

County ORANGE

T 3 N R 1 W

Sec SW SE 24

Other Survey

Quarry or Pit... X Core Dim Other

Name .. Orleans Quarry

Former Names

Operator .. Radcliff and Berry, INC.

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
1 John B. Patton .....	..... June 28 & July 11, 1948
2 Duncan J. McGregor .....	..... June 16, 1954
3 Duncan J. McGregor .....	..... August 7, 1953
4 L. Rooney & N. Smith .....	..... October 31, 1962
5 D. Carr & L. Rooney .....	..... May 17, 1966
6 .....	.....
7 .....	.....
8 .....	.....
9 .....	.....
10 .....	.....

REMARKS
Chemical analyses

Orleans Crushed Stone Co.

formerly

Radcliff and Berry Quarry

SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 3 N., R. 4 W.
Orange County

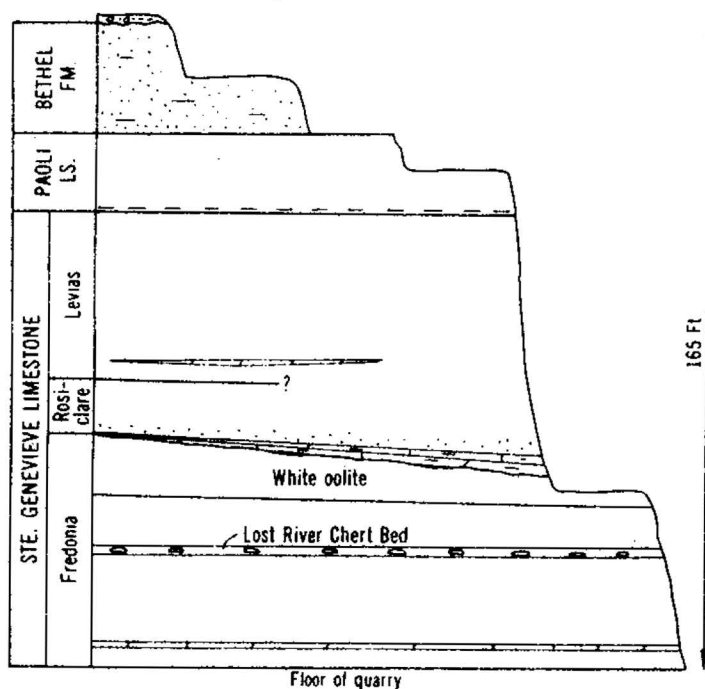


Figure 4-5. Generalized columnar section showing rocks exposed in the Radcliff and Berry quarry near Orleans.

The Radcliff and Berry quarry was selected for this stop because thick oolite beds are quarried selectively here for fluxstone. All the rocks exposed in the quarry (fig. 4-5) are Mississippian in age. The lowest floor of the quarry is only a few feet above the top of the St. Louis Limestone. The Ste. Genevieve and Paoli Limestones are the only formations quarried for commercial products. Sandstone and shale of the Bethel Formation are stripped.

The oolite bed of highest purity stands out clearly on the west, south, and east walls of the quarry because it is whiter than the overlying and underlying rocks. Two channel samples of this unit taken at different locations in the quarry

analyzed 98.8 percent CaCO_3 , 0.8 percent MgCO_3 , 0.13 percent SiO_2 , .003 percent P_2O_5 , and 0.01 percent sulfur. Much of the stone above and below this oolite bed is also oolitic and almost as pure as the prominent white unit. Approximately 35 ft of stone, including stone from 5 to 10 ft below and 10 to 15 ft above this oolite bed, is being quarried selectively for use as open-hearth fluxstone. The specifications for fluxstone are that it contain more than 96 percent CaCO_3 , less than 1.5 percent MgCO_3 , 1 percent SiO_2 , and 0.25 percent sulfur.

Dolomite and chert are the two major impurities that have complicated the production of fluxstone. Most of the dolomite is in the form of yellow-brown lenticular lenses that can be distinguished readily from the limestone, but no attempt is made to remove the dolomite. Some chert, also found in lenticular lenses, is quarried with the limestone. The thickest cherty unit is a layer of fossiliferous limestone about 2 ft thick called the Lost River Chert. To fill the fluxstone orders only stone above the Lost River Chert is quarried, including some stone that appears micritic.

The remaining stone above and below the unit used for fluxstone is used for aggregate and agricultural limestone. About 40 percent of the stone quarried as fluxstone is reduced below the minimum size for fluxstone ($1\frac{1}{4}$ in.) in the primary crusher and after further crushing is sold as agricultural limestone.

During our walk through the quarry we will be able to examine conveniently only the Fredonia Member of the Ste. Genevieve Limestone. The Lost River Chert is exposed near the top of the lower ramp on the west side of the quarry. Dolomite lenses are clearly visible on several faces of the quarry. Cross-bedding of oolitic limestone can be observed in the west wall. The sharp boundary between the massive white oolite and the overlying Rosiclare Member is of considerable interest. If you wish to examine it closely, take great care because rocks fall frequently from the face above the best exposure.

This composite section was prepared by Donald Carr from sections measured by Donald Carr and Lawrence Rooney on May 17, 1966, and from sections measured by John Patton in 1948 and by Lawrence Rooney and Ned Smith in 1962.

	Thickness (ft)
39. Soil: reddish-brown and mahogany-brown; residual clay	2.0
Bethel Formation:	
38. Shale and sandstone	28.0
Paoli Limestone:	
Downeys Bluff Mbr.	
37. Limestone: medium-brown, micritic, micritic-skeletal, silty; irregular upper surface with relief of 6-10 in. Thin lenses of sandstone in the upper part of the unit	0.8
36. Limestone: medium-brown, oolitic-micritic and micritic, silty; wavy-bedded in upper part; thin vertical fractures with calcite fill are common	9.0
Yankeetown Mbr.	
35. Limestone: light gray-brown, oolitic-skeletal and in part skeletal. Upper part is thin bedded and shaly	1.8
Shetlerville Mbr.	
34. Limestone: very light-brown, micritic, silty, slightly argillaceous, in part skeletal-micritic; thick bedded becoming medium and thin bedded near both the top and the bottom of the unit	5.2
Popcorn Mbr.	
33. Limestone, siltstone, and sandstone: limestone gray, micritic, very argillaceous; siltstone very calcareous; sandstone thinly interbedded, fine grained, resistant; forms a slight ledge on the quarry wall; weathers to reddish yellow brown. Shale <0.1 ft thick at both top and bottom of unit	3.7
Thickness of Paoli Limestone	20.5

Ste. Genevieve Limestone:

Levias Member:

32.	Limestone: gray-brown, brecciated, with clasts as much as several inches long; micritic matrix; bedding very contorted and thin; weathers rubbly; (Bryantville Breccia Bed)	1.7
31.	Limestone: medium-brown, micritic, dense, thick-bedded; conchoidal fractures; abundant veins and vugs filled with calcite	5.3
30.	Shale: gray, platy	0.1
29.	Limestone: light-brown, oolitic-skeletal, medium-bedded; very thin shale partings	2.2
28.	Limestone: light-gray, micritic, silty, medium-thin beds; very thin blue-gray shale partings mainly in lower part of unit; bedding varies from even to wavy	3.0
27.	Limestone: light-gray, micritic, silty, argillaceous, thin-bedded; interbeds of gray-green shale; poorly exposed	0.6
26.	Limestone: light-gray, dense to finely crystalline, oolitic, massive	6.5
25.	Limestone: gray, crystalline	1.5
24.	Limestone: tan, finely crystalline, massive; clay seam at top	3.4
23.	Limestone: gray, coarsely crystalline	4.8
22.	Limestone: light gray-brown, micritic, thick-bedded; very thin clay seams; stylolites and calcite seams common	9.1
21.	Shale: gray-green; not sampled	0.1
20.	Limestone: light-gray, oolitic-skeletal and micritic, thick-bedded; prominent stylolite 1.0 ft from base	4.3
	Thickness of Levias Member	42.6

Spar Mountain Mbr.

19.	Shale and sandstone: gray, platy, with limestone nodules; gradational with unit below	0.5
18.	Limestone: light-gray, pelletal, brecciated, with clasts as much as several inches long; grades into unit above and below	0.8
17.	Limestone: light-gray, oolitic and micritic, thick-bedded; prominent stylolites 0.2 ft and 0.8 ft above base; unit grades into brecciated unit above	3.4
16.	Limestone: gray, skeletal, brecciated, with clasts of light-gray micrite, some as much as 6 in. long; irregular bedding; stylolite marks the base of the unit; a thin shale parting marks the top of the unit	0.6
15.	Limestone: light-brown, oolitic, thick-bedded; prominent shale partings 0.9 ft and 2.6 ft above base; stylolites common	7.1
14.	Shale: gray, platy, calcareous	0.1
13.	Limestone: gray, oolitic-skeletal; irregular in thickness; thins to north	0.5
12.	Shale: gray, calcareous; irregular in thickness	0.1
	Thickness of Spar Mountain Member	13.1

Fredonia Member:

11. Limestone: white, oolitic, massive, crossbedded	15.2
10. Calcarenite: gray, fine- to coarse-grained, dense, stylolitic. Rock is made of oolites or pellets embedded in calcilutite	2.6
9. Calcarenite: dark-gray, tinted tan and brown, coarse- grained, dense. Rock probably is made of fossil debris, chiefly crinoid pieces, but contains rudaceous, angular pieces of calcilutite, and toward the top becomes oolitic ; . . .	2.4
8. Calcarenite: dark-gray, medium-grained, dense, in places poorly sorted. Rock is made of oolites embedded in calcilutite and in places in spar. Massiveness of bedding is masked by extreme fracturing as a result of blasting. Thickness of unit not accurately measured	5.0
7. Calcilutite: gray, dense, fossiliferous; in one stylolitic bed . . .	2.7
6. Calcilutite and silicilutite (Lost River Chert Bed): Silicilutite is dark blue gray, is very fossiliferous (bryozoans), and is present in thin beds or lenses. Calcilutite is gray, dense, and fossiliferous	2.3
5. Calcarenite: gray, dense, coarse-grained. Rock is made of fossils embedded in calcilutite and is in many thin beds demarcated by thick stylolites. Top of unit is arbitrarily placed at the base of the Lost River Chert Bed . . .	6.5
4. Calcarenite: gray to tan-gray, fine- to medium-grained, dense, thick-bedded, stylolitic. Rock probably is made entirely of fossil debris and includes a thin irregular lens of very large fossil debris	5.4
3. Calcarenite: dark-gray, very fine- to fine-grained, dense, brittle. Rock probably is a fossil-calcarenite and is in thin, slabby, and stylolitic beds	6.0
2. Dolomitic calcilutite or calcitic dololutite: dark-gray to dark-brown, sugary textured, fine-grained. Rock is in a massive bed that appears to have inclined laminations and contains large balls of large calcite crystals	2.8 to 3.0
1. Calcarenite: gray to brownish-gray, tinted tan, medium- to coarse-grained, thick-bedded. Rock is made of fossil debris laid in thick beds that are also stylolitic. Dolomitic and rubbly in basal foot	7.7
Thickness of exposed Fredonia Member	58.8
Thickness of exposed Ste. Genevieve Limestone	114.5
Total thickness of usable rock quarried	135.0

N. VAN NIELEN ATTN D. BIGGS
SOURCE
FIELD OFFICE (3)

INDIANA STATE HIGHWAY COMMISSION
DIVISION OF MATERIALS AND TESTS
SUMMARY OF QUALITY RESULTS

PAGE 1 OF 2

SEPTEMBER 25, 1978

SOURCE WESTERN MATERIALS COMPANY 2648.
BOX 187 ORLEANS, IN. 47452

ELEVATION TOP OF LEDGE 8 713 FEET ABOVE MSL

LEDGE QUALITY

LAB NUMBER	DATE SAMPLED	LEDGE NUMBER	GEOLOGICAL FORMATION	BULK SP.G. PCT	ABS. PCT	BRI.	L.A. WEAP PCT	S.S. LOSS PCT	F.T. QUAL LOSS RATNG PCT	APPROX DATA THICK VALID FT UNTIL
68-28136	11-03-67	1	PAOLI	2.650	.90		28.64	11.82	A1	8 02-03-70
68-28137	11-03-67	2	PACLI	2.660	.80		29.28	2.37	A1	9 02-03-70
68-28138	11-03-67	3	AUX VASES	2.550	2.40		44.12	21.66	81 3.75	3 02-03-70
69-28085	03-04-69	4	UPPER STE. GENEV	2.670	.70		30.28	4.93	A1	5 06-04-71
68-28140	11-03-67	5	UPPER STE. GENEV	2.660	.80		27.16	11.72	A1	5 02-03-70
68-28141	11-03-67	6	UPPER STE. GENEV	2.660	.70		30.94	3.05	A1	8 02-03-70
68-28142	11-03-67	7	UPPER STE. GENEV	2.650	.90		29.94	5.29	A1	11 02-03-70
77-28122	03-02-77	8	UPPER STE. GENEV	2.617	1.09	.45	25.60	3.84	A1	16 06-02-79
77-28123	03-02-77	9	UPPER STE. GENEV	2.528	2.29	.07	28.84	2.37	A1	13 06-02-79
77-28124	03-02-77	10	UPPER STE. GENEV	2.565	1.20	.18	29.22	3.41	A1	10 06-02-79
72-28181	05-04-72	11	UPPER STE. GENEV	2.650	.91		31.76	6.23	A1	5 08-04-74
78-28128	04-13-78	12	LOWER STE. GENEV	2.518	2.61	.47	33.52	30.39	7.61 A1	27 07-13-80

THIS REPORT IS FOR INFORMATION ONLY AND
IS NOT INTENDED TO BE USED FOR ADVERTISING.

C.F. Hotter
CHIEF, DIVISION OF MATERIALS AND TESTS

WESTMONT

MINING INC.

February 9, 1988

Mr. Donald D. Carr
Indiana Geological Survey
611 N. Walnut Grove
Bloomington, IN 47405

Dear Don:

It was nice seeing you again, if only briefly, at the AIME meeting in Phoenix. Unfortunately, we didn't have another opportunity to talk.

Enclosed is some information generated as an outcome of my trip last October. I ended up getting a few more samples than we took during our day in the field. The samples were ground in a Bantam pulverizer to mean particle sizes (M.P.S.) ranging from 4.4 to 11.5 microns before reflectances were measured using a Photovolt 670 model instrument. The reflectance values of the samples I took compare very closely with those analyzed by the Survey, and demonstrate that only a marginal increase in reflectance is obtained at finer particle sizes. The chemical analyses were done by the ICP-AA method and not XRF, which could explain the somewhat lower CaCO_3 values obtained in comparison to comparable IGS samples.

We are currently trying to assess various market-related aspects posed by a possible calcium carbonate producer in southern Indiana. Once this evaluation is complete, we may or may not be back for further on-site investigations.

I ask that you keep this information confidential among Survey personnel for a three year period, after which you may feel free to put it in your "public" files. Again, thanks for your help!

Sincerely,



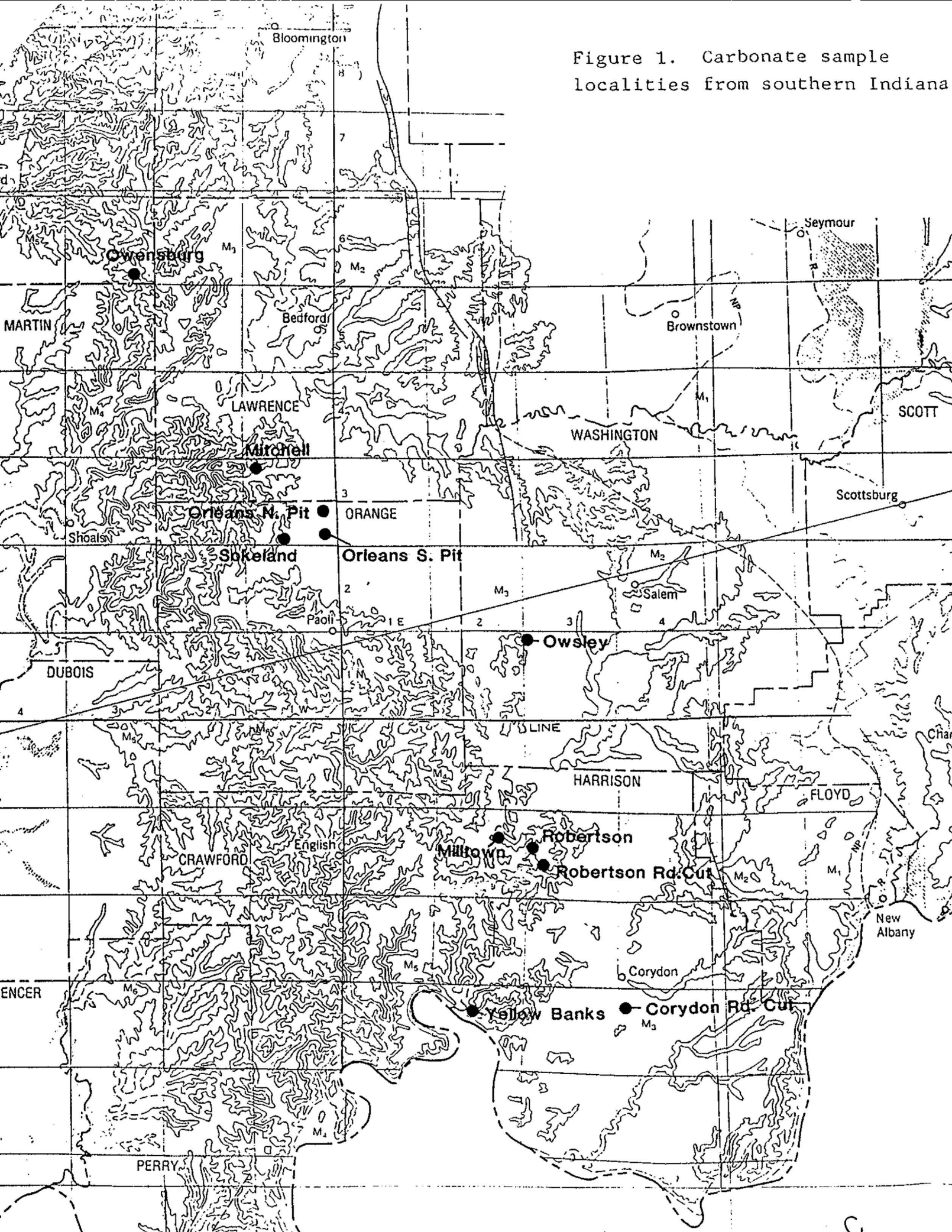
Gary A. Parkison
Senior Geologist

GAP:psp

Enclosure



Figure 1. Carbonate sample localities from southern Indiana



APPENDIX 1. CARBONATE SAMPLE DESCRIPTIONS
FROM SOUTHERN INDIANA

- ✓ Corydon Road Cut - NW1/4 Sec. 12, T4S, R3E - Corydon West 7-1/2' - grab sample from weathered outcrop along roadcut, lt. buff color, well-cemented oolitic limestone bed about 2' thick, surrounded by micritic brown limestone
- ✓ Milltown - SE1/4 Sec. 10, T2S, R2E - Milltown 7-1/2' - grab sample from portal area of abandoned underground mine, sampled large loose blocks, white color, fairly soft, massive, surrounded by white micritic limestone
- ✓ Mitchell - SW1/4 Sec. 7, T3N, R1W - Georgia 7-1/2' - grab sample from large blocks along north margin of active Rogers Group quarry, light gray color, moderately cemented, very oolitic, not all in place
- ✓ Orleans N. Pit - SE1/4 Sec. 24, T3N, R1W - Mitchell 7-1/2' - grab sample of 5' thick oolite bed exposed at NW edge of inactive pit, about 10' above Losy Creek Chert, white, fairly hard
- ✓ Orleans S. Pit - NW1/4 Sec. 25, T3N, R1W - Mitchell 7-1/2' - grab sample from blocks near S wall of inactive pit, oolite beds about 20' thick, massive, white, fairly hard
- lower right
Owensburg - SE1/4 Sec. 34, T6N, R2W, Owensburg 7-1/2' - grab sample from roadcut between old quarry astride road, 7-8' thick bed of oolite, lt. buff color, wxs. white, fairly hard with moderate calcite cement
- ✓ Owsley - SW1/4 Sec. 31, T2N, R3E - Becks Mill 7-1/2' - grab sample from waste material around perimeter of active quarry, 1 or 2 oolite beds exposed, each about 4-5' thick, white and buff color, moderate calcite cement, very clean
- ✓ Robertson - SE 1/4 Sec. 13, T2S, R2E - Depaws 7-1/4' - chip sample across lower 5' thick oolite bed at SW margin of active open pit, upper 5' thick oolite bed not sampled, oolite is white, massive, fairly soft with not too much carbonate cement, material used by Yellow Banks Clay.

GEOLOGICAL SURVEY COMMUNICATION
INDIANA DEPARTMENT OF NATURAL RESOURCES

To: Curt, Walt, and Nelson

Date: November 20, 1991

From: Don *D.*

Subj: Industry news

Dick Dixon recently purchased the Orleans Quarry from Gib Williams. Mr. Dixon has past experience in coal mining, but currently he operates Midwest Pavement Services [RR2, Box 533A, Orleans, IN 47452; phone 812-865-3869 (office); phone 812-865-3313 (home)]. Mr. Dixon bought the quarry because he needed the buildings for his business, but he is also interested in producing oolitic limestone for the scrubber market.

8:30 am

*OKay -
8-17-94*

4. HAVERLY PROPERTY

Jan 1968
Don C. H. R²

3. TAYLOR
HANCOCK

RADCLIFF AND BERRY INC

↑
1. CHARLES HUDELSON
↓

77.4 ACRES

2. LESTER
EDWARDS

COUNTY ROAD

SOUTHEAST QUARTER OF SECTION 24
TWP. 3 NORTH - RANGE 1 WEST

SOUTH EAST Quarter of SECTION 28
Twp. 3 North, Range 1 West

Twp. 3 North, Range 1 West

Track 7

Taylor Hancock

Edwards

Troch 7. a
Tact 4

29 Rev

9 Rods

27804

Tea Garden 7.8A

Tract

TEAGARDEN 15A.

Tract 2

HUFFMAN 5A.
OWNS
Tract 8

48 Rod
Charles and Margaret Hudson

QUARRY SECTION

Name: Radcliff and Berry, Inc.

Location: SW $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 24, T.3N., R.1W. 1 mile northwest of Orleans,
Orange County

Remarks: Composite section prepared by Don Carr from section measured by Don Carr and L. F. Rooney on May 17, 1966 and from sections measured by John Patton, 1948, and Rooney and Smith, 1962.

Unit	Description	Thick	Sample No.
39	Soil, reddish brown and mahogany brown residual clay soil	2.0	
	<u>Bethel Formation</u>		
38	Shale and Sandstone	28.0	
	(Ledge)	70.0	
	<u>Paoli Limestone</u>		
37	Limestone, med. brown, micritic, silty, and micritic-skeletal, irregular upper surface with relief of 6-10 inches. Thin lenses of sandstone in the upper part of the unit.	0.8	DC 66-26
36	Limestone, med. brown, oolitic micritic and micritic, silty; wavy bedded in upper part; thin vertical fractures with calcite fill are common.	9.0	DC 66-25
	(Ledge)	37.8	
35	Limestone, light gray brown, oolitic-skeletal and in part skeletal. Upper part is thin bedded and shaly.	1.8	DC 66-24
34	Limestone, v. light brown, micritic, silty, slightly argillaceous, in part skeletal-micritic, thick bedded becoming medium and thin bedded near both the top and the bottom of the unit.	5.2	DC 66-23
	Total thickness of Paoli Limestone	16.8	
		63.6	
	<u>"Aux Vases"</u>		
33	Limestone, siltstone, and sandstone: gray micritic limestone, very argillaceous; siltstone very calcareous; sandstone thinly interbedded, fine grained; med-thick bedded, resistant; forms a slight ledge on the quarry wall, weathers to reddish-yellow brown. Shale <0.1' at both top and bottom of unit.	3.7	DC 66-22
	Total thickness of "Aux Vases"	3.7	
	(Ledge)	70.0	

<u>Unit</u>	<u>Description</u>	<u>Thick</u>	<u>Sample No.</u>
	<u>Ste. Genevieve Limestone</u> <u>Levias Member</u>		
32	Limestone, gray brown, breccia ^{ted} clasts up to several inches, micritic matrix; bedding very contorted and thin; weathers rubbly.	1.7 91.7	DC 66-21
31	Limestone, med. brown, micritic, dense, conchoidal fracture, thick bedded, abundant veins and vugs filled with calcite.	5.3 97.0	DC 66-20
30	Shale, gray, platy	0.1 97.1	
29	Limestone, light brown, oolitic-skeletal, medium bedded; occasional v. thin shale partings	2.2 99.3	DC 66-19
28	Limestone, light gray, micritic, silty, med.-thin beds; v. thin blue gray shale partings mainly in lower part of unit; bedding varies from even to wavy	3.0 82.3	DC 66-18
27	Limestone, light gray, micritic, silty, argillaceous, thin bedded; interbeds of gray-green shale; poorly exposed.	0.6 82.9	DC 66-17
	(Ledge)		
26	Limestone, light gray, dense to finely crystalline, oolitic, massive	6.5 89.4	
25	Limestone, gray crystalline	1.5 90.9	P 48-105
24	Limestone, tan, finely crystalline, massive; clay seam at top	3.4 94.3	
23	Limestone, gray, coarsely crystalline	4.8 99.1	P 48-102
22	Limestone, light gray brown, micritic, thick bedded; occasional v. thin clay seams; stylolites and calcite seams common.	9.1 108.2	DC 66-16
21	Shale, gray-green, not sampled	0.1 108.3	
20	Limestone, light gray, oolitic-skeletal and micritic, thick bedded, prominent stylolite 1.0' from base.	4.3 112.6	DC 66-15
	Total thickness of Levias Member	42.6	
	(Ledge)		
	<u>Rosiclare Member</u>		
19	Shale and sandstone, gray, platy with limestone nodules Gradational with unit below	0.5 113.1	DC 66-14

<u>Unit</u>	<u>Description</u>	<u>Thick</u>	<u>Sample No.</u>
18	Limestone, light gray, pelletal, brecciated with clasts up to several inches. Grades into unit above and below	0.8 0.8 118.9	DC 66-13
17	Limestone, light gray, oolitic and micritic, thick bedded, prominent stylolites 0.2' and 0.8' above base. Units grades into brecciated unit above.	3.4 117.3	DC 66-12
16	Limestone, gray, skeletal, brecciated with clasts of micrite, light gray, some up to 6 inches long; irregular bedding, stylolite marks the base of the unit, a thin shale parting marks the top of the unit	0.6 117.9	DC 66-11
15	Limestone, light brown, oolitic, thick bedded; prominent shale partings 0.9' and 2.6' above base; stylolites common	7.1 125.0	DC 66-10
14	Shale, gray, platy, calcareous	0.1 125.1	DC 66-9
13	Limestone, gray, oolitic-skeletal, irregular in thickness, thins to north	0.5 125.6	DC 66-8
12	Shale, gray, calcareous, irregular in thickness	0.1 125.7	DC 66-7
Total thickness of Rosiclare Member		13.1	
Fredonia Member			
11	Limestone; white, oolitic, massive, cross-bedded. RS 4869 taken 4.0 feet from base. Chip sample 4868	15.2 140.9	P 48-68
10	Calcarenite, Gray, fine- to coarse-grained, dense, stylolitic. Rock is made of oolites or pellets embedded in calcilutite. Hand specimen S62-37 was obtained 1.3 ft. below the top of the unit.	2.6 143.5	S 62-36
9	Calcarenite, Dark-gray, tinted tan and brown, coarse-grained, dense. Rock probably is made of fossil debris; chiefly crinoid pieces, but contains rudaceous, angular pieces of calcilutite, and toward the top, becomes oolitic. Hand specimen S 62-35 was obtained 0.7 ft. below the top of the unit.	2.4 145.9	S 62-34
8	Calcarenite, Dark-gray, medium-grained, dense, locally is poorly sorted. Rock is made of oolites embedded in calcilutite and locally in spar. Massiveness of bedding is masked by extreme fracturing as a result of blasting. Hand specimen S 62-33 was obtained 1.0 ft. down from top of the unit. Thickness of unit not accurately measured.	5.0 150.9	S 62-32
7	Fossiliferous calcilutite, Gray, dense, and is in one stylolitic bed. Hand specimen S 62-31 was obtained 0.7 ft. below the top of the unit.	2.7 153.6	S 62-30

<u>Unit</u>	<u>Description</u>	<u>Thick</u>	<u>Sample No.</u>
6	Fossiliferous calcilutite and silicilutite (Lost River Chert Bed): Silicilutite is dark blue-gray, is very fossiliferous with bryozoans, and is present in thin beds or lenses. Calcilutite is gray, dense, and fossiliferous. Hand specimen S 62-29 was obtained 1.0 ft. below top of the unit.	2.3 155.9	S 62-28
5	Calcarenite, Gray, dense, coarse-grained. Rock is made of fossils embedded in calcilutite and is in many thin beds demarcated by thick stylolites. Top of unit is arbitrarily placed at the base of the Lost River Chert Bed. Hand specimen S 62-27 was obtained 1.0 ft. below the top of the unit.	6.5 162.4	S 62-26
4	Calcarenite, Gray to tan-gray, fine- to medium-grained, dense, thick-bedded, stylolitic. Rock probably is made entirely of fossil debris and includes a thin irregular lens of very large fossil debris. Hand specimen S 62-25 was obtained 1.4 ft. below top of the unit.	5.4 167.8	S 62-24
3	Calcarenite, Dark-gray, very fine- to fine-grained, dense, brittle. Rock probably is a fossil-calcarenite and is in thin, slabby, and stylolitic beds. Hand specimen S 62-23 was obtained from the top of the unit. Rock was sampled where thinnest.	6.0 173.8	S 62-22
2	Dolomitic calcilutite or calcitic dololutite, Dark-gray, to dark-brown, sugary textured, fine-grained. Rock is in a massive bed that appears to have locally inclined laminations and contains large balls of large calcite crystals. Hand specimen S 72-21 was obtained from the middle of the unit. Rock was sampled where thickest.	2.8 to 3.0 176.8	S 62-20
1a	Calcarenite, Gray, tinted tan, medium- to coarse-grained, thick-bedded. Rock is made of fossil debris laid in thick beds that are also stylolitic. Hand specimen S 62-17 was obtained from the middle of the unit.	6.7 183.5	S 62-16
1	Calcarenite, Brownish-gray, medium- to coarse-grained, dense, dolomitic, and rubbly. Rock possibly is a crystal-calcarenite. Hand specimen S 62-19 was obtained from the base of the unit.	1.0 189.5	S 62-18
Total thickness of the Fredonia Member exposed		58.8	
Total thickness of the Ste. Genevieve Ls exposed		114.5	
Total section of usable rock quarried		135	

RADCLIFF AND BERRY QUARRY NORTHWEST OF ORLEANS, ORANGE COUNTY, INDIANADate of field examination. -- June 16, 1954.Location. -- SW¹/₄SW¹/₄ sec. 24, T. 3 N., R. 1 W.Geology. -- In deepening the quarry, the following additional section was measured and sampled.

Unit	Description	Thickness in feet	Chip Sample Number
<u>Fredonia</u>			
1	Limestone: Lt. gray to white, massive oolitic cross-bedded. (Same as Patton's Unit 1, 1948).	15.2	7.6 CS Mc54-9 7.6 CS Mc54-10
4, 2a	Limestone: Gray, fine grained, oolitic, massive in gross aspect, few stylolites. RS Mc54-8 taken 4' above base of unit.	3.6	CS Mc54-7
3, 2b	Limestone: Lt. gray, massive, med. to fine grained, oolite lenses, Top 1' green, argillaceous, in appearance. RS Mc54-6 taken 6" above base of unit.	2.8	Cs Mc54-5 <i>duplicate RS Mc54-5a, 2</i>
2, 3a	Limestone: Lt. gray, massive fine grained, stylolitic, oolitic in part. Lower 1.8' contains chert, abundant bryozoans, top of unit drawn at 1.5" brown shale break. RS Mc54-4 2' from top of unit.	5.1	CS Mc54-3
1, 4a	Limestone: Lt. gray to tan, med. to fine grained, oolite lenses, lithographic with calcite blebs, stylolitic. Break between this unit and unit drawn on top of chert mass. RS Mc54-2 taken 3 feet above base.	8.3	CS Mc54-1
Total thickness of measured section		35.0	

Respectfully submitted,



Duncan J. McGregor

MEMORANDUM REPORT BY DUNCAN J. MC GREGOR

RADCLIFF AND BERRY QUARRY NORTHWEST OF ORLEANS, ORANGE COUNTY

Date of field examination. -- August 7, 1953.

Location. -- A plant and quarry operated by Max Radcliff are located one mile northwest of the town of Orleans and in the SW¹/₄SW¹/₄ sec. 24, T. 3 N. R. 1 W.

Geology. -- Since Patton's report of 1948, there has been no increase in section.

Operation. -- Operation of the plant and quarry is intermittent. The company works only to take care of their business. According to Mr. Radcliff, business is down about 35 percent from that of the past two years. Because the company recently purchased the Thacker quarry near Paoli, production of agricultural limestone will be kept at a minimum.

Equipment. -- The only new equipment in use includes the installation of a Symons 36" Cone crusher. The roll crusher formerly in use will be installed at the quarry near Paoli.

References cited. --

Patton, John B. (1948) Radcliff and Berry Quarry Northwest of Orleans, Orange County, unpublished memorandum report, 4 pps.

Respectfully submitted,

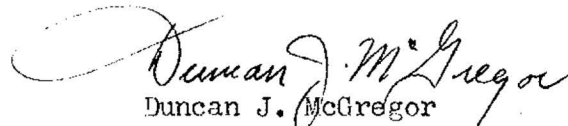

Duncan J. McGregor

Table 1. Reflectance and Physical Characteristics
of Indiana carbonate.

<u>Locality</u>	<u>Reflectance/Filter</u>			<u>Hegman</u>	<u>M.P.S. Microns</u>	<u>Surface Area M²/g</u>	<u>Oil Abs. SRO</u>	<u>Passes</u>
	<u>Green</u>	<u>Blue</u>	<u>Amber</u>					
Corydon								
Road Cut	82.8	73.0	84.1					1
Mitchell	82.9	76.1	84.1					1
N. Orleans	85.5	79.6	86.4					1
Owensberg	84.4	78.7	85.4					1
Robertson								
Road Cut	86.5	76.1	88.3					1
Sokeland	86.1	79.8	87.1					1
Milltown	87.3	81.6	87.9	2.0	7.0	1.1	15.0	1
Owsley	89.0	81.3	90.3	2.0	7.0	0.8	15.0	1
Robertson	89.2	84.9	89.8	2.0	7.1	1.0	16.0	1
S. Orleans	84.2	77.4	85.3	2.0	11.5	1.2	11.5	1
Yellow Banks	86.1	79.8	87.1	2.0	6.6	1.0	10.8	1
Milltown	88.3	83.2	89.0	3.0	4.5	1.1	16.0	2
Owsley	89.8	85.7	90.4	2.5	4.8	1.0	16.0	2
Robertson	89.8	85.7	90.4	3.3	4.8	1.0	16.0	2
S. Orleans	85.6	85.6	86.3	2.0	5.4	1.5	12.8	2
Yellow Banks	86.9	80.5	87.4	2.5	5.5	1.3	13.6	2
Milltown	89.1	83.9	89.6	4.0	4.4	1.5	17.1	4
Owsley	90.1	84.5	90.4	4.0	4.4	1.4	16.0	4
Robertson	89.2	84.3	89.6	3.5	5.0	1.6	16.2	4
S. Orleans	87.0	81.0	87.7	4.5	5.0	1.8	16.1	4
Yellowbanks	87.7	81.9	88.7	4.0	4.5	1.6	16.1	4



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To: WESTMONT MINING INC.

2341 S. FRIEBUS AVE., STE. #12
TUCSON, ARIZONA
85713

Project :

Comments: ATTN: GARY PARKINSON CC: MIKE CERINO

Page no. :
Tot. Pages: 1
Date : 21-JAN-84
Invoice # : 1-8810084
P.O. # :

CERTIFICATE OF ANALYSIS A8810084

SAMPLE DESCRIPTION	PREP CODE		SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	BaO %	LOI %	TOTAL %
CORYDON RD CUT	214	232	22.43	1.21	0.52	11.72	32.64	0.15	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	28.81	97.58
MILLTOWN	214	232	0.73	0.14	0.04	0.32	53.64	0.11	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	42.76	97.80
MITCHELL	214	232	1.02	0.19	0.09	0.38	54.06	0.14	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	42.71	98.65
ORLEANS N PIT	214	232	0.40	0.13	0.10	0.37	54.17	0.15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	43.09	98.47
ORLEANS S PIT	214	232	0.34	0.11	0.14	0.32	54.18	0.14	< 0.01	< 0.01	0.01	< 0.01	< 0.01	43.12	98.41
OVENSBURG	214	232	0.82	0.23	0.19	0.38	53.92	0.17	< 0.01	< 0.01	0.04	< 0.01	< 0.01	42.71	98.51
OWSLEY	214	232	0.59	0.17	0.16	0.29	54.26	0.16	< 0.01	< 0.01	0.02	< 0.01	< 0.01	42.97	98.67
ROBERTSON	214	232	0.57	0.14	0.13	0.39	54.84	0.14	< 0.01	< 0.01	0.03	< 0.01	< 0.01	42.78	99.07
ROBERTSON RD CUT	214	232	0.40	0.12	0.13	0.54	54.13	0.14	< 0.01	< 0.01	0.02	< 0.01	< 0.01	42.83	98.36
SOKELAND	214	232	0.47	0.21	0.11	0.32	54.57	0.16	< 0.01	0.01	0.03	< 0.01	< 0.01	43.22	99.14
YELLOWKNIFE	214	232	0.56	0.18	0.27	0.30	56.20	0.15	0.33	0.01	0.05	< 0.01	< 0.01	43.05	101.15

Table 2. Chemical characteristics of Indiana carbonate.

CERTIFICATION

[Signature]

GP5-955-2M

INDIANA GEOLOGICAL SURVEY

LOG OF HOLE NUMBER: 103 LANDOWNER: Redcliff & Berry DATE STARTED: Feb. 25, 1963

LOCATION: COUNTY Orange ~~SW~~ 1/4 of the ~~SE~~ 1/4 of Section 24, TOWNSHIP 3N, RANGE 17,

ELEVATION		HOW DETERMINED	
-----------	--	----------------	--

Completed 2/23/63

[illegible]

Indiana Geological Survey
Survey drill hole 103
Radcliff, Inc. quarry
SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 3 N., R. 1 W.

Sample	Thick- ness	CaCO ₃	MgCO ₃	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	MnO	CO ₂	S	P ₂ O ₅				
Ste. Genevieve															
LR63-1	6.6	98.3	.71	.71	.022	<.1	N.D.	N.D.	43.6	.005	.004				
4	0.8	*Lithologically similar to unit 1.													
5	7.1	98.5	.66	.61	.024	<.1	N.D.	N.D.	43.8	.008	.004				
6	0.8	98.3	.77	.35	.21	.12	N.D.	N.D.	43.5	.011	.005				
8	1.4	98.1	.56	.80	.15	.12	N.D.	N.D.	43.1	.015	.008				
10	0.5	98.0	.98	.45	.25	.085	N.D.	N.D.	43.0	.020	.007				
11	2.7	98.2	.98	.33	.10	.039	N.D.	N.D.	43.1	.010	.005				
13	0.9	97.6	1.07	.67	.39	.12	N.D.	N.D.	43.1	.019	.016				
15	5.0	97.9	.94	.65	.20	.068	N.D.	N.D.	43.4	.005	.032				
17	3.2	97.5	.87	1.22	.15	.058	N.D.	N.D.	43.3	.014	.034				
19	2.3	85.5	.94	12.6	.19	.086	N.D.	N.D.	36.5	.019	.045				
21	0.5	37.	.31	62.	.075	.16	N.D.	N.D.	19.0	.010	.046				
22	5.8	95.3	1.14	2.86	.37	.083	N.D.	N.D.	42.2	.031	.020				
25	2.1	97.6	1.12	.90	.14	.065	N.D.	N.D.	42.8	.015	.014				
26	0.6	62.2	33.0	2.80	.75	.46	N.D.	N.D.	44.5	.11	.030				
27	1.5	*Lithologically resembles unit 15.													
28	0.5	96.7	1.21	1.64	.17	.056	N.D.	N.D.	43.0	.015	.010				
29	0.1	60.2	2.23	24.7	7.23	1.75	.73	.014	28.7	.032	.062				
30	0.2	93.4	1.21	2.90	1.21	.20	.065	N.D.	40.6	.029	.020				
31	0.4	95.8	1.34	2.11	.48	.11	.034	N.D.	42.2	.015	.014				
32	4.3	97.1	1.16	1.31	.20	.068	N.D.	N.D.	42.8	.014	.013				
33	0.8	91.1	6.56	1.41	.24	.14	N.D.	N.D.	43.3	.022	.014				
35	1.0	64.5	31.0	3.16	.51	.35	.038	.015	44.0	.12	.023				
37		*Lithologically resembles unit 23.													
38	3.4	52.9	36.5	7.93	1.11	.63	.11	.011	41.9	.13	.023				

page 2

*Lithologically resembles unit 33.

Indiana Geological Survey
Survey drillhole 104
Radcliff, Inc. quarry
SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 3 N., R. 1 W.

Orange County

Sample	Thick- ness	CaCO ₃	MgCO ₃	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	MnO	CO ₂	S	P ₂ O ₅				
Ste. Genevieve															
LR63-58	5.0	99.0	.72	.11	N.D.	N.D.	N.D.	N.D.	43.6	.005	.002				
60	6.5	98.6	.98	.088	.055	.033	N.D.	N.D.	43.9	.012	.002				
62	2.5	98.5	1.08	.13	.063	N.D.	N.D.	N.D.	44.1	.010	.014				
64	3.4	98.2	1.08	.28	.13	.080	N.D.	N.D.	43.7	.010	.009				
66	0.7	*Lithologically similar to unit 5													
67	2.9	98.8	.83	.080	.024	.031	N.D.	N.D.	43.6	.014	.002				
69	3.0	97.9	.96	.60	.21	.12	N.D.	N.D.	43.5	.008	.038				
71	1.3	29.7	N.D.	69.9	.074	.074	N.D.	N.D.	14.7	.014	.065				
73	1.7	98.2	.86	.59	.072	.034	N.D.	N.D.	43.2	.010	.041				
75	.1	59.3	.50	39.4	.046	.031	N.D.	N.D.	26.4	.012	.042				
76	1.6	94.7	.46	4.45	.045	N.D.	N.D.	N.D.	41.5	.012	.045				
78	.1	18.3	.27	80.5	.15	.18	N.D.	N.D.	8.0	.017	.036				
79	1.7	99.1	.42	.22	.031	N.D.	N.D.	N.D.	43.6	.008	.028				
81	5.5	98.4	.74	.47	.16	.057	N.D.	N.D.	43.8	.017	.033				
83	3.0	95.3	1.67	2.10	.33	.13	N.D.	N.D.	42.4	.034	.025				
85	0.6	*Lithologically similar to unit 18.													
86	3.0	73.0	.88	24.8	.37	.15	N.D.	N.D.	32.4	.051	.011				
88	1.6	97.6	1.07	1.07	.057	.045	N.D.	N.D.	43.4	.008	.016				
90	0.8	96.3	1.40	1.73	.28	.092	N.D.	N.D.	42.8	.020	.008				
92	1.4	54.6	40.7	2.94	.66	.60	.049	.019	43.2	.17	.026				
94	1.3	*Lithologically similar to unit 23.													
95	6.6	97.1	1.25	1.22	.17	.060	.025	.0048	42.3	.014	.014				
97	0.7	91.0	2.00	5.46	.82	.21	.079	N.D.	40.2	.060	.017				
99	5.2	60.7	34.0	3.34	.61	.50	.055	.011	44.2	.14	.016				
101	0.1	Chert							4.0	.12	.003				

page 2

*Complete core segments taken by Geophysical section for measurement of various physical properties.

N. VAN NIELEN ATTN D. BIGGS
SOURCE
FIELD OFFICE (3)C

INDIANA STATE HIGHWAY COMMISSION
DIVISION OF MATERIALS AND TESTS
SUMMARY OF QUALITY RESULTS

PAGE 2 OF 2

SEPTEMBER 25, 1978

SOURCE WESTERN MATERIALS COMPANY 2648.
BOX 187 ORLEANS, IN. 47452

ELEVATION TOP OF LEDGE FEET ABOVE MSL

LEDGE QUALITY

LAB NUMBER	DATE SAMPLED	LEDGE NUMBER	GEOLOGICAL FORMATION	BULK SP.G. PCT	ABS. PCT	BRI.	L.A. WEAR PCT	S.S. LOSS PCT	F.T. LOSS PCT	QUAL RATING	APPROX DATA THICK FT	VALID UNTIL
78-28129	04-13-78	1202	LOWER STE. GENEV	2.605	1.25	.18	30.04	20.29	.98	A1	5	07-13-80
79-28001	07-06-78	13	LOWER STE. GENEV	2.635	.78	.11	27.52	6.26		A1	16	10-06-80
78-28130	04-13-78	1301	LOWER STE. GENEV	2.580	1.95	.62	32.32	12.84	.72	A1	7	07-13-80
78-28131	04-13-78	1302	LOWER STE. GENEV	2.575	1.69	.20	34.32	16.94	.33	A1	4	07-13-80
76-28147	10-21-75	14	UPPER STE. GENEV	2.591	.84		34.54	2.27		A1	8	01-21-78
68-28149	11-13-67	15	LOWER STE. GENEV	2.600	2.50		38.76	8.31		A1	3	02-13-70
76-28148	10-21-75	16	UPPER STE. GENEV.	2.587	1.04	.18	25.50	2.32		A1	10	01-21-78

NOTES: THIS IS A CATEGORY I SOURCE.

FOR PRODUCTION SAMPLE QUALITY RESULTS SEE SUMMARY LETTER DATED SEPTEMBER 1, 1978.

SAMPLE 78-28128 WAS TAKEN FROM A NEW CUT LOCATED APPROXIMATELY 400 FEET FROM SOUTH LINE, 2400 FEET FROM WEST LINE OF SECTION 24, TOWNSHIP 3N, RANGE 1W.

SAMPLES 78-28129, 78-28130, AND 78-28131 WERE TAKEN FROM THE OLD QUARRY AREA LOCATED APPROXIMATELY 510 FEET FROM THE SOUTH LINE, 3300 FEET FROM THE WEST LINE OF SECTION 24, TOWNSHIP 3N, RANGE 1W.

SAMPLE 79-28001 WAS TAKEN FROM THE OLD QUARRY AREA LOCATED APPROXIMATELY 1050 FEET FROM THE SOUTH LINE, 3800 FEET FROM THE WEST LINE OF SECTION 24, TOWNSHIP 3N, RANGE 1W.

THIS REPORT IS FOR INFORMATION ONLY AND
IS NOT INTENDED TO BE USED FOR ADVERTISING.

C. F. Hatten
CHIEF, DIVISION OF MATERIALS AND TESTS

Radcliff and Berry, Inc.
Orleans, Orange County

MEMORANDUM REPORT

by

Donald D. Carr

Summary

<u>Field examination</u>	D. Carr and L. Rooney L. Rooney and N. Smith D. McGregor D. McGregor J. Patton	May 17, 1966 Oct. 31, 1962 June 16, 1964 Aug. 7, 1963 July 2, 1948
<u>Location</u>	SW $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 24, T.3N., R.1W.	
<u>Officers</u>	Max Radcliff, president and general manager. Don Radcliff, superintendent.	
<u>Ownership</u>	The land on which the quarry and plant are located is owned by Radcliff and Berry, Inc. and consists of 31 acres. The company is in the process of leasing about 40 acres of land adjacent to thin property on the west.	
<u>Personnel</u>	About 50 employees are used in both the quarry and the block plant operation.	
<u>Products</u>	Agricultural limestone, crushed stone, fluxstone and high calcium limestone.	
<u>Transportation</u>	Agricultural limestone and crushed stone are shipped by truck. Fluxstone is shipped by rail.	

file ✓

MEMORANDUM REPORT

RESAMPLING OF PART OF RADCLIFF AND BERRY QUARRY NORTHWEST OF ORLEANS

Date of resampling.--October 31, 1962.

Collectors.--These samples were collected by L. F. Rooney, while the clerical work was done by N. M. Smith.

Location.--The Radcliff and Berry quarry is located about one mile northwest of Orleans, Orange County, Ind., in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 3 N., R. 1 W. The location given for this quarry in previous memoranda is not correct. Samples S62-16 to -37 were collected in the westernmost part of the quarry.

Geology.--This quarry has been deepened since the report of June 16, 1954. The following measured section and sample collection in part replaces Mc54-1 to Mc54-8 and in part brings up to date the data on the total exposure in this quarry on the above date. The common denominator of all sampling (Patton, McGregor, and this report) is the base of the 15.2-foot white oolite-calcarenite. The top of unit 11 of this report coincides with the base of the 15.2-foot oolite of previous memoranda.

<u>Unit</u>	<u>Description</u>	<u>Thickness in feet</u>	<u>Chip Sample No.</u>
STE. GENEVIEVE LIMESTONE			
	<u>Fredonia Member:</u>		
	(Same bed as represented by samples Mc54-9 and 10 and P48-68)	15.2	
11.	Calcarenite: Gray, fine- to coarse-grained, dense, stylolitic. Rock is made of oolites or pellets embedded in calcilutite. Hand specimen S62-37 was obtained 1.3 ft. below the top of the unit.	2.6	S62-36

Note: A lens of brown rock was observed in this position between units 10 and 11 but was not accessible for close examination.

<u>Unit</u>	<u>Description</u>	<u>Thickness in feet</u>	<u>Chip Sample No.</u>
10.	Calcarenite: Dark-gray, tinted tan and brown, coarse-grained, dense. Rock probably is made of fossil debris, chiefly crinoid pieces, but contains rudaceous, angular pieces of calcilutite, and toward the top, becomes oolitic. Hand specimen S62-35 was obtained 0.7 ft. below the top of the unit.	2.4	S62-34
9.	Calcarenite: Dark-gray, medium-grained, dense, locally is poorly sorted. Rock is made of oolites embedded in calcilutite and locally in spar. Massiveness of bedding is masked by extreme fracturing as a result of blasting. Hand specimen S62-33 was obtained 1.0 ft. down from top of the unit. Thickness of unit not accurately measured.	5.0	S62-32
8.	Fossiliferous calcilutite: Gray, dense, and is in one stylolitic bed. Hand specimen S62-31 was obtained 0.7 ft. below the top of the unit.	2.7	S62-30
7.	Fossiliferous calcilutite and silicilutite (Lost River Chert Bed): Silicilutite is dark blue-gray, is very fossiliferous with bryozoans, and is present in thin beds or lenses. Calcilutite is gray, dense, and fossiliferous. Hand specimen S62-29 was obtained 1.0 ft. below top of the unit.	2.3 ^{30.2}	S62-28
6.	Calcarenite: Gray, dense, coarse-grained. Rock is made of fossils embedded in calcilutite and is in many thin beds demarcated by thick stylolites. Top of unit is arbitrarily placed at the base of the Lost River Chert Bed. Hand specimen S62-27 was obtained 1.0 ft. below the top of the unit.	6.5 ^{36.7}	S62-26
5.	Calcarenite: Gray to tan-gray, fine- to medium-grained, dense, thick-bedded, stylolitic. Rock probably is made entirely of fossil debris and includes a thin irregular lens of very large fossil debris. Hand specimen S62-25 was obtained 1.4 ft. below top of the unit.	5.4 ^{42.1}	S62-24
4.	Calcarenite: Dark-gray, very fine- to fine-grained, dense, brittle. Rock probably is a fossil-calcarenite and is in thin, slabby, and stylolitic beds. Hand specimen S62-23 was obtained from the top of the unit. Rock was sampled where thinnest. 6.2 to 6.0.	6.2 to 6.0 ^{48.1}	S62-22

<u>Unit</u>	<u>Description</u>	<u>Thickness in feet</u>	<u>Chip Sample No</u>
3.	Dolomitic calcilutite or calcitic dololutite: Dark-gray, to dark-brown, sugary textured, fine-grained. Rock is in a massive bed that appears to have locally inclined laminations and contains large balls of large calcite crystals. Hand specimen S62-21 was obtained from the middle of the unit. Rock was sampled where thickest.	2.8 to 3.0	S62-20
2.	Calcarenite: Gray, tinted tan, medium- to coarse-grained, thick-bedded. Rock is made of fossil debris laid in thick beds that are also stylonitic. Hand specimen S62-17 was obtained from the middle of the unit.	6.7	S62-16
1.	Calcarenite: Brownish-gray, medium- to coarse-grained, dense, dolomitic, and rubbly. Rock possibly is a crystal-calcarenite. Hand specimen S62-19 was obtained from the base of the unit.	<u>1.0</u>	S62-18
Thickness of the Fredonia Member exposed - - - - -		58.8	

Unit 1 was not observed to extend to the undulatory floor of the quarry as much talus was present at the base of the face. The St. Louis Limestone was not encountered in the quarry face, but at one place in the floor the rock seemed to belong to the St. Louis. Thus the above described quarry exposure ends within a few feet of the boundary between the St. Louis and Ste. Genevieve Limestones.

Respectfully submitted,

L. F. Rooney

N. M. Smith
N. M. Smith

July 2, 1948

MEMORANDUM REPORT BY JOHN B. PATTON

RADCLIFF AND BERRY QUARRY NORTHWEST OF ORLEANS, ORANGE COUNTY

Date of field examination.--- June 28 and July 1, 1948.

Location.--- One mile northwest of the town of Orleans, in Orange County, Radcliff and Berry, Inc. operate a quarry and crushing plant in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 24, T. 3 N., R. 1 W.

Ownership.--- The land on which the operation is located is owned by Max Radcliff and Albert Berry and consists of 31 acres.

Geology.--- In the vicinity of Orleans, the physiographic province named the Mitchell Plain (Malott, 1922), bears its typical aspect of a gently rolling limestone plain characterized by subsurface drainage. The quarry has enveloped several small sink holes, which remain as vertical solution channels in the quarry floors.

The following section was measured and sampled:

Unit	Description	Thickness
21	Soil: reddish brown, residual, clayey, with blocks of Mooretown sandstone float.	2.0
Paoli		
20	Limestone: light gray, finely crystalline, oolitic to sub-oolitic, fossil fragments. Bedding 0.2 to 0.8 foot thick. RS 48115 taken 0.9 foot from base.	6.9
19	Shale: light greenish gray, soft, calcareous, fossiliferous.	0.9
18	Limestone: light gray, finely crystalline, oolitic, fossil fragments. Bedding 0.5 to 2.0 feet thick. Chip sample 48114 represents units 18, 19, and 20.	7.1
Measured thickness of exposed Paoli limestone		14.9

Aux Vases

- 17 Limestone, sandstone, and shale; upper 0.2 foot fine-grained, calcareous sandstone, stained brown. Most of unit consists of light gray, granular, massive, argillaceous limestone, becoming sandy toward top, 2.6 feet thick. Lower 0.2 foot light gray, soft, calcareous shale. RS 48113 taken 0.1 foot from top and RS 48112 taken 0.9 foot from base of unit. Chip sample 48111. 3.0

Ste. Genevieve formation

Levias

- 16 Limestone: brown, dense, brecciated. Weathers rubbly. RS 48110 taken 0.5 foot from base. 2.2
- 15 Limestone: tan, dense to finely crystalline, sub-oolitic. Lower 1.0 foot interbedded with green soft shale. RS 48109 taken 2.2 feet from top. Chip sample 48108 represents units 15 and 16. 6.6
- 14 Limestone: light gray, dense to finely crystalline, oolitic, massive. RS 48107 obtained 4.4 feet from top of unit. 6.5
- 13 Limestone: gray, crystalline. RS 48106 taken 0.6 foot from top. Chip sample 48105 represents units 13 and 14. 1.5
- 12 Limestone: tan, finely crystalline, massive. Clay seam at top. RS 48104 taken 0.9 foot from top. 3.4
- 11 Limestone: gray, coarsely crystalline. RS 48103 taken 2.2 feet from top. Chip sample 48102 represents units 11 and 12. 4.8
- 10 Limestone: dark gray, dense, massive, has banded appearance due to moisture in more porous streaks. Prominent bedding plane with thin clay parting at base. RS 48101 taken 2.3 feet from top. Chip sample 48100. 8.6
- 9 Limestone: dark gray, dense, massive, prominent bedding plane 3.9 feet from base, upper 3.8 feet have banded appearance due to moisture in more porous streaks. RS 4899 taken 2.5 feet from base. Chip sample 4898. 9.4

Total measured thickness of Levias member 43.0

Rosiolare

- | | | |
|---|--|-----|
| 8 | Shale: gray, platy, calcareous, oolitic. Contains rounded frosted sand grains. Weathers tan. | 0.3 |
| 7 | Limestone: lower 1.0 foot tan, dense; upper 2.8 feet tan, dense, oolitic; uppermost 1.0 foot brecciated. RS 4897 taken 1.2 feet from base. | 3.8 |
| 6 | Limestone: gray, crystalline, cross-bedded, oolitic, brecciated. RS 4896 taken 0.2 foot from top of unit. | 0.9 |
| 5 | Limestone: white, dense, oolitic, lower 0.5 foot gray. RS 4873 taken 0.7 foot from top. | 2.7 |
| 4 | Shale and sandstone: shale at top, gray, platy, sandy; sandstone at base, gray, hard, calcareous. Thickness of unit varies between 0.1 and 0.5 foot. | 0.2 |

Total thickness of Rosiolare member 7.9

Fredonia

- | | | |
|---|---|------|
| 3 | Limestone: tan, dense. RS 4872 taken 0.5 foot from top. | 1.1 |
| 2 | Limestone: light gray, oolitic, coarsely crystalline, fossiliferous, contains crystalline calcite. RS 4871 taken 1.4 feet from base. Chip sample 4870 represents units 2 through 8. | 2.6 |
| 1 | Limestone: white, oolitic, massive, cross-bedded. RS 4869 taken 4.0 feet from base. Chip sample 4868. | 15.2 |

Measured thickness of exposed Fredonia member 18.9

Total exposed thickness of Ste. Genevieve formation	69.8
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Total thickness of measured section	86.7
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Unit 16 is an excellent expression of the Bryantsville bed of Malott (manuscript in preparation).

The soil overburden in unit 21 was measured at the crest of a hill where the soil was thin. The operator states that an average thickness of 12 feet of overburden has been removed. (Information for this report was furnished by Mr. Max Radcliff).

Most of the property will not be high enough topographically for units 15 through 20 to be quarryable.

Unit 1 appears to be an extremely pure limestone. It is considered to be too soft for some road stone purposes, but should be valuable for purposes which demand a high calcium carbonate content, such as fluxing.

Agricultural Adjustment Administration analyses show a CaCO_3 equivalent ranging from 95 to 108 percent.

Quarrying operations.-- The present owners have operated the quarry since February 1946. A quarry known as the Teagarden quarry had been opened on this acreage about 1922 but had never been a large operation.

Equipment in use includes a Sullivan 415 cubic foot compressor, a Sullivan wagon drill, a $1\frac{1}{2}$ yard Marion diesel-powered shovel, a bulldozer, an Austin-Western 25 x 40 jaw crusher, an Austin-Western

10 x 40 jaw crusher for reduction, an Austin-Western 22 x 40 rolls crusher, a Stedman hammer mill, and two quarry trucks. The plant is electrically powered. Lime spreading is done by the company, but by means of contract trucks. The firm does its own stripping. A force of 12 men is employed.

All hauling is by truck. Nearest rail connection would be the Monon Railroad at Orleans, where a siding is available 1.5 miles from the plant. Rail shipping could also be done via the Baltimore & Ohio Railroad at Mitchell, a road distance of 6.5 miles.

Production.-- Present daily production ranges from 1000 to 1200 tons, which is about 25 percent of capacity. The plant and quarry were not operating on a full time basis at the date of this examination, as it was not a favorable season for the spreading of agricultural lime. Total production for 1947 was 115,000 tons, of which 57,000 were agricultural lime, approximately 45,000 were road stone, and the remainder was aggregate for concrete blocks and other concrete products. The company operates a concrete products plant at the site of the quarry.

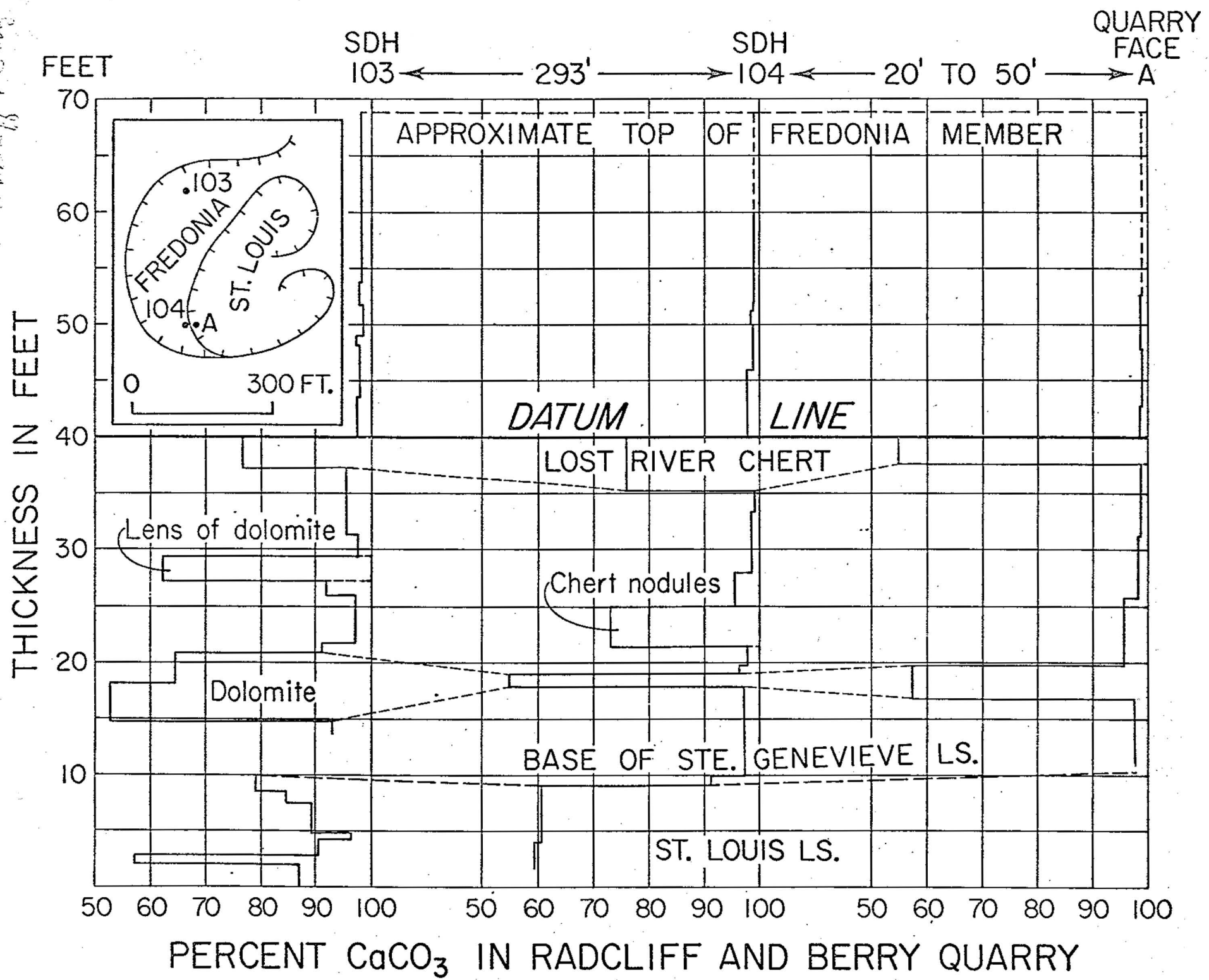
Reserves.-- Approximately ten acres of the present acreage holdings are quarryable in the part of the measured section described in units 1 through 14. This area should produce an estimated 2,214,300 tons of limestone. Deeper reserves are available below unit 1.

Respectfully submitted,

John B. Patton
John B. Patton
Geologist

Malott, G. A. (1922) The physiography of Indiana, in Handbook of Indiana Geology, Ind. Dept. Conservation, Pub. 21, p. 59-256, 51 figs., 3 pls., maps.

Radcliff and Berry Quarries



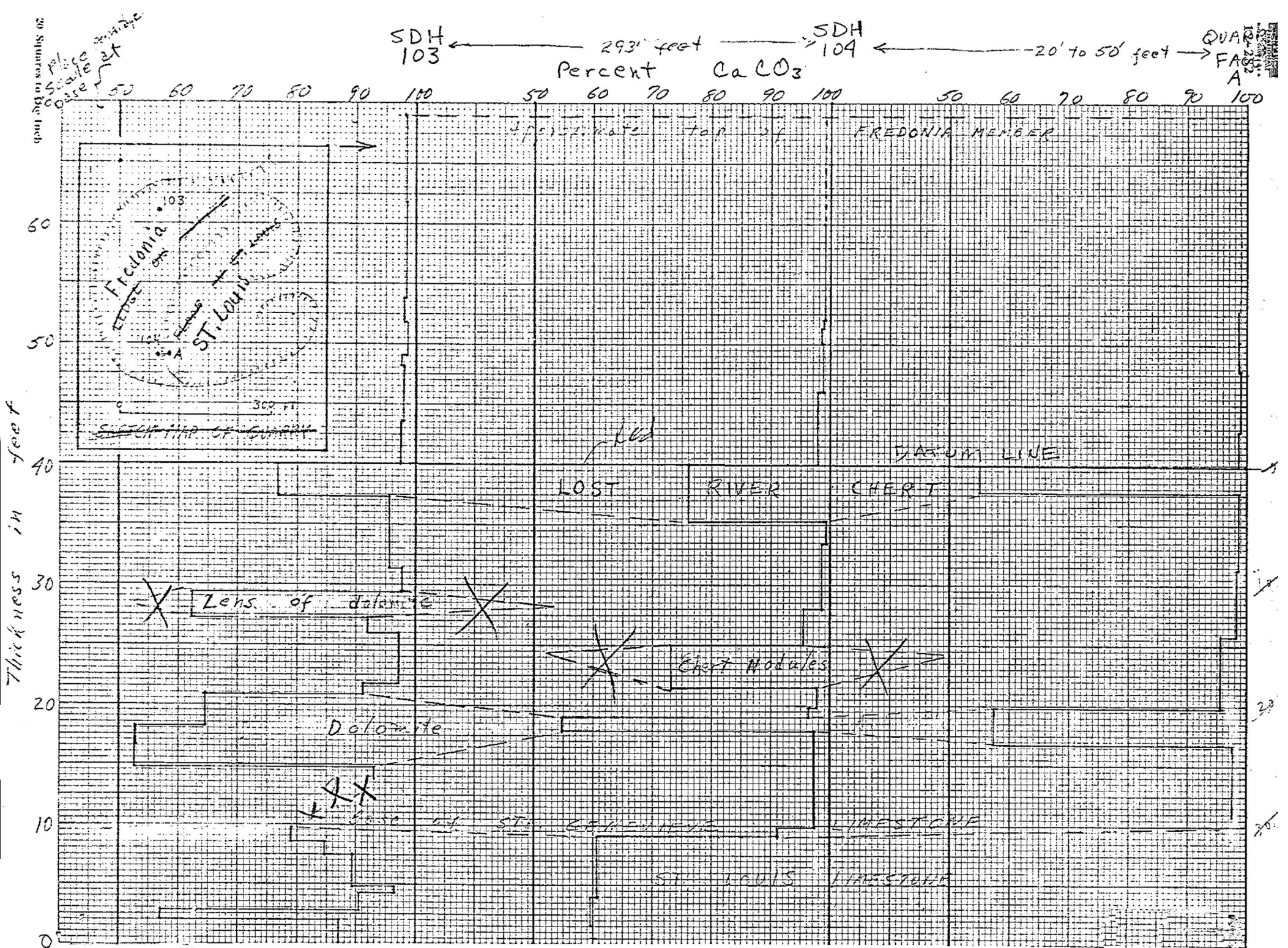


Fig. Correlation of units within the Fredonia member of the Ste. Genevieve Limestone, on basis of chemical composition. The datum plane is the top of the Lost River Chert.

SPECTROCHEMICAL ANALYSES OF THE RADCLIFF AND BERRY QUARRY NORTHWEST OF ORLEANS, ORANGE COUNTY

[illegible]

radberry 7 orange

Radcliff and Berry Quarry Location 7
Orange County

Unit	Description	Thick- ness	Sample
	Ste. Genevieve Limestone		
	Rosiclare Member		
20	Limestone, dark yellowish brown (10YR4/2) detrital, fine to med. grained, argill. and silty, few scattered med. quartz grains; unable to sample above this unit.	0.5	DC67-0724
	Fredonia Member		
19	Limestone, very light gray (N8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.	15.6	DC67-0723
18	Limestone, very light gray (N8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.		DC67-0722
17	Limestone, very light gray (N8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.		DC67-0721
16	Limestone, very light gray (N8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.		DC67-0720
15	Limestone, very light gray (N8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.		DC67-0719
14	Limestone, very light gray (N8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.		DC67-0718
13	Limestone, very light gray (N8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.		DC67-0717
12	Limestone, very light gray (N8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.		DC67-0716
11	Limestone, very light gray (N8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.		DC67-0715
10	Limestone, very light gray (N8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.		DC67-0714
9	Limestone, very light gray (N8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.		DC67-0713
8	Limestone, very light gray (N8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.		DC67-0712
7	Limestone, brownish gray (5YR4/1), micritic-oolitic; irregular thickness, in part missing, wavy, stylolites at top and base of unit; correlates with unit 2 of Location 4.	0.4	DC67-0711

6	Limestone, light brownish gray (5YR6/1), oolitic-micritic, gradational with unit below. In places this unit is directly below unit 8. Top of surface wavy with up to 0.5' relief. Unit 5 and 6 correlates with unit 3 of Location 4.	1.0	DC67-0710
5	Limestone, v. lt. brn. gray (5YR7/1), oolitic-skeletal near base gradually changing to oolitic in upper part of unit, fn. to v. cs. grained; basal 1 ft. is a pebble conglomerate with a few clasts up to 6 inches; thick bedded, slightly cross-bedded; upper & lower surface wavy.	3.4	DC67-0709
4	Calcareous dolomite, med. brownish gray (5YR5/1), detrital, slightly silty; numerous ooid structures; numerous pebbles up to 3 cm long; thinly bedded.	0.7	
3	Argillaceous dolomite, greenish gray (5GY6/1), v. finely xln; irregular thickness, in part replaced by greenish gray shale and in part replaced by unit 4.	0.5	
2	Limestone, v. lt. brownish gray (5YR6/1), skeletal, med. to v. cs. grained; med. bedded.	4.3	
	Lost River Chert Bed		
1	Chert and limestone (50-50), light & med. gray (N8 and N6) mottled; chert replaces skeletal limestone similar to unit 2.	2.5	
	Total measured section	28.9	

Radcliff and Berry Quarry

Location 7

<u>Unit</u>	<u>Description</u>	<u>Thickness (ft.)</u>
	<u>Ste. Genevieve Limestone</u>	
	<u>Rosiclare Member</u>	
20	Limestone, dark yellowish brown (10 YR 4/2) detrital, fine to med. grained, argill. and silty, few scattered med. quartz grains; unable to sample above this unit. DC67-724.	0.5
	<u>Fredonia Member</u>	
8-19	Limestone, very light gray (N-8), oolitic, med.-grained, well sorted; thick bedded, in part cross-bedded. Samples DC67-723 to DC67-712 taken at 1 ft. intervals in unit.	15.6
7	Limestone, brownish gray (5 YR 4/1), micritic-oolitic; irregular thickness, in part missing, wavy, stylolites at top and base of unit; correlates with unit 2 of Location 4. DC67-711	0.4
6	Limestone, light brownish gray (5 YR 6/1), oolitic-micritic, gradational with unit below. In places this unit is directly below unit 8. Top of surface wavy with up to 0.5' relief. Unit 5 and 6 correlates with unit 3 of Location 4. DC67-710	1.0
5	Limestone, v. lt. brn. gray (5 YR 7/1), oolitic-skeletal near base gradually changing to oolitic in upper part of unit, fn. to v. cs. grained; basal 1 ft. is a pebble conglomerate with a few clasts up to 6 inches; thick bedded, slightly cross-bedded; upper & lower surface wavy. DC67-709	3.4
4	Calcareous dolomite, med. brownish gray (5 YR 5/1), detrital, slightly silty; numerous ooid structures; numerous pebbles up to 3 cm long; thinly bedded.	0.7
3	Argillaceous dolomite, greenish gray (5 GY 6/1), v. finely xln; irregular thickness, in part replaced by greenish gray shale and in part replaced by unit 4.	0.5
2	Limestone, v. lt. brownish gray (5 YR 6/1), skeletal, med. to v. cs. grained; med. bedded.	4.3

<u>Unit</u>	<u>Description</u>	<u>Thickness (ft.)</u>
	<u>Lost River Chert Bed</u>	
1	Chert and limestone (50-50), light & med. gray (N-8 and N-6) mottled; chert replaces skeletal limestone similar to unit 2.	2.5
Total measured section		28.9

radberry 9 orange

Radcliff and Berry Quarry Location 9
Orange County

Unit	Description	Thick- ness	Sample
	Ste. Genevieve Limestone		
	Rosiclare Member		
7.1	Argillaceous dolomite, brownish gray (5YR4/1) with nodules (up to 1.5 ft.) of fine-grained pelletal limestone, slightly silty; thin bedded with shale partings: Ls. nodules, DC67-1051 Dol., DC67-1050.	3.8	DC67-1050
7.2	Argillaceous dolomite, brownish gray (5YR4/1) with nodules (up to 1.5 ft.) of fine-grained pelletal limestone, slightly silty; thin bedded with shale partings: Ls. nodules, DC67-1051 Dol., DC67-1050.		DC67-1051
	Fredonia Member		
6	Limestone, white (N9), oolitic, med.-grained, well sorted, well cemented with sparry calcite.	6.1	DC67-1049
5	Covered.	1.5	
4	Limestone, very light gray brown (5YR6/1), oolitic-skeletal, slightly silty, v. fine to med. grained, poorly sorted.	3.3	DC67-1048
3	Shale, gray, not sampled.	0.1	
2	Limestone, very light brownish gray (5YR6/1), skeletal-micritic, fine to very coarse grained, numerous bryozoans.	2.8	DC67-1047
	Lost River Chert Bed		
1	Chert and limestone, light and med. gray (N8 and N6), mottled, chert replaces skeletal limestone, similar to unit 2.	2.7	
	Total thickness measured	20.3	

Radcliff and Berry Quarry

Location 9.

<u>Unit</u>	<u>Description</u>	<u>Thickness</u>
	<u>Ste. Genevieve Limestone</u>	
	<u>Rosiclare Member</u>	
7	Argillaceous dolomite, brownish gray (5 YR 4/1) with nodules (up to 1.5 ft.) of fine-grained pelletal limestone, slightly silty; thin bedded with shale parting: Ls. nodules, DC67-1050; Dol., DC67-1050.	3.8
	<u>Fredonia Member</u>	
6	Limestone, white (N-9), oolitic, med.-grained, well sorted, well cemented with sparry calcite. DC67-1049.	6.1
5	Covered.	1.5
4	Limestone, very light gray brown (5 YR 6/1), oolitic-skeletal, slightly silty, v. fine to med. grained, poorly sorted; DC67-1048.	3.3
3	Shale, gray, not sampled.	0.1
2	Limestone, very light brownish gray (5 YR 6/1), skeletal-micritic, fine to very coarse grained, numerous bryozoans; DC67-1047.	2.8
	<u>Lost River Chert Bed</u>	
1	Chert and limestone, light and med. gray (N-8 and N-6), mottled, chert replaces skeletal limestone, similar to unit 2.	2.7
Total thickness measured.		20.3

Radcliff and Berry Quarry Location 12
Orange County

Unit	Description	Thick- ness	Sample
	Ste. Genevieve Ls.		
	Rosiclare Member		
7	Argillaceous dolomite, brownish gray (5YR4/1), with nodules (up to 1.5 ft.) of fine-grained pelletal limestone, slightly silty; thin bedded with shale partings, similar to unit 6 of Loc. 9.	4.5	
	Fredonia Member		
6	Limestone, very light gray (N8), oolitic, with small patches of oolitic-micritic, med. grained, well sorted.	3.0	DC67-1046
5	Covered.	3.0	
4	Limestone, very light brownish gray (5YR7/1), oolitic-micritic, med. grained.	3.1	DC67-1045
3	Shale, gray, not sampled.	0.1	
2	Limestone, very light brownish gray (5YR7/1), skeletal-micritic, fine-med. grained.	2.8	DC67-1044
	Lost River Chert Bed		
1	Chert and limestone, med. and lt. gray (N6 and N8); chert replaces skeletal limestone similar to unit 2.	2.7	
	Total thickness measured.	19.2	

Radcliff and Berry Quarry

Location 12.

<u>Unit</u>	<u>Description</u>	<u>Thickness</u>
	<u>Ste. Genevieve Ls.</u>	
	<u>Rosiclare Member</u>	
7	Argillaceous dolomite, brownish gray (5 YR 4/1), with nodules (up to 1.5 ft.) of fine-grained pelletal limestone, slightly silty; thin bedded with shale partings, similar to unit 6 of Loc. 9.	4.5
	<u>Fredonia Member</u>	
6	Limestone, very light gray (N-8), oolitic, with small patches of oolitic-micritic, med. grained, well sorted; DC67-1046.	3.0
5	Covered.	3.0
4	Limestone, very light brownish gray (5 YR 7/1), oolitic-micritic, med. grained; DC67-1045.	3.1
3	Shale, gray, not sampled	0.1
2	Limestone, very light brownish gray (5 YR 7/1), skeletal-micritic, fine-med. grained; DC67-1044.	2.8
	<u>Lost River Chert Bed</u>	
1	Chert and limestone, med. and lt. gray (N-6 and N-8); chert replaces skeletal limestone similar to unit 2.	2.7
Total thickness measured.		19.2

Radcliff and Berry Quarry Location 13
Orange County

Unit	Description	Thick- ness	Sample
	Ste. Genevieve Limestone		
	Rosiclare Member		
9	Argillaceous limestone, med. greenish gray (5GY5/1), micritic, slightly silty, thin bedded. Top of unit forms ledge.	7.0	DC67-1043
	Fredonia Member		
8	Limestone, very light brownish gray (5YR7/1), oolitic, med.-grained, med. sorting, thick bedded, forms prominent protruding face.	5.0	DC67-1042
7	Mud-shale, gray, calcareous; not sampled.	0.1	
6	Limestone, very light brownish gray (5YR7/1), oolitic, med.-grained, med. sorting.	2.1	DC67-1041
5	Mud-shale, grayish brown with small limestone nodules, not sampled.	0.2	
4	Limestone, med. brownish gray (5YR5/1), detrital, fine-grained, slightly argill., few scattered, very fine, clear quartz grains.	0.2	DC67-1040
3	Mud-shale, gray; not sampled.	0.1	
2	Limestone; very light brownish gray (5YR7/1), skeletal-micritic, fine-to v. cs. grained, numerous bryozoans, thick bedded.	3.3	DC67-1039
	Lost River Chert Bed		
1	Chert and limestone, light and med. gray (N8 and N6), mottled, chert replaces skeletal limestone similar to unit 2.	2.8	
	Total thickness measured.	20.8	

Radcliff and Berry Quarry

Location 13.

<u>Unit</u>	<u>Description</u>	<u>Thickness</u>
	<u>Ste. Genevieve Limestone</u>	
	<u>Rosiclare Member</u>	
9	Argillaceous limestone, med. greenish gray (5 GY 5/1), micritic, slightly silty, thin bedded. Top of unit forms ledge; DC67-1043. (DC67-1043)	7.0
	<u>Fredonia Member</u>	
8	Limestone, very light brownish gray (5 YR 7/1), oolitic, med.-grained, med. sorting, thick bedded, forms prominent protruding face. DC67-1042. (DC67-1042)	5.0
7	Mud-shale, gray, calcareous; not sampled.	0.1
6	Limestone, very light brownish gray (5 YR 7/1), oolitic, med.-grained, med. sorting; DC67-1041. (DC67-1041)	2.1
5	Mud-shale, grayish brown with small limestone nodules, not sampled.	0.2
4	Limestone, med. brownish gray (5 YR 5/1), detrital, fine-grained, slightly argill., few scattered, very fine, clear quartz grains; DC67-1040. (DC67-1040)	0.2
3	Mud-shale, gray; not sampled.	0.1
2	Limestone; very light brownish gray (5 YR 7/1), skeletal-micritic, fine-to v. cs. grained, numerous bryozoans, thick bedded; DC67-1039.	3.3
	<u>Lost River Chert Bed</u>	
1	Chert and limestone, light and med. gray (N-8 and N-6), mottled, chert replaces skeletal limestone similar to unit 2.	2.8
Total thickness measured.		20.8

Radcliff and Berry Quarry Location 17
Orange County

Unit	Description	Thick- ness	Sample
	Ste. Genevieve Ls.		
	Rosiclare Member		
8	Argill. limestone, brownish gray, similar to unit 9 of location 13; not able to sample.	1.0	
	Fredonia Member		
7.1	Limestone, v. light gray (N8), oolitic, med.-grained, well sorted, well cemented with sparry calcite; DC67-1055 near base; DC67-1056 near top of unit.	6.0	DC67-1056
7.2	Limestone, v. light gray (N8), oolitic, med.-grained, well sorted, well cemented with sparry calcite; DC67-1055 near base; DC67-1056 near top of unit.		DC67-1055
6	Limestone, as unit 4, oolitic, fine to med. grained, fair sorting.	1.5	DC67-1054
5	Limestone, as unit 4. Med.-v. cs. grained.	2.0	DC67-1053
4	Limestone, very light gray brown, oolitic-skeletal, slightly silty.	3.0	DC67-1052
3	Shale, not sampled.	0.1	
2	Limestone, very light brownish-gray (5YR7/1), skeletal, med. to v. cs. grained; med. bedded.	3.0	
	Lost River Chert Bed		
1	Chert and limestone, light and med. gray (N8 and N6) mottled; chert replaces skeletal limestone similar to unit 2.	2.5	
	Total thickness measured.	19.1	

Radcliff and Berry Quarry

Location 17.

<u>Unit</u>	<u>Description</u>	<u>Thickness</u>
	<u>Ste. Genevieve Ls.</u>	
	<u>Rosiclare Member</u>	
8	Argill. limestone, brownish gray, similar to unit 9 of location 13; not able to sample.	1.0
	<u>Fredonia Member</u>	
7	Limestone, v. light gray (N-8), oolitic, med.-grained, well sorted, well cemented with sparry calcite; DC67-1055 near base; DC67-1056 near top of unit.	6.0
6	Limestone, as unit 4, oolitic, fine to med. grained, fair sorting. DC67-1054.	1.5
5	Limestone, as unit 4. Med.-v. cs. grained; DC67-1053	2.0
4	Limestone, very light gray brown, oolitic-skeletal, slightly silty. DC67-1052.	3.0
3	Shale, not sampled.	0.1
2	Limestone, very light brownish-gray (5 YR 7/1), skeletal, med. to v. cs. grained; med. bedded.	3.0
	<u>Lost River Chert Bed</u>	
1	Chert and limestone, light and med. gray (N-8 and N-6) mottled; chert replaces skeletal limestone similar to unit 2.	2.5
Total thickness measured.		19.1

Radcliff and Berry Quarry Location 18
Orange County

Unit	Description	Thick- ness	Sample
	Ste. Genevieve Ls.		
	Rosiclare Member		
8	Argillaceous limestone, med. greenish gray (5GY5/1), micritic, silty, numerous scattered anhedral pyrite inclusions; thin bedded.	5.5	DC67-1060
	Fredonia Member		
7.1	Limestone, very light brownish gray (5YR7/1), oolitic skeletal, med.-cs. grained with scattered pods of fine grained, fair sorting. DC67-1058 near base; DC67-1059 near top of unit.	7.0	DC67-1059
7.2	Limestone, very light brownish gray (5YR7/1), oolitic skeletal, med.-cs. grained with scattered pods of fine grained, fair sorting. DC67-1058 near base; DC67-1059 near top of unit.		DC67-1058
6	Limestone, light brownish gray (5YR6/1), oolitic, fine-med. grained, fair sorting.	2.0	DC67-1057
5	Shale, not sampled.	0.1	
4	Limestone, lt. brownish gray (5YR6/1), oolitic, poorly exposed.	3.0	
3	Covered interval.	5.0	
2	Limestone, lt. brownish gray (5YR6/1), skeletal, med. to v. cs. grained, med. bedded.	4.0	
	Lost River Chert Bed		
1	Chert and limestone, light and med. gray (N8 and N6); chert replaces skeletal limestone as unit 2; chert replaces skeletal limestone as unit 2; chert nodules and thin discontinuous lenses.	2.9	
	Total thickness measured.	23.7	

Radcliff and Berry Quarry

Location 18.

<u>Unit</u>	<u>Description</u>	<u>Thickness</u>
	<u>Ste. Genevieve Ls.</u>	
	<u>Rosiclare Member</u>	
8 5	Argillaceous limestone, med. greenish gray (5 GY 5/1), micritic, silty, numerous scattered anhedral pyrite inclusions; thin bedded. DC67-1060	5.5
	<u>Fredonia Member</u>	
7 4	Limestone, very light brownish gray (5 YR 7/1), oolitic-skeletal, med.-cs. grained with scattered pods of fine grained, fair sorting. DC67-1058 near base; DC67-1059 near top of unit.	7.0
6 3	Limestone, light brownish gray (5 YR 6/1), oolitic, fine-med. grained, fair sorting. DC67-1057	2.0
5 2	Shale, not sampled.	0.1
4	Limestone, lt. brownish gray (5 YR 6/1), oolitic, poorly exposed.	3.0
3.	Covered interval	5.0
2.	Limestone, lt. brownish gray (5 YR 6/1), skeletal, med. to v. cs. grained, med. bedded.	4.0
	<u>Lost River Chert Bed</u>	
1	Chert and limestone, light and med. gray (N-8 and N-6); chert replaces skeletal limestone as unit 2; chert replaces skeletal limestone as unit 2; chert nodules and thin discontinuous lenses.	2.9
Total thickness measured.		23.7

Elevation of Top & bottom of in life body - 1000 m & 1200 m.

[illegible]

Radcliff and Berry Quarry Northwest of Orleans, Orange County

Date of field examination - June 28 and July 1, 1948

Location- One mile northwest of the town of Orleans, in Orange County, Radcliff and Berry, Inc. operate a Quarry and crushing plant in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 24, T. 3 N., R. 1 W.

By John B. Patton

Unit	Description	Thick- ness	Sample
21	Soil: reddish brown, residual, clayey, with blocks of Mooretown sandstone float.	2.0	
	Paoli		
20	Limestone: light gray, finely crystalline, oolitic to sub-oolitic, fossil fragments. Bedding 0.2 to 0.8 foot thick. RS 22115 taken 0.9 foot from base.	6.9	RS22-0115
19	Shale: light greenish gray, soft, calcareous, fossiliferous.	0.9	
18	Limestone: light gray, finely crystalline, oolitic, fossil fragments. Bedding 0.5 to 2.0 feet thick. Chip sample 48114 represents units 18 19, and 20.	7.1	CS48-0114
	Measured thickness of exposed Paoli limestone	14.9	
	Aux Vases		
17.1	Limestone, sandstone, and shale: upper 0.2 foot fine-grained, calcareous sandstone, stained brown. Most of unit consists of light gray, granular, massive, argillaceous limestone, becoming sandy toward top, 2.6 feet thick. Lower 0.2 foot light gray, soft, calcareous shale. RS 48113 taken 0.1 foot from top and RS 48112 taken 0.9 foot from base of unit. Chip sample 48111.	3.0	RS48-0113
17.2	Limestone, sandstone, and shale: upper 0.2 foot fine-grained, calcareous sandstone, stained brown. Most of unit consists of light gray, granular, massive, argillaceous limestone, becoming sandy toward top, 2.6 feet thick. Lower 0.2 foot light gray, soft, calcareous shale. RS 48113 taken 0.1 foot from top and RS 48112 taken 0.9 foot from base of unit. Chip sample 48111.		RS48-0112
17.3	Limestone, sandstone, and shale: upper 0.2 foot fine-grained, calcareous sandstone, stained brown. Most of unit consists of light gray, granular, massive, argillaceous limestone, becoming sandy toward top, 2.6 feet thick. Lower 0.2 foot light gray, soft, calcareous shale. RS 48113 taken 0.1 foot from top and RS 48112 taken 0.9 foot from base of unit. Chip sample 48111.		CS48-0111
	Ste. Genevieve formation		
	Levias		
16	Limestone: brown, dense, brecciated. Weathers rubbly. RS 48110 taken 0.5 foot from base.	2.2	RS48-0110
15.1	Limestone: tan, dense to finely crystalline, sub-oolitic. Lower 1.0 foot interbedded with green soft shale. RS 48109 taken 2.2 feet from top. Chip sample 48108 represents units 15 and 16.	6.6	RS48-0109
15.2	Limestone: tan, dense to finely crystalline, sub-oolitic. Lower 1.0 foot interbedded with green soft shale. RS 48109 taken 2.2 feet from top. Chip sample 48108 represents units 15 and 16.		CS48-0108

14	Limestone: light gray, lense to finely crystalline, oolitic, massive. RS 48107 obtained 4.4 feet from top of unit.	6.5	RS48-0107
13.1	Limestone: gray, crystalline. RS 4S106 taken 0.6 foot from top. Chip sample 48105 represents units 13 and 14.	1.5	RS48-0106
13.2	Limestone: gray, crystalline. RS 4S106 taken 0.6 foot from top. Chip sample 48105 represents units 13 and 14.		CS48-0105
12	Limestone: tan, finely crystalline, massive. Clay seam at top. RS 48104 taken 0.9 foot from top.	3.4	RS48-0104
11.1	Limestone: gray, coarsely crystalline. RS 48103 taken 2.2 feet from top. Chip sample 48102 represents units 11 and 12.	4.8	RS48-0103
11.2	Limestone: gray, coarsely crystalline. RS 48103 taken 2.2 feet from top. Chip sample 48102 represents units 11 and 12.		CS48-0102
10.1	Limestone: dark gray, dense, massive, has banded appearance due to moisture in more porous streaks. Prominent bedding plane with thin clay parting at base. RS 4S1O1 taken 2.3 feet from top. Chip sample 22100.	8.6	RS48-0101
10.2	Limestone: dark gray, dense, massive, has banded appearance due to moisture in more porous streaks. Prominent bedding plane with thin clay parting at base. RS 4S1O1 taken 2.3 feet from top. Chip sample 22100.		CS48-0101
9.1	Limestone: dark gray, dense, massive, prominent bedding plane 3.9 feet from base, upper 3.8 feet have banded appearance due to moisture in more porous streaks, RS 4899 taken 2.5 feet from base. Chip sample 4898.	9.4	RS48-0099
9.2	Limestone: dark gray, dense, massive, prominent bedding plane 3.9 feet from base, upper 3.8 feet have banded appearance due to moisture in more porous streaks, RS 4S99 taken 2.5 feet from base. Chip sample 4898.		CS48-0098
	Total measured thickness of Levias member	43.0	
	Rosiclaire		
8	Shale: gray, platy, calcareous, oolitic. Contains rounded frosted sand grains. Weathers tan.	0.3	
7	Limestone: lower 1.0 foot tan, dense; upper 2.8 feet tan, dense, oolitic; uppermost 1.0 foot brecciated. RS 4897 taken 1.2 feet from base.	3.8	RS48-0097
6	Limestone: gray, crystalline, cross-bedded, oolitic, brecciated. RS 4396 taken 0.2 foot from top of unit.	0.9	RS43-0096
5	Limestone: white, dense, oolitic, lower 2.5 foot gray. RS 4873 taken 0.7 foot from top.	2.7	RS48-0073
4	Shale and sandstone: shale at top, gray, platy, sandy; sandstone at base, gray, hard, calcareous. Thickness of unit varies between 0.1 and 0.5 foot.		
	Total thickness of Rosiclaire member	7.9	
	Fredonia		

3	Limestone: tan, dense. RS 4872 taken 0.5 foot from top.	1.1	RS48-0072
2.1	Limestone: light gray, oolitic, coarsely crystalline, fossiliferous, contains crystalline calcite. RS 4S71 taken 1.4 feet from base. Chip sample 4870 represents units 2 through 8.	2.6	RS48-0071
2.2	Limestone: light gray, oolitic, coarsely crystalline, fossiliferous, contains crystalline calcite. RS 4S71 taken 1.4 feet from base. Chip sample 4870 represents units 2 through 8.		CS48-0071
1.1	Limestone: white, oolitic, massive, cross-bedded. RS 4869 taken 4.0 feet from base. Chip sample 4868.	15.2	RS48-0069
1.2	Limestone: white, oolitic, massive, cross-bedded. RS 4869 taken 4.0 feet from base. Chip sample 4868.		CS48-0068
	Measured thickness of exposed Fredonia member	18.9	
	Total exposed thickness of Ste. Genevieve formation	69.8	
	Total thickness of measured section	86.7	

ORANGE COUNTY

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Radditt & Berry SW SE sec 24, 34, 14

7 Ls, lower 1.0 tan, dse, upper 2.8 tan
dse, ool., uppermost 1.0 brecciated 3.8

6 RS 4297 1.2 from base
Ls, gray, xtn, x-bedded, ool., brecciated, 0.9

5 RS 4296 0.2 from top
Ls, wh, dse, oolitic, lower 0.5 gray 2.7

4 RS 4873 dit from top
Shale & sandstone, sh at top, gray, platy,
sdy, ss, gray, hd. calc, thickness of
unit varies from 0.1 to 0.5
No RS 0.2

Fredonia
3 Limestone, tan, dse 11.

RS 4872 0.5 FROM TOP
2 Ls, H. gray, ool, crsly xtn, f. ss,
xtn calcite 2.6

Chip 4870 for Units 2, 3, 4, 5, 6, 7, 8
RS 4871 1.4 from base
1 Limestone, wh., ool., mass, x-bedded 15.2

Chip unit 1 4868
RS 4869 from bottom

Radcliff And Berry Quarry Northwest of Orleans Orange County Indiana
 Date of field examination June 16, 1954
 Location SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 24, T. 3 N., R. 1. W.
 by Duncan McGregor

Unit	Description	Thick- ness	Sample
1.1	Limestone: Lt. gray to white, massive oolitic cross-bedded. (Same as Patton's Unit 1, 1948).	15.2	Mc54-0010
1.2	Limestone: Lt. gray to white, massive oolitic cross-bedded. (Same as Patton's Unit 1, 1948).		Mc54-0009
1a.1	Limestone: Gray, fine grained, oolitic, massive in gross aspect, few stylolites. RS Mc54-8 taken 4' above base of unit.	3.6	Mc54-0008
1a.2	Limestone: Gray, fine grained, oolitic, massive in gross aspect, few stylolites. RS Mc54-8 taken 4' above base of unit.		Mc54-0007
2.1	Limestone: Lt. gray, massive, med. to fine grained, oolite lenses, top 1' green, argillaceous, in appearance. RS Mc54-6 taken 6" above base of unit.	2.8	Mc54-0006
2.2	Limestone: Lt. gray, massive, med. to fine grained, oolite lenses, top 1' green, argillaceous, in appearance. RS Mc54-6 taken 6" above base of unit.		Mc54-0005
3.1	Limestone: Lt. gray, massive fine grained, stylolitic, oolitic in part. Lower 1.8' contains chert, abundant bryozoans, top of unit drawn at 1.9 brown shale break. RS Mc54-4 2' from top of unit.	5.1	Mc54-0004
3.2	Limestone: Lt. gray, massive fine grained, stylolitic, oolitic in part. Lower 1.8' contains chert, abundant bryozoans, top of unit drawn at 1.9 brown shale break. RS Mc54-4 2' from top of unit.		Mc54-0003
4.1	Limestone: Lt. gray to tan, med. to fine grained, oolite lenses, lithographic with calcite blebs, stylolitic. Break between this unit and unit drawn on top of chert mass. RS Mc54-2 taken 3 feet above base.	8.3	Mc54-0002
4.2	Limestone: Lt. gray to tan, med. to fine grained, oolite lenses, lithographic with calcite blebs, stylolitic. Break between this unit and unit drawn on top of chert mass. RS Mc54-2 taken 3 feet above base.		Mc54-0001
	Total thickness of measured section	35.0	

Resampling of Part of Radcliff And Berry Quarry Northwest of Orleans

Date of resampling - October 31, 1962.

These samples were collected by L. F. Rooney, while the clerical work was done by N. M. Smith.

The Radcliff and Berry quarry is located about one mile northwest of Orleans, Orange County, Ind., in the SW¼SE¼ sec. 24, T. 3 N., R. 1 W. The location given for this quarry in previous memoranda is not correct. Samples S62-16 to -37 were collected in the westernmost part of the quarry.

Unit	Description	Thick- ness	Sample
	Ste. Genevieve Limestone		
	Fredonia Member		
	(Same bed as represented by samples Mc54-9 and 10 and P48-68)	15.2	
11.1	Calcarenite: Gray, fine- to coarse-grained, dense stylolitic. Rock is made of oolites or pellets embedded in calcilutite. Hand specimen S62-37 was obtained 1.3 ft. below the top of the unit.	2.6	S62-0037
11.2	Calcarenite: Gray, fine- to coarse-grained, dense stylolitic. Rock is made of oolites or pellets embedded in calcilutite. Hand specimen S62-37 was obtained 1.3 ft. below the top of the unit.		S62-0036
	Note: A lens of brown rock was observed in this position between units 10 and 11 but was not accessible for close examination.		
10.1	Calcarenite: Dark-gray, tinted tan and. brown, coarse-grained, dense. Rock probably is made of fossil debris, chiefly crinoid pieces, but contains rudaceous, angular pieces of calcilutite, end toward the top, becomes oolitic. Hand specimen S62-35 was obtained 0.7 ft. below the top of the unit.	2.4	S62-0035
10.2	Calcarenite: Dark-gray, tinted tan and. brown, coarse-grained, dense. Rock probably is made of fossil debris, chiefly crinoid pieces, but contains rudaceous, angular pieces of calcilutite, end toward the top, becomes oolitic. Hand specimen S62-35 was obtained 0.7 ft. below the top of the unit.		S62-0034
9.1	Calcarenite: Dark-gray, medium-grained, dense, locally is poorly sorted. Rock is made of oolites embedded in calcilutite and locally in spar. Massiveness of bedding is masked by extreme fracturing as a result of blasting. Hand specimen S62-33 was obtained 1.0 ft. down from top of the unit. Thickness of unit not accurately measured.	5.0	S62-0033
9.2	Calcarenite: Dark-gray, medium-grained, dense, locally is poorly sorted. Rock is made of oolites embedded in calcilutite and locally in spar. Massiveness of bedding is masked by extreme fracturing as a result of blasting. Hand specimen S62-33 was obtained 1.0 ft. down from top of the unit. Thickness of unit not accurately measured.		S62-0032
8.1	Fossiliferous calcilutite: Gray, dense, and is in one stylolitic bed. Hand specimen S62-31 was obtained 0.7 ft. below the top of the unit.	2.7	S62-0031
8.2	Fossiliferous calcilutite: Gray, dense, and is in one stylolitic bed. Hand specimen S62-31 was obtained 0.7 ft. below the top of the unit.		S62-0030

7.1	Fossiliferous calcilutite and silicilutite (Lost River Chart Bed): Silicilutite is dark blue-gray, is very fossiliferous with bryozoans, and is present in thin beds or lenses. Calcilutite is gray, dense, and fossiliferous. Hand specimen S62-29 was obtained 1.0 ft. below top of the unit.	2.3	S62-0029
7.2	Fossiliferous calcilutite and silicilutite (Lost River Chart Bed): Silicilutite is dark blue-gray, is very fossiliferous with bryozoans, and is present in thin beds or lenses. Calcilutite is gray, dense, and fossiliferous. Hand specimen S62-29 was obtained 1.0 ft. below top of the unit.		S62-0028
6.1	Calcarenite: Gray, dense, coarse-grained. Rock is made of fossils embedded in calcilutite and is in many thin beds demarcated by thick stylolites. Top of unit is arbitrarily placed at the base of the Lost River Chert Bed. Hand specimen S62-27 was obtained 1.0 ft. below the top of the unit.	6.5	S62-0027
6.2	Calcarenite: Gray, dense, coarse-grained. Rock is made of fossils embedded in calcilutite and is in many thin beds demarcated by thick stylolites. Top of unit is arbitrarily placed at the base of the Lost River Chert Bed. Hand specimen S62-27 was obtained 1.0 ft. below the top of the unit.		S62-0026
5.1	Calcarenite: Gray to tan-gray, fine- to medium-grained, dense, thick-bedded, stylolitic. Rock probably is made entirely of fossil debris and includes a thin irregular lens of very large fossil debris. Hand specimen S62-25 was obtained 1.4 ft. below top of the unit.	5.4	S62-0025
5.2	Calcarenite: Gray to tan-gray, fine- to medium-grained, dense, thick-bedded, stylolitic. Rock probably is made entirely of fossil debris and includes a thin irregular lens of very large fossil debris. Hand specimen S62-25 was obtained 1.4 ft. below top of the unit.		S62-0024
4.1	Calcarenite: Dark-gray, very fine- to fine-grained, dense, brittle. Rock probably is a fossil-calcarenite and is in thin, slabby, and stylolitic beds. Hand specimen S62-23 was obtained from the top of the unit. Rock was sampled where thinnest.	6.2 to 6.0	S62-0023
4.2	Calcarenite: Dark-gray, very fine- to fine-grained, dense, brittle. Rock probably is a fossil-calcarenite and is in thin, slabby, and stylolitic beds. Hand specimen S62-23 was obtained from the top of the unit. Rock was sampled where thinnest.		S62-0022
3.1	Dolomitic calcilutite or calcitic dololite: Dark-gray, to dark-brown, sugary textured, fine-grained. Rock is in a massive bed that appears to have locally inclined laminations and contains large balls of large calcite crystals. Hand specimen S62-21 was obtained from the middle of the unit. Rock was sampled where thickest.	2.8 to 3.0	S62-0021
3.2	Dolomitic calcilutite or calcitic dololite: Dark-gray, to dark-brown, sugary textured, fine-grained. Rock is in a massive bed that appears to have locally inclined laminations and contains large balls of large calcite crystals. Hand specimen S62-21 was obtained from the middle of the unit. Rock was sampled where thickest.		S62-0020
2.1	Calcarenite: Gray, tinted tan, medium- to coarse-grained, thick-bedded. Rock is made of fossil debris laid in thick beds that are also stylolitic. Hand specimen S62-17 was obtained from the middle of the unit.	6.7	S62-0017
2.2	Calcarenite: Gray, tinted tan, medium- to coarse-grained, thick-bedded. Rock is made of fossil debris laid in thick beds that are also stylolitic. Hand specimen S62-17 was obtained from the middle of the unit.		S62-0016
1.1	Calcarenite: Brownish-gray, medium- to coarse-grained, dense, dolomitic, and rubbly. Rock possibly is a crystal-calcarenite. Hand specimen S62-19 was obtained from the base of the unit.	1.0	S62-0019

1.2	Calcarenite: Brownish-gray, medium- to coarse-grained, dense, dolomitic, and rubbly. Rock possibly is a crystal-calcarenite. Hand specimen S62-19 was obtained from the base of the unit.		S62-0018
	Thickness of the Fredonia Member exposed	58.8	

Radcliff and Berry Quarry Location 2

Unit	Description	Thick- ness	Sample
	Ste. Genevieve Limestone		
	Rosiclare Member		
21	Limestone, brownish gray (5YR4/1), detrital, fine to med. grained, trace of scattered clear med. grained quartz.	1.0	DC67-0692A
20	Argillaceous limestone, dark yellowish brown (5YR5/2), micritic and detrital, silty, in part shaley.	0.4	DC67-0692B
	Fredonia Member		
19	Limestone, brownish gray (5YR4/1), oolitic with scattered thin laminae of skeletal, med. grained, fair sorting, well cemented with sparry calcite; numerous scattered euhedral pyrite inclusions.	1.0	DC67-0691
18	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)	16.2	DC67-0690
17	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0689
16	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0688
15	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0687
14	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0686
13	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0685
12	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0684
11	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0683

10	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0682
9	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0681
8	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0680
7	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0679
6	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0678
5	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0677
4	Limestone, very light gray (N8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)		DC67-0676
3	Dolomite, brownish black (5YR3/1), very finely crystalline, slightly argillaceous; wavy irregular bed.	0.8	DC67-0675
2	Covered interval.	4.0	
	Lost River Chert Bed		
1	Chert and limestone.	2.5	

Radcliff and Berry Quarry

Location 2

<u>Unit</u>	<u>Description</u>	<u>Thickness (ft.)</u>
	<u>Ste. Genevieve Limestone</u>	
	<u>Rosiclare Member</u>	
21	Limestone, brownish gray (5 YR 4/1), detrital, fine to med. grained, trace of scattered clear med. grained quartz. DC67-692A.	1.0
20	Argillaceous limestone, dark yellowish brown (5 YR 5/2), micritic and detrital, silty, in part shaley. DC67-692B.	0.4
	<u>Fredonia Member</u>	
19	Limestone, brownish gray (5 YR 4/1), oolitic with scattered thin laminae of skeletal, med. grained, fair sorting, well cemented with sparry calcite; numerous scattered euhedral pyrite inclusions. DC67-691.	1.0
4-18	Limestone, very light gray (N-8), oolitic, med. grained, well cemented by sparry calcite, thick bedded, in part cross-bedded. (Samples DC67-690 to DC67-676 taken at 1 ft. intervals in unit.)	16.2
3	Dolomite, brownish black (5 YR 3/1), very finely crystalline, slightly argillaceous; wavy irregular bed. DC67-675.	0.8
2	Covered interval.	4.0
	<u>Lost River Chert Bed</u>	
1	Chert and limestone.	2.5

radcliffe / ORANGE
BERRY

Radcliff and Berry Quarry
Location 1.
Orange County

Unit	Description	Thick- ness	Sample
	Ste. Genevieve Limestone		
	Rosiclare Member		
21	Limestone, brownish gray (5YR4/1), oolitic, fine-very coarse grained, med. sorting.	1.0	DC67-0674
20	Argillaceous limestone, dark yellowish brown (10YR4/2) micritic, silty, few detrital grains.	0.7	DC67-0673
19	Limestone, brownish gray (5YR5/1), oolitic, med. grained well-sorted, numerous inclusions of euhedral pyrite.	1.0	DC67-0672
	Fredonia Member		
18	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.	14.2	DC67-0671
17	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0670
16	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0669
15	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0668
14	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0667
13	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0666
12	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0665
11	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0664
10	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0663
9	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0662
8	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0661

7	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0660
6	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0659
5	Limestone, very light gray (N8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit.		DC67-0658
4	Calcareous shale, mod, yellow brown (10YR5/4).	0.2	DC67-0657
3	Limestone, brownish gray (5YR4/1), oolitic-micritic, very fine to med. grained, poorly sorted; irregular thickness, in part replaced by silty dolomite.	2.0	DC67-0656
2	Limestone, med. brownish gray (5YR7/1), skeletal, med. to v. cs. grained, med. bedded.	3.9	
	Lost River Chert Bed		
1	Chert and limestone (60-40), light and med. gray (N8 and N6); chert replaces skeletal limestone similar to unit 2.	1.7	
	Total thickness measured	24.7	

Radcliff and Berry Quarry

Location 1.

<u>Unit</u>	<u>Description</u>	<u>Thickness (ft.)</u>
<u>Ste. Genevieve Limestone</u>		
<u>Rosiclare Member</u>		
21	Limestone, brownish gray (5 YR 4/1), oolitic, fine-very coarse grained, med. sorting. DC67-674.	1.0
20	Argillaceous limestone, dark yellowish brown (10 YR 4/2) micritic, silty, few detrital grains. DC67-673.	0.7
19	Limestone, brownish gray (5 YR 5/1), oolitic, med. grained well-sorted, numerous inclusions of euhedral pyrite. DC67-672	1.0
<u>Fredonia Member</u>		
5-18	Limestone, very light gray (N-8), oolitic, med. grained, well sorted, with scattered pods and laminae of coarse grained skeletal. Samples taken at 1 ft. intervals in unit. DC67-671 to DC67-658.	14.2
4	Calcareous shale, mod. yellow brown (10 YR 5/4). DC67-657.	0.2
3	Limestone, brownish gray (5 YR 4/1), oolitic-micritic, very fine to med. grained, poorly sorted; irregular thickness, in part replaced by silty dolomite. DC67-656.	2.0
2	Limestone, med. brownish gray (5 YR 7/1, skeletal, med. to v. cs. grained, med. bedded.	3.9
<u>Lost River Chert Bed</u>		
1	Chert and limestone (60-40), light and med. gray (N-8 and N-6); chert replaces skeletal limestone similar to unit 2.	1.7
Total thickness measured		24.7

radberry 4ORANGE

Radcliff and Berry Quarry Location 4
Orange County
SE $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 3N., R. 1W.

Unit	Description	Thick- ness	Sample
	Ste. Genevieve Limestone		
	Rosiclare Member		
19.1	Limestone, pale yellowish brown (10YR6/2) oolitic-skeletal and micritic, med. grained, fair sorting; med. bedded. Top of unit where exposed by stripping contains dessication polygons 0.6 to 1.0 ft. in diameter, filled with grayish orange calc. siltstone.	1.0	DC67-0709
19.2	Limestone, pale yellowish brown (10YR6/2) oolitic-skeletal and micritic, med. grained, fair sorting; med. bedded. Top of unit where exposed by stripping contains dessication polygons 0.6 to 1.0 ft. in diameter, filled with grayish orange calc. siltstone.		DC67-0708
18.1	Limestone, mod, yellowish brown (10YR6/4) micritic with scattered small pods of fine-grained oolitic; numerous worm burrows on top of unit; upper 0.5' becomes slightly argillaceous. Lower 0.7' of unit grades into brownish gray oolitic ls., med. grained, well sorted.	1.2	DC67-0707
18.2	Limestone, mod, yellowish brown (10YR6/4) micritic with scattered small pods of fine-grained oolitic; numerous worm burrows on top of unit; upper 0.5' becomes slightly argillaceous. Lower 0.7' of unit grades into brownish gray oolitic ls., med. grained, well sorted.		DC67-0706
17	Mud-shale, gray, calc. not sampled.	0.4	
	Fredonia Member		
16	Limestone, lt. brownish gray (5YR6/1), oolitic, med.-grained, mod, well sorted.	1.0	
15	Limestone, v. light gray (N8), oolitic, med. grained, well sorted, thick bedded, in part cross-bedded. Samples taken at 1' intervals in unit.	14.5	DC67-0705
14	Limestone, v. light gray (N8), oolitic, med. grained, well sorted, thick bedded, in part cross-bedded. Samples taken at 1' intervals in unit.		DC67-0704
13	Limestone, v. light gray (N8), oolitic, med. grained, well sorted, thick bedded, in part cross-bedded. Samples taken at 1' intervals in unit.		DC67-0703
12	Limestone, v. light gray (N8), oolitic, med. grained, well sorted, thick bedded, in part cross-bedded. Samples taken at 1' intervals in unit.		DC67-0702
11	Limestone, v. light gray (N8), oolitic, med. grained, well sorted, thick bedded, in part cross-bedded. Samples taken at 1' intervals in unit.		DC67-0701
10	Limestone, v. light gray (N8), oolitic, med. grained, well sorted, thick bedded, in part cross-bedded. Samples taken at 1' intervals in unit.		DC67-0700

9	Limestone, v. light gray (N8), oolitic, med. grained, well sorted, thick bedded, in part cross-bedded. Samples taken at 1' intervals in unit.		DC67-0699
8	Limestone, v. light gray (N8), oolitic, med. grained, well sorted, thick bedded, in part cross-bedded. Samples taken at 1' intervals in unit.		DC67-0698
7	Limestone, v. light gray (N8), oolitic, med. grained, well sorted, thick bedded, in part cross-bedded. Samples taken at 1' intervals in unit.		DC67-0697
6	Limestone, v. light gray (N8), oolitic, med. grained, well sorted, thick bedded, in part cross-bedded. Samples taken at 1' intervals in unit.		DC67-0696
5	Limestone, v. light gray (N8), oolitic, med. grained, well sorted, thick bedded, in part cross-bedded. Samples taken at 1' intervals in unit.		DC67-0695
4	Calcareous dolomite, brownish black (5YR2/1), v. finely crystalline, slightly argill; irregular thickness, pinches out in places and replaced by thin gray shale; top and base of unit has blue-green argillaceous laminae; few burrow structures; numerous vugs filled with sparry calcite.	0.8	DC67-0694
3	Limestone, v. light brownish gray (5YR6/1) oolitic, fine-med. grained, mod, well sorted. Only partially exposed.	4.2	DC67-0693
2	Limestone, light brownish gray (5YR7/1) skeletal, med. to v. cs. grained, med. bedded.	3.2	
	Lost River Chert Bed		
1	Chert and limestone, (50-50) light and med. gray (N8 and N6), mottled, chert replaces skeletal limestone similar to unit 2.	2.5	
	Total thickness	28.8	

Indiana Geological Survey

SW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 3N., R. 1E

Orange County

Radcliff and Berry Quarry

Location 4.

<u>Unit</u>	<u>Description</u>	<u>Thickness (ft.)</u>
<u>Ste. Genevieve Limestone</u>		
<u>Rosiclare Member</u>		
19	Limestone, pale yellowish brown (10 YR 6/2) oolitic-skeletal and micritic, med. grained, fair sorting; med. bedded. DC67-708, 709, Top of unit where exposed by stripping contains dessication polygons 0.6 to 1.0 ft. in diameter, filled with grayish orange calc. siltstone.	1.0
18	Limestone, mod. yellowish brown (10 YR 6/4) micritic with scattered small pods of fine-grained oolitic; numerous worm burrows on top of unit; upper 0.5' becomes slightly argillaceous, DC67-707. Lower 0.7' of unit grades into brownish gray oolitic ls., med. grained, well sorted. DC67-706.	1.2
17	Mud-shale, gray, calc. not sampled.	0.4
<u>Fredonia Member</u>		
16	Limestone, lt. brownish gray (5 YR 6/1), oolitic, med.-grained, mod. well sorted.	1.0
5-15	Limestone, v. light gray (N-8), oolitic, med. grained, well sorted, thick bedded, in part cross-bedded. Samples taken at 1' intervals in unit. DC67-705 to DC67-695.	14.5
4	Calcareous Dolomite, brownish black (5 YR 2/1), v. finely crystalline, slightly argill; irregular thickness, pinches out in places and replaced by thin gray shale; top and base of unit has blue-green argillaceous laminae; few burrow structures; numerous vugs filled with sparry calcite. DC67-694	0.8
3	Limestone, v. light brownish gray (5 YR 6/1) oolitic, fine-med. grained, mod. well sorted. Only partially exposed. DC67-693	4.2
2	Limestone, light brownish gray (5 YR 7/1) skeletal, med. to v. cs. grained, med. bedded.	3.2
<u>Lost River Chert Bed</u>		
1	Chert and limestone, 50-50) light and med. gray (N-8 and N-6), mottled, chert replaces skeletal limestone similar to unit 2.	2.5
Total Thickness		28.8

rad berry quarry section

Radcliff and Berry, Inc. Quarry Section

SW $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 24, T. 3 N., R. 1 W.

1 mile northwest of Orleans, Orange County

Remarks: Composite section prepared by Don Carr from section measured by Don Carr and L. F. Rooney on May 17, 1966 and from sections measured. by John Patton, 1943, and Rooney and Smith, 1962.

Unit	Description	Thick- ness	Sample
39	Soil, reddish brown and mahogany brown residual clay soil	2.0	
	Bethel Formation		
38	Shale and Sandstone	28.0	
	Paoli Limestone		
37	Limestone, med. brown, micritic, silty; and micritic-skeletal irregular upper surface with relief of 6-10 inches. Thin lenses of sandstone in the upper part of the unit.	0.8	DC66-0026
36	Limestone, med. brown, oolitic micritic and micritic, silty; wavy bedded in upper part; thin vertical fractures with calcite fill are common.	9.0	DC66-0025
35	Limestone, light gray brown, oolitic-skeletal and in part skeletal. Upper part is thin bedded and shaly.	1.8	DC66-0024
34	Limestone, v. light brown, micritic, silty, slightly argillaceous, in part skeletal-micritic, thick bedded becoming medium and thin bedded near both the top and the bottom of the unit.	5.2	DC66-0023
	Total thickness of Paoli Limestone	16.8	
	Aux Vases		
33	Limestone, siltstone, and sandstone: gray micritic limestone, very argillaceous; siltstone very calcareous; sandstone thinly interbedded, fine grained; med-thick bedded, resistant; forms a slight ledge on the quarry wall, weathers to reddish-yellow brown. Shale <0.1' at both top and bottom of unit.	3.7	DC66-0022
	Total thickness of Aux Vases	3.7	
	Ste. Genevieve Limestone		
	Levias Member		
32	Limestone, gray brown, brecciated; clasts up to several inches, micritic matrix; bedding very contorted and thin; weathers rubbly.	1.7	DC66-0021
31	Limestone, med. brown, micritic, dense, conchoidal fracture, thick bedded, abundant veins and vugs filled with calcite.	5.3	DC66-0020
30	Shale, gray, platy	0.1	
29	Limestone, light brown, oolitic-skeletal, medium bedded; occasional v. thin shale partings	2.2	DC66-0019

28	Limestone, light gray, micritic, silty, med.-thin beds; v. thin blue gray shale partings mainly in lower part of unit; bedding varies from even to wavy	3.0	DC66-0018
27	Limestone, light gray, micritic, silty, argillaceous, thin bedded; interbeds of gray-green shale; poorly exposed.	0.6	DC66-0017
26	Limestone, light gray, dense to finely crystalline, oolitic, massive	6.5	
25	Limestone, gray crystalline	1.5	P48-0105
24	Limestone, tan, finely crystalline, massive; clay seam at top	3.4	
23	Limestone, gray, coarsely crystalline	4.8	P48-0102
22	Limestone, light gray brown, micritic, thick bedded; occasional v. thin clay seams; stylolites and calcite seams common.	9.1	DC66-0016
21	Shale, gray green, not sampled	0.1	
20	Limestone, light gray, oolitic-skeletal and micritic, thick bedded, prominent stylolite 1.0' from base.	4.3	DC66-0015
	Total thickness of Levias Member		
	Rosiclaire Member		
19	Shale and sandstone, gray, platy with limestone nodules gradational with unit below	0.5	DC66-0014
18	Limestone, light gray, pelletal, brecciated with clasts up to several inches. Grades into unit above and below	0.8	DC66-0013
17	Limestone, light gray, oolitic and micritic, thick bedded, prominent stylolites 0.2' and 0.8' above base. Units grades into brecciated unit above.	3.4	DC66-0012
16	Limestone, gray, skeletal, brecciated with clasts of micrite, light gray, sane up to 6 inches long; irregular bedding, stylolite marks the base of the unit, a thin shale parting marks the top of the unit	0.6	DC66-0011
15	Limestone, light brown, oolitic, Thick bedded; prominent shale partings 0.9' and 2.6: above base; stylolites common	7.1	DC66-0010
14	Shale, gray, platy, calcareous	0.1	DC66-0009
13	Limestone, gray, oolitic-skeletal, irregular in thickness, thins to north	0.5	DC66-0008
12	Shale, gray, calcareous, irregular in thickness	0.1	DC66-0007
	Total thickness of Rosiclaire Member	13.1	
	Fredonia Member		
11.1	Limestone; white, oolitic, massive, cross-bedded. RS 4869 taken 4.0 feet from base. Chip sample 4868	15.2	P48-0069

11.2	Limestone; white, oolitic, massive, cross-bedded. RS 4869 taken 4.0 feet from base. Chip sample 4868		P48-0068
10.1	Calcarenite, gray, fine- to coarse-grained, dense, stylolitic. Rock is made of oolites or pellets embedded in calcilutite. Hand specimen 362-37 was obtained 1.3 ft. below the top of the unit.	2.6	S62-0037
10.2	Calcarenite, gray, fine- to coarse-grained, dense, stylolitic. Rock is made of oolites or pellets embedded in calcilutite. Hand specimen 362-37 was obtained 1.3 ft. below the top of the unit.		S62-0036
9.1	Calcarenite, dark-gray, tinted tan and brown, coarse-grained, dense. Rock probably is made of fossil debris; chiefly crinoid pieces, but contains rudaceous, angular pieces of calcilutite, and toward the top, becomes oolitic. Hand specimen S 62-35 was obtained 0.7 ft. below the top of the unit.	2.4	S62-0035
9.2	Calcarenite, dark-gray, tinted tan and brown, coarse-grained, dense. Rock probably is made of fossil debris; chiefly crinoid pieces, but contains rudaceous, angular pieces of calcilutite, and toward the top, becomes oolitic. Hand specimen S 62-35 was obtained 0.7 ft. below the top of the unit.		S62-0034
8.1	Calcarenite, dark-gray, medium-grained, dense, locally is poorly sorted. Rock is made of oolites embedded in calcilutite and locally in spar. Massiveness of bedding is masked by extreme fracturing as a result of blasting. Hand specimen S 62-33 was obtained 1.0 ft. down from top of the unit. Thickness of unit not accurately measured.	5.0	S62-0033
8.2	Calcarenite, dark-gray, medium-grained, dense, locally is poorly sorted. Rock is made of oolites embedded in calcilutite and locally in spar. Massiveness of bedding is masked by extreme fracturing as a result of blasting. Hand specimen S 62-33 was obtained 1.0 ft. down from top of the unit. Thickness of unit not accurately measured.		S62-0032
7.1	Fossiliferous calcilutite, gray, dense, and is in one stylolitic bed. Hand specimen S62-31 was obtained 0.7 ft. below the top of the unit.	2.7	S62-0031
7.2	Fossiliferous calcilutite, gray, dense, and is in one stylolitic bed. Hand specimen S62-31 was obtained 0.7 ft. below the top of the unit.		S62-0030
6.1	Fossiliferous calcilutite and silicilutite (Lost River Chert Bed): Silicilutite is dark blue-gray, is very fossiliferous with bryozoans, and is present in thin beds or lenses. Calcilutite is gray, dense, and fossiliferous. Hand specimen S 62-29 was obtained 1.0 ft. below top of the unit.	2.3	S62-0029
6.2	Fossiliferous calcilutite and silicilutite (Lost River Chert Bed): Silicilutite is dark blue-gray, is very fossiliferous with bryozoans, and is present in thin beds or lenses. Calcilutite is gray, dense, and fossiliferous. Hand specimen S 62-29 was obtained 1.0 ft. below top of the unit.		S62-0028
5.1	Calcarenite, gay, dense, coarse-grained. Rock is made of fossils embedded in calcilutite and is in many thin beds demarcated by thick stylolites. Top of unit is arbitrarily placed at the base of the Lost River Chert Bed. Hand specimen S 62-27 was obtained 1.0 ft. below the top of the unit.	6.5	S62-0027
5.2	Calcarenite, gay, dense, coarse-grained. Rock is made of fossils embedded in calcilutite and is in many thin beds demarcated by thick stylolites. Top of unit is arbitrarily placed at the base of the Lost River Chert Bed. Hand specimen S 62-27 was obtained 1.0 ft. below the top of the unit.		S62-0026

4.1	Calcarenites, gray to tan-gray, fine- to medium- grained, dense, thick-bedded, stylolitic. Rock probably is made entirely of fossil debris and includes a thin irregular lens of very large fossil debris. Hand specimen S 62-25 was obtained 1.4 ft. below top of the unit.	5.4	S62-0024
4.2	Calcarenites, gray to tan-gray, fine- to medium- grained, dense, thick-bedded, stylolitic. Rock probably is made entirely of fossil debris and includes a thin irregular lens of very large fossil debris. Hand specimen S 62-25 was obtained 1.4 ft. below top of the unit.		S62-0024
3.1	Calcarenites, Dark-gray, very fine- to fine-grained, dense, brittle. Rock probably is a fossil Calcarenites and is in thin, scabby, and stylolitic beds. Hand specimen S 62-23 was obtained from the top of the unit. Rock was sampled where thinnest.	6.0	S62-0023
3.2	Calcarenites, Dark-gray, very fine- to fine-grained, dense, brittle. Rock probably is a fossil Calcarenites and is in thin, scabby, and stylolitic beds. Hand specimen S 62-23 was obtained from the top of the unit. Rock was sampled where thinnest.		S62-0022
2.1	Dolomitic calcilutite or calcitic dololite, Dark-gray, to dark-brown, sugary textured, fine-grained. Rock is in a massive bed that appears to have locally inclined laminations and contains large balls of large calcite crystals. Hand specimen S 62-21 was obtained from the middle of the unit. Rock was sampled where thickest.	2.8 to 3.0	S62-0021
2.2	Dolomitic calcilutite or calcitic dololite, Dark-gray, to dark-brown, sugary textured, fine-grained. Rock is in a massive bed that appears to have locally inclined laminations and contains large balls of large calcite crystals. Hand specimen S 62-21 was obtained from the middle of the unit. Rock was sampled where thickest.		S62-0020
1a.1	Calcarenites, Gray, tinted tan, medium- to coarse-grained, thick-bedded. Rock is made of fossil debris laid in thick beds that are also stylolitic. Hand specimen S 62-17 was obtained from the middle of the unit.	6.7	S62-0017
1a.2	Calcarenites, Gray, tinted tan, medium- to coarse-grained, thick-bedded. Rock is made of fossil debris laid in thick beds that are also stylolitic. Hand specimen S 62-17 was obtained from the middle of the unit.		S62-0016
1.1	Calcarenites, brownish-gray, medium- to coarse-grained, dense, dolomitic, and rubbly. Rock possibly is a crystal-Calcarenites. Hand specimen S 62-19 was obtained from the base of the unit.	1.0	S62-0019
1.2	Calcarenites, brownish-gray, medium- to coarse-grained, dense, dolomitic, and rubbly. Rock possibly is a crystal-Calcarenites. Hand specimen S 62-19 was obtained from the base of the unit.		S62-0018
	Total thickness of the Fredonia Member exposed	58.8	
	Total thickness of the Ste. Genevieve Ls exposed	114.5	
	Total section of usable rock quarried	135	

Aug 21, 1969. — LFR & DDC visited with Max
Rodriff. Max said that they have changed
the name of the company to 'Rodriff, Inc.'
Mr. Berry has not been connected with the
business since around 1952.

Radcliff, Inc. quarry, Orleans
SW 1/4 SE 1/4 sec. 24, T. 3 N., R. 1 W. Orange Co.

	THICKNESS	CaCO ₃	HgCO ₃	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	H ₂ O	CALC CO ₂	CHEM CO ₂	S	P ₂ O ₅	AOI		
DC 66-7	0.1	44	4	30	13	4	1	.01	21	16.7	.011	.066	22.5		
8	0.5	97.3	.91	.75	.29	.21	nd	nd	43.3	43.2	.016	.007	43.6		
9	0.1	64	1	27	4	.9	.4	.008	29	27.2	.016	.043	28.4		
10	7.1	93.3	.89	5.19	.27	.16	nd	nd	41.5	42.9	.002	.005	43.1		
11	0.6	96.0	1.00	2.48	.16	.10	nd	nd	42.8	43.3	.002	.005	43.6		
12	3.4	94.5	.94	4.10	.19	.12	nd	nd	42.1	43.4	.003	.007	43.4		
13	0.8	93.4	1.21	4.08	.52	.23	nd	nd	41.8	42.9	.003	.016	43.2		
14	0.5	78.5	.83	16.2	2.47	.82	.13	nd	35.0	34.9	.026	.028	36.2		
15	4.3	94.7	.90	3.81	.24	.10	nd	nd	42.2	43.4	.002	.006	43.2		
16	9.1	83.4	11.9	4.10	.25	.18	nd	nd	42.9	43.8	.005	.006	43.9		
17	0.6	90.6	1.13	5.46	1.45	.31	.072	nd	40.5	40.2	.002	.007	40.7		
18	3.0	94.9	.98	2.85	.54	.24	nd	nd	42.3	42.1	.082	.005	42.0		
19	2.2	96.1	.94	1.81	.44	.18	nd	nd	42.8	42.9	.008	.004	42.9		
20	5.3	94.8	1.40	2.44	.56	.28	nd	nd	42.5	42.5	.043	.006	42.4		
21	1.7	95.2	1.10	2.11	.84	.22	.038	nd	42.5	42.3	.003	.023	42.6		
22	3.7	61.2	16.0	17.9	1.99	1.63	.11	.040	35.3	34.4	.29	.028	34.6		
23	5.2	95.9	1.11	1.96	.40	.16	nd	nd	42.8	43.2	.007	.004	43.1		
24	1.8	88.0	.92	9.01	1.12	.40	.064	.014	39.2	38.8	.003	.031	39.4		
25	9.0	96.6	1.23	1.24	.36	.22	.050	trace	43.1	42.7	.013	.007	43.2		
26	0.8	90.5	3.73	2.66	.96	1.59	.040	.040	41.8	41.7	.005	.013	42.3		

GEOLOGICAL SURVEY COMMUNICATION
INDIANA DEPARTMENT OF NATURAL RESOURCES

TO: File **DATE:** October 8, 1986
FROM: Donald D. Carr
SUBJ: Orleans Crushed Stone Co. (formerly Western Materials Co. and Radcliff and Berry, Inc.)

The quarry noted above is abandoned, but fill is being sold from old stockpiles. The quarry is owned by Gibb Williams. The quarry phone number is 812/865-3077, the same as Williams's home.

It is difficult to get an answer by phone during the day because both Mr. and Mrs. Williams work. I reached Mrs. Williams by calling where she works, the high school, during lunch hour (812/865-2994). Mr. and Mrs. Williams have a daughter, Mrs. John Penn (phone 865-2629) who lives a short distance from the quarry.

Gilbert Williams
R 2, Box 527
Orleans, IN 47452

SPECTROCHEMICAL ANALYSES OF THE RADCLIFF AND BERRY QUARRY NORTHWEST OF ORLEANS, ORANGE COUNTY

[illegible]

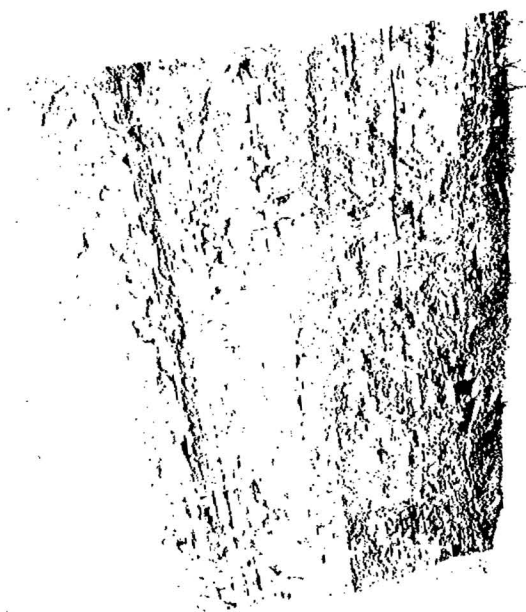
44-38861-10

P25

U/SAMPLE NO	THICK	CAC03	MGC03	SI02	AL203	FE203	TI02	MNO	CALC CO2	CHEM CO2	LOI	S	P205
TE. GENEVIEVE													
DC66-10	7.1	93.3	.89	5.19	.27	.16			41.5	42.9	43.1	.002	.005
DC66-9	.1	64.	1.	27.	4.	.9	.4	.008		27.2	28.4	.016	.043
DC66-8	.5	97.3	.91	.75	.29	.21			43.3	43.2	43.6	.016	.007
DC66-7	.1	44.	4.	30.	13.	4.	1.	.01		16.7	22.5	.011	.006
MC54-10	7.6	98.8	.85	.08	.035	.042			43.9	44.0		.013	.003
MC54-9	7.6	98.8	.79	.17	.052	.040			43.9	44.0		.014	.003
S62-36	2.6	98.8	.68	.14	.11	.079			43.8	44.0		.016	.004
S62-34	2.4	98.8	.61	.23	.089	.079		.0050	43.8	44.3		.010	.005
S62-32	5.0	98.9	.68	.11	.050	.042		.0061	43.9	44.2		.018	.004
S62-30	2.7	98.7	.60	.26	.15	.068			43.7	43.5		.013	.046
S62-28	2.3	55.	.26	45.	.11	.14				17.9		.021	.046
S62-26	6.5	98.9	.51	.25	.099	.049		.0055	43.8	43.7		.025	.036
S62-24	5.4	98.2	.79	.52	.17	.072		.0061	43.6	43.4		.039	.032
S62-22	6.0	95.5	1.24	2.58	.35	.13			42.7	43.1		.10	.013
S62-20	3.0	57.2	38.2	2.82	.78	.42		.020	45.1	45.1		.53	.023
S62-16	6.7	97.7	.12	1.69	.23	.078			43.0	43.1		.036	.015
S62-18	1.0	97.6	1.07	.91	.16	.054	.027	.0058	43.5	43.2		.010	.028
AOLI													
P48-114	14.9	94.6	.80	3.38	.90	.15	.038	.018	42.0	42.2		.019	.011
P48-111	3.0	48.0	32.2	14.9	2.25	1.76	.089	.034	37.9	38.6	38.6	.50	.026
EVIAS													
P48-108	8.8	95.4	.91	2.55	.76	.14	.029		42.5	42.6		.050	.006
P48-100	8.6	90.0	6.85	2.08	.36	.12			43.2	43.2		.017	.005
P48-98	9.4	89.1	7.92	2.21	.26	.10			43.3	43.4		.020	.006
FAR MOUNTAIN													
P48-70	11.6	94.8	.69	3.59	.56	.098	.032		42.1	42.4		.022	.007
REDONIA													
P48-68	15.2	98.8	.80	.13	.048	.047			43.9	44.3		.011	.003
P48-68	15.2	98.7	.74	.16	.087	.023	.005		43.8	44.3		.011	.003
MC54-7	3.6	98.3	.92	.44	.084	.058			43.7	43.8	43.5	.011	.004
MC54-5	2.8	81.3	13.0	4.07	.69	.35	.072	.0077	42.6	42.4		.11	.015
MC54-25	2.8	68.7	15.0	12.3	1.94	.94	.16	.0096	38.1	38.7	38.9	.20	.026
MC54-3	5.1	92.0	.76	6.53	.16	.059			40.9	40.7		.011	.026
MC54-1	8.3	98.3	.88	.42	.080	.063		.0059	43.7	43.5		.011	.031

INDIANA GEOLOGICAL SURVEY
SPECTROCHEMICAL ANALYSES
(IN PERCENT)
RADCLIFF, INC.
SW SW SEC. 24, T. 3 N., R. 1 W.
ORANGE COUNTY

U/SAMPLE NO	THICK	CAC03	MGC03	SI02	AL203	FE203	TI02	MNO	CALC C02	CHEM C02	LOI	S	P205
POST PALEOZOIC, SOIL													
	2.0												
SHELF													
	28.0												
PAOLI													
DC66-26	.8	90.5	3.73	2.66	.96	1.59	.040	.040	41.8	41.7	42.3	.005	.013
DC66-25	9.0	96.6	1.23	1.24	.36	.22	.050		43.1	42.7	43.2	.013	.007
DC66-24	1.8	88.0	.92	9.01	1.12	.40	.064	.014	39.2	38.8	39.4	.003	.031
DC66-23	5.2	95.9	1.11	1.96	.40	.16			42.8	43.2	43.1	.007	.004
DC66-22	3.7	61.2	16.0	17.9	1.99	1.63	.11	.040	35.3	34.3	34.6	.29	.028
STE. GENEVIEVE													
DC66-21	1.7	95.2	1.10	2.11	.84	.22	.038		42.5	42.3	42.6	.003	.023
DC66-20	5.3	94.8	1.40	2.44	.56	.28			42.5	42.5	42.4	.043	.006
	.1												
DC66-19	2.2	96.1	.94	1.81	.44	.18			42.8	42.9	42.9	.008	.004
DC66-18	3.0	94.9	.98	2.85	.54	.24			42.3	42.1	42.0	.082	.005
DC66-17	.6	90.6	1.13	5.46	1.45	.31	.072		40.5	40.2	40.7	.002	.007
P48-105	8.0	97.4	.66	1.44	.24	.067			43.2	43.6		.007	.004
P48-102	8.2	93.8	3.89	1.64	.24	.091			43.3	43.2		.036	.012
DC66-16	9.1	83.4	11.9	4.10	.25	.18			42.9	43.8	43.9	.005	.006
	.1												
DC66-15	4.3	94.7	.90	3.81	.24	.10			42.2	43.4	43.2	.002	.006
DC66-14	.5	78.5	.83	16.2	2.47	.82	.13		35.0	34.9	36.2	.026	.028
DC66-13	.8	93.4	1.21	4.08	.52	.23			41.8	42.9	43.2	.003	.016
DC66-12	3.4	94.5	.94	4.10	.19	.12			42.1	43.4	43.4	.003	.007
DC66-11	.6	96.0	1.00	2.48	.16	.10			42.8	43.3	43.6	.002	.005



Radcliff and Berry Quarry

Location 1 mile west of Orleans and a railroad

- Sample 1. Ls. oolitic, some fossil fragments, varying amount of calcite cement. Parting planes ~~not~~ persistent. Hi 4 and 90 fracture irregularly spaced and coated with clay and iron oxide. One massive zone except basal 3 feet. Underlain by 2' of siliceous (cherty) rock and 6" green clay. Top of zone marked by some breccia or cgl. - 18.0 ft. Sample 1 taken from the east face and left of entrance road. (2 sacks)
- Sample 2: Same zone as No. 1. Zone has thinned and 12.1' of base up sampled. (2 sacks) *Location: North face of quarry, about central part of face. Zone about 14' thick.*
- Sample 3: West wall. 12 ft. sampled. Same zone as 1 and 2, zone about 11 ft. Sample 2 and 3 does not represent basal 2 ft. (2 sacks)
- Sample 4: South side of quarry - 4 sacks. Same zone as above. 15.7 feet. Cherty looking lense at base.

May 5, 1954

Calcar Quarry, 2 mi. south of Paoli, Indiana on hwy 37.

- Sample 5: Cut from south end of quarry north face. Chip sample represents an oolitic zone 8.2 feet thick as exposed. This is best looking zone in quarry. Base not exposed. Top marked by 0.1 ft. green clay and 3.3 ft. lithographic ls. (2 sacks)
- Sample 6: Same zone as 5 above. Chipped from quarry wall counterclockwise from No. 5. Zone is exactly 8.0 ft. thick. Bounded on base by stylolite and denser ls. (2 sacks)
- Sample 7: Same zone as 5 - 6. East of Quarry. 10' sampled. Base not exposed. (2 sacks)
- Sample 8: Chip sample, of 7.0' zone overlying 3.3' zone described under No. 5 above. This zone alternates vertically and laterally into lithographic ls. Probably not over 60% oolitic. This is Patton's analyzed zone for this quarry. (1 sack)
- Sample 9: 1 ft. thick bed-lithographic appearing ls-much of it shows oolites. (1 sack)
- Sample 10: 4.6 ft. thick zone. Bluish colored ls. overlies No. 9. bed. About 50 to 60% oolitic. Probably will not meet specifications. (1 sack)
- (Samples 9-10 taken on middle portal. No. 8 on east portal.)
- (Noble A. Land-foreman, Mrs. Glen Meadows, owner)

Victor Chemical Works
LABORATORY ANALYTICAL REPORT

Factory Nashville

Date 5/25/54

Material LIMESTONE

Identification Samples submitted by Mr. Wayne Lowell of Indiana University,
Bloomington, Indiana. See his letter of 5/12/54 to Mr. Goben

Sample Identification	Type Stone	%Loss on Ign.	% Insol.	% Fe ₂ O ₃ + Al ₂ O ₃	% CaO	% MgO	% SO ₃	F	PPM As ₂ O ₃
No. 1 Radcliff Quarry	White Oolitic	43.62	0.23	0.09	55.10	0.30	0.02	44	0.1
No. 2 Radcliff Quarry	White Oolitic	43.79	0.20	0.10	55.33	0.24	0.02	68	0.1
No. 3 Radcliff Quarry	White Oolitic	43.73	0.15	0.08	55.33	0.26	0.02	56	0.1
No. 4 Radcliff Quarry	White Oolitic	43.73	0.11	0.09	55.44	0.29	0.02	50	0.1
No. 5 Calcar Quarry, Paoli, Ind., 8' Zone	Gray Oolitic	43.66	0.28	0.10	55.10	0.43	0.06	76	0.1
No. 6 Calcar Quarry	Gray Oolitic	43.83	0.35	0.09	54.82	0.40	0.05	66	0.2
No. 7 Calcar Quarry E.Side, same bed as samples 5, 6	Gray Oolitic	43.71	0.26	0.07	55.27	0.38	0.05	96	0.1
No. 8 Calcar Quarry 7' zone above the 3' of lithographic ls described in No. 5	Gray dense, semi-oolitic.	43.60	0.45	0.10	55.16	0.41	0.11	96	0.2
No. 9 1' thick bed oolitic lithographic ls overlies bed of sample No. 8	Gray, dense, flint-like	43.26	1.03	0.16	54.60	0.45	0.05	86	0.1
No. 10 4.6' thick zone, bluish gray ls; dense, one massive bed about 50-60% oolitic, remain- der shell fragments and lithographic ls overlies	Blue-Gray flint- like	40.19	8.18	0.62	49.15	0.51	0.10	208	0.2

Radcliff, Inc. Orleans quarry
SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 3 N., R. 1 W.

Orange County

Calc. Chem.

[illegible]

CORE DESCRIPTIONS

CHEMICAL ANALYSES OF CORE SAMPLES

This core was drilled in the Radcliff and Berry quarry at Orleans, in March, 1963 at the request of the Industrial Minerals Section. It was sampled and described by Lawrence F. Rooney on March 21, 1963. Chip samples were taken for chemical analysis and rock samples were taken for study by the Industrial Minerals Section. Elev. 680

Core	Unit	Interval	Th.	Top Pc	Bot Pc	Chip Sample	Depth	Pc No	Rock Sample	Description	
Ste. Genevieve formation											
1	1	0	5.0	5.0						No recovery.	
U. Fredonia member											
1	2	5.0	11.5	6.5	1	20	58	5.0	1	59	Limestone, white, fine to medium grain, oolitic, fair sorting, sparry cement, soft.
1	3	11.5	12.5	1.0	20	23	60	11.7	21	61	Limestone, gray, hard, stylo, otherwise as above.
1	4	12.5	15.0	2.5	23	31	62	12.7	24	63	Limestone, as unit 2.
1	5	15.0	18.4	3.4	31	39	64	18.0	38	65	Limestone, gray, very fine to medium grain, skel-oolitic, hard; lenses of fine to medium oolites, with lenses of very fine skel mark with some oolites.
1	6	18.4	19.1	0.7	39	41	66*	--	--	--	Limestone, as above. *Blakely's sample.
1, 2	7	19.1	22.0	2.9	41	7	67	19.3	1	68	Limestone, white, fine to medium grain, dominant medium grain, oolitic, spar cement, soft.
2	8	22.0	25.0	3.0	7	16	69	22.8	9	70	Limestone, gray, very fine to medium grain, dominant very fine grain, skel, stylo, hard.
Lost River Chert member											
2	9	25.0	26.3	1.3	16	19	71	26.3	14	72	Chert, gray, texture of above limestone, nodules and lenses, abundant foss, lacy bryozoa, brachs
2	10	26.3	28.0	1.7	19	24	73	26.6	21	74	Limestone, light gray, very fine to fine grain, skel-pel, moderately well sorted, hard, with lens of oolite (0.2') at 26.8 ft.
2	11	28.0	28.1	0.1	24	24	75	--	--	--	Chert, medium gray as above.
2	12	28.1	29.7	1.6	25	28	76	29.5	27	77	Limestone, very light gray, fine grain, skeletal, fine grain, recrystallized, soft.
2	13	29.7	29.8	0.1	28	28	78	--	--	--	Chert, as above.
L. Fredonia member											
2	14	29.8	31.5	1.7	28	33	79	30.8	31	80	Limestone, light brown gray, very fine to fine grain, trace oolites
3	15	31.5	37.0	5.5	1	17	81	33.6	7	82	Limestone, brown gray, very fine grain, skel-pel, trace rounded quartz grains at top, few lumps of micrite and some lenses of micrite, stylo; with lens of yellow brown limestone at base.
3	16	37.0	40.0	3.0	17	25	83	--	20	84	Limestone, brown gray, very fine grain, skel? slightly dolomitic?, partly recrystallized.
3	17	40.0	40.6	0.6	26	27	85*	--	--	--	Limestone, as below. *Blakely's sample.
3	18	40.6	43.6	3.0	28	34	86	41.1	29	87	Limestone, brown gray, very fine grain, skel, with tan, medium grain very foss, cherty bed at base; abrupt lower contact visible.
3	19	43.6	45.2	1.6	35	37	88	44.3	36-37	89	Limestone, white, very fine to medium grain, skel-oolitic, poorly sorted, soft foraminiferal.
3	20	45.2	46.0	0.8	37	40	90	45.4	37-38	91	Limestone, brown, very fine to fine grain, skel, hard.
3, 4	21	46.0	47.4	1.4	40	2	92	46.2	41	93	Dolomite, yellow brown at top to gray throughout, very fine crystalline, slightly argillaceous.
St. Louis formation											
4	22	47.4	48.7	1.3	2	6	94*	--	--	--	Limestone, yellow brown, very fine grain, skel, well cemented. *Blakely's sample.
4	23	48.7	55.3	6.6	7	26	95	49.5	9-10	96	Limestone, yellow brown at top, mostly light gray, skel, partly recemented, medium grain in basal few inches.
4	24	55.3	56.0	0.7	27	30	97	55.8	30	98	Limestone, medium yellow brown, micritic, dolomitic.
4	25	56.0	61.2	5.2	30	43	99	56.3	31	100	Dolomite, medium yellow brown, very fine crystalline.
		(56	60.0)								Dolomite, as above
		(60	60.7)								Limestone, as above, very dolomitic.
		(60	61.2)								Dolomite, as above
4	26	61.2	61.3	0.1	44	44	101	--	--	--	Chert, brown gray, micritic.
4	27	61.3	63.5	2.2	45	51	102	63.5	51	103	Limestone, medium yellow brown, micritic, slightly dolomitic.
		(61.3	61.9)								Dolomite, as above, very calcareous, trace white opaque chert.
		(61.9	63.5)								

[illegible]

SURVEY RILL HOLE 103 NW SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 3 N., R. 1 W.

This core was drilled in the Radcliff and Berry quarry at Orleans between Feb. 25 and March 2, 1963 at the request of the Industrial Minerals Section. It was sampled and described by Lawrence F. Rooney on March 21, 1963. Chip samples were taken for chemical analysis and rock samples taken for study by the Industrial Minerals Section. *File 675*

Core	Unit	Interval	Th.	Top Pc No.	Bot. Pc No.	Chip Sample No.	Depth	Pc No	Rock Sample No	Description
Ste. Genevieve formation										
1	1	0	6.6	6.6	1	18	LR63-1	6.1	17	LR63-2
U. Fredonia member										
1	2	6.6	7.4	0.8	19	20	4*	2.5	7	3
1	3	7.4	14.5	7.1	20	--	5*	10.0	25	5
1	4	14.5	15.3	0.8	--	--	6	14.8	38	7
1	5	15.3	16.7	1.4	--	--	8	15.6	41	9
1	6	16.7	17.2	0.5	--	--	10	--	--	--
1	7	17.2	19.9	2.7	--	--	11	18.0	48	12
1, 2	8	19.9	20.8	0.9	53	3	13	19.9	53	14
2	9	20.8	25.8	5.0	4	16	15	22.5	9	16
2	10	25.8	29.0	3.2	16	26	17	28.5		18
Lost River Chert										
2	11	29.0	31.3	2.3	27	31	19	29.5	29	20
2	12	31.0	31.5	0.5	31	32	21	--	--	--
L. Fredonia member										
2	13	31.5	37.3	5.8	32	47	22	31.5	32	23
2	14	37.3	39.4	2.1	48	52	25	38.3	50	24
2	15	39.4	40.0	0.6	52	55	26	39.4	54-55	27a
Loss of 4' in Run 3										
3	16	40.0	41.5	1.5	1	5	27*	--	--	--
3	17	41.5	42.0	0.5	--	--	28	--	--	--
3	18	42.0	42.1	0.1	--	--	29	--	--	--
3	19	42.1	42.3	0.2	--	--	30	--	--	--
3	20	42.3	42.7	0.4	--	--	31	--	--	--
3	21	42.7	47.0	4.3	10	19	32	--	--	--
3	22	47.0	47.8	0.8	19	22	33	47.2	20-21	34
(St. Louis formation (?) lithology)										
3	23	47.8	48.8	1.0	22	25	35	48.6	25	36
3	24	48.8	50.6	1.8	25	30	37*	--	--	--
3	25	50.6	54.0	3.4	30	37	38	52	34	39
3	26	54.0	55.0	1.0	37	42	40	--	40	41
St. Louis formation (?) by interval										
4	27	60.0	61.2	1.2	1	4	42	60.4	2	43

[illegible]

SDH 104 SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 3 N., R. 1 W. (293 feet south of SDH 103)

Formation	Unit	Unit	Th.	Sample	CaCO ₃	MgCO ₃	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	MnO	CO ₂	S	P ₂ O ₅
Ste. Genevieve	1	25.0	5.0	No recovery. Probably similar to unit 2.										
U. Fred.	2	20.0	6.5	LR63-58	99.0	.72	.11	N.D.	N.D.	N.D.	N.D.	43.6	.005	.002
U. Fred.	3	13.5	1.0	60	98.6	.98	.088	.055	.033	N.D.	N.D.	43.9	.012	.002
U. Fred.	4	12.5	2.5	62	98.5	1.08	.13	.063	N.D.	N.D.	N.D.	44.1	.010	.014
U. Fred.	5	10.0	3.4	64	98.2	1.08	.28	.13	.080	N.D.	N.D.	43.7	.010	.009
U. Fred.	6		0.7	66	* Lithologically similar to unit 5.									
U. Fred.	7	5.9	2.9	67	98.8	.83	.080	.024	.031	N.D.	N.D.	43.6	.014	.002
U. Fred.	8	↑ 3.0	3.0	69	97.9	.96	.60	.21	.12	N.D.	N.D.	43.5	.008	.038
Lost River Chert	9		1.3	71	29.7	N.D.	69.9	.074	.074	N.D.	N.D.	14.7	.014	.065
Lost River Chert	10		1.7	73	98.2	.86	.59	.072	.034	N.D.	N.D.	43.2	.010	.041
Lost River Chert	11	↓ 4.8	.1	75	59.3	.50	39.4	.046	.031	N.D.	N.D.	26.4	.012	.042
Lost River Chert	12		1.6	76	94.7	.46	4.45	.045	N.D.	N.D.	N.D.	41.5	.012	.045
Lost River Chert	13		.1	78	18.3	.27	80.5	.15	.18	N.D.	N.D.	8.0	.017	.036
L. Fred.	14	↓ 6.5	1.7	79	99.1	.42	.22	.031	N.D.	N.D.	N.D.	43.6	.008	.028
L. Fred.	15	↓ 12.0	5.5	81	98.4	.74	.47	.16	.057	N.D.	N.D.	43.8	.017	.033
L. Fred.	16	↓ 15.0	3.0	83	95.3	1.67	2.10	.33	.13	N.D.	N.D.	42.4	.034	.025
L. Fred.	17		0.6	85	* Lithologically similar to unit 18.									
L. Fred.	18	↓ 18.6	3.0	86	73.0	.88	24.8	.37	.15	N.D.	N.D.	32.4	.051	.011
L. Fred.	19	↓ 20.2	1.6	88	97.6	1.07	1.07	.057	.045	N.D.	N.D.	43.4	.008	.016
L. Fred.	20	↓ 21.0	0.8	90	96.3	1.40	1.73	.28	.092	N.D.	N.D.	42.8	.020	.008
L. Fred.	21	↓ 22.4	1.4	92	54.6	40.7	2.94	.66	.60	.049	.019	43.2	.17	.026
L. Fred.	22		1.3	94	* Lithologically similar to unit 23.									
L. Fred.	23	↓ 30.3	6.6	95	97.1	1.25	1.22	.17	.060	.025	.0048	42.3	.014	.014
St. Louis	24	↓ 31.0	0.7	97	91.0	2.00	5.46	.82	.21	.079	N.D.	40.2	.060	.017
St. Louis	25	↓ 36.2	5.2	99	60.7	34.0	3.34	.61	.50	.055	.011	44.2	.14	.016
St. Louis	26	36.3	0.1	101	Chert									
St. Louis	27	38.5	2.2	102	59.8	34.7	3.77	.53	.60	.045	.012	43.0	.15	.024
St. Louis		42.0	3.5	No recovery.										
St. Louis	28	43.5	1.5	104	* Lithologically similar to unit 27. Cherty.									
St. Louis	29	44.7	1.2	105	65.8	26.3	6.58	.49	.24	.043	.0038	42.1	.099	.015
St. Louis	30	46.5	1.8	106	89.1	8.02	2.05	.23	.087	N.D.	N.D.	42.7	.029	.011
St. Louis	31	46.6	0.1	108	Chert - not analyzed.									
St. Louis	32	47.5	0.9	109	76.1	22.1	.99	.15	.17	.022	.0075	44.4	.087	.037
St. Louis	33	48.1	0.6	111	* Lithologically similar to unit 32.									
St. Louis	34	49.8	1.7	112	87.0	7.31	4.96	.31	.15	.031	.0068	42.6	.036	.014
S62-18					97.6	1.07	.91	.16	.054	.027	.0058	43.2	.010	.028

av. 76.0% CaCO₃
0.47 MgCO₃
23.1 SiO₂
.53 other

* Complete core segments taken by Geophysical section for measurement of various physical properties.

SDH 103 SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 3 N., R. 1 W.

Formation	Unit	Unit	Th.	Sample	CaCO ₃	MgCO ₃	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	MnO	CO ₂	S	P ₂ O ₅
Ste. Genevieve	1	13.2	6.6	IR63- 1	98.3	.71	.71	.022	<.1	N.D.	N.D.	43.6	.005	.004
U. Fred.	2	11.6	0.8	4	* Lithologically similar to unit 1.									
U. Fred.	3	14.2	7.1	5	98.5	.66	.61	.024	<.1	N.D.	N.D.	43.8	.008	.004
U. Fred.	4	1.6	0.8	6	98.3	.77	.35	.21	.12	N.D.	N.D.	43.5	.011	.005
U. Fred.	5	2.8	1.4	8	98.1	.56	.80	.15	.12	N.D.	N.D.	43.1	.015	.008
U. Fred.	6	1.0	0.5	10	98.0	.98	.45	.25	.085	N.D.	N.D.	43.0	.020	.007
U. Fred.	7	5.4	2.7	11	98.3	.98	.33	.10	.039	N.D.	N.D.	43.1	.010	.005
U. Fred.	8	1.8	0.9	13	97.6	1.07	.67	.39	.12	N.D.	N.D.	43.1	.019	.016
U. Fred.	9	10.0	5.0	15	97.9	.94	.65	.20	.068	N.D.	N.D.	43.4	.005	.032
U. Fred.	10	6.4	3.2	17	97.5	.87	1.22	.15	.058	N.D.	N.D.	43.3	.014	.034
Lost River Chert	11	58.0	2.3	19	85.5	.94	12.6	.19	.086	N.D.	N.D.	36.5	.019	.045
Lost River Chert	12		0.5	21	37.	.31	62.	.075	.16	N.D.	N.D.	19.0	.010	.046
L. Fred.	13	8.6	5.8	22	95.3	1.14	2.86	.37	.083	N.D.	N.D.	42.2	.031	.020
L. Fred.	14	10.7	2.1	25	97.6	1.12	.90	.14	.065	N.D.	N.D.	42.8	.015	.014
L. Fred.	15		0.6	26	62.2	33.0	2.80	.75	.46	N.D.	N.D.	44.5	.11	.030
L. Fred.	16	12.8	1.5	27	* Lithologically resembles unit 15.									
L. Fred.	17		0.5	28	96.7	1.21	1.64	.17	.056	N.D.	N.D.	43.0	.015	.010
L. Fred.	18		0.1	29	60.2	2.23	24.7	7.23	1.75	.73	.014	28.7	.032	.062
L. Fred.	19		0.2	30	93.4	1.21	2.90	1.21	.20	.065	N.D.	40.6	.029	.020
L. Fred.	20	14.0	0.4	31	95.8	1.34	2.11	.48	.11	.034	N.D.	42.2	.015	.014
L. Fred.	21	18.3	4.3	32	97.1	1.16	1.31	.20	.068	N.D.	N.D.	42.8	.014	.013
L. Fred.	22	19.1	0.8	33	91.1	6.56	1.41	.24	.14	N.D.	N.D.	43.3	.022	.014
St. Louis	23	21.9	1.8	35	64.5	31.0	3.16	.51	.35	.038	.015	44.0	.12	.023
St. Louis	24		1.8	37	* Lithologically resembles unit 23.									
St. Louis	25	25.3	3.4	38	52.9	36.5	7.93	1.11	.63	.11	.011	41.9	.13	.023
St. Louis	26	26.3	1.0	40	93.1	4.93	1.12	.27	.086	.036	.005	43.2	.013	.007
St. Louis		30.3	4.0	Lost	Probably dolomite.									
St. Louis	27	31.5	1.2	42	79.0	19.0	1.03	.32	.18	N.D.	N.D.	43.9	.082	.028
St. Louis	28	32.5	1.0	44	84.8	2.46	11.9	.21	.093	N.D.	N.D.	37.1	.030	.011
St. Louis	29	35.3	2.8	46	89.3	3.04	7.14	.25	.089	N.D.	N.D.	40.0	.022	.016
St. Louis	30	35.8	0.5	48	96.2	.94	2.60	N.D.	.051	N.D.	N.D.	42.7	.039	.007
St. Louis	31	37.3	1.5	50	90.6	1.18	7.79	.18	.056	N.D.	N.D.	39.8	.025	.036
St. Louis	32	38.0	0.7	52	57.1	38.9	2.57	.46	.42	.042	.012	44.4	.16	.033
St. Louis	33		3.9	53	87.6	8.32	3.68	.10	.11	N.D.	N.D.	42.3	.031	.013
St. Louis	34	42.7	0.8	55	* Lithologically resembles unit 33.									
St. Louis	35	44.5	1.8	56	83.0	9.96	5.48	.83	.23	.048	N.D.	41.2	.048	.066

* Complete core segments taken by Geophysical section for measurement of various physical properties.









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