

County PUTNAM
T 13 N R 3 W
Sec NE NE NE 31
Other Survey

Quarry or Pit...^X...Core.....Dim.....Other.....
Name ..Cloverdale Quarry.....
Former Names
.....
Operator ..Standard Materials.....
Former Operators

COAL AND INDUSTRIAL MINERALS SECTION
INDIANA GEOLOGICAL SURVEY
DEPARTMENT OF NATURAL RESOURCES
611 NORTH WALNUT GROVE
BLOOMINGTON, INDIANA 47401

MEMORANDUM REPORTS BY:	
Name	Date
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Date _____

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	REMARKS

Summary: Cloverdale Rock Core Drilling

M21004

Hole #C-070S-000 Elevation of Surface - 851.6

	<u>Overburden</u> - Red, brown silt clay with limestone boulders	0 to 12.0	
	<u>Limestone</u> - Gray, brown, weathered, set casing @ 14.0'	12.0 to 14.0	
Unit #1	<u>Limestone</u> - Tan and gray, hard, dense, fine grained to lithographic, medium bedded with small amount of shale partings.	14.0 to 44.0	
Unit #2	<u>Limestone</u> - Tan and gray, thin chalky, shaley, coarse to fine grain crystalline, brittle, shatters easily, chert layers and nodules, approximate 6 to 7 percent of beds	44.0 to 53.3	SC SL
Unit #3	<u>Limestone</u> - <u>Dolomites</u> and <u>Siltstones</u> brown to gray, interlayered hard med. bedded. Lithographic limestones with soft thin bedded porous dolomites, siltstones and shale approximately 35 percent is soft, highly abrasive and porous.	53.3 to 124.0	
Unit #4	<u>Limestone</u> - Tan, cream to gray, hard dense, med. grained crystalline, thick to massive bedded, styalitic, clean, with macro fossilé and oolitic layers	124.0 to 150.0	SL
Unit #5	<u>Limestone</u> - dark tan to gray, medium hard, medium to coarse grained crystalline, porous and soft in layers, thick to massive bedded, bioclastic with numerous small fossils, white calcareous carbonaceous material and laminae, styolitic.	150.0 to 184.0	

M21003

Hole #C-060S-010E Elevation of Surface - 845.8

	<u>Overburden</u> - Red, brown silty clay with limestone boulders.	0 to 22.0	
	<u>Limestone</u> - Tan, weathered, set casing @ 23.0'.	22.0 to 23.0	
Unit #1	<u>Limestone</u> - Tan to gray, hard, fine grained to lithographic, dense, dolomitic layer, medium bedded	23.0 to 34.4	SL
Unit #2	<u>Limestone</u> - Light gray, medium to thin bedded, hard, fine to medium grained, crystalline with shale partings and chert layers approximately 10 per cent.	34.4 to 44.0	SL

Unit #3 Limestone - Dolomite and Siltstones 44.0 to 103.0
alternating tan lithographic hard
medium bedded limestone with brown
to gray soft porous silty dolomites,
thin siltstone and shale beds occur.

Hole #C060S-010W Surface Elevation 842.9

Overburden - red, yellow silty clay 0 to 11.0
with limestone boulders
Limestone - brown, weathered set 11.0 to 12.0
casing @ 12.0'

Unit #1 Limestone - Gray to tan, hard, fine 12.0 to 34.5
grained, crystalline, medium bedded,
styolitic and irregular shale partings
interbedded with dark fine grained, hard
dense dolomite and shale partings
(22.3 - 30.0)

SG

SL

Unit #2 Limestone - Gray, medium hard, fine 34.8 to 45.7
to medium grained, laminated thin
bedded with chert nodules layers and
shale laminae. Approximately 12 per
cent chert.

Unit #3 Limestone - Dolomite and Siltstone 45.7 to 104.0
Alternating brown to tan and gray hard
lithographic limestones with soft porous
argillaceous dolomites

Conclusions:

Unit #1 is hard, dense limestone suitable for class "A" aggregate, the shale layers slake in water and can be removed by washing. Unit #1 occurs above elevation 807.0* Some of the higher layers may have high calcium stone beds.

Unit #2 is hard, thin bedded limestone which has shale partings and chert layers which may approach 10 percent. This stone may be suitable to mix with the lower 10 to 15 feet of unit #1 to produce #53 base coarse. These beds are expected between elevation 800.0 and 811.0*.

Unit #3 is a porous and soft dolomite and hard limestone which may be suitable for Class "B" stone, county road metal, and agricultural limestone. Below the water table and elevation 800.0*.

Unit #4 being hard and dense and apparently at high chemical grade. May be suitable for all general uses of class "A" stone, perhaps high grade chemical stone. This stone occurs below elevation 727.0.

Unit #5 being soft porous, thick bedded and granular is a typical building stone, easy to work, which also can be used for agriculture lime and perhaps chemical grade high calcium lime. This stone occurs below elevation 701.0.

* Note: Slight amount of dip to the west will affect the elevation of the units - the rate is about 1'/100' horizontal.

1 Water table -- October 1, 1966 - 816.0; November 9, 1966 - 812.6

J. E. Garrison
November 21, 1966

Summary: Cloverdale Rock Core Drilling
Hole #C-070S-000
Elevation of Surface - 851.6

Unit	Description	Depth	
	Overburden - Red, brown silt clay with limestone boulders	0.0	12.0
	Limestone - Gray, brown, weathered, set casing @ 14.0	12.0	14.0
1	Limestone - Tan and gray, hard, dense, fine grained to lithographic, medium bedded with small amount of shale partings.	14.0	44.0
2	Limestone - Tan and gray, thin chalky, shaley, coarse to fine grain crystalline, brittle, shatters easily, chert layers and nodules, approximate 6 to 7 percent of beds	44.0	53.3
3	Limestone - Dolomites and Siltstones brown to gray, interlayered hard med. bedded. Lithographic limestones with soft thin bedded porous dolomites, siltstones and shale approximately 35 percent is soft, highly abrasive and porous.	53.3	124.0
4	Limestone - Tan, cream to gray, hard dense, med. grained crystalline, thick to massive bedded, stylitic, clean, with macro fossils and oolitic layers	124.0	150.0
5	Limestone - dark tan to gray, medium hard, medium to coarse grained crystalline, porous and soft in layers, thick to massive bedded, bioclastic with numerous small fossils, white calcareous carbonaceous material and laminae, stylitic.	150.0	184.0

Cloverdale c6c

Summary: Cloverdale Rock Core Drilling
Hole #C-060S-010E
Elevation of Surface - 845.8

Unit	Description	Depth	
	Overburden - Red, brown silty clay with limestone boulders.	0.0	22.0
	Limestone - Tan, weathered, set casing @ 23.0'.	22.0	23.0
1	Limestone - Tan to gray, hard, fine grained to lithographic, dense, dolomitic layer, medium bedded	23.0	34.4
2	Limestone - Light gray, medium to thin bedded, hard, fine to medium grained, crystalline with shale partings and chert layers approximately 10 per cent.	34.4	44.0
3	Limestone - Dolomite and Siltstones alternating tan lithographic hard medium bedded limestone with brown to gray soft porous silty dolomites, thin siltstone and shale beds occur.	44.0	103.0

Summary: Cloverdale Rock Core Drilling
Hole #C-060S-010W
Elevation of Surface - 842.9

Unit	Description	Depth	
	Overburden - red, yellow silty clay with limestone boulders	0.0	11.0
	Limestone - brown, weathered set casing @ 12.0'	11.0	12.0
1	Limestone - Gray to tan, hard, fine grained, crystalline, medium bedded, stylonitic and irregular shale partings interbedded with dark fine grained, hard dense dolomite and shale partings (22.3 - 30.0)	12.0	34.5
2	Limestone - Gray, medium hard, fine to medium grained, laminated thin bedded with chert nodules layers and shale laminae. Approximately 12 percent chert.	34.8	45.7
3	Limestone - Dolomite and Siltstone Alternating brown to tan and gray hard lithographic limestones with soft porous argillaceous dolomites	45.7	104.0

INDIANA GEOLOGICAL SURVEY
MEMORANDUM REPORT

France Stone Co.
Cloverdale Quarry
Putnam County

Location: SE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 1, T. 12 N., R. 4 W.

Sampled by: Donald Carr and William Hohlbein

Date: October 30, 1984

Remarks: Beds of Mansfield, Elwren, and Reelsville lie above the Sample, but they were not measured or described.

<u>Sample Formation</u>	<u>Thickness (ft)</u>
4. Shale, medium gray, blocky to fissile, few thin laminae of siltstone. DC84-9	10.5
<u>Beaver Bend Limestone</u>	
3. Limestone, weathers reddish brown, not sampled.	6
<u>Bethel Formation</u>	
2. Shale and siltstone, siltstone increasing in upper part, medium to dark gray. DC84-8	4.0
1. Shale, dark gray, fissile to blocky. DC84-7	6.5
<u>Paoli-Ste. Genevieve Limestone</u>	
Working face of quarry, not sampled.	

Cloverdale Quarry 87
67-42-04-01

France Stone Co.
Cloverdale Quarry
Putnam County

Location: SE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 1, T. 12 N., R. 4 W.

Sampled by: Donald Carr and William Hohlbein

Date: October 30, 1984

Remarks: Beds of Mansfield, Elwren, and Reelsville lie above the Sample, but they were not measured or described.

Unit	Description	Thick- ness	Sample
	Sample Formation		
4	Shale, medium gray, blocky to fissile, few thin laminae of siltstone.	10.5	DC84-0009
	Beaver Bend Limestone		
3	Limestone, weathers reddish brown, not sampled.	6.0	
	Bethel Formation		
2	Shale and siltstone, siltstone increasing in upper part, medium to dark gray.	4.0	DC84-0008
1	Shale, dark gray, fissile to blocky.	6.5	DC84-0007
	Paoli-Ste. Genevieve Limestone		
	Working face of quarry, not sampled.		

INDIANA GEOLOGICAL SURVEY

ELECTRIC WELL LOG

M21003

WELL NO. 3 ELEVATION 845.8LOCATION: COUNTY PutnamSECTION 32, TOWNSHIP 13N, RANGE 3W

NW NW NW 600 NL 100 WL

Standard Materials--Cloverdale Quarry
060S 010E

Logged by: J. Whaley

RUN NUMBER	1	2		
DATE	2-13-67	2-13-67		
LOGGED FROM (feet)	24	29		
LOGGED TO (feet)	99.5	97.5		
LONG NORMAL (3)				
SHORT NORMAL (3)				
LONG NORMAL (4)				
SHORT NORMAL (4)		X		
LATERAL (A)				
LATERAL (B)				
SELF POTENTIAL	X			
HOLE DIAMETER				

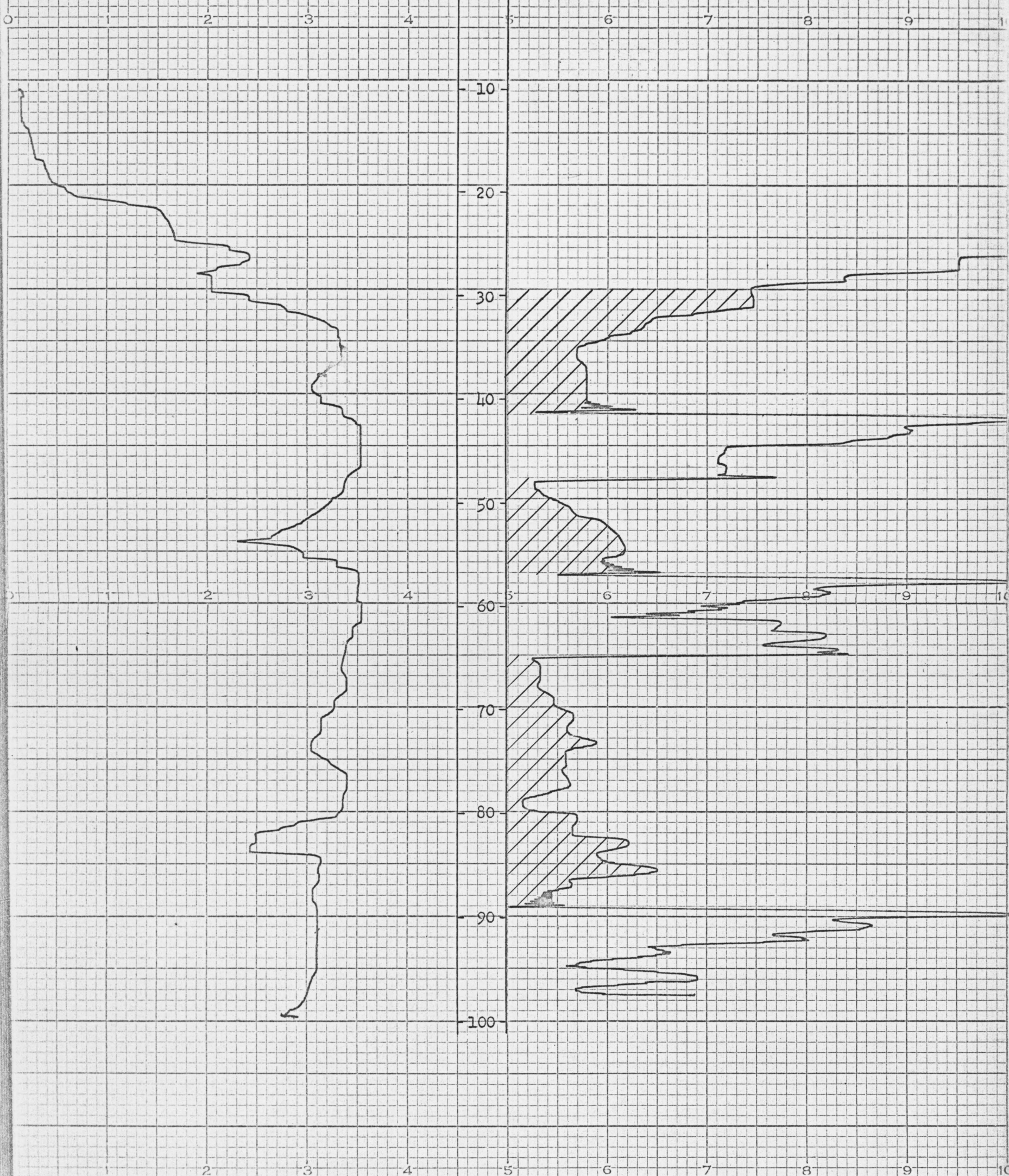
POTENTIAL

RESISTIVITY

4 electrodes--16 in. spacing

OHM-METERS

- 20 mv. +

0 100 200 300 400 500
0 1000 2000 3000 4000 5000

INDIANA GEOLOGICAL SURVEY

ELECTRIC WELL LOG *M21002*WELL NO. 2 ELEVATION 842.9LOCATION: COUNTY PutnamSECTION 31, TOWNSHIP 13N, RANGE 3W

NE NE NE 600 NL 100 EL

Standard Materials--Cloverdale Quarry
060S 010W

Logged: J. Whaley

RUN NUMBER	1	2		
DATE	2-13-67	2-13-67		
LOGGED FROM (feet)	15	16		
LOGGED TO (feet)	98	96		
LONG NORMAL (3)				
SHORT NORMAL (3)				
LONG NORMAL (4)				
SHORT NORMAL (4)		X		
LATERAL (A)				
LATERAL (B)				
SELF POTENTIAL	X			
HOLE DIAMETER				

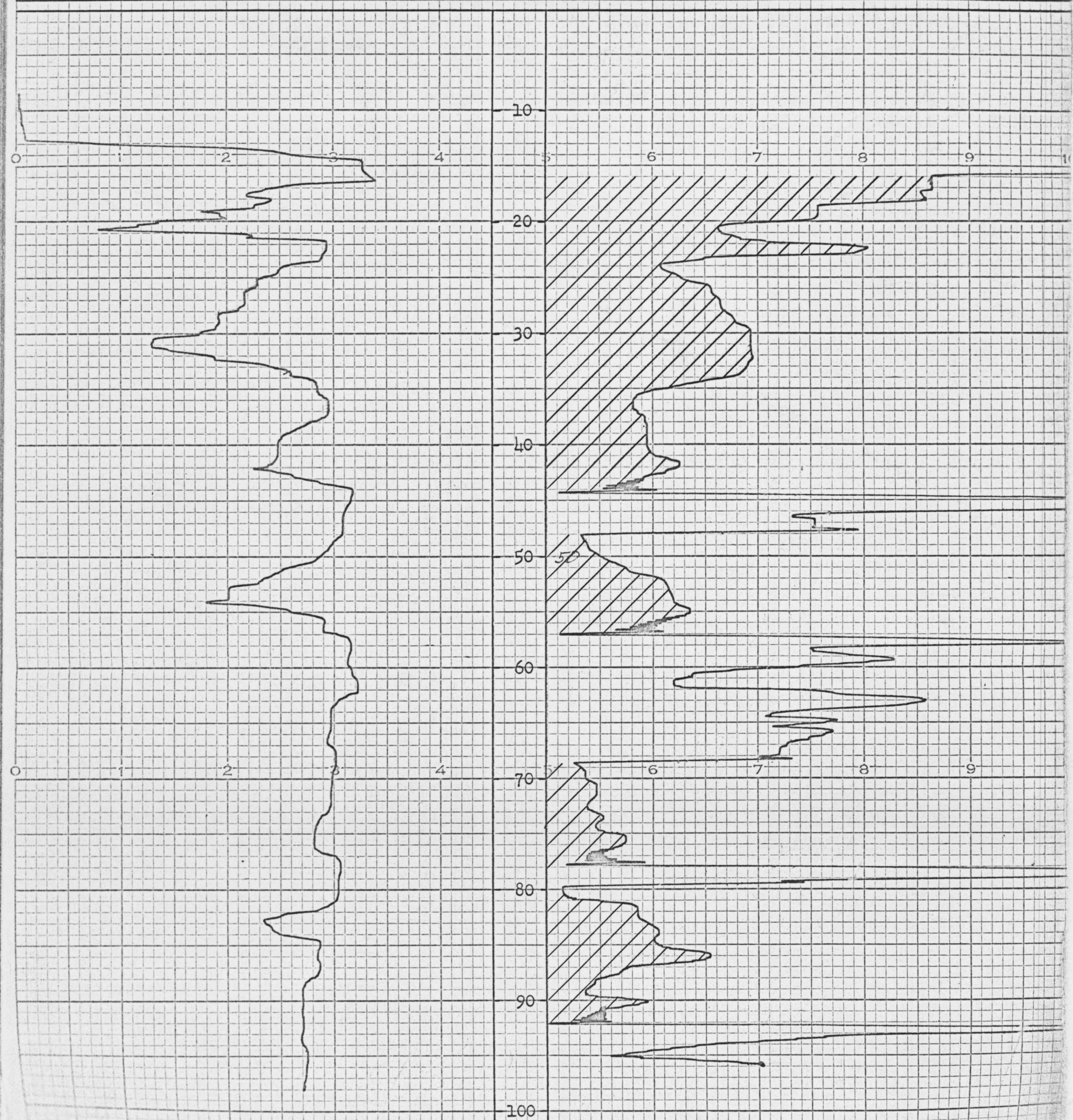
POTENTIAL

RESISTIVITY

4 electrodes--16 in. spacing

OHM-METERS

- 20 mv. +

0 100 200 300 400 500
0 1000 2000 3000 4000 5000

INDIANA GEOLOGICAL SURVEY

ELECTRIC WELL LOG *M21004*WELL NO. 4 ELEVATION 851.6LOCATION: COUNTY PutnamSECTION 31, TOWNSHIP 13N, RANGE 3W

NE NE 700 NL 0 EL

Standard Materials--Cloverdale Quarry
070S 000

Logged by: J. Whaley

RUN NUMBER	1	2		
DATE	2-13-67	2-13-67		
LOGGED FROM (feet)	31	38		
LOGGED TO (feet)	179	177		
LONG NORMAL (3)				
SHORT NORMAL (3)				
LONG NORMAL (4)				
SHORT NORMAL (4)		X		
LATERAL (A)				
LATERAL (B)				
SELF POTENTIAL	X			
HOLE DIAMETER				

POTENTIAL

RESISTIVITY

4 electrodes--16 in. spacing

OHM-METERS

- 20 mv. +

0 100 200 300 400 500
0 1000 2000 3000 4000 5000