 57	yellow clay
57 - 63	sand and gravel
63 -	shale

16. Pfister Chemical Company well #2.

0 - 40	clay
40 - 63	sand, some gravel
63 -	shale

17. Flintkote well.

0 - 14	fill
14 - 25	sand and clay
25 - 38	sand and gravel
38 -	baked shale or trap

Section B - B

1. Permanent notes, New Jersey Geological Survey.

   85' to bedrock

2. Permanent notes, New Jersey Geological Survey.

   191' to bedrock

3. Hackensack Water Company. Well #1.

0 - 1	fill
1 - 4	muck
4 - 28	gray sand and clay
28 - 60	gray clay
60 - 79	light brown clay
79 - 106	sandy brown clay
106 - 110	gravel, sand and clay
110 - 113	gravel and sand
113 - 115	medium coarse sand (active)
115 - 120	sand and gravel
120 - 126	clay with sand and gravel
126 - 130	clay with gravel
130 - 137	red hardpan
137 - 139	sand and gravel
139 - 146	red hardpan
154 - 170	silty red brown and gray clay
170 - 182	red silty sandy clay
182 - 188	coarse sand and clay
188 - 208	red hardpan
208 - 214	red clay and sand
214 - 237	red hardpan
237 - 238	red sands
238 - 243	red rock

4. Hackensack Water Company. Well #2.

0 - 2	fill
2 - 7	muck
7 - 25	gray clay
25 - 27	red clay
27 - 44	red sand and gravel (active)
44 - 59	sand and gravel "
59 - 63	fine sand with gravel "
63 - 74	coarse sand less gravel (active)
74 - 77	coarse sand and gravel "
77 - 83	fine sand and gravel "
83 - 87	coarse sand and gravel "
87 - 92	fine sand and clay
92 - 109	fine red sand
109 - 130	red clay with sand
130 - 150	red clay, sand with gravel
150 - 167	brown sand and clay
167 - 174	brown sand

174 - 179	red sandy clay
179 - 192	red sand with gravel
192 - 251	red clay sand and little gravel
251 - 263	red clay and sand
263 - 271	red rock and sandstone

5. Little Ferry Bronze Company Well.

0 - 82	gray clay
82 - 90	red sand
90 - 96	hardpan
96 - 160	red shale

6. Terminal Construction Company Well.

0 - 80	gray clay
80 - 90	red sand
90 - 113	hardpan
113 - 190	red shale

7. Bergen County Sewage Plant boring.

90 feet to rock

8. Merhoff Brick Company Well.

85 feet to rock

9. Bergen County Sewage Plant boring.

0 - 7	marsh
7 - 20	gray clay and organic matter
20 - 31	fine sand
31 - 70	clay
70 - 75	sand and gravel
75 - 82	gray sandstone
82 - 87	red shale

10. Transco Gas Pipeline boring.

0 - 6	fill
6 - 10	sand and marsh muck
10 - 67	red clayey silt with fine sand
67 - 86	brown clay with fine sand
86 - 111	sand and gravel
111 - 124	fine brown sand

11. New Jersey Turnpike boring.

+6.3 - 1.7	cinders
1.7 - 8	silty sand
8 - 63	brown clay with thin sand layers
63 - 74	reddish brown silty sand
74 - 116	reddish brown clay with fine sand and gravel
116 - 137	fine to medium reddish brown sand and gravel
137 - 170	coarse red sand

12. New Jersey Turnpike boring.

0 - 3	fill
3 - 7	gray sand
7 - 108	gray and brown silty clay
108 - 119	red silty sand
119 - 129	red clay and gravel
129 - 140	clay sand and gravel

13. New Jersey Turnpike boring.

114 feet to sandstone

14. Public Service Electric & Gas Company.

+3 - -2	marsh
-2 - 7	gray sand
7 - 14	gray clay
14 - 26	brown clay
26 - 65	gray clay
65 - 66	blue sand

15. Permanent notes, New Jersey Geological Survey.

90 feet to rock

16. Joseph Turner & Company Well.

30 feet to rock

17. Merrill Corporation Well.

25 feet to rock

Section C - C

1. Caughey Bar Well. el +10

   201' to bedrock, sandstone and shale.

2. Hackensack Water Company.

0 - 10	marsh
10 - 38	clay
38 - 86	sand and gravel

3. Hackensack Water Company.

0 - 4	marsh
4 - 110	clay, some sand
110 - 130	sand and gravel
130 - 137	clay
137 - 154	sand gravel and clay
154 - 237	mostly clay some sand and gravel
237 - 250	sand
250 -	red sandstone, shale

4. Trubeck Labs Well.

0 - 10	fill
10 - 130	clay
130 - 145	gravel
145 - 150	clay

5. Permanent Notes, New Jersey Geological Survey

   191' to rock

6. Hackensack Water Company

0 - 7	marsh
7 - 27	clay
27 - 109	sand and gravel
109 - 150	clay
150 - 192	sand and gravel
192 - 263	clay, sand and gravel
263 - 271	sandstone

7. WNEW Radio Station borings.

0 - 5	bog
5 - 8	gray clay
8 - 16	brown clay
16 - 60	gray clay
60 - 64	red clay
64 - 75	clay and gravel
75 - 78	clay gravel and sand
78 -	rock - other borings had 72 and 84 feet to bedrock

8. Meadowlands Regional Planning Board.
Master Plan #1; boring #3.

0 - 3	fill
3 - 7	meadow bog
7 - 14	gray clay
14 - 40	gray clay with sand
40 - 43	clay sand and gravel

9. Belle Meade Development Corporation Well.

0 - 8	fill
8 - 40	marsh muck
40 - 215	clay
215 - 220	sand and gravel
220 - 255	clay
255 - 416	shale

10. Highway Department boring.

Bedrock at 10'.

11. Vestal Builders Well.

12 - 20	marsh
20 - 95	clay
95 - 130	red sandstone

12. Highway Department. Borings on S-3 over Hackensack River.

W to E 62, 74, 65 feet to bedrock

13. Highway Department boring.

54' no rock

14. Keystone Metal Finishers Well.

0 - 18	glacial drift
18 - 200	Triassic sandstone

15. Turnpike Borings.

0 - 8	marsh
8 - 20	gray clay
20 - 30	sand and gravel
30 - 35	shale

16. Turnpike borings. West to East
58, 80 and 98 feet to bedrock

17. Turnpike boring.

0 - 7	marsh
7 - 17	clay
17 - 21	sand
21 - 69	clay
69 - 92	silt
92 - 98	clay
98 - 130	sand and gravel
130 -	refusal

17A. Turnpike boring.

0 - 7	marsh
7 - 55	silty clay
55 - 70	sand and gravel

18. Highway Department borings.

0 - 9	marsh
9 - 18	gray clay
18 - 57	brown clay
57 - 102	red clay with gravel
	no rock

19. Highway Department boring.

190 feet to bedrock

20. Public Service boring.

0 - 7	marsh
7 - 11	sand
11 - 60	clay and sand
60 - 62	red sand
62 - 98	clay

21. Pennsylvania Railroad boring.

0 - 8	marsh
8 - 15	sand
15 - 108	clay
108 - 156	sand and gravel
156 -	shale

22. Pennsylvania Railroad boring.

0 - 8	marsh
8 - 11	sand
11 - 101	clay
101 - 116	sand and clay
116 - 140	sand
140 -	shale

23. Pennsylvania Railroad borings.

0 - 6	marsh
6 - 12	sand and clay
12 - 56	clay
56 - 59	sand and gravel
59	shale

Section D.- D

1. E.I. DuPont Wells.

   165', 185', 185' to bedrock

2. D.L. & W. Railroad borings.

   87 feet no rock

3. Erie Railroad boring.

0 -	7	marsh
7 -	18	sand and gravel
18 -	46	blue clay

4. Erie Railroad boring.

0 -	4	marsh
4 -	16	gray sand
16 -	41	clay and sand
41 -	81	clay
81 -	84	light brown sand
84 -		rock

5. New Jersey Turnpike boring.

0 -	7	marsh
7 -	8	clay
8 -	12	sand
12 -	94	blue clay
94 -	103	clay, sand and gravel
103 -		rock

6. New Jersey Turnpike boring.

0 -	6	marsh
6 -	13	gray silty sand
13 -	90	clay
90 -	95	sand and gravel and clay

7. New Jersey Turnpike boring.

0 -	9	marsh
9 -	12	sand
12 -	72	clay
72 -		red shale

8. New Jersey Turnpike boring.

0 -	10	mud
10 -	98	clay
98 -	103	stone and clay
103 -	106	brown clay

9. Erie Railroad boring.

0	- 6	marsh
6	- 41	clay
41	- 47	sand, gravel and clay
47	-	shale

10. D.L. & W Railroad boring.

130 feet no rock

11. Erie Railroad boring.

0	- 12	marsh
12	- 24	fine red sand
24	- 39	red sand and gravel
39	- 49	medium sand
49	- 64	fine red sand
64	- 69	medium to coarse sand
69	- 82	fine red sand
82	- 91	fine red sand clay and gravel
91	-	decomposed diabase

12. Erie Railroad boring.

0	- 16	sand, gravel and peat
16	- 22	brown sand and gravel
22	- 29	fine red sand
29	- 58	medium to coarse sand and gravel
58	- 69	fine brown sand
69	- 78	medium and coarse brown sand and gravel
78	- 82	fine brown sand
82	- 84	broken rock
84	- 89	diabase

Section E - E

1. State Highway Department boring.

   +43, +18, -3

2. State Highway Department boring . el 22.7

+22 -	-13	sand and gravel
-13 -		red sandstone and shale

3. State Highway Department boring.

+24 -	-5	sand and hardpan
- 5 -	10	fine sand
10 -	27	coarse sand
27		sandstone and shale

4. Stickel Bridge boring .

   bedrock at el - 30', -20'

5. Newark Center Corporation Well.

0 -	147	sand and clay
147 -		shale

6. Pennsylvania Railroad boring.

+17 -	-22	red sand and clay and gravel
-22 -	52	red clay and sand
52 -	87	red clay
87 -	92	red sand

7. Permanent Notes, New Jersey Geological Society.

   225' no bedrock.

8. Jersey Central Railroad boring el +10.

0 -	9	coarse gravelly sand
9 -	26	red clayey sand
26 -	30	same with gravel
30 -	52	sand and gravel

9. Pennsylvania Railroad boring.

0 -	17	water
17 -	25	black silt, sand, and gravel
25 -	35	red sand
35 -	76	red clay and sand
76 -	86	red clay
86 -	89	red sand
89 -	200	red clay
200 -	212	shale and sandstone

10. Pennsylvania Railroad boring.

0 - 10	water
10 - 17	black silt sand and gravel
17 - 27	red sand and gravel
27 - 48	red sand
48 - 59	red sand and clay
59 - 71	red clay
71 - 92	red sand
92 - 200	red clay
200 -	shale and sandstone

11. Permanent Notes, New Jersey Geological Survey

250' no bedrock

12. Public Service Electric and Gas wells.

207', 207', 168', 158' to bedrock

13. Kolker Chemical Company wells el +8.

0 - 6	fill
6 - 24	river muck
24 - 42	sand and gravel
42 - 67	silt
67 - 78	sand and gravel
78 - 87	silt
87 - 359	shale

other wells going west 90' & 98' to bedrock

14. State Highway Department borings.

0 - 10	cinders
10 - 30	brown sand
30 - 50	fine red sand & clay
50 - 59	coarse red sand
59 - 80	red shale

15.

0 - 10	fill
10 - 50	red sand
50 - 56	sand and gravel
56 - 76	red shale

16.

0 - 20	marsh
20 - 55	red sand and clay
55 - 75	red shale

17.

0 - 5	fill
5 - 15	red sand, clay and gravel
15 - 60	red sand and clay
60 - 80	red shale

18.

0 - 30	swamp mud
30 - 55	red clay and sand
55 - 76	red shale

19.

0 - 20	marsh mud
20 - 50	red sand
50 - 61	soft red shale
61 - 81	red shale rock

20.

0 - 17	swamp mud
17 - 20	red sand and clay
20 - 61	red sand
61 - 82	red shale

21.

0 - 25	swamp mud
25 - 36	gray sand
36 - 42	red sand and gravel
42 - 64	shale

22.

0 - 25	marsh
25 - 37	gray sand
37 - 42	red sand and gravel
42 - 65	red shale

23.

0 - 30	swamp marsh
30 - 50	gray sand
50 - 60	red sand and clay
60 - 84	red shale

24.

0 - 15	swamp marsh
15 - 35	gray sand
35 - 45	gray and red sand
45 - 55	red sand and clay
55 - 72	red clay and sand

25.

0 - 10	river mud
10 - 20	dark sand
20 - 30	coarse dark sand & gravel
30 - 40	coarse dark sand
40 - 60	fine red sand
60 - 70	fine red sand & clay
70 -	red shale

26.

0 - 20	water
20 - 39	river mud, sand, gravel
39 - 49	gray sand, gravel & clay
49 - 55	red clay and gravel
55 - 100	red shale

27.

0 - 20	water
20 - 39	river mud
39 - 48	red sand, clay
48 - 53	red clay, gravel
53 - 104	red shale

28.

0 - 33	brown sand
33 - 43	gravel
43 - 53	red clay
53 - 63	red sand and clay
63 - 85	red shale

29.

0 - 20	brown sand
20 - 30	fine gray sand
30 - 40	coarse gray sand
40 - 94	red clay
94 - 115	red shale

30.

0 - 25	swamp mud
25 - 45	gray sand
45 - 65	gray clay
65 - 118	gray clay
118 - 143	red shale

31.

0 - 12	swamp mud
12 - 42	gray sand
42 - 82	red clay
82 - 92	sand and clay
92 - 117	red clay
117 - 140	red shale

32.

0 - 30	swamp mud
30 - 45	gray sand
45 - 84	gray clay
84 - 108	red clay
108 - 118	red sand and clay
118 - 122	red clay and gravel
122 - 142	red shale

33.

0 - 14	swamp mud
14 - 34	gray sand
34 - 114	red clay
114 - 126	red shale
126 - 127	gray sandstone
127 - 142	red shale

34.

0 - 34	swamp mud
34 - 44	gray sand
44 - 98	gray clay
98 - 114	red clay
114 - 130	red sand
130 -	red shale

35.

0 - 4	swamp mud
4 - 38	gray sand
38 - 110	soft red clay
110 - 113	boulders
113 - 132	broken & seamy red shale

36.

0 - 12	swamp mud
12 - 35	gray sand
35 - 45	red clay
45 - 108	soft red clay & sand
108 - 128	red shale

37.

0 - 20	swamp mud
20 - 45	gray sand
45 - 56	coarse gray gravel
56 - 102	gray clay
102 - 137	red shale
137 - 148	gray sandstone

38.

0 - 16	swamp mud
16 - 56	gray sand
56 - 99	gray clay
99 - 127	red shale, sandstone

39.

0 - 13	swamp mud
13 - 54	gray sand
54 - 82	gray clay
82 - 110	red sandstone

40.

0 - 15	swamp mud
15 - 25	gray sand
25 - 55	gray clay
55 - 81	red clay and sand
81 - 102	red shale

41.

0 - 7	swamp mud
7 - 44	gray clay
44 - 51	red sand
51 - 68	soft red shale
68 - 73	gray sandstone
73 - 101	red shale & sandstone

42.

0 - 27	water
27 - 32	river mud
32 - 38	red clay
38 - 48	red shale
48 - 59	red shale and gray sandstone

43.

0 - 27	water
27 - 78	red shale

44.

0 - 31	water
31 - 35	river mud
35 - 39	red clay and sand
39 - 45	red shale
45 - 70	red sandstone

45.

0 - 30	swamp mud
30 - 45	red sand
45 - 79	red shale

Section F - F

1. P. Ballantine & Sons #8 Well.

0 - 135	sand and clay
135 - 600	shale

2. N. J. Highway Department borings.

75 and 71 feet to bedrock

3. N. J. Turnpike borings.

51 feet to bedrock

4. Central Railroad of New Jersey borings.

0 - 6	sand and gravel
6 - 26	clay and sand
26 - 43	hardpan and boulders
43 -	rock

5.

0 - 8	fill
8 - 33	very fine gray sand and clay
33 - 43	fine sand
43 - 50	red sand and clay
50 -	rock

6.

0 - 4	fill
4 - 24	gray sand & clay
24 - 34	fine sand
34 - 60	red sand & clay
60 -	rock

7.

0 - 10	sand and clay
10 - 30	fine gray sand
30 - 45	red sand & clay
45 - 55	hardpan and boulders
55 -	rock

8.

0 - 15	silt
15 - 24	sand
24 - 38	sand & gravel
38 - 48	red clay
48 - 59	fine red sand & clay
59 -	rock

9.

0 - 10	water
10 - 15	silt
15 - 36	fine sand
36 - 40	gravel
40 - 70	fine red sand & clay
70 -	rock

10.

0 - 9	water
9 - 19	silt
19 - 29	very fine sand & clay
29 - 39	coarse sand
39 - 79	very fine sand & clay
79 - 83	red sandstone
83 - 84	gray sandstone
84 - 89	red sandstone

11.

0 - 12	water
12 - 24	silt
24 - 34	fine red sand
34 - 54	gray sand & clay
54 - 104	fine sand & clay
104 -	rock

12.

0 - 5	fill
5 - 10	silt
10 - 19	sand
19 - 29	red sand & clay
29 - 75	fine red sand & clay
75 -	rock

13.

0 - 7	fill
7 - 17	gray sand and clay
17 - 37	red sand and clay
37 - 44	red sand some clay
	no bedrock

14.

0 - 8	fill
8 - 28	gray sand & clay
28 - 35	gray sand
	no bedrock

15.

0 -	9	fill
9 -	20	silt
20 -	30	coarse sand
30 -	98	red clay & sand
98 -		bedrock

16.

0 -	16	water
16 -	20	sand & gravel
20 -	35	very fine red sand and clay
35 -	105	red sand & clay
105 -		bedrock

17.

0 -	16	water
16 -	23	sand
23 -	45	clay
45 -	95	red clay
95 -	107	very fine red sand and clay
107 -		rock

18.

0 -	15	water
15 -	17	silt
17 -	57	red sand & clay
57 -	77	coarse red sand and clay
77 -	97	very fine red sand and clay
97 -		rock

19.

0 -	21	water
21 -	24	silt
24 -	32	fine sand
32 -	82	fine red sand & clay
82 -	92	fine red sand
92 -	103	fine red sand & clay
103 -	109	hardpan
109 -		red and gray sandstone

20.

0 -	17	water
17 -	19	silt
19 -	27	sand & clay
27 -	103	fine red sand & clay

21.

0 -	22	fill
22 -	52	red sand
52 -	62	red sand & boulders
62 -	87	red sand & clay
87 -		rock

22.

0 -	36	sand, gravel & boulders
36 -	50	fine red sand some clay
50 -		rock

23. Spalding & Jennings Well.

0 -	57	drift
57 -	91	shale
91 -	400	trap

24.

0 -	15	red sand
15 -	65	red clay & gravel
65 -	91	red sand & clay

Section C - G

1. Spinnerin Yarn Well.

0 - ?	varved clays
? - 160	sand and gravel
160 -	Triassic sandstone and shale

2. Bendix Corporation. Two wells.

0 - 10	silt
10 - 168	soft clay
168 -	red sandstone

2a.

0 - 10	silt
10 - 190	soft clay
190 - 220	coarse sand
220 -	red sandstone

3. Sewage Disposal Plant

175 - 235	gravel
269 -	red shale

4. Hackensack Water Company Well.

0 - 4	marsh muck
4 - 110	clay with some sand
110 - 130	sand and gravel
130 - 137	clay
137 - 154	sand, gravel and clay
154 - 237	mostly clay
237 - 238	sand
238 - 243	red rock

5. Hackensack Water Company Well.

0 - 7	marsh mud
7 - 27	clay
27 - 109	sand and gravel
109 - 150	clay
150 - 192	sand and gravel
192 - 263	clay sand and gravel
263 - 271	sandstone

6. Felhaber Pile Company & Highway Department boring.

0 - 38	fill
38 - 128	clay
128 - 175	glacial till
175 - 208	clay and loose gravel
208 - 297	shale

7. Passaic Valley Citizens Planning Association Master Plan #1.

0 - 7	marsh
7 - 13	fine brown sand with trace of clay and silt
13 - 25	fine brown red sand
25 - 56	gray clay with layers of silt
56 - 66	red brown sandy clay, with traces of gravel

8. E. I. DuPont Well.

185 feet to bedrock

9. Worthington Pump & Machine Company well.

295 feet to bedrock

10. Driver Harris well.

0 - 197	clays and sand
197 -	red clay
248 - 279	cobbles, gravel and sand
279 -	sandstone

11. Driver Harris well.

0 - 22	fill
22 - 31	clay, gravel and sand
31 - 40	coarse sand and gravel
40 - 58	red clay fine sand and gravel
58 - 72	red clay and gravel
72 - 82	red clay and fine sand
82 - 135	red clay
135 - 141	hard packed sand
141 - 155	red clay
155 - 166	clay sand and gravel
166 - 173	hardpan
173 - 192	sand and clay
192 - 212	red clay
212 - 225	coarse sand and gravel
225 - 231	clay and gravel
231 - 235	sand and gravel
235 - 240	clay and sand
240 - 253	sand and gravel
253 - 270	red clay and gravel
270 - 291	hard clay sand and large gravel
291 - 292	coarse sand and large gravel
292 - 337	red shale

12. Public Service Electric & Gas Company well.

15 - 33	dark fine sand
33 - 36	gravel
36 - 45	clay
45 - 65	fine reddish brown sand
65 - 145	sandy clay and soft brownstone gravel 80 - 83
145 - 180	sticky clay

180	- 212	brown sand
212	- 218	water-bearing gravel
218	- 232	sandstone el -207
232	- 263	decomposed shale
263	- 320	soft sandstone
320	- 699	hard brownstone

13. Pennsylvania Railroad boring.

0	- 10	water
10	- 17	black silt, sand and gravel
17	- 27	red sand and gravel
27	- 48	red sand
48	- 59	red sand and clay
59	- 71	red clay
71	- 92	red sand
92	- 200	red clay
200	- 212	shale and sandstone

14. Duranoid Mfg. Company Well el+10.

Rock at 268 feet from surface.

15. Interchemical Corporation Well.

0	- 100	quicksand
100	- 200	clay and sand
		rock at 224

16a. Claimoid Plastics Well.

0	- 11	sandy clay
11	- 24	quicksand
24	- 32	hardpan
32	- 76	clay
76	- 98	gravel with clay matrix
98	- 133	sandy clay
133	- 181	gravel with clay matrix
181	- 245	soft shale
245	- 485	red shale

16. Merchants Refrigerator Company Well.

Rock at 220 feet.

17. CO. two Fire Equipment Co. el +12

0	- 26	muck and fill
26	- 29	gray sand and clay
29	- 55	red sand and clay
55	- 71	red clay
71	- 81	fine red sand and clay
81	- 100	fine red sand
		rock at el -107

17a. Highway Department boring.

109 feet no bedrock

18. Suburban Cabins well.

126 feet of casing - may be some weathered shale

18a. Newark City garage.

0 - 19	fill
19 - 38	bog
38 - 75	clay
75 - 83	red sand
83 - 113	red sand
113 - 123	gravel, sand and clay

19. Orbis Products well el +5.

157 feet of casing (may include some weathered rock)

Section H - H

1. New Jersey Turnpike boring.

+4 - -2	marsh
-2 - 9	fine sand
9 - 78	clay and sand
78 - 133	fine sand
	no bedrock

2. New Jersey Turnpike boring.

0 - 7	marsh
7 - 14	clay
14 - 40	sand and gravel
40 - 42	sand
42 - 54	clay
54 - 101	sand and gravel

3. Public Service Electric & Gas Company boring el 3.1.

+3 - 1	marsh
1 - 5	fine sand
5 - 22	gray silt and layers of fine sand
22 - 37	gray clay and layers of fine sand
37 - 46	brown clay - layers of fine red sand and silt
46 - 71	brownish gray silty clay and fine sand
71 - 93	reddish clay - traces of fine sand and silt
93 - 118	fine brown sand - some gravel
	no bedrock

4. Public Service Electric & Gas Company boring el +3.9.

+3.9 - 0.9	marsh
1 - 6	fine to medium brown sand
6 - 47	soft gray silt
47 - 64	soft reddish gray clay and silt with thin layers of fine sand
64 - 85	gray silty clay
85 - 129	silty reddish clay in layers
129 - 149	medium reddish sand
	no bedrock

5. Public Service Electric & Gas Company boring el 9.6.

+9.6 - +3.6	silty red brown sand
+3.6 - -1.4	marsh
-1.4 - 6	greenish blue brown silty sand
6 - 12	reddish brown silty clay
12 - 57	brown gray silty clay
57 - 66	reddish brown silty clay
66 - 81	greyish brown and red clay
81 - 111	brown gray clay with sand layers
	no bedrock

6. New Jersey Turnpike boring.

surface to -7	silty sand and gravel
7 - 108	gravel with brown clay
108 - 119	silty sand
119 - 129	clay with little gravel
129 - 140	clay with gravel

7. New Jersey Turnpike boring.

surface to -7	brown sand
7 - 62	brown clay with sand
62 - 94	clay with sand

8. New Jersey Turnpike boring.

0 - 8	marsh
8 - 125	clay
125 - 128	sand and clay
128 - 161	sand and gravel

9. New Jersey Turnpike boring.

0 - 3	water
3 - 7	marsh
7 - 144	mostly clay - a little gravel
144 - 154	fine sand
154 - 157	coarse gravel
157 - 163	silty sand and coarse gravel

10. New Jersey Turnpike boring.

+8 - 0	white sand
0 - 7	marsh
7 - 55	clay
55 - 58	sand & gravel
58 - 64	sand
64 - 70	sand & gravel

11. New Jersey Turnpike boring.

0 - 7	marsh
7 - 17	clay
17 - 21	sand
21 - 69	clay
69 - 92	silt
92 - 98	clay
98 - 130	sand and gravel
130 -	refusal

12. State Highway Department boring.

190 feet to bedrock.

13. Pennsylvania Railroad boring.

0	- 8	marsh
8	- 15	sand
15	- 108	clay
108	- 156	sand & gravel
156	-	shale

14. Mullen Company well.

Mostly clay, silt and muck
Possibly 15' of gravel above trap? bedrock which is at el -110.

15. D. L. & W. Railroad boring.

Bedrock at el -130? (refusal at this depth)

Erie boring ± 600' East

+4	- -2	fill
2	- 13	marsh
13	- 24	brown sand
24	- 39	sand & gravel
39	- 82	sand
82	- 96	sand, clay & gravel
96	-	decomposed diabase

15a. Erie Railroad boring.

0	- 21	water
21	- 39	silt
39	- 41	sand
41	- 54	silt and clay
54	- 82	clay
82	- 113	gravel
113	- 118	red shale

16. Pennsylvania Railroad boring.

0	- 6	marsh
6	- 9	sand and clay
9	- 15	sand
15	- 100	clay with little gravel
100	-	rock

17. State Highway Department boring.

0	- 34	swamp mud
34	- 44	gray sand
44	- 98	gray clay
98	- 114	red clay
114	- 130	red sand
130	-	red shale

18. Western Electric Company well.

0	- 11	fill
11	- 25	marsh
25	- 33	sand
33	- 54	clay
54	- 96	fine sand and gravel
		no bedrock

19. Roosevelt Stadium boring.

0	- 5	fill
5	- 23	mud
23	- 31	sand
31	- 42	red sand and clay
42	- 51	red clay
51	- 117	red clay, sand & gravel
117	- 129	red sand and clay
129	-	sandstone

20. Passaic Valley Trunk Sewer.

0	- 11	mud
11	- 23	sand
23	- 43	sand and clay
43	- 73	gravelly clay
73	-	trap rock

21. Passaic Valley Trunk Sewer.

0	- 124	glacial
124	- 250	sandstone
250	-	trap

Section J - J

1. New Jersey Turnpike boring.

0 - 3	water
3 - 7	marsh
7 - 144	mostly clay a little gravel
144 - 154	fine sand
154 - 157	coarse gravel
157 - 163	sand and coarse gravel

2. New Jersey Turnpike boring.

0 - 8	marsh
8 - 125	clay
125 - 161	sand and gravel
	no bedrock

3. Armour Soap Company well.

0 - 18	marsh
18 - 25	blue green clay
25 - 112.7	sand and gravel, getting coarser toward bottom
112.7 -	rock

4. Public Service Electric & Gas Company boring.

0 - 8	marsh
8 - 13	blue clay
13 - 19	tan clay
19 - 21	tan and gray clay
21 - 81	gray clay
	no bedrock

5. Armour Company well.

bedrock at el -120

6. Armour Company well.

75 - 96 sand
bedrock at el -106

7. Armour Company well.

bedrock at el -100

8. Armour Company well.

gravel above rock
sandstone at el -90

9. Armour Company well.

rock at el -70 -- baked shale or trap

10. Armour Company well. ?

0 - 40	fill and soft clay
40 - 50	red sandstone
50 - 195	gray sandstone
195 - 200	hard black limestone (baked shale)?
200 - 220	hard dark sandstone
220 - 248	limestone (baked shale)?
248 - 251	trap
251 - 258	white sandstone
258 - 286	blue trap rock
286 - 335	white sandstone
335 - 350	black coarse sandstone

11. New Jersey Central Railroad boring.

+10 - +2	sand, some clay
+2 - -5	red sandy clay with boulders
-5 - 9	red sand and gravel
9 - 23	same, with some clay
23 - 35	hard sand, gravel and boulders with some clay
	no bedrock

12. New York Central Railroad boring.

0 - 15	red sand, stones and clay
15 - 16	boulders and coarse sand
16 - 22	gravel, sand and boulders
22 - 49	glacial drift
49 - 53	trap rock

13. Gibraltar Corrugated Paper Company well.

0 - 10	marsh
10 - 105	clay
105 - 126	sand and gravel
126 - 138	trap

14. Belleman's Bleach Company well.

0 - 16	clay
16 - 32	red sand
32 - 92	sand, gravel and boulders
92 - 145	trap
145 - 148	white sandstone
148 - 180	trap

15. Consolidated Bleach Company well.

0 - 93	clay sand and gravel
93 - 528	altered shale, then diabase

16. Belleman's Bleach Company well el +10

0 - 52	sand, gravel and boulders
52 - 92	white sandstone
92 - 146	trap
146 - 152	white sandstone
152 - 368	trap

# # # # # # # #

BEDROCK MAP, HACKENSACK MEADOWS AREA
NEW JERSEY
GEOLOGIC REPORT SERIES #1

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
H. Mat Adams, Commissioner

DIVISION OF RESOURCE DEVELOPMENT
Kenneth H. Creveling, Director

BUREAU OF GEOLOGY AND TOPOGRAPHY
NEW JERSEY GEOLOGICAL SURVEY
Kemble Widmer, State Geologist

Scale = 1:24000

1 MILE 1/2 0

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

Base Map U.S.G.S. 1:24000

LEGEND

CROSS-SECTION

- Marsh
- Sand and Gravel
- Clay and Silt
- Sandstone
- Shale
- Diabase
- Limestone

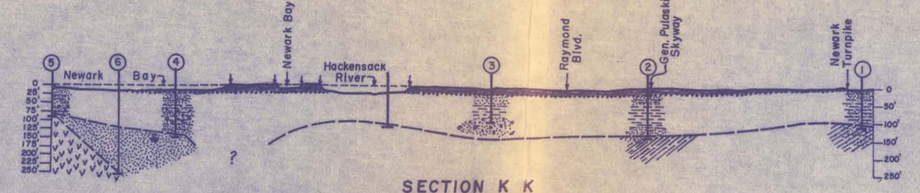
Numbered wells refer to appropriate detailed logs of each section

LEGEND

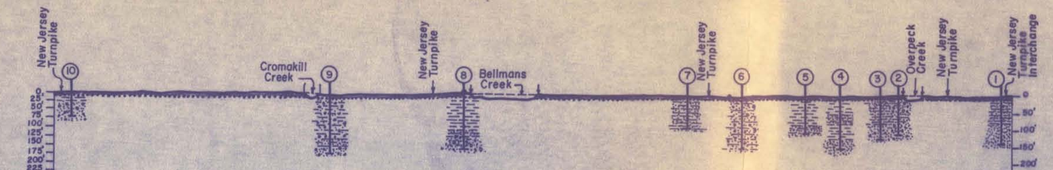
MAP

- Marsh area
- Bedrock at or near the surface
- 40 — Contour of bedrock below sea level
- 100 — Approximate boundary of ancient channel
- e 62 — Elevation of bedrock below sea level
- e 54 — Elevation below sea level to which no bedrock was found
- x 26 — Elevation of bedrock above sea level
- (15-E) — Well used in section (log in text)

SECTION G G
Scale:
Horizontal - 1" = 2000'
Vertical - 1" = 250'



SECTION K K
Scale:
Horizontal - 1" = 2000'
Vertical - 1" = 250'



SECTION H H
Scale:
Horizontal - 1" = 2000'
Vertical - 1" = 250'

ORIGINAL COMPILATION BY D.G. Parrillo, Geologist
REVISED January 1962 BY H.F. Kasabach, Geologist

BEDROCK MAP, HACKENSACK MEADOWS AREA
NEW JERSEY
CROSS-SECTIONS
GEOLOGIC REPORT SERIES #1

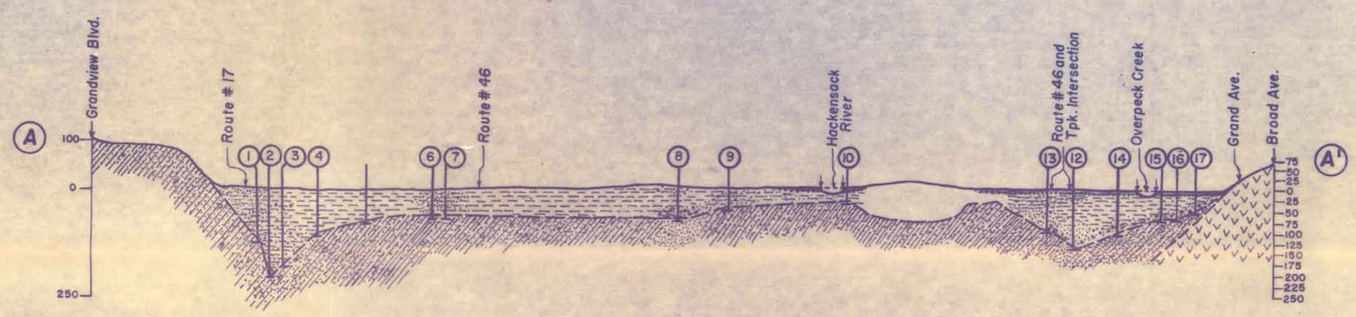
Scale:
Horizontal - 1" = 2000 Feet
Vertical - 1" = 250 Feet

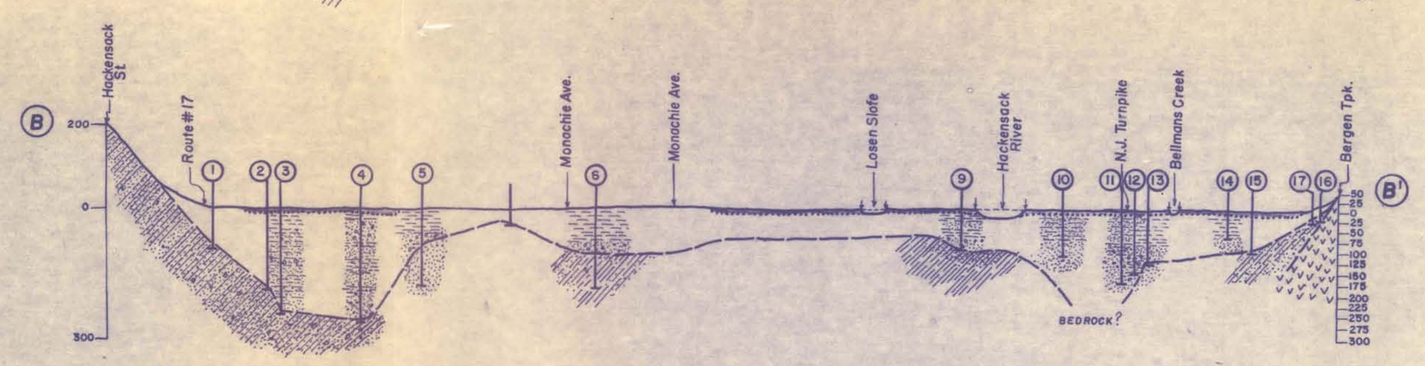
LEGEND

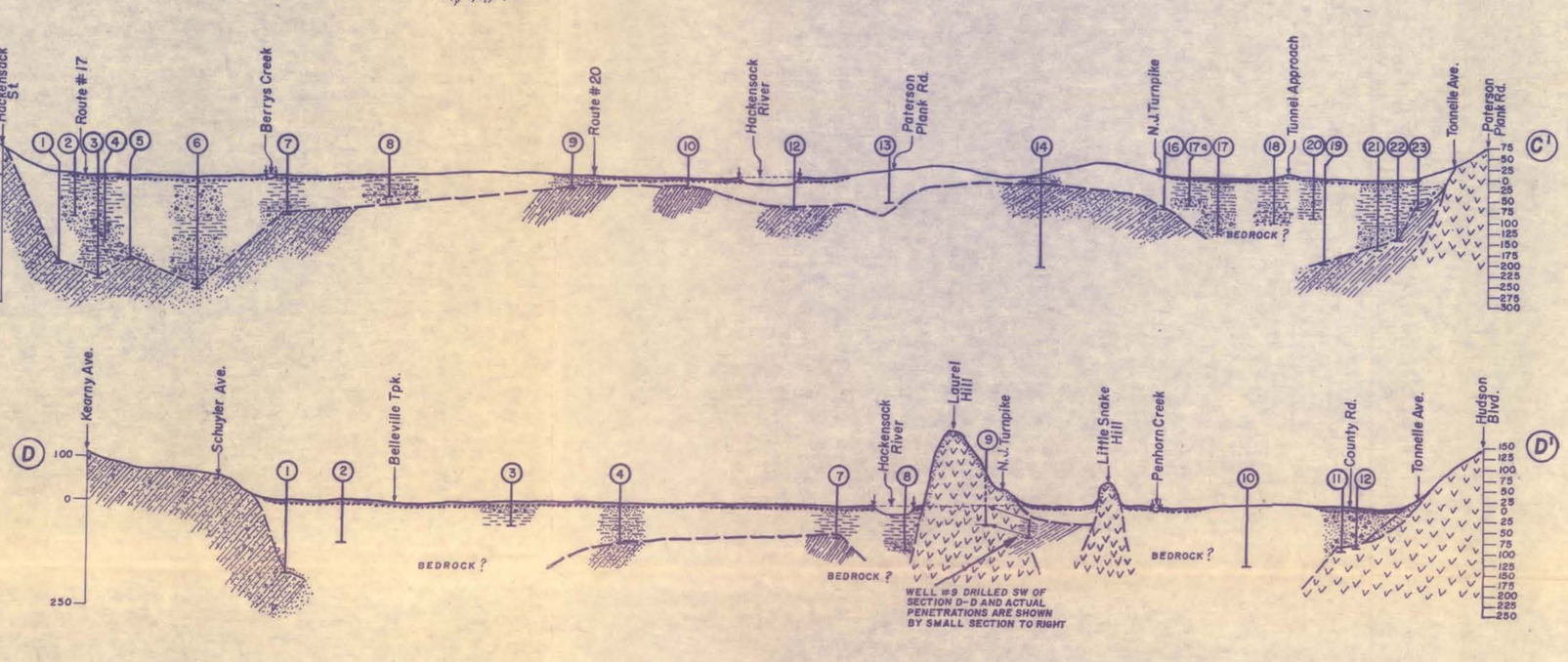
CROSS-SECTION

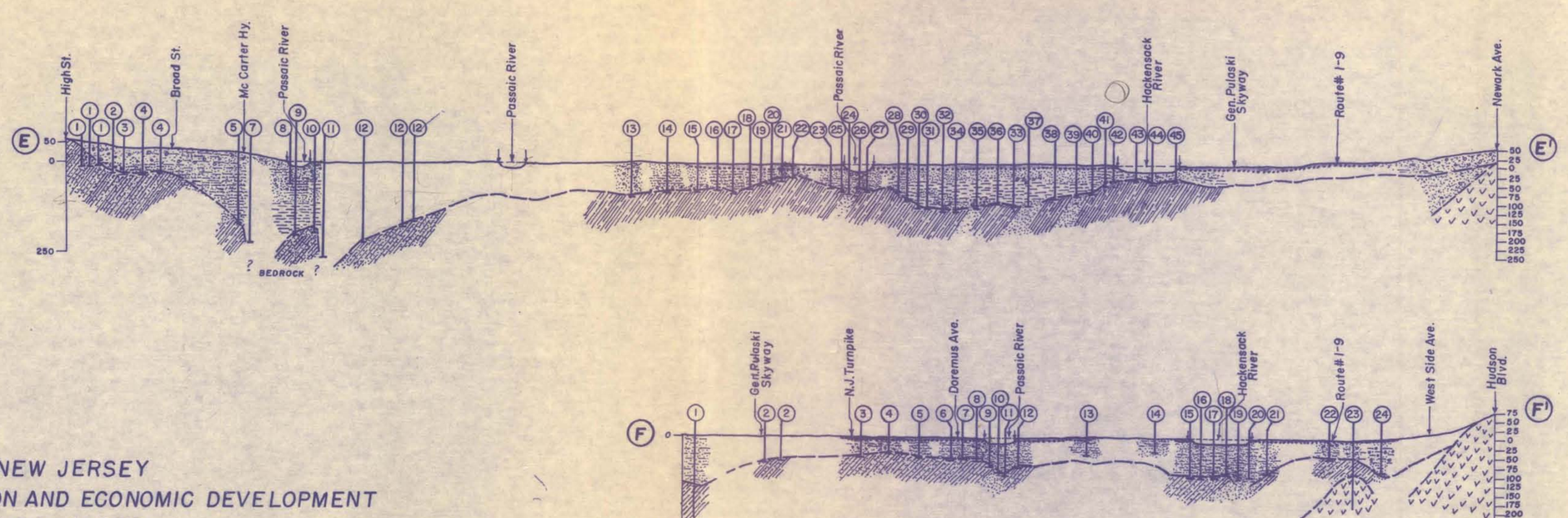
- Marsh
- Sand & Gravel
- Clay & Silt
- Sandstone
- Shale
- Diabase
- Limestone

Numbered wells refer to appropriate detailed logs of each section.









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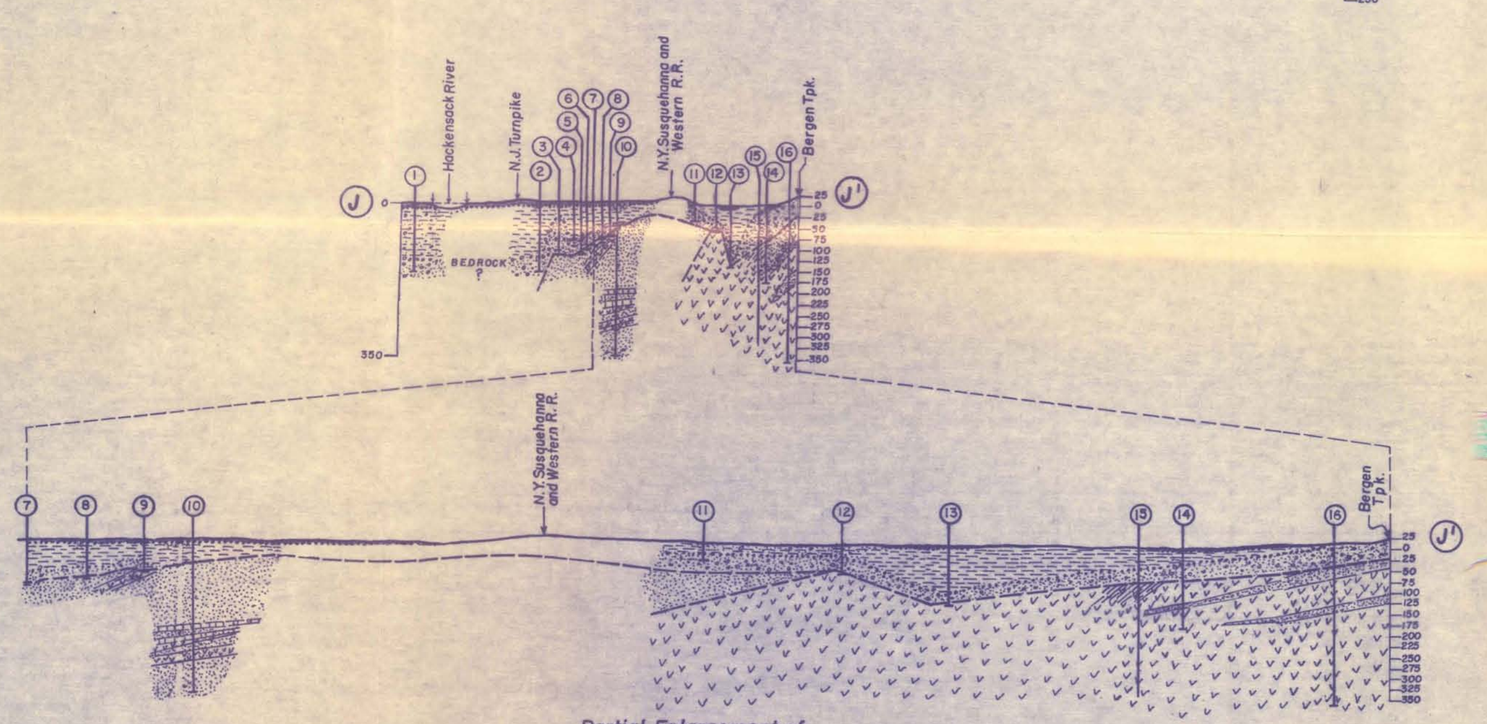

Partial Enlargement of
SECTION J - J'
Scale:
Horizontal - 1" = 300 Feet
Vertical - 1" = 250 Feet