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PRINTED: 03/14/2003

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: ROGERS LAKE

ALTERNATE NAMES:

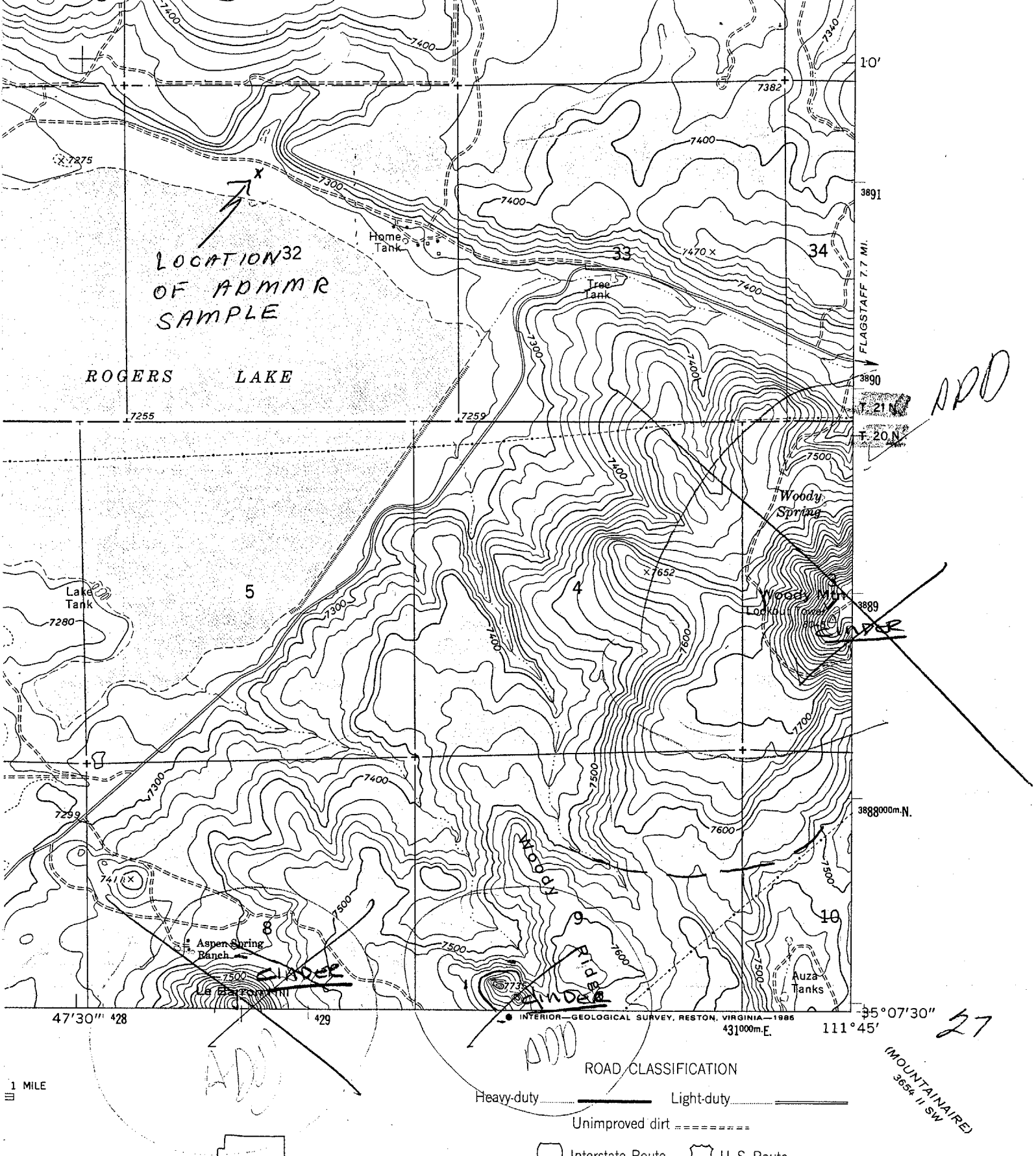
COCONINO COUNTY MILS NUMBER: 24

LOCATION: TOWNSHIP 21 N RANGE 6 E SECTION 32 QUARTER NW
LATITUDE: N 35DEG 09MIN 55SEC LONGITUDE: W 111DEG 47MIN 15SEC
TOPO MAP NAME: BELLEMONT - 7.5 MIN

CURRENT STATUS: RAW PROSPECT

COMMODITY:
CLAY SILICA

BIBLIOGRAPHY:
ADMMR INDUSTRIAL MIN. RPT. P. 20
ADMMR ROGERS LAKE FILE
USBM MLA 11-92 P. 19



ROGERS LAKE CLAY (file)

COCONINO CO.

BELLEMONT, ARIZ.

35111-B7-TF-024

PHOTOINSPECTED 1980

1963

DMA 3654 III NE—SERIES V898

92

Map photoinspected 1980

No major culture or drainage changes observed

FVDS.08

Department of Mines and Mineral Resources

MINE AND PROSPECT FIELD VISIT DATA SUMMARY

Sheet 1 of 2

COMMODITIES: Clay

MILS ID No.: Coconino 24 **DATE:** 8-6-1989

ENGINEER: Ken A Phillips

INFORMATION FROM: Field visit above date

PROPERTY SUMMARY

I. **MINE NAME:** Rogers Lake **OTHER POSSIBLE NAMES INCL. ANY CLAIM NAMES NOTED:**

II. **LOCATION:** 21 W **SEC(S):** NW 32 **MINE DISTRICT**

ELEV.: 7300 **COUNTY** Coconino **TOPO QUAD.** Bellemont 7 1/2

DIRECTIONS: Forest route 231 from old highway 66 south and west to Rogers Lake and DK Ranch

MAP ATTACHED Yes

III. **OWNERSHIP: NAME** Cecil Miller & brother **PHONE:**

ADDRESS: Litchfield Park, AZ 85340

COMPANY NAME IF ANY: DK Ranch

PERTINENT PEOPLE:

IV. **PROPERTY AND HOLDINGS:** Patented stock raising homestead, state trust lands, public lands administered by Coronado Forest.

V. **PAST PRODUCTION-NOTED, KNOWN, PROBABLE, UNKNOWN, NONE:** None

VI. **CURRENT STATUS:** Raw Prospect

VII. **WORKINGS:** None

VIII GEOLOGY AND MINERALOGY: **DEPOSIT TYPE:** Recent lake bed

LENGTH: **WIDTH** **VEIN STRIKE** **DIP**

HOST ROCK:

ECONOMIC MINERALS: Possible illite clays for structural use and ceramic use

COMMENTS:

IX. EQUIPMENT ON SIGHT: None

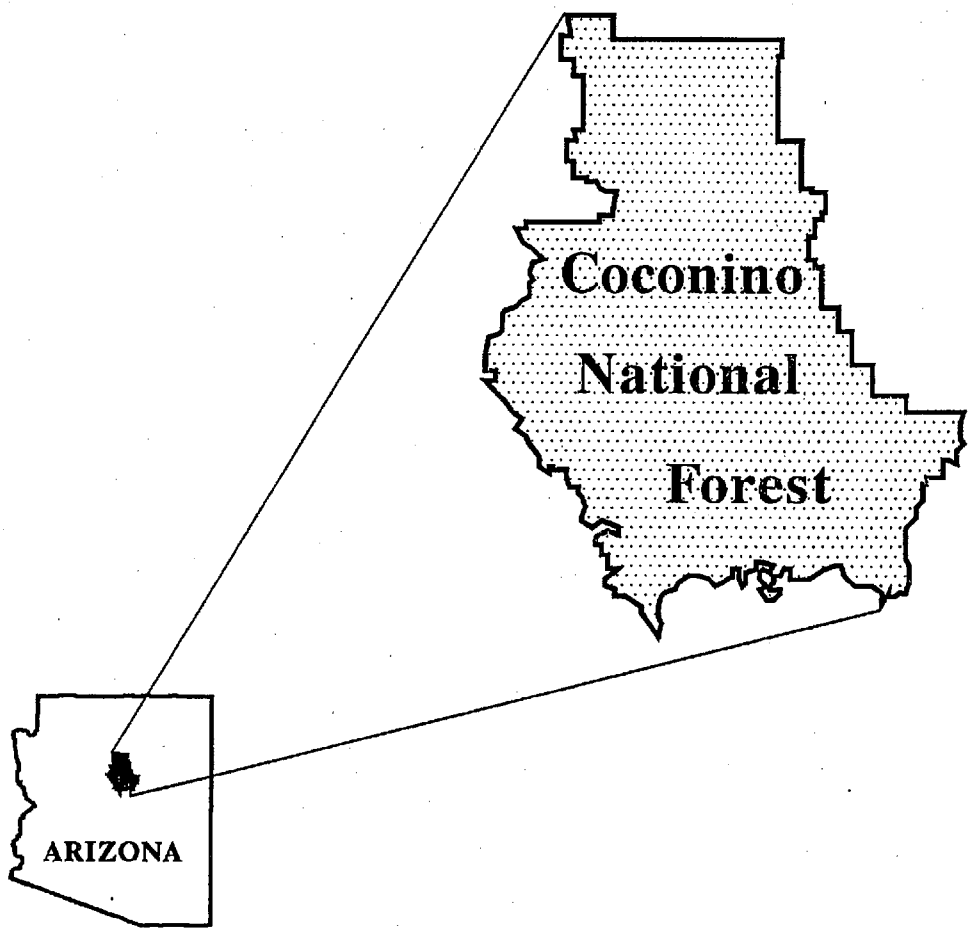
X. SAMPLING: NOTE TYPE IF ANY, DRILLING? Sample - ADMMR Black illite? clay with some visible organic matter

XI. REFERENCES AND REMARKS: Elevatorski reports it to be a high silica clay derived from decomposed andesite and basalt

MLA 11-92

Mineral Land Assessment
Open File Report 1992

Mineral Resource Appraisal of the Coconino National Forest, Arizona



U.S. Department of the Interior
Bureau of Mines

During this investigation two basalt samples were taken: one sample (62, sec. 2, T. 17 N., R. 6 E.) was from a flow at the top of Schnebley Hill Road and the other (59, sec. 8, T. 19 N., R. 7 E.) was from the road cut on the east side of I-17 at the Kelly Canyon interchange. Each sample was in excess of 25 kg and was crushed to 2 to 1 cm in size. LA abrasion tests were conducted on each sample to determine the hardness and resistance to abrasion, thus determining suitability as road material.

The test consisted of putting each crushed sample in a drum containing steel balls, turning the drum for 500 revolutions, and measuring the percent loss. The two basalt samples (samples 59 and 62) measured 26 and 27 percent loss, respectively. Acceptable loss for material used in asphalt for road construction is anything less than 40 percent (oral comm., Tom Foster and Greg Gentsch, Arizona Department of Transportation). In addition to abrasion resistance, basalt must be relatively free of clay seams, and from an economic standpoint, have little overburden and a flow thickness of at least 6 m. These localities, and probably many others, satisfy these criteria and the rocks are considered a resource. Drilling is needed to determine the exact thickness and extent of the basalt. A large part of the volcanic fields has rocks that could be used for road material.

Clay

Bentonitic clay has numerous uses depending on its physical characteristics. Clay is used as a foundry sand bonding agent, filtering, clarifying, and decolorizing oils (bleaching clays), in

animal feed, waterproofing and sealing of ponds and reservoirs, petroleum refining catalysts, drilling mud, pesticides and related products. Other uses include oil and greases adsorbents, paper coating and filler, and animal bedding. (See Peterson, 1987, p. 28.) Most of the clay found in the National Forest occurs in the Verde Valley; however, one clay sample was taken at Rogers Lake southwest of Flagstaff. The clays in the Verde Valley are in the Verde Formation and are bentonitic; the high-silica clay at Rogers Lake occurs in the lake bed and is probably the result of the weathering of the volcanics in the area (Minobras, 1975). Funnell and Wolfe (1964, p. 65) report that bentonitic clay in secs. 1, 2, 11, and 12, T. 13 N., R. 5 E., is low-expanding montmorillonite containing relatively high calcium.

Five clay samples were taken during the field investigation: sample 50 was from Rogers Lake bed and samples 182 and 184-186 were from the Verde Formation near Camp Verde. Analytical data for these samples are shown in Table 1. The clay from Rogers Lake is a montmorillonite-kaolinite that has a very high bloating factor and may be suitable in making lightweight aggregate. Samples 182 (sec. 29, T. 14 N., R. 5 E.), and 184, 185 (sec. 10, T. 13 N., R. 5 E.) are of clays that may be suitable for structural use such as facia brick, tile, etc. Sample 186 indicated clay that is below standards for industrial use (oral comm. Ken Phillips, Arizona Department of Mines and Mineral Resources).

The clay at Rogers Lake, secs. 31 and 32, T. 21 N., R. 6 E., and sec. 5 and 6, T. 20 N., R. 6 E., is in a deposit covering about

Table 1.-- Clay evaluation conducted by the Mineral Resources Institute on samples from the Coconino National Forest, Coconino County, Arizona.

[N/A, not applicable]

Sample Number:	50	182	184	185	186
Raw Properties:					
Water of Plasticity	23.2	27.5	25.0	24.1	23.3
Working Properties	Plastic	Plastic	Plastic	Plastic	Granular
Color	Gray	Tan	Tan	Gray	Tan
Drying Shrinkage (%)	7.5	7.5	7.5	5.0	7.5
Dry Strength	Good	Good	Good	Good	Good
Other Properties:					
Ph	7.8	8.0	8.0	7.9	8.1
HCL Effervescence	Negative	Negative	Negative	Negative	Positive
Other Test	N/A	N/A	N/A	N/A	N/A
Preliminary Bloating Test:	Positive	Negative	Negative	Negative	Negative

Bloating Test (Sample 50):

Temperature (°C/°F)	Percent Absorbance	Bulk Density (gm/cc)
1,000 / 1,832	52.2	0.89
1,050 / 1,922	38.2	0.72
1,100 / 2,012	32.2	0.51
1,150 / 2,102	Melted	

Table 1.-- Clay evaluation conducted by the Mineral Resources Institute on samples from the Coconino National Forest, Coconino County, Arizona.--Continued

Sample Density Number	Temp (°C)	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk Density gm/cc
50	1,000	5YR 6/6	5	12.5	7.8	16.2	2.09
	1,050				Melted		

Sample Number	Temp (°C)	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk Density gm/cc
182	1,000	5YR 7/6	5	10.0	23.0	38.3	1.66
	1,050	5YR 6/6	5	12.5	18.3	34.5	1.89
	1,100	5YR 5/6	5	12.5	14.1	27.9	1.98
	1,150				Melted		

Sample Number	Temp (°C)	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk Density gm/cc
184	1,000	2.5Y 8/2	3	5.0	44.8	58.5	1.30
	1,050	2.5Y 8/2	3	7.5	43.5	57.3	1.32
	1,100	2.5Y 8/2	3	7.5	43.2	57.0	1.32
	1,150	2.5Y 8/2	3	7.5	43.2	56.9	1.32
	1,200	2.5Y 8/2	3	10.0	35.3	51.3	1.45
	1,250				Melted		

Sample Number	Temp (°C)	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk Density gm/cc
185	1,000	2.5Y 9/1	3	7.5	29.4	45.4	1.54
	1,050	2.5Y 8.5/2	3	7.5	28.7	44.6	1.55
	1,100	2.5Y 8/4	3	7.5	28.7	44.6	1.56
	1,150	2.5Y 8/4	3	7.5	22.7	35.9	1.59
	1,200				Melted		

Sample Density Number	Temp (°C)	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk Density gm/cc
186				No Data			

280 hectares. Calculating the surface area of Rogers Lake and assuming an average thickness of about 3 meters, about 18 million mt of high-bloating clay could exist at Rogers Lake. Drilling or trenching is required to determine the exact thickness.

The clay at Rogers Lake is described by Guild (1910) as yellowish gray, very tough and plastic. A burning test on the clay using 100 parts clay to 300 parts limestone resulted in excellent quality cement. The composition of the clay was: 52.94 % silica (SiO_2), 17.91% alumina (AlO), 9.23% iron oxide (FeO), 1.22% lime (CaO), 0.42% magnesia (MgO), 2.22% alkalies, and 16.34% water. (See Guild, 1910, p. 82.)

Clay uses and characteristics vary greatly. Testing of the clay gives an indication of possible uses but is by no means absolute.

Diatomite

Diatomite is a light-colored siliceous sedimentary rock composed of the opaline cell walls of a diatom, a unicellular aquatic plant (Bates and Jackson, 1980, p. 173). Diatomite is used mostly as a filter aid. Other uses include filler in paper, molded plastics, and synthetic rubber, as a paint extender and flattening agent, and it is used in insulating applications. (See Bates, 1969, p.362.)

Long and Olson (1957, p. 94) report diatomite at an unspecified locality south of Camp Verde at elevations above that of the gypsum deposits; it is not known where the diatomite deposit is in relation to the Forest. A series of beds ranging in