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Arizona Geological Survey
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Arizona Department of Mines and Mineral Resources Mining Collection

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PRINTED: 12/17/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: CIENEGA CREEK

ALTERNATE NAMES:
PANTANO CLAY

PIMA COUNTY MILS NUMBER: 1147

LOCATION: TOWNSHIP 16 S RANGE 17 E SECTION 29 QUARTER NE
LATITUDE: N 32DEG 01MIN 04SEC LONGITUDE: W 110DEG 37MIN 16SEC
TOPO MAP NAME: RINCON PEAK - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
CLAY STRUCTURAL

BIBLIOGRAPHY:
ADMMR CIENEGA CREEK FILE
JANDERS, CAVID J.,1978, COMPARATIVE SEDIMENT-
OLOGY, STARTIGRAPHY, AND ECONOMIC POTENTIAL
OF TWO TERTIARY LACUSTRINE DPSTS IN ARIZ.,AZ
ST UNIV. MASTER THESIS, (ADMMR GEOLOGY FILE)

11/26/86

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: CIENEGA CREEK

ALTERNATE NAMES:
PANTANO CLAY

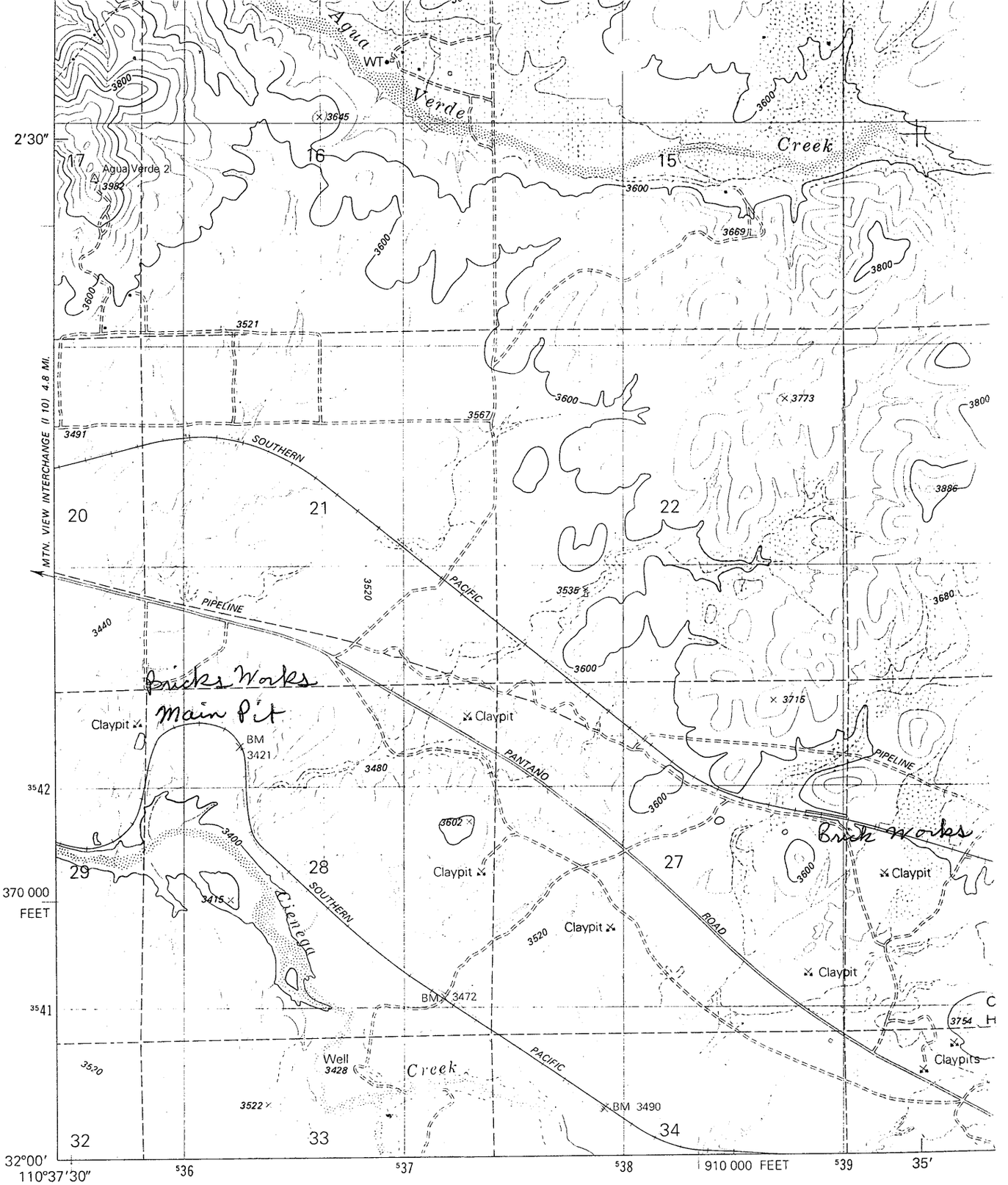
PIMA COUNTY MILS NUMBER: 1147

LOCATION: TOWNSHIP 16 S RANGE 17 E SECTION 29 QUARTER NE
LATITUDE: N 32DEG 07MIN SEC LONGITUDE: W 110DEG 30MIN SEC
TOPO MAP NAME: RINCON PEAK 7.5

CURRENT STATUS: ACTIVE

COMMODITY:
CLAY STRUCTURAL

BIBLIOGRAPHY:
ADMMR CIENEGA CREEK FILE



(MOUNT FAGAN) 3847 I NW

Mapped, edited, and published by the Geological Survey

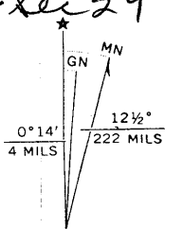
Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1975. Field checked 1976
Map edited 1981

Projection and 10,000-foot grid ticks: Arizona coordinate system, central zone (transverse Mercator)
1000-meter Universal Transverse Mercator grid, zone 12
1927 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 7 meters south and 61 meters east as shown by dashed corner ticks

Where omitted, land lines have not been established

T 16S R17E Sec 29



UTM GRID AND 1981 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CIENEGA CREEK PIMA COUNTY

MG 11/86: Operator: The Brick Works, Inc., P O Box 17956, Tucson, rizona 85731, phone 298-8631.

MG WR 11/6/87: The Brick Works (as of Jan. 1987) no longer mines clay (Cienega Creek mine file) Pima County or makes its own brick. It supports a brick company in Mexico.

FAX - AZ. DEPT OF MINES
AND MINERAL RESOURCES
KEN PHILLIPS 3 PAGES 255-3777

FROM - DTE - GSA RESOURCES

Most cement plants have been faced with the problem of cleaning up airborne particulate emissions. This has been done by covering stockpiles and utilizing dust collection equipment. Nevertheless, many cement quarries and plants would be faced with a serious problem in meeting airborne particulate standards if a single fiber standard is promulgated by OSHA.

Clay

Clay used in structural applications is produced from two widely separated localities in Arizona. The high alumina clays from the Pantano deposit southeast of Tucson are used for making bricks and also as a source of alumina in cement production at the Rillito plant. The kaolinitic clay mined at a deposit near Pinedale is blended with aluminous shales and other mineral additives in the fabrication of vitrified pipe. Geologically, these clays are classified as clastic sedimentary rocks. Though structural clays do not appear in the end use classification, kaolinitic clays used in refractory and ceramic applications are categorized as ball clays which are chemical minerals. Certainly, all of these clays are in fact ceramic raw materials and should be classified as chemical minerals.

Cienega Creek (file) Pima Co.

The clays being mined near Pantano occur near the base of the Pantano Formation of upper Oligocene to lower Miocene age. The clay beds range from a light to dark reddish brown color

and contain veinlets of satin spar, an fibrous variety of gypsum (Pennebaker, 1959). Experience has shown that the Pantano clays by blending, produce bricks exhibiting a wide range of colors after firing. The Pantano clays are blended with clays from Tolleson for brick manufacturing at the Phoenix Brick Yard.

The clays near Pinedale are kaolinitic underclays at the stratigraphic position of coal beds in the Cretaceous rocks (Morris, 1985). These clays do not contain calcite and therefore can be used for manufacture of vitrified pipe.

Vitrified pipe and bricks are both examples of value added by processing crude clays into fired or ceramic clay products. These ceramic products require both high purity raw materials. Thus, the ceramic clays mined at Pinedale and Pantano should not be classified as common clays.

Feldspar

Feldspar production began from a pegmatite deposit in Precambrian granitic rock on the east side of the Cerbat Mountains north of Kingman in 1923. The Taylor mine suspended operations in the late 1970's after over 50 years of operation when the reserves available for surface mining were depleted. The milling facility operated until 1984 by grinding stockpiled quartz, a byproduct of the earlier feldspar mining operation. The geological classifi-

Cienega Creek file
Pima Co.

MINERAL RESOURCES INSTITUTE

SCHOOL OF MINES AND ENERGY DEVELOPMENT
THE UNIVERSITY OF ALABAMA
P.O. DRAWER AY
UNIVERSITY, ALABAMA 35486

July 14, 1986

Mr. Michael N. Greeley
Arizona Department of Mines and Mineral Resources
Mineral Building
State Fairgrounds
Phoenix, Arizona 85007

Dear Mr. Greeley:

Enclosed are the results of the seven (7) silt and clay samples submitted to the Mineral Resources Institute under a Bureau of Mines' agreement. Under separate cover we are returning the fired briquettes.

Thank you for your patience during the transition of the clay lab from USBM to MRI. Please call if you have any questions.

Sincerely,

Janet Boyer

Janet Boyer
Research Assistant

JB:se

ARIZONA DEPT. OF MINES & MINERAL RESOURCES
STATE OFFICE BUILDING
416 W. CONGRESS, ROOM 161
TUCSON, ARIZONA 85701

Samples collected by The Brick Works

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 160-1

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification A Type Material silt

Raw Properties:

Water of Plasticity, Percent -- Working Properties --

Color brown Drying shrinkage, percent -- Dry Strength --

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	--	--	No Bond	--	--	--
1,050	--	--	--	--	--	--
1,100	--	--	--	--	--	--
1,150	--	--	--	--	--	--
1,200	--	--	--	--	--	--
1,250	--	--	--	--	--	--

pH 8.0 HCL Effervescence high Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 160-2

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification B Type Material Silt

Raw Properties:

Water of Plasticity, Percent 16.5 Working Properties Short

Color Brown Drying shrinkage, percent 0.0 Dry Strength Fair

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	5 YR 7/6	2	0.0	27.5	42.4	1.54
1,050	5 YR 7/6	3	0.0	27.4	42.2	1.54
1,100	5 YR 6/6	3	0.0	23.9	38.5	1.61
1,150	7.5 YR 6/4	4	5.0	14.8	27.9	1.89
1,200	--	--	--	melted	--	--
1,250	--	--	--	--	--	--

pH 8.6 HCL Effervescence high Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 106-3

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification C Type Material Clay

Raw Properties:

Water of Plasticity, Percent 21.4 Working Properties Plastic

Color beige Drying shrinkage, percent 5.0 Dry Strength Good

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	10 YR 8/4	3	5.0	22.2	37.3	1.68
1,050	10 YR 8/4	4	5.0	21.6	36.7	1.70
1,100	10 YR 7/4	5	10.0	14.1	26.9	1.90
1,150	10 YR 6/4	5	12.5	3.7	8.2	2.21
1,200	--	--	melted	--	--	--
1,250	--	--	--	--	--	--

pH 8.2 HCL Effervescence high Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 160-4

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification D Type Material Clay

Raw Properties:

Water of Plasticity, Percent 19.7 Working Properties Plastic

Color tan Drying shrinkage, percent 2.5 Dry Strength Good

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	7.5 YR 8/4	3	2.5	23.9	39.9	1.66
1,050	7.5 YR 8/4	3	2.5	23.8	39.5	1.67
1,100	10 YR 8/4	4	5.0	20.7	35.9	1.73
1,150	10 YR 7/4	5	7.5	12.3	24.6	2.00
1,200	--	--	melted	--	--	--
1,250	--	--	--	--	--	--

pH 8.7 HCL Effervescence High Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc	Bulk Density lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 160-5

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification E Type Material Clay

Raw Properties:

Water of Plasticity, Percent 16.7 Working Properties Short

Color brown Drying shrinkage, percent 2.5 Dry Strength Good

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	5 YR 6/8	5	7.5	8.1	16.9	2.08
1,050	5 YR 4/6	5	7.5	4.5	9.9	2.19
1,100	--	--	melted	--	--	--
1,150	--	--	--	--	--	--
1,200	--	--	--	--	--	--
1,250	--	--	--	--	--	--

pH 9.2 HCL Effervescence High Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 160-6

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification F Type Material Clay

Raw Properties:

Water of Plasticity, Percent 15.6 Working Properties Short

Color Brown Drying shrinkage, percent 2.5 Dry Strength Good

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	5 YR 5/8	5	5.0	7.8	16.2	2.09
1,050	2.5 YR 5/6	7	5.0	6.3	13.2	2.09
1,100	--	--	melted	--	--	--
1,150	--	--	--	--	--	--
1,200	--	--	--	--	--	--
1,250	--	--	--	--	--	--

pH 9.3 HCL Effervescence High Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 160-7

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification G Type Material Clay

Raw Properties:

Water of Plasticity, Percent 17.7 Working Properties Short

Color tan Drying shrinkage, percent 2.5 Dry Strength Fair

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	5 YR 6/8	5	7.5	4.9	10.8	2.20
1,050	5 YR 5/6	7	10.0	1.5	3.6	2.34
1,100	--	--	melted	--	--	--
1,150	--	--	--	--	--	--
1,200	--	--	--	--	--	--
1,250	--	--	--	--	--	--

pH 9.3 HCL Effervescence high Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Agua Verde 2

Creek

Coyote Spring

MTN. VIEW INTERCHANGE (I 10) 4.8 MI.

SOUTHERN PACIFIC PIPELINE

PANTANO ROAD

Arenega Creek

Well

The Brick Works (BW) Main Pit

F&G

BW

Phoenix Brick (PB) Main Pit

Claypits PB

Cross Hill

Pantano

BUTANO INTERCHANGE (I 10) 1.5 MI.

(THE NARROWS)

T16S

Rincon Peak 7½' Quad.

Mapped, edited, and published by the Geological Survey

SCALE 1:24 000

35′ 40 41 3848 II SE (RINCON PEAK) R 17 E R 18 E 43 32′30″ 44 930 000 FEET 45 46 47 110°30′ 32°00′

T 16 S
T 17 S

3540 3539 360 000 FEET 3538 3536 57′30″

BENSON (VIA U.S. 80) 12 MI.
WILCOX (ARIZ. 186) 42 MI.

BM 3561 Wt Pantano 3648 36 31 32 3812 33 Mesquel 34 35 Well 3549 3702 SOUTHERN PACIFIC PIPELINE PANTANO ROAD 3640 3880 3800 3600 Cienega 3680 BM 3581 3722 3767 3616 Mescal Arroyo 10 BM 3595 Gaging Station PANTANO INTERCHANGE 6 5 4 3 Nega BM 3659 BM 3619 PACIFIC PIPELINE Rest Area 2 LANE Borrow Pit 3773 B Creek 3720 A Gravel Pit BM 3674 3631 3783 3866 3908 11 12 8 9 10 Water Tank Pantano Substation 3716 BM 3734 BM 3785 BM 3856 BM 3787 AMOLE INTERCHANGE Milepost 3890 U S MILITARY RESERVATION 3843 3920 PIPELINE Anderson Canyon

A = sample

The Narrows 7½′ Quad.

BM 3218
3200
14
13
3619
3400
Gaging Station
×3396
×3533
18
17
Agua
3600
×3618
3368
3320
Borrow Pit
PIPELINE
3280
×3410
BM ×3251
3480
21
Corrals
22
23
24
19
20
PACIFIC
ROAD
SOUTHERN
PANTANO
×3424
3483×
Cienega
Creek
BM 3365
Spring
Canyon
Davidson
3360
×3387
BM 3339
Water Tank
Irene 3425
MOUNTAIN VIEW INTERCHANGE
27
26
25
30
29
×3461
3440
BM 3438
2 LANE
10
83
BM 3492
34
35
36
31
32
×3558
×3464
×3516
3486×
3520
42'30"
28
29
30
31
40'
32
R 16 E
R 17 E
33
34
35
110°37'30"
(MOUNT FAGAN)
3847 I NW
PANTANO INTERCHANGE 7 MI.
BENSON (VIA U.S. 80) 23 MI.
INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1981
Vail 7½' Quad.
SCALE 1:24 000
ROAD CLASSIFICATION

MINERAL RESOURCES INSTITUTE

SCHOOL OF MINES AND ENERGY DEVELOPMENT
THE UNIVERSITY OF ALABAMA
P.O. DRAWER AY
UNIVERSITY, ALABAMA 35486

July 14, 1986

Mr. Michael N. Greeley
Arizona Department of Mines and Mineral Resources
Mineral Building
State Fairgrounds
Phoenix, Arizona 85007

Dear Mr. Greeley:

Enclosed are the results of the seven (7) silt and clay samples submitted to the Mineral Resources Institute under a Bureau of Mines' agreement. Under separate cover we are returning the fired briquettes.

Thank you for your patience during the transition of the clay lab from USBM to MRI. Please call if you have any questions.

Sincerely,

Janet Boyer

Janet Boyer
Research Assistant

JB:se

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 160-1

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification A Type Material silt

Raw Properties:

Water of Plasticity, Percent -- Working Properties --

Color brown Drying shrinkage, percent -- Dry Strength --

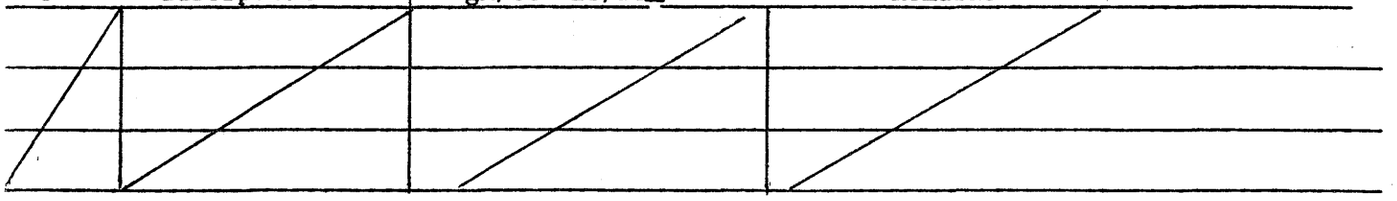
Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	--	--	No Bond	--	--	--
1,050	--	--	--	--	--	--
1,100	--	--	--	--	--	--
1,150	--	--	--	--	--	--
1,200	--	--	--	--	--	--
1,250	--	--	--	--	--	--

pH 8.0 HCL Effervescence high Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc lb/ft^3	Remarks



Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 160-2

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification B Type Material Silt

Raw Properties:

Water of Plasticity, Percent 16.5 Working Properties Short

Color Brown Drying shrinkage, percent 0.0 Dry Strength Fair

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	5 YR 7/6	2	0.0	27.5	42.4	1.54
1,050	5 YR 7/6	3	0.0	27.4	42.2	1.54
1,100	5 YR 6/6	3	0.0	23.9	38.5	1.61
1,150	7.5 YR 6/4	4	5.0	14.8	27.9	1.89
1,200	--	--	--	melted	--	--
1,250	--	--	--	--	--	--

pH 8.6 HCL Effervescence high Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 106-3

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification C Type Material Clay

Raw Properties:

Water of Plasticity, Percent 21.4 Working Properties Plastic

Color beige Drying shrinkage, percent 5.0 Dry Strength Good

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	10 YR 8/4	3	5.0	22.2	37.3	1.68
1,050	10 YR 8/4	4	5.0	21.6	36.7	1.70
1,100	10 YR 7/4	5	10.0	14.1	26.9	1.90
1,150	10 YR 6/4	5	12.5	3.7	8.2	2.21
1,200	--	--	melted	--	--	--
1,250	--	--	--	--	--	--

pH 8.2 HCL Effervescence high Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc	Bulk Density lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 160-4

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification D Type Material Clay

Raw Properties:

Water of Plasticity, Percent 19.7 Working Properties Plastic

Color tan Drying shrinkage, percent 2.5 Dry Strength Good

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	7.5 YR 8/4	3	2.5	23.9	39.9	1.66
1,050	7.5 YR 8/4	3	2.5	23.8	39.5	1.67
1,100	10 YR 8/4	4	5.0	20.7	35.9	1.73
1,150	10 YR 7/4	5	7.5	12.3	24.6	2.00
1,200	--	--	melted	--	--	--
1,250	--	--	--	--	--	--

pH 8.7 HCL Effervescence High Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc	Bulk Density lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 160-5

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification E Type Material Clay

Raw Properties:

Water of Plasticity, Percent 16.7 Working Properties Short

Color brown Drying shrinkage, percent 2.5 Dry Strength Good

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	5 YR 6/8	5	7.5	8.1	16.9	2.08
1,050	5 YR 4/6	5	7.5	4.5	9.9	2.19
1,100	--	--	melted	--	--	--
1,150	--	--	--	--	--	--
1,200	--	--	--	--	--	--
1,250	--	--	--	--	--	--

pH 9.2 HCL Effervescence High Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 160-6

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification F Type Material Clay

Raw Properties:

Water of Plasticity, Percent 15.6 Working Properties Short

Color Brown Drying shrinkage, percent 2.5 Dry Strength Good

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	5 YR 5/8	5	5.0	7.8	16.2	2.09
1,050	2.5 YR 5/6	7	5.0	6.3	13.2	2.09
1,100	--	--	melted	--	--	--
1,150	--	--	--	--	--	--
1,200	--	--	--	--	--	--
1,250	--	--	--	--	--	--

pH 9.3 HCL Effervescence High Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Mineral Resources Institute
Preliminary Clay Evaluation

MRI Number 160-7

Date Received 3-26-86 Date reported 7-8-86

Sender's Name Arizona Department of Mines and Mineral Resources

Sender's Identification G Type Material Clay

Raw Properties:

Water of Plasticity, Percent 17.7 Working Properties Short

Color tan Drying shrinkage, percent 2.5 Dry Strength Fair

Slow firing test:

Temp. ° C	Munsell Color	Moh's Hardness	Percent Linear Shk	Percent Abs.	Percent Appr. Por.	Bulk density gm/cc
1,000	5 YR 6/8	5	7.5	4.9	10.8	2.20
1,050	5 YR 5/6	7	10.0	1.5	3.6	2.34
1,100	--	--	melted	--	--	--
1,150	--	--	--	--	--	--
1,200	--	--	--	--	--	--
1,250	--	--	--	--	--	--

pH 9.3 HCL Effervescence high Other tests --

Preliminary Bloating Test: negative

Temp. ° C	Percent adsorption	Bulk Density gm/cc lb/ft^3	Remarks

Potential Use: Not suitable for structural clay products.

High effervescence.

The data presented in this report are based on laboratory tests that are preliminary in nature and will not suffice for plant or process design. It does not preclude the use of the material in mixes.

Change name of Pima MILS 453

to: Pantano gravel pit

Greeley