

County ... WHITE
T ... 28 N R ... 4 W
Sec ... SE NE 38
Other Survey

Quarry or Pit... X Core Dim Other
Name ... Monon Quarry
Former Names
.....
Operator ... Monon Crushed Stone Company
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	G. E. Erickson	July 29, 1947
2	G. E. Erickson	Feb. 1949
3	T. G. Perry	Juln 30 & July 1, 1953
4	R. R. French	Oct. 10, 1963
5	C. H. Ault	Sept. 11, 1968
6	C. H. Ault	July 1, 1970
7	C. H. Ault	Aug. 24, 1972
8		
9		
10		

REMARKS
Chemical analyses, 8' x 11" map
Chemical analyses

Monon Crushed Stone Company Quarry, South of Monon, White County

By T. G. Perry

Date of field examination - June 30 and July 1, 1953.

The crushing plant and office are in the SW¼NE¼ sec. 28, T. 28 N., R. 4 W., the main part of the quarry is located in the SE¼NE¼ sec. 28, T. 28 N., R. 4 W.

Unit	Description	Thick- ness	Sample
	Huntington dolomite		
5	Limestone: light-gray, fine-grained, most probably dolomitic; commonly deeply weathered to tan-gray; massive and irregularly bedded. Unit is unfossiliferous and contains very little petroliferous material. This unit, somewhat variable in thickness, can be traced about the whole periphery of the quarry by its distinctive weathered surface. Hand specimen Py53-22 taken 0.7 foot from top of unit.	2.7	Py53-0022
5	Limestone: light-gray, fine-grained, most probably dolomitic; commonly deeply weathered to tan-gray; massive and irregularly bedded. Unit is unfossiliferous and contains very little petroliferous material. This unit, somewhat variable in thickness, can be traced about the whole periphery of the quarry by its distinctive weathered surface. Hand specimen Py53-22 taken 0.7 foot from top of unit.		Py53-0021
4	Dolomite: light-medium-gray, fine- and fine-to-medium-grained, crystalline; irregularly bedded and, in places massive. Unit is petroliferous and contains a few poorly preserved corals of the Favosites type. Hand specimen Py53-20 collected 5.6 feet from base of unit.	17.3	Py53-20
4	Dolomite: light-medium-gray, fine- and fine-to-medium-grained, crystalline; irregularly bedded and, in places massive. Unit is petroliferous and contains a few poorly preserved corals of the Favosites type. Hand specimen Py53-20 collected 5.6 feet from base of unit.		Py53-0019
3	Dolomite: light-gray, fine-grained, crystalline; essentially massive. Vugs occur throughout unit but are particularly abundant in upper 20.0 feet. The unit is petroliferous throughout and is especially petroliferous in the upper 15.0 feet. Fossils are uncommon. Hand specimen Py53-18 taken 7.5 feet from base of unit.	26.0	Py53-0018
3	Dolomite: light-gray, fine-grained, crystalline; essentially massive. Vugs occur throughout unit but are particularly abundant in upper 20.0 feet. The unit is petroliferous throughout and is especially petroliferous in the upper 15.0 feet. Fossils are uncommon. Hand specimen Py53-18 taken 7.5 feet from base of unit.		Py53-0017
2	Dolomite(?): This stratigraphic interval marks the basal part of the abandoned upper workings and is entirely concealed throughout the extent of the quarry.	5.0	not sampled
1	Dolomite: light-gray and light-medium-gray, very fine-grained and fine-grained, crystalline; weathered surface drab-light-gray and locally stained brown by petroliferous material; irregularly bedded, the beds ranging from 0.2 to 2.9 feet in thickness. The rock is porous, the porosity increasing upward. The unit is petroliferous, particularly in the upper 1.0 feet. Fossils are rare but include brachiopods, corals, and gastropods, all represented by internal or external molds. Quarrying operations are currently proceeding in this unit. Hand specimen Py53-16 taken 9.8 feet from base of unit.	21.9	Py53-0016

1	Dolomite: light-gray and light-medium-gray, very fine-grained and fine-grained, crystalline; weathered surface drab-light-gray and locally stained brown by petroliferous material; irregularly bedded, the beds ranging from 0.2 to 2.9 feet in thickness. The rock is porous, the porosity increasing upward. The unit is petroliferous, particularly in the upper 1.0 feet. Fossils are rare but include brachiopods, corals, and gastropods, all represented by internal or external molds. Quarrying operations are currently proceeding in this unit. Hand specimen Py53-16 taken 9.8 feet from base of unit.		Py53-0015
	Total exposed thickness of Huntington dolomite 72.9		

MEMORANDUM REPORT
BY
ROBERT R. FRENCH

MONON CRUSHED STONE COMPANY QUARRY, SOUTH OF MONON, WHITE COUNTY .

Date of field examinations.- *c.H. Ault 11 Sept, 1968 -*
R.R.French, 10 October, 1963. *24 June 1965*
T.G.Perry, 1 July, 1953.
G.E.Ericksen, 29 July, 1947

Location.-
SE NE section 28, T.28N., R.4W.
Quarry is located 0.8 mile south of Monon, on S.H.421, in White County.

Ownership.- *Anne Heims 11 Sept '68*
Nicholas Bozich, President. -George Bozich, Jr., Vice-President
Box 146, Monon, Ind.

Reserves.-
Approximately 72.9 feet of carbonate section is exposed at this time.
160 acres are owned by the company.

Products.-
Crushed stone, aglime, ballast.
Production averages approximately 4,000 tpd. *primary crusher 350 ton/hr max.*
Shipments are by road and rail

Personnel.-
Twenty-two employees.

Geology.-
The entire quarry is located in a reef facies of the Huntington (upper Niagaran). The strata is characteristically fossiliferous, bituminous, strongly dipping, porous to vuggy, with many molds of Conchidium. A strong, petroliferous odor is given off when the rock is broken. A core taken about 7 miles north of this location cut 200 feet of this type of lithology.
No samples were taken as the quarry has not been deepened since the 1953 examination.

References.-
Perry, T.G. (1953) Monon Crushed Stone Company Quarry, South of Monon, Ind. Dept. Cons. Geol. Surv., open-file memorandum.
Ericksen, G.E. (1947) " " " "

Respectfully submitted,

Robert R. French

MONON CRUSHED STONE COMPANY QUARRY, SOUTH OF MONON, WHITE COUNTY

Date of field examination. -- June 30 and July 1, 1953.

Location. -- Although the crushing plant and offices of this company are in the SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 28 N., R. 4 W., the main part of the quarry is located in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 28 N., R. 4 W. The quarry site is 0.8 mile south of the village of Monon and immediately east of Indiana Highway 421, in White County. Photos BFX-4H-33 and 34 show the quarry site.

Elevation. -- The altitude of the main quarry floor is 631 feet (Ericksen, 1947, p. 1).

Ownership. -- The quarry is owned and operated by Messrs. Nicholas and George Bozich, Box 146, Monon, Indiana. (The former owner, Mr. George Bozich, is deceased.)

Geology. -- Ericksen (1947, pp. 1-3) described the geology of this quarry but did not present a measured section; furthermore, the stratigraphic locations of samples collected by Ericksen are not clearly specified. For the above reasons the following section was measured, described, and sampled:

6 Soil and Glacial drift

<u>Unit</u>	<u>Description</u>	<u>Thickness in feet</u>	<u>Chip Sample Number</u>
	Huntington dolomite	10	
5	Limestone: light-gray, fine-grained, most probably dolomitic; commonly deeply weathered to tan-gray; massive and irregularly bedded. Unit is unfossiliferous and contains very little petroliferous material. This unit, somewhat variable in thickness, can be traced about the whole periphery of the quarry by its distinctive weathered surface. (Hand specimen Py53-22 taken 0.7 foot from top of unit.)	2.7	Py53-21 ✓
4	Dolomite: light-medium-gray, fine- and fine-to-medium-grained, crystalline; irregularly bedded and, in places massive. Unit is petroliferous and contains a few poorly preserved corals of the <u>Favosites</u> type. (Hand specimen Py53-20 collected 5.6 feet from base of unit.)	17.3	Py53-19 ✓

<u>Unit</u>	<u>Description</u>	<u>Thickness in feet</u>	<u>Chip Sample Number</u>
3	Dolomite: light-gray, fine-grained, crystalline; essentially massive. Vugs occur throughout unit but are particularly abundant in upper 20.0 feet. The unit is petroliferous throughout and is especially petroliferous in the upper 15.0 feet. Fossils are uncommon. (Hand specimen Py53-18 taken 7.5 feet from base of unit.)	26.0	Py53-17 ✓
2	Dolomite(?): This stratigraphic interval marks the basal part of the abandoned upper workings and is entirely concealed throughout the extent of the quarry.	5.0	Not sampled
1	Dolomite: light-gray and light-medium-gray, very fine-grained and fine-grained, crystalline; weathered surface drab-light-gray and locally stained brown by petroliferous material; irregularly bedded, the beds ranging from 0.2 to 2.9 feet in thickness. The rock is porous, the porosity increasing upward. The unit is petroliferous, particularly in the upper 10.0 feet. Fossils are rare but include brachiopods, corals, and gastropods, all represented by internal or external molds. Quarrying operations are currently proceeding in this unit. (Hand specimen Py53-16 taken 9.8 feet from base of unit.)	21.9	Py53-15 ✓

Total exposed thickness of Huntington dolomite 72.9

Present condition of quarry. -- Since the start of 1953, drainage has presented no problems. The overburden customarily ranges from 8.0 to 10.0 feet in thickness, which is slight in comparison with the thickness of the quarried section. Quarrying operations are proceeding eastward in the lower face, which is 21.9 feet thick. Mr. Nicholas Bozich advises that the operation is free of serious problems and further comments that the quality of the stone is remarkably uniform, both laterally and vertically.

Equipment. -- The following major items of equipment are in use: 1 Marion 3½-yard diesel shovel; 1 Marion 2-yard electric shovel; 6 15-ton Euclid trucks; 3 Bucyrus Erie well drills, 1 22T and 2 27T; 3 compressors, 2 Ingersoll Rand and 1 Sullivan; 1 Allis Chalmers No. 18 primary crusher;

5 Symons cone crushers; 5 Allis Chalmers triple deck vibrating screens; 7 conveyors, made on quarry site; 6 bucket elevators, made on quarry site; 3 bulldozers, 1 TD18 diesel, 1 TD9 diesel, 1 Allis Chalmers Model K50, gasoline; 1 Wagner scoupmobile truck loader; 1 1½-yard Lorain railroad crane; 1 1½-yard Osgood dragline; 1 LinkBelt steam locomotive clamshell for loading freight cars and trucks; 1 3/4-yard Brown hoist; 1 Koring 3/4-yard shovel; 1 Bucyrus Erie 2-yard electric shovel; 1 Whitcomb gas locomotive; and 2 Davenport steam locomotives. The company has a fully equipped machine shop on the quarry site.

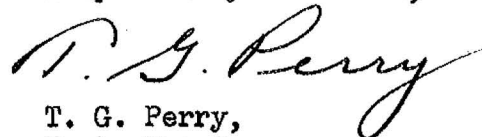
Personnel. -- A total of 35 to 40 employees are engaged.

Production. -- Mr. Nicholas Bozich advises that daily production ranges from 2500 to 3000 tons, of which 12 to 14 percent is agricultural lime and the remainder crushed stone. Quarry products are distributed by rail and truck shipments throughout northern Indiana. The State of Indiana purchases approximately 25 percent of the crushed stone production. The present stockpile of all products is approximately 35,000 tons. The 1952 production approached 450,000 tons. The stone averages somewhat over 40 percent $MgCO_3$ and slightly over 55 percent $CaCO_3$ according to A.A.A. tests.

References cited. --

Ericksen, George (1947) Monon Crushed Stone Company plant and quarry near Monon, White County, Indiana, Indiana Dept. Cons. Geol. Survey, open-file Memorandum Rept., pp. 1-3, 1 map.

Respectfully submitted,


T. G. Perry,
Party Chief

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[illegible]

Table 3^a .--Chemical and spectrographic analyses of samples from Monon Crushed Stone Company quarry
south of Monon, White County, Ind. (SE¹NE¹ sec. 28, T. 28 N., R. 4 W.)

Unit	Thickness (feet)	Rock unit	CaCO ₃	MgCO ₃	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	MnO	S	P ₂ O ₅	CO ₂
6	10	Soil and glacial drift										
5	2.7	Huntington	55.5	42.9 0	0.62	0.17 0	0.28 0	0.000 0.032 0	0.019	0.004	46.5	
4	17.3	Huntington	55.1	43.2 0	0.70	0.19 0	0.34 0	0.000 0.026 0	0.11 0	0.004	46.6	
3	26.0	Huntington	53.4	40.0 0	3.98	1.01 0	0.52 0	0.044 0.022 0	0.16 0	0.006	44.4	
2	5.0	(not sampled)										
1	21.9	Huntington	55.6	42.9 0	0.56	0.16 0	0.27 0	0.000 0.018 0	0.078	0.002	47.0	

FROM: IU MA thesis, "Petrology of Silurian Limestones of northern Indiana,"
by G. E. Ericksen, Feb., 1949

Monon quarry

The Monon quarry is approximately one mile south of Monon, White County, in the SE¹/₄NE¹/₄ sec. 28, T. 27 N., R. 4 W., and west of State Highway #43 and the Monon railroad (pl. 13). It is owned and operated by the Monon Crushed Stone Company.

The Huntington dolomite reef (Cumings and Shrock, 1928a, p. 112), which is exposed in the quarry, is nearly saturated with petroleum. Fractures and cavities are filled with black, liquid oil which seeps down over the walls and hardens to form a coating of black tar. After prolonged weathering the tar is removed and the dolomite surface becomes light-gray. Fresh dolomite is brown and gray, finely crystalline, fossiliferous, and thick-bedded to massive. Fossils are poorly preserved but are so numerous that in places they make up much of the rock. A few chert nodules are exposed in the north wall; the west wall is topped by a 1- to 3-foot layer of buff, dolomitic sandstone; and irregular lenses of green, argillaceous dolomite occur in the southwest corner of the quarry.

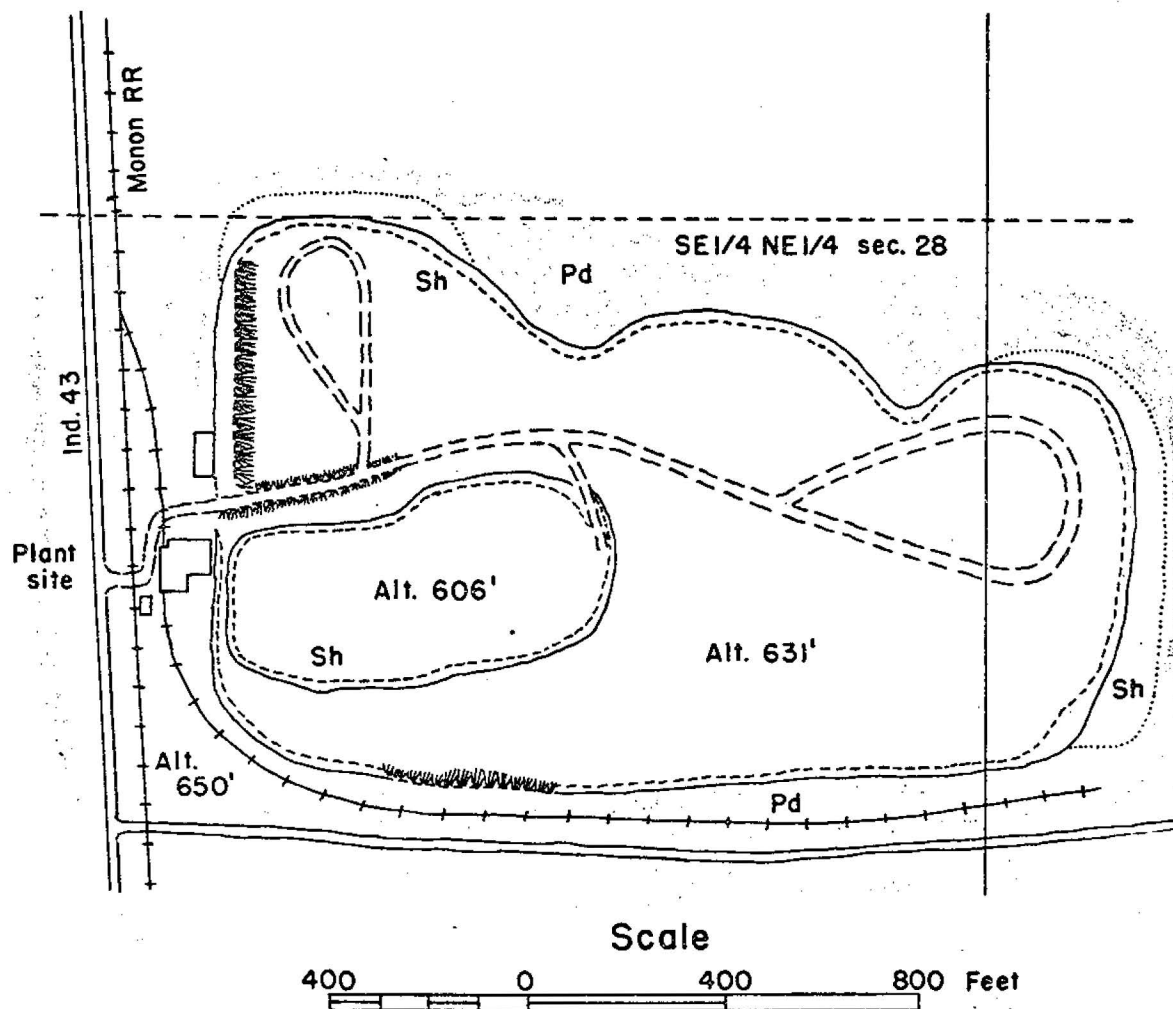
Beds in the south, east, and north walls strike about N. 50° W. and dip 30° NE; beds are obscure in the west wall, but may be horizontal.

In the vicinity of the quarry the dolomite is covered with about 8 feet of Pleistocene glacial drift.

A chemical analysis of one sample of dolomite was furnished by George Bozich, owner and superintendent:

Insol	0.25
R ₂ O ₃	0.14

Sec. 28, T.28N., R.4W.



EXPLANATION

SEDIMENTARY ROCKS	
Pleistocene	Pd
	Glacial drift
QUATERNARY	Sh
	Huntington dolomite (Reef rock)
SILURIAN	

Outline of stripped area



Control: Brunton Compass and
Aneroid Barometer

Mapped by R.H. Stewart
July 29, 1947

MONON CRUSHED STONE COMPANY QUARRY, MONON, INDIANA

CaCO ₃	56.28
MgCO ₃	43.26

Mr. Bozich also provided results of physical tests on 3 samples as follows:

Sample M-1 from 45 feet below top of face, northwest corner of main quarry;
Sample M-2 from 28 feet below top of face, east end of lower pit; Sample M-3
from middle of east face of main quarry.

	<u>M-1</u>	<u>M-2</u>	<u>M-3</u>
Specific gravity	2.46	2.55	2.58
Weight per cu. ft. (lbs.)	153.5	159.0	161.0
Water	0.9%	1.6%	5.6%
Wear	4.8%	5.1%	3.1%
Sodium sulphate soundness loss	1.7%	1.3%	3.4%

Samples 47159 to 47172 were collected from measured intervals in the south wall of the quarry. The dolomite is light-gray, finely crystalline, porous, fossiliferous, and thick-bedded and has pores and large cavities filled with liquid petroleum.

INDIANA GEOLOGICAL SURVEY
SPECTROCHEMICAL ANALYSES
(IN PERCENT)
ABANDONED MONON CRUSHED STONE CO.
SE NE SEC. 28, T. 28 N., R. 4 W.
WHITE COUNTY

RU/SAMPLE NO	THICK	CAC03	MGC03	SI02	AL203	FE203	TI02	MNO	CALC CO2	CHEM CO2	LOI	S	P205
WABASH													
PY53-21	2.7	55.5	42.9	.62	.17	.28		.032	46.8	46.5		.019	.004
PY53-19	17.3	55.1	43.2	.70	.19	.34		.026	46.8	46.6		.11	.004
PY53-17	26.0	53.4	40.0	3.98	1.01	.52	.044	.022	44.4	44.4		.16	.006
	5.0												
PY53-15	21.9	55.6	42.9	.56	.16	.27		.018	46.8	47.0		.078	.002
E47-174	40.0	58.2	41.1	.18	.083	.21			47.1	47.6	47.5	.068	.003
E47-173	23.0	52.6	44.9	1.31	.35	.33	.022		46.6	46.3		.17	.005
P49-55	.0	54.0	45.2	.16	.083	.45		.044	47.4	47.1	47.2	.074	.002
P49-54	.0	55.2	43.4	.12	.064	.94		.038	46.9	46.6	46.5	.38	.003
E47-174	40.0	54.8	44.2	.18	.17	.22	.005		47.2	47.6	47.5	.068	.003

MEMORANDUM REPORT

BY

CURTIS H. AULT

MONON CRUSHED STONE COMPANY QUARRY, NEAR MONON, WHITE COUNTY

Date: August 4, 1976

Location: SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 28 N., R. 4 W: Monon and Monticello, North
Quads. 0.8 miles south of Monon, on U.S. 421

Operations at the quarry ceased during the summer of 1974. The quarry was sold to Fauber Construction Company, Lafayette, Indiana. No reason was given for the abandonment of the quarry, although the reasons were probably other than quality of the stone.

MEMORANDUM REPORT

BY

CURTIS H. AULT

MONON CRUSHED STONE COMPANY QUARRY, NEAR MONON, WHITE COUNTY

Date of field examinations:

C. H. Ault, Sept. 11, 1968; July 1, 1970, Aug 24, '72
R. R. French, Oct. 10, 1963; June 24, 1965
T. G. Perry, July 1, 1953
G. E. Ericksen, July 29, 1947

Location: SE NE Sec. 28-28N-4W; ~~Seafield Quad.~~
0.8 miles south of Monon, on US 421

Monon & Monticello, North Squads.

Ownership: Monon Crushed Stone Company, Inc.
Box 146
Monon, Indiana 47959

Officers: Nicholas Bozich, Pres.
Anne Heims, Vice Pres.
~~Joseph McCormick, Plant Manager~~ Francis Cooley, Sec. Treas.

Telephone: 219-253-6011- 6688

Personnel: 12

Production: Crushed and agricultural limestone, railroad ballast;
shipped by rail and truck.

Capacity: Primary Crusher 350 tons/hour.

Geology: The geology of the quarry is as described in previous reports:

Soil and drift	10.0 feet
Huntington Lithofacies	<u>72.9</u>
	82.9 feet

April, 1973

Cored:

SDH 240 on lip of quarry near southeast corner

	Depth
Fill stone	0
clay and sandy clay	3
Wabash Formation	16.0
Louisville Limestone	352.0
Waldron Formation	391.4
Salamina Dolomite	396.0
Total Depth	440.0

NOTE: Publication showing road elements in quarry "A Monon Road Complex near

Seeburger, S.P. and Singh, K.C.
1978 - Evaluation of alternative land use potentials in depleted mineral
aggregates deposit sites: Transportation and Urban Engineering
78-1, School of Civil Engineering, Purdue Univ., West Lafayette, IN, 27 p. CE-TRK
57
traffic. A line of the CONRAIL system is located on the opposite side
of SR 67 thru the site and could not provide direct rail service.

Adjacent land uses to the site consist of (single family) residen-
tial, agricultural and open space as shown in Figures 17, 18, 22, and
23. Subdivisions exist to the north, south and west and agricultural
uses exist to the northeast, east, and south. Also, a nursery is
located to the west of the 9 acre parcel.

Monon

General Information. The town of Monon is located in northwestern
Indiana within White County. White County is part of Indiana Planning
and Economic Development District 4 which also includes Benton, Carroll,
Clinton, Fountain, Montgomery, Tippecanoe, and Warren Counties as shown
in Figure 9. Monon is located 25 miles north of Lafayette, 80 miles
northwest of Indianapolis, and 100 miles southeast of Chicago.

Natural Resources. The main resource of White County is its soil
with the 1974 Census of Agriculture (50) reporting 83% of the county's
317,900 acres in farmland for 1974.

The area also has an abundant supply of ground water, but surface
storage facilities are needed to ensure an adequate supply of water
during dry spells.

Transportation. Interstate 65 is located 15 miles west of the town
which connects Chicago and Indianapolis. U.S. 421 which passes through
Monon is a two lane highway which connects Lafayette and Michigan City.
U.S. 24, located 9 miles south, is the main east-west route in the
vicinity and connects points west with Monticello, Fort Wayne, and
Toledo. Monon is directly serviced by the Louisville and Nashville
Railroad which connects with the Norfolk and Western and the CONRAIL
systems in nearby communities. This is a benefit for possible
industrial location in the town. The closest commercial air service
and trucking terminals are located in Lafayette.

Population and Employment. Monon is a small community of about
1500 population. The population figures for the past few decades are
shown in Table 7. The 1980 population is not expected to be more
than 2000.

Table 7. Monon Population, 1940-1977

1940	1950	1960	1970
1262	1439	1417	1548

(Source: References 51, 52, 53)

According to the local public officials the present local employment is about 450; approximately 200 employees are employed in the two local industrial establishments. By 1980 the employment is not expected to increase significantly.

White County has experienced stable and steady growth in population since 1950 and projections maintain the current population level. The population projections for White County are shown in Table 8.

According to the local public officials there is a current need in Monon for low-middle income housing of a price range from \$25,000 to \$30,000.

Monon is currently experiencing difficulty in attracting industries. The water and sewage systems are unable to handle an appreciable amount of new connections and this situation has discouraged new industries from locating in Monon.

Site Description. The site is a depleted stone quarry of 160 acres of which 125 acres have been excavated and is located 1 mile south of Monon on U.S. 421. It is currently being used as a location for asphalt production, storage of trailers by a commercial freight mover, and for two residences. Surrounding land use is basically agriculture, farm residences, and another stone quarry and aggregate storage. This site location is shown in Figure 24.

The Louisville and Nashville railroad has a line running adjacent to the site to the west and another runs across the site on the east. This may be beneficial for the possible location of industry.

A major constraint to any alternative use is the topography of the site. The 125 acre pit fluctuates from 25 to 90 feet in depth and has steep, almost vertical high walls characteristic of stone quarries as shown in Figures 25a, 25b, 26b, 26c, 26d. Filling the pit or contouring the highwalls would incur high earthmoving expense. The highwalls in the shallower parts of the pit, mainly located on the northern part of the site, could be contoured to create interesting land forms and vistas to the central and southern half of the site.

Approximately 35 acres in the southern half of the site is inundated with a 5 foot average depth of water. During years of low

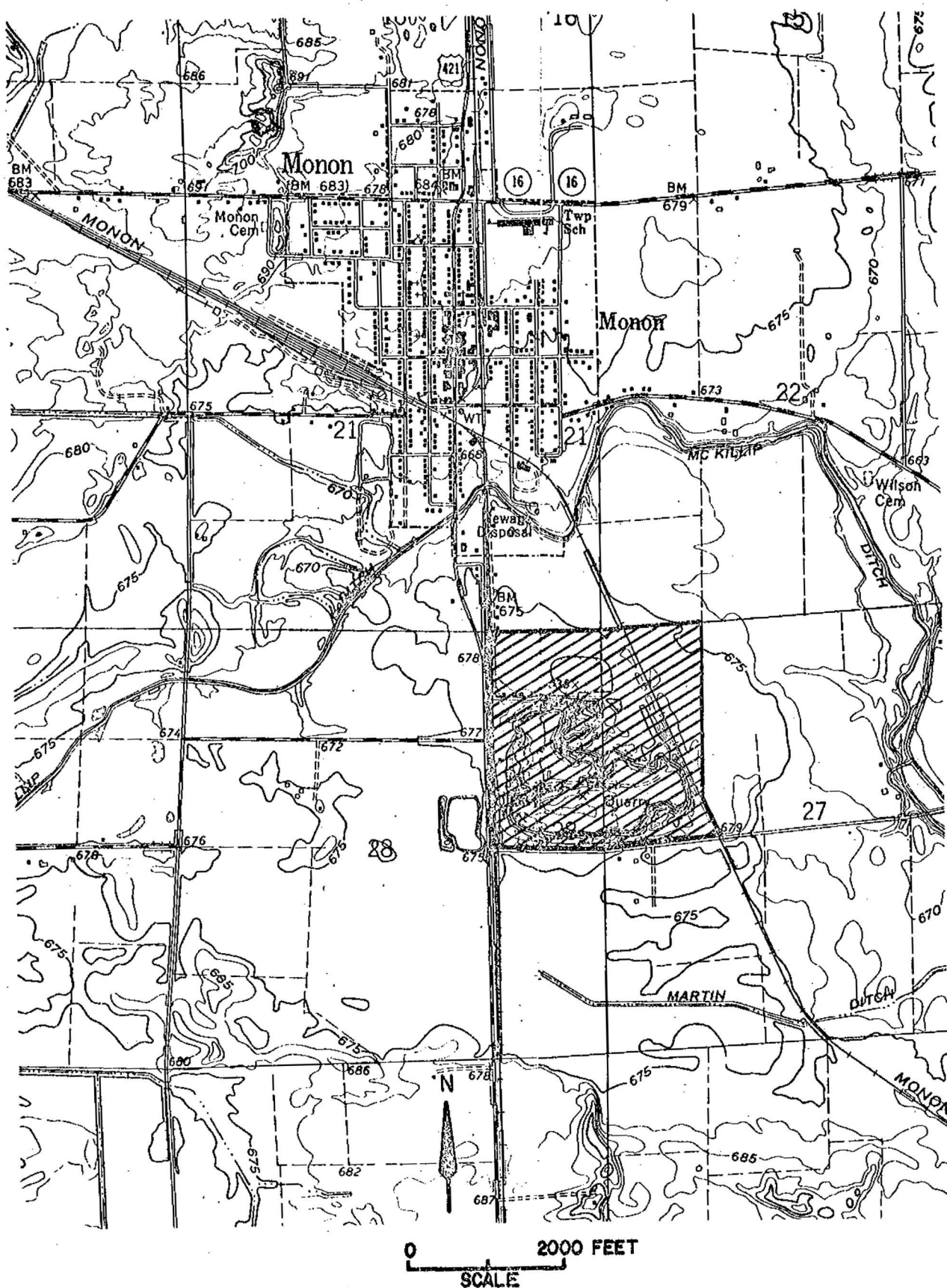


Figure 24. Monon Site and Adjacent Transportation Network
(Source: References 55, 56)



Figure 25a. Depleted Areas Featuring 25' to 30' Highwalls in Northern Area, Looking East, Monon Site



Figure 25b. 25 to 30 Foot Highwalls Looking South, Monon Site

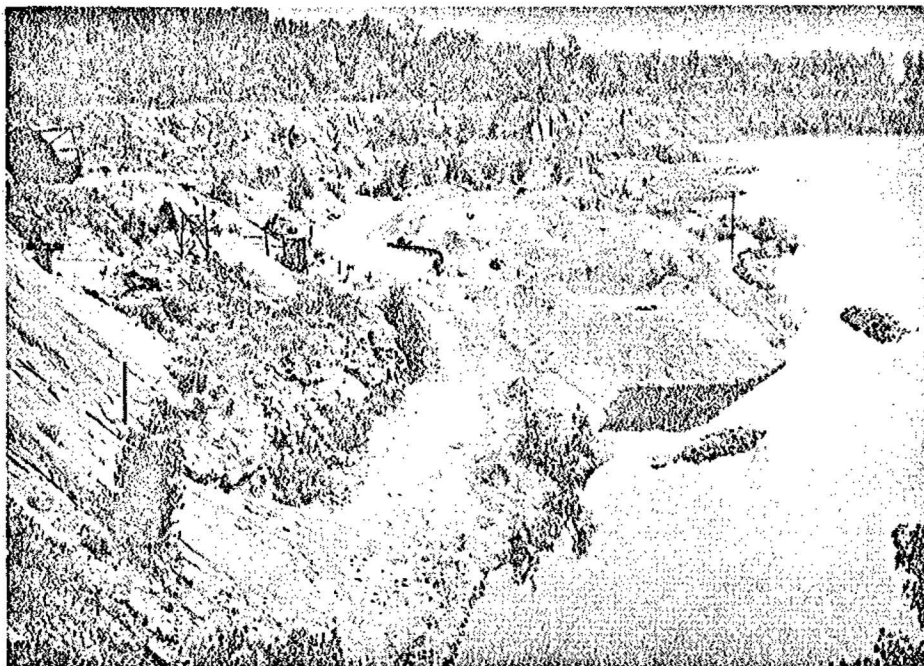


Figure 26a. Inundated Area, Waste Piles, and Old Conveyor System in Southern Area Looking East, Monon Site

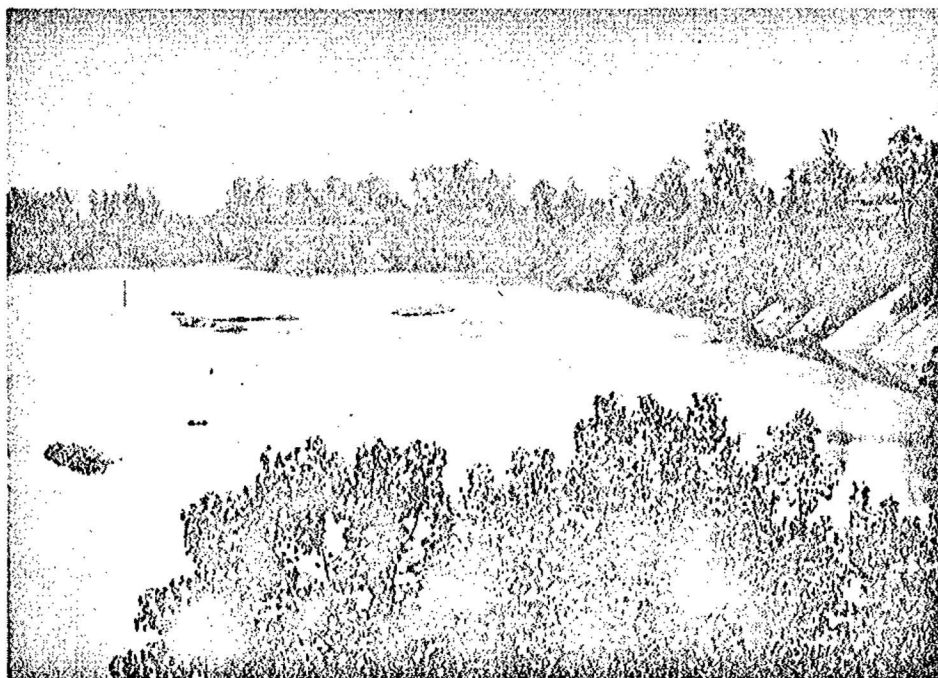


Figure 26b. Inundated Area, 60' to 90' Highwalls on Right Bank in Southern Area, Looking East, Monon Site

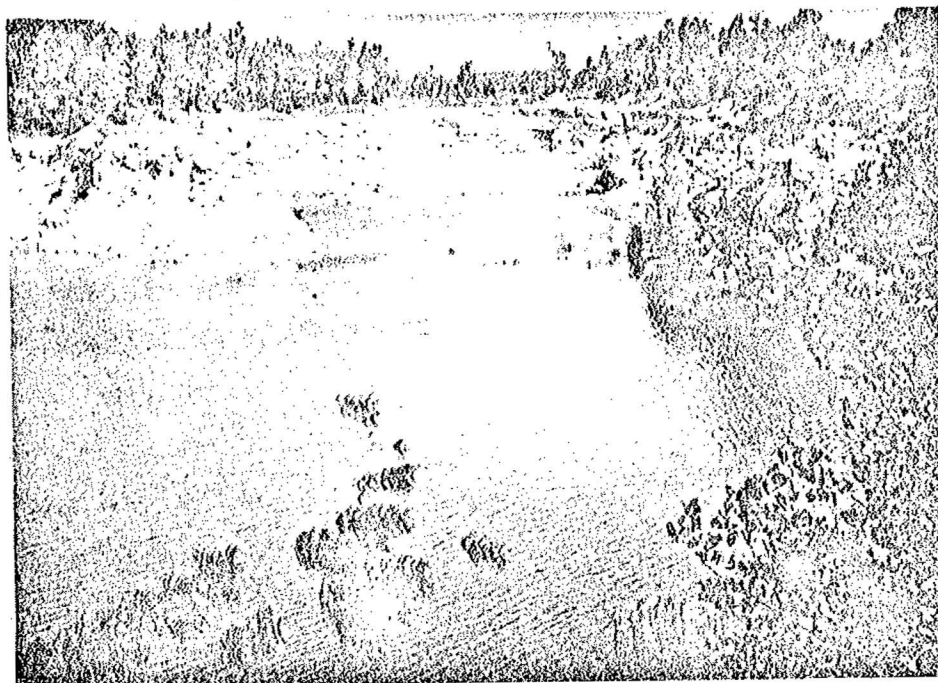


Figure 26c. Inundated Area and 30-50 Foot Highwalls in Southeastern Area Looking North, Monon Site

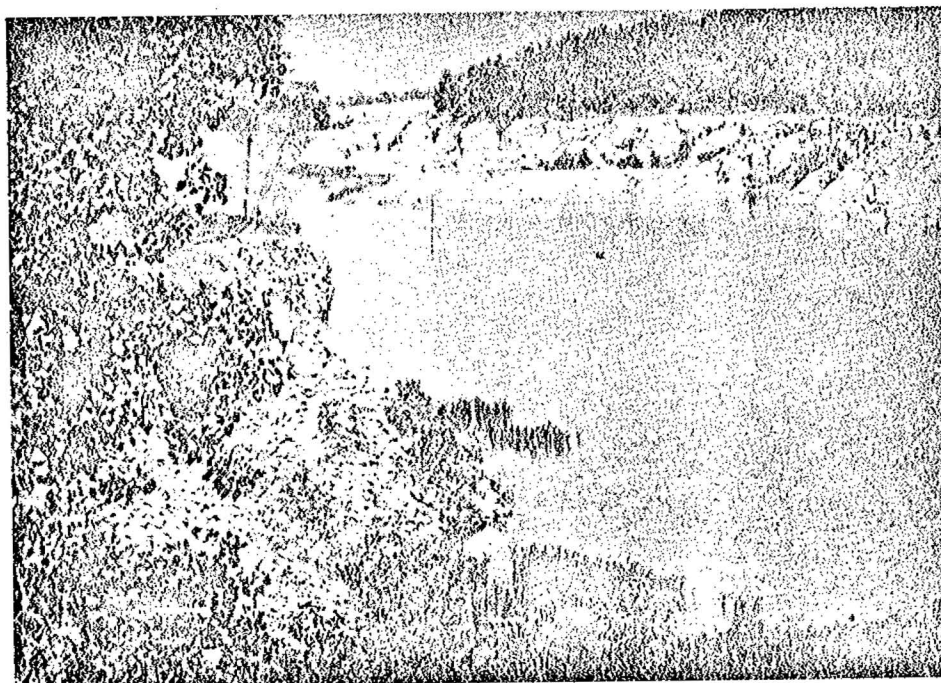


Figure 26d. Inundated Area and 30 to 50 Foot Highwalls, Looking West, Monon Site

rainfall this area remains dry. To be of any practical use in terms of recreation or water supply reservoir this pit will have to be made deeper. For any other use, the pit has to be filled in. Setbacks along the boundaries of the site make a cut and fill method of contouring the highwalls and filling in the pit an impossibility. Material excavated from the south part of the pit to make it deeper can be deposited in the north part of the pit for fill purposes, but will be expensive.

The existing soil conditions consist of limestone of indeterminate depth covered with from about 1-1/2 feet to 5 feet of overburden in the unexcavated areas and bare stone in the excavated areas. If landscaping is required in the final land use, topsoil will have to be imported.

The final constraint to any type of urban use is the lack of sewerage facilities. A creek just south of Monon together with a thin layer of overburden above limestone makes extension of the present sewerage system south to the site an engineering problem.

South Bend

General Information. South Bend is located in north-central Indiana in St. Joseph County, 90 miles east of Chicago, and 130 miles north of Indianapolis. The South Bend-Mishawaka area, comprising the majority of the population of St. Joseph County, has had a poor economic performance since 1950 but this trend is expected to change in the future due to the area's favorable geographical location in the industrial northeastern portion of the nation and the excellent transportation system serving the area.

Transportation. The area is highly accessible through its extensive transportation system, which is a benefit in attracting new industry. Interstate 80 provides service to Chicago and points west and to Toledo, Cleveland, and points east. U.S. 31-33 provide north-south service to Indianapolis and Michigan. U.S. Highways 20, 6, and 21 as well as numerous state highways center on South Bend-Mishawaka.



North view of main quarry from east side: Reef facies of Wabash Fm.



Northwest view of main quarry from east side: Reef facies of Wabash Fm.



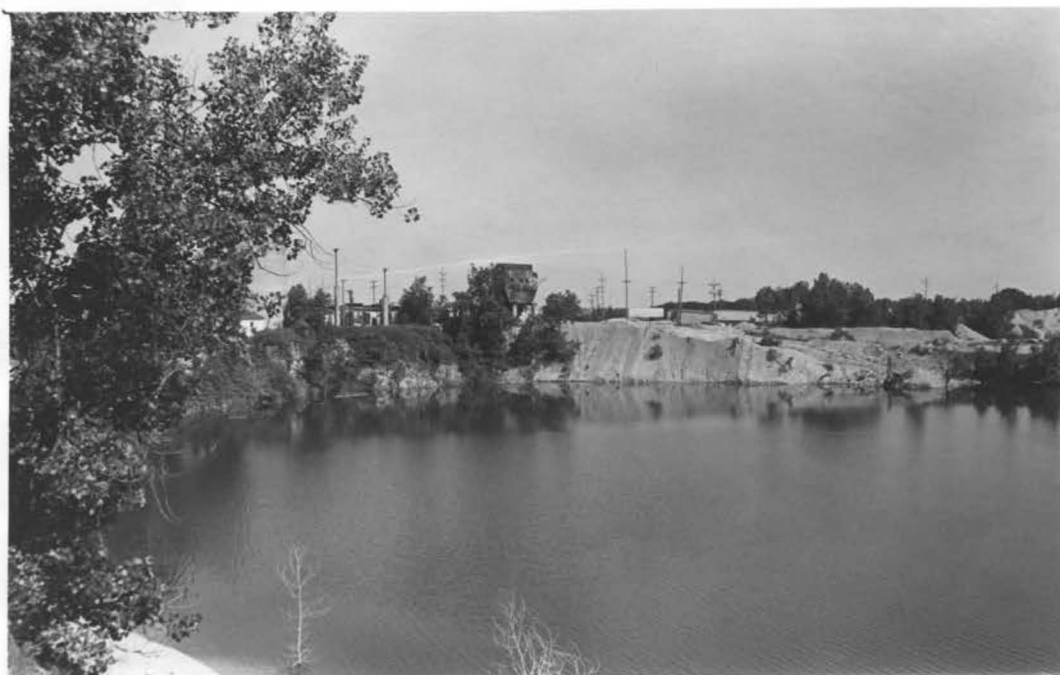
Northwest view from east side



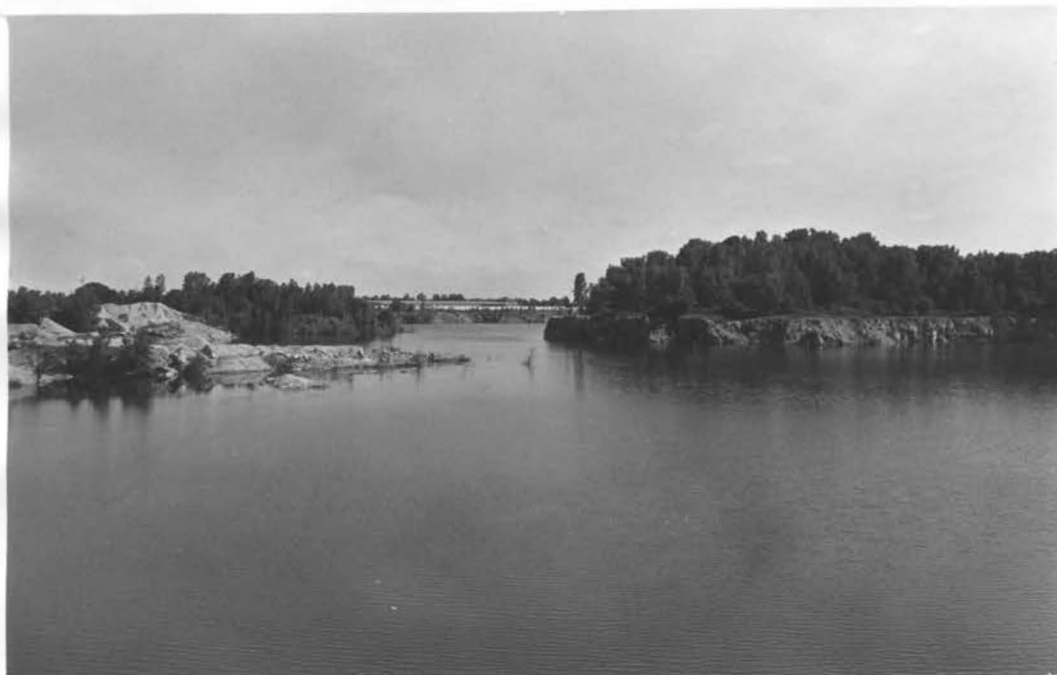
West view from north side

Abandoned Monon quarry
Sec. 28, T. 28 N., R. 4 W., White Co.

June, 1983
C. Ault



Northwest view from east side



West view from east side: Reef facies of Wabash Fm.



Part of quarry used for truck storage



Part of quarry used for truck storage

Mon. cello, Indiana
July 29, 1947

MEMORANDUM REPORT BY GEORGE E. ERICKSEN

MONON CRUSHED STONE COMPANY PLANT AND QUARRY NEAR MONON,
WHITE COUNTY, INDIANA

Date of field examination. July 29, 1947.

Location. The plant and quarry are approximately one mile south of Monon, in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 28 N., R. 4 W. State Highway #43 and the Monon railroad pass west of the quarry. The plant is at the west edge of the quarry. The quarry is approximately 1800 feet long and 900 feet wide. The elevation of the main quarry floor is 631 feet. See accompanying map.

Products. The plant produces crushed stone and agricultural lime. Most of the crushed stone is sold for railroad ballast. Rock is shipped on the Monon railroad and by private truck.

Plant. Information on plant and quarry operations was furnished by Mr. George Bozich, owner and superintendent.

The plant is powered by electricity. Rock is crushed and screened into several sizes. Crushed stone is washed. The crushed rock is stock piled with railroad cars and a turtle-back steam engine. The plant has been under the present ownership for 2 years. The company has remodeled the plant and replaced all the old equipment. The plant is now producing about 1000 tons per day but could produce as high as 3000 tons (personal communication, Mr. Bozich). The company would not release information on yearly tonnage but probably is producing between 150,000 and 200,000 tons. The plant could produce 350,000 to 400,000 tons per year. The company employs 48 men.

Geology. The quarry is in a reef in Huntington dolomite. Cumings and Shrock (1928, p. 112) briefly discuss the rock in the Monon quarry.

The dolomite is partly saturated with petroleum and fractures and cavities are filled with black liquid petroleum. Sections of the quarry wall are covered with a layer of black tar which formed from petroleum seeping from fractures and cavities. Prolonged weathering removes the tar and the weathered surface is light-gray in color. The dolomite is brown and gray, finely crystalline, and thick bedded. Many of the cavities are casts of leached fossils. Fossils are poorly preserved but are so numerous that in places they make up much of the rock. Cephalopods and brachiopods are most common. A few chert nodules were found in the north wall of the quarry.

Beds in the south, east, and north walls of the quarry strike about N. 50° W. and dip 30° NE. Beds in the west wall are obscure but probably are horizontal. The rock is broken by many fractures and small joints.

A section of the reef rock was measured in the south wall of the quarry, from the bottom of the lower pit to the top of the main quarry. 149 feet of reef rock was measured. The lithologic character of the rock is similar throughout the section. Collected rock samples 47159-47172, and chip samples 47173-47174.

S. th.
E 47-173 - 23.0'
E 47-174 - 40.0'

On top of the west quarry wall is a 1-3 ft. layer of dolomitic sandstone which weathers buff in color. In the southwest corner of the main quarry, irregular lenses of green argillaceous dolomite are exposed.

The bedrock is overlain by about 8 feet of Pleistocene glacial drift.

The following analyses and physical tests of stone from the Monon quarry were furnished by Mr. Bozich:

Dolomite sample

Insol.	0.25
R ₂ O ₃	0.14
CaCO ₃	56.28
MgCO ₃	43.26

Physical tests: Sample M-1 from 45 feet below top of face, northwest corner of main quarry; Sample M-2 from 28 feet below top of face, east end of lower pit; Sample M-3 from middle of east face of main quarry.

	M-1	M-2	M-3
Specific gravity	2.46	2.55	2.58
Weight per cu. ft. (lbs.)	153.5	159.0	161.0
Water	0.9%	1.6%	5.6%
Wear	4.8%	5.1%	3.1%
Sodium sulphate soundness			
loss	1.7%	1.3%	3.4%

Mining operations. The rock has been mined from two levels in the quarry; the lower level is marked by the pit near the west end of the main quarry. The rock is now being mined in the east wall and the southwest corner of the main quarry. The face is 40-55 feet high. When the upper stone is worked out, the company expects to work the rock in the floor to the depth of the lower pit. The walls of the lower pit are 23-30 feet high. Overburden is stripped with shovel and trucks. Each time stripping is done, a year's supply of stone is exposed. Blasting is done in vertical well-drill holes. Broken rock is loaded into trucks with a 2-yard electric shovel. Two shovels,

four trucks, and 2 well-drill rigs are operated in the pit. Small springs drain into the quarry and the water is pumped from a pond in the lower pit.

Estimate of reserves. Approximately 6,000,000 tons have already been mined. There should be at least 2,000,000 tons, indicated ore, on the upper bench, east of the present quarry. If the rock in the lower bench is mined, there should be an additional 4,000,000 tons, indicated ore, available.

Respectfully submitted,

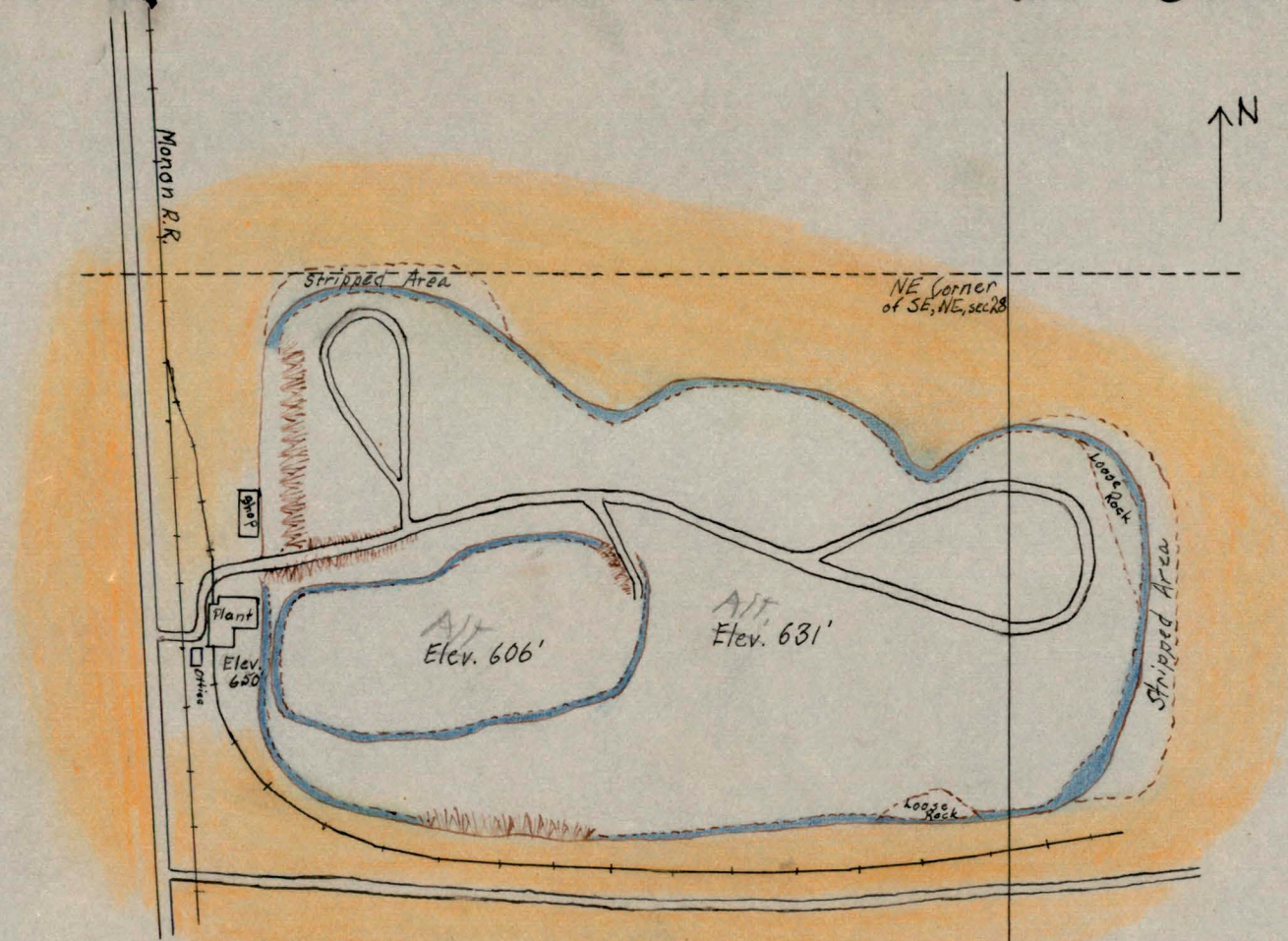
George E. Ericksen

George E. Ericksen
Geologist

Cumings, E. R. and Shrock, R. R. (1928) The geology of the Silurian rocks of northern Indiana, Ind. Dept. Conservation, Div. Geol., 226 pages, 45 figures, maps.

white

SKETCH MAP OF MONON CRUSHED STONE CO.



Location SE 1/4, NE 1/4, sec. 28, T.28N., R.4W.

Scale 1 inch = 400' feet

Glacial Drift

Huntington Dolomite

Date July 29, 1947

Mapped by R.H. Stewart

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