Site: Oronogo Duenweg
ID #: MOD0950686281
Break: 11.11
Other:
10-14-85

WESTON • SPER
Suite 2500, Eleven Oak Tower
324 East 11th Street, Kansas City, MO 64106 • (816) 221-1722

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-6669

TO: Shelley Brodie

DATE: October 14, 1985

FROM: Glenn Curtis, TATM GMC

TAT #17-F-00875

THRU: Rheta J. Smith, TATL

PCS #5015

SUBJECT: Jasper County Mining District

Please find enclosed a copy of the material sent to Steve Chang, Mitre Corporation in support of the subject HRS. The enclosed package consists of recent telephone communication records (TCR), maps, calculations, and pages from References #1 and #8. References #1 and #8 have previously been submitted in totality. The enclosed pages from these two references are submitted in support of the most recent information.

GC/lp

enclosures

40115350

SUPERFUND RECORDS

000132

ADDENDUM C

JASPER COUNTY HRS

Table of Contents

	Page
Shoal Creek Basin	
Hazardous Waste Quantity	
TCR 1C	1
TCR 2C	2
Joplin West Quad - HW Quantity areas	3
HW Quantity Calculations	4
Target Wells	
TCR 3C	5
TCR 4C	6
Joplin West Quad - Target Well locations	7
Target Well - distance to nearest well	8
Joplin West Quad - distance to nearest well	9
Quad Map - legend for distance	10
Short Creek Basin	
Hazardous Waste Quantity	
Reference #1 - U.S.G.S., J. Barks, Report	11
Reference #1, page 13	12
TCR 5C	13
Reference #8 - K.G.S., T. Spruill, Report	14
Reference #8, page 10	15
Reference #8, page 81	16
Reference #8, page 82	17
TCR 6C	18
List of Wells/Locations/Depths (TCR 6)	19
Joplin West Quad - Well locations	20
Target Well - distance to nearest well	21
Joplin West Quad - distance to nearest well	22
Quad Map - legend for distance	23
Observed Release	
Reference #8 - K.G.S., T. Spruill, Report	24
Reference #8 - Sample data	25
Reference #8 - Sample data	26

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(1)

BY GMC DATE 10/11/85 DIV ____ SHEET 1 OF ____
CHKD BY ____ DATE ____ DEPT ____ W.O. NO. ____
PROJECT Jasper Co. HRS Shoal Creek Basin
SUBJECT TCR 1C HW Quantity

Missouri Highway and Transportation Department
Bob Wilbert 417/623-5794

Re: "Waste Products in Missouri with Potential Highway Application" Report 81-2, April 1982 W.L. Trimm

Mr. Wilbert is the district highway person who participated in the above study for the Joplin vicinity.

I asked Mr. Wilbert for information regarding tailing pile quantity and location which related to the former lead/zinc mining activities, and to the above report. He said he would research his files, etc. and for me to call back.

Return call:
Mr. Wilbert couldn't find any info in his files regarding the areas I previously described in the Shoal Creek Basin i.e. Tanyard Hollow, Gordon Hollow, Roaring Springs Hollow. He talked to his geologist who had performed the effort documented in the above report for the Joplin area, and who stated that most of the tailing piles in these areas had been removed. Also Mr. Wilbert traveled to site and surveyed areas listed above. Several piles, 10,000 ton or so existed in the area. He roughly estimated at least **50,000 ton** still on ground in above "hollow" areas

RFW 338-5-81

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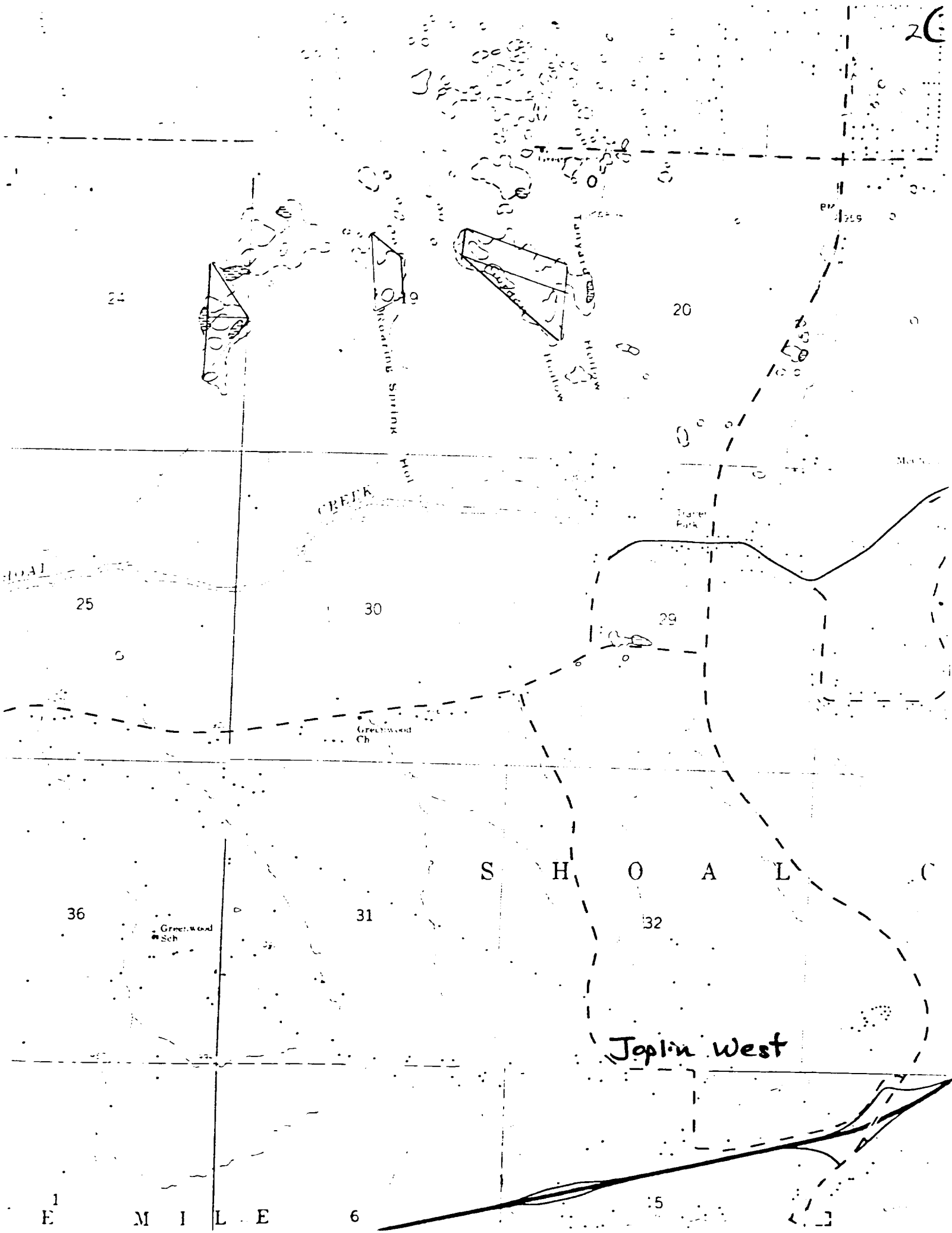
BY GMC DATE 10/11/85 DIV _____ SHEET 1 OF 3
CHKD BY _____ DATE _____ DEPT _____ W.O. NO. _____
PROJECT Jasper Co. HRS Shoal Creek Basin
SUBJECT TCR 2c HW Quantity

Daniel R. Stewart
Route #1, Webb City 417/673-4161

local Mining Engineer-Geologists-former Manager of local concern with American Zinc and Lead Smelting Co.

Discussion of mine tailing piles in Shoal Creek drainage basin specifically Tanyard Hollow, Gordon Hollow and Roaring Springs Hollow areas.

Most of the tailing piles in these area have been removed and primarily used for highway application However a thin veneer (layer of unusable tailing debris) remains at these sites from 2 to 3 feet deep in areas that were removed. Other small piles still remain in the area at greater depth, with greater volumns.



24
19
20
Roaring Spring
Hollow
Hollow
CREEK
25
30
29
Greenwood Ch
S H O A L
36
31
32
Greenwood Sch
Joplin West
1
E M I L E
6
5

WESTON
DESIGNERS CONSULTANTS

BY _____ DATE _____ DIV _____ SHEET 3 OF 3
CHKD BY _____ DATE _____ DEPT _____ W.O. NO. _____
PROJECT Jasper Co. HRS Shoal Creek Basin
SUBJECT Calculations HW Quantity

Volume Mine Tailing Waste Pile
conservative estimation based on previous D. Stewart TCR. Using designated areas at a one-foot depth.

1.

Area = $2 \times (1000 \times 800 \times \frac{1}{2}) = 800{,}000$

2.

Area =
$(500 \times 490 \times \frac{1}{2}) = 122500$
$(500 \times 332 \times \frac{1}{2}) = 83000$
$(700 \times 480) = 336000$
541,500

3.

Area
$(800 \times 2200 \times \frac{1}{2}) = 880000$
$(500 \times 1800) = 900000$
1,780,000

Total Area 3,121,500 ft^2

Volume (1 foot depth) 3121 500 ft^2

= 115,611 yd^3

WESTON
DESIGNERS CONSULTANTS

BY GMC DATE 10/11/85 DIV _____ SHEET 1 OF _____
CHKD BY _____ DATE _____ DEPT _____ W.O. NO. _____
PROJECT Jasper Co. HRS Shoal Creek Basin
SUBJECT TCR 3C Target Wells

Bob Casada - Engineer
Missouri American Water Company
Joplin, Mo. 417/623-2100

WTP 417/624 3361

Re: Area in N ½ Section 29
Township 27 N Range 33 W

All of the homes located in the above describe area near Fillmore Bridge just north of Shoal Creek are on private wells. There are at least 30 homes in this area using groundwater from private wells for consumption.

RFW 338-5-81

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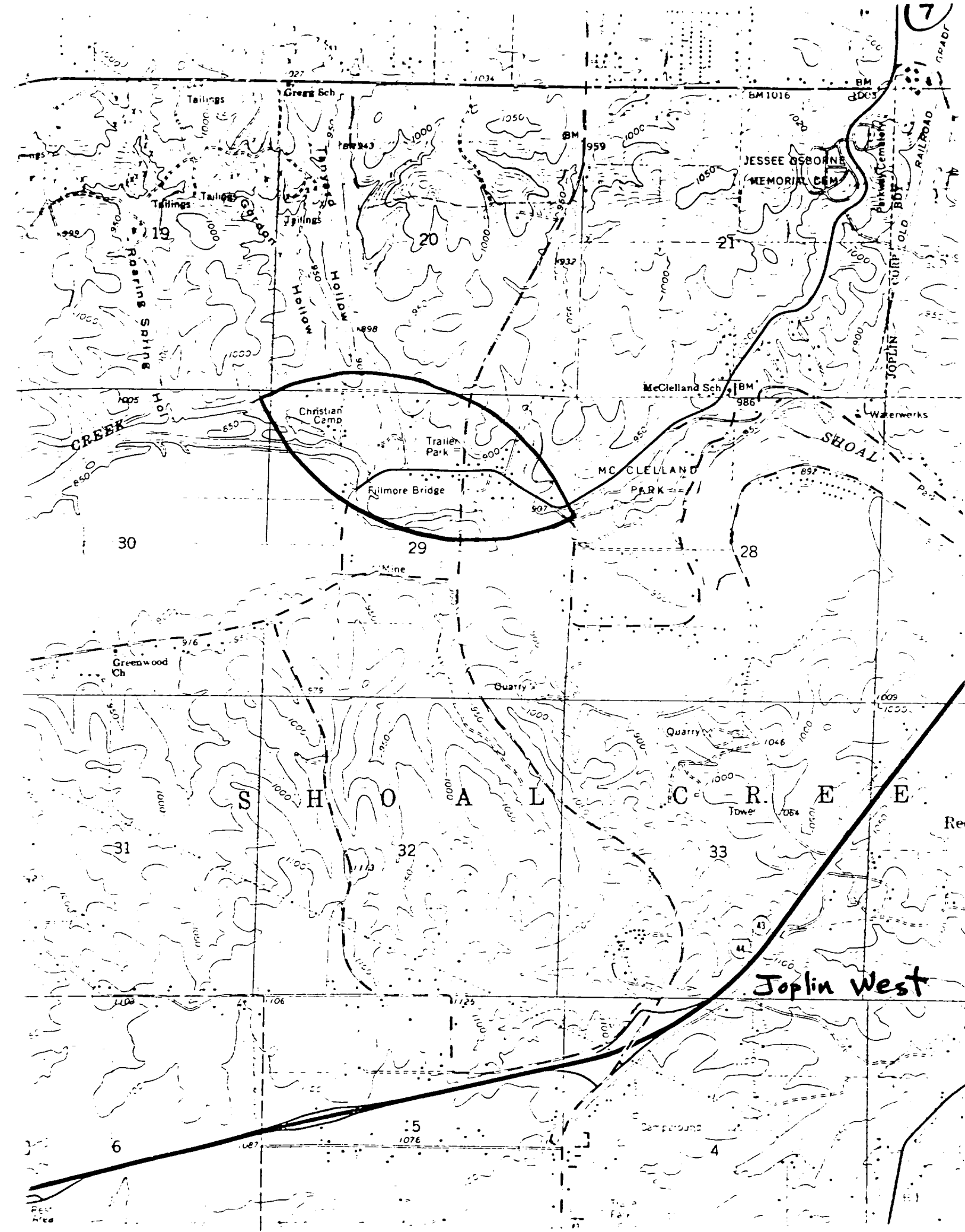
BY GMC DATE 10/11/85 DIV _____ SHEET 1 OF _____
CHKD BY _____ DATE _____ DEPT _____ W.O. NO. _____
PROJECT Jasper Co HRS Shoal Creek Basin
SUBJECT TCR 4C Target Wells

John Geller
Neosho Well Drilling 417/451-3147

Re: Area in N ½ Section 29
Township 27N Range 33W

near/north of Filmore Bridge
which crosses Shoal Creek

A trailer park and large cluster of homes are located in the above described area. These homes are located in an area not served by a public water supply system. Mr. Geller thought that most of these homes were on private wells and using the well water for drinking. Ground water is plentiful in this area at a depth between 200 to 400 feet.


7
Gregg Sch
Tailings
Tailings
Tailings
Tailings
Tanyard
Gordon
Hollow
Hollow
Roaring Spring
Hol
CREEK
19
20
21
BM 1016
BM 959
JESSEE OSBORNE
MEMORIAL CEM
Parkway Cemetery
RAILROAD
JOPLIN
CORP
OLD
BDY
McClelland Sch
BM 986
Waterworks
SHOAL
Christian Camp
Trailer Park
Fillmore Bridge
MC CLELLAND PARK
30
29
28
Mine
Greenwood Ch
Quarry
Quarry
S H O A L C R E E
Tower
31
32
33
Joplin West
5
6
4
Campground

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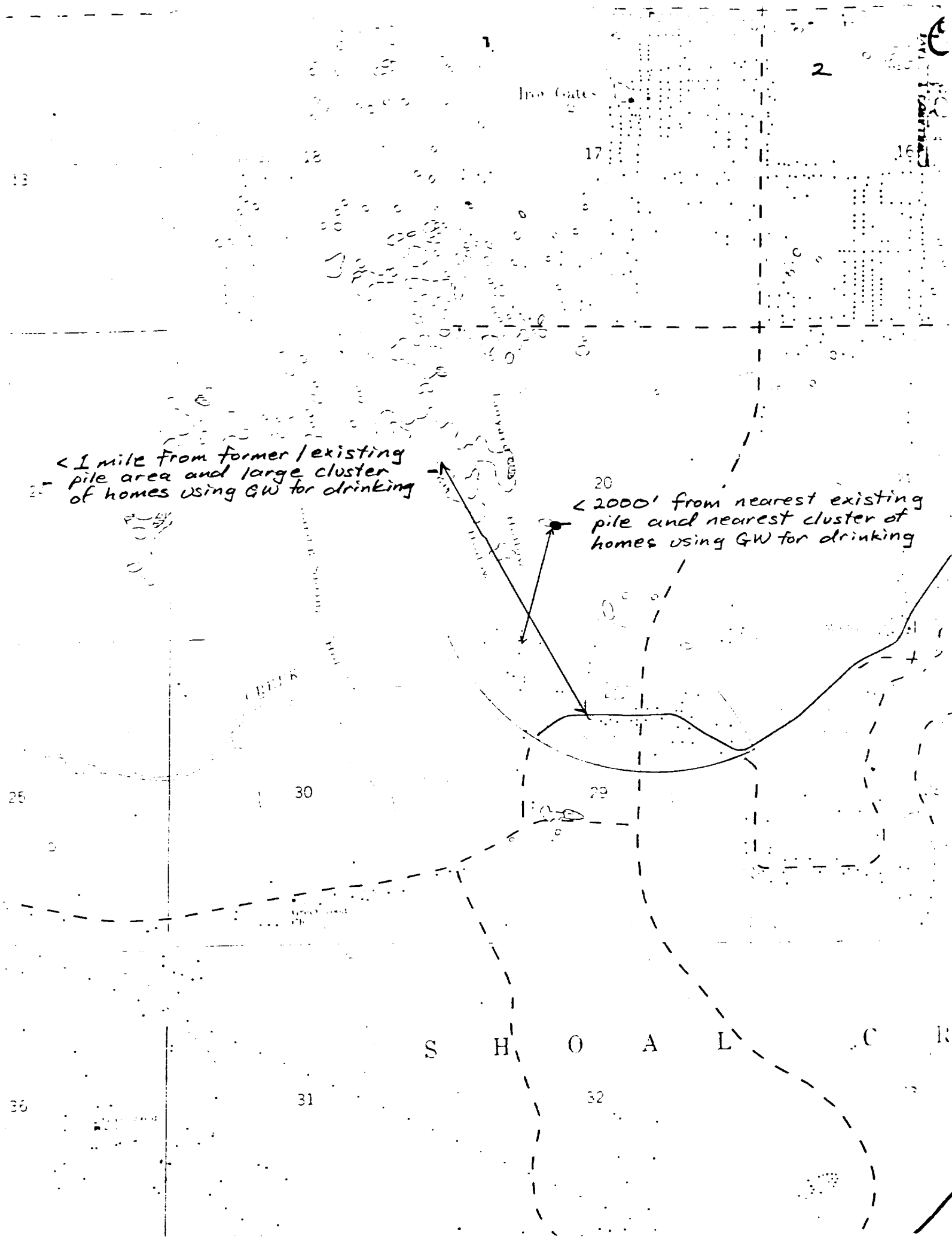
BY GMC DATE 10/4/85 DIV _____ SHEET 1 OF 3
CHKD BY _____ DATE _____ DEPT _____ W.O. NO. _____
PROJECT Jasper Co. HRS Shoal Creek Basin
SUBJECT Target Wells

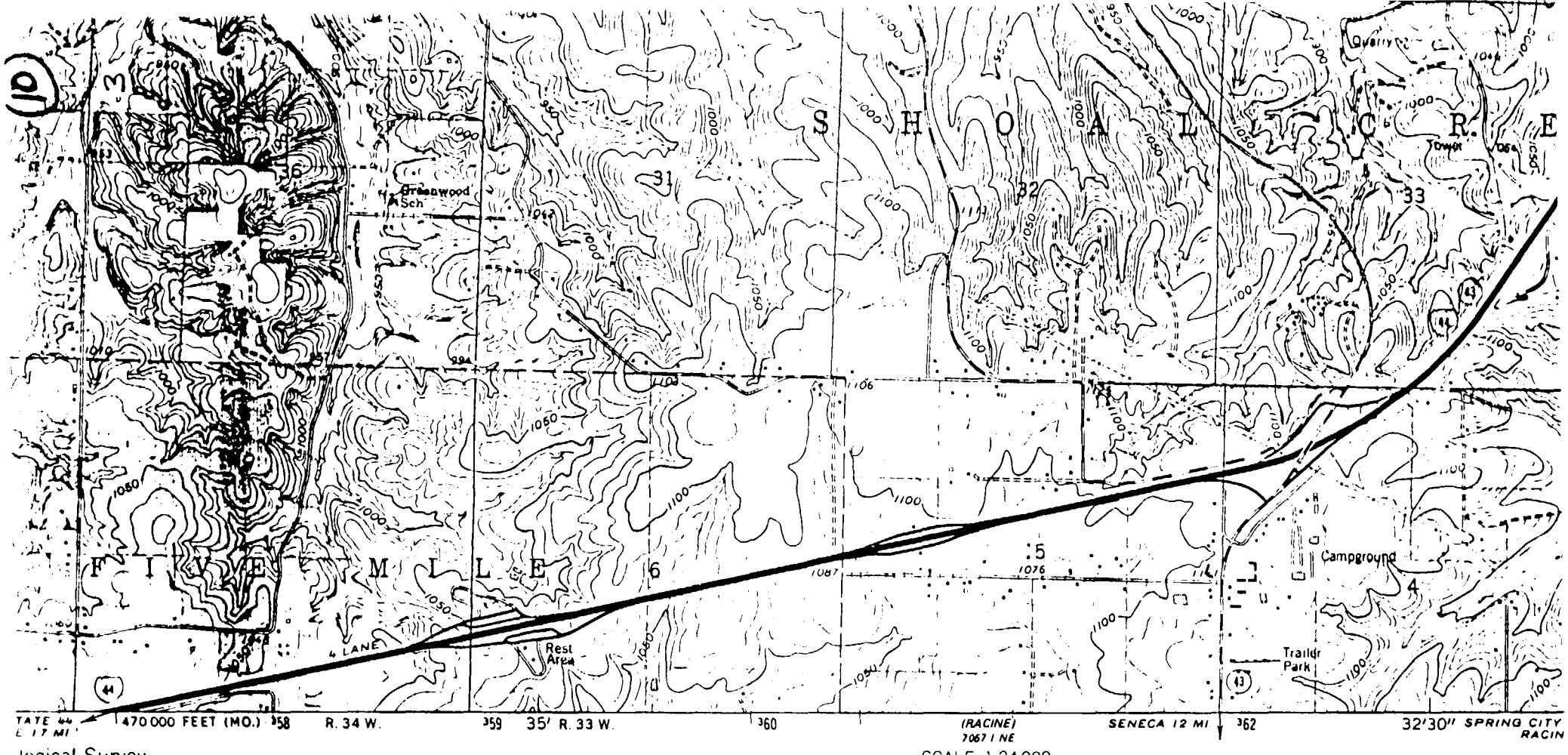
- Distance to tailings piles from drinking water well.

The wells used for drinking water purposes previously described in the enclosed TCR's lie primarily in the N ½ of Section 29, Township 27 N, Range 33 W. The home/well locations are outlined on the enclosed maps.

The subject wells lie < 2000 feet from an existing tailing pile. The accumulation of homes also lie less than one mile from an accumulation of former tailings piles. These former piles have been described as being from 1 to 3 feet deep, scattered over the ground; the majority of the piles having been removed.



1
2
Iron Gates
13
18
17
16
< 1 mile from former / existing pile area and large cluster of homes using GW for drinking
20
< 2000' from nearest existing pile and nearest cluster of homes using GW for drinking
25
30
29
S H O A L C R
36
31
32



logical Survey

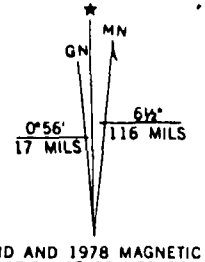
em, west zone

s,

dings are shown

ld lines where
ation is unchecked

ographs taken
ld checked



UTM GRID AND 1978 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092,
AND THE DIVISION OF RESEARCH AND TECHNICAL INFORMATION
MISSOURI DEPARTMENT OF NATURAL RESOURCES, ROLLA, MISSOURI 65401
AND STATE GEOLOGICAL SURVEY, LAWRENCE, KANSAS 66044
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

HW Quantity (11)

EFFECTS OF ABANDONED LEAD AND ZINC MINES AND TAILINGS PILES ON WATER QUALITY IN THE JOPLIN AREA, MISSOURI

by James H. Barks

Reference #1

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations 77-75

Prepared in cooperation with

the Ozark Gateway Council of Governments

August 1977

In June 1972 the dissolved-solids concentration in water from Webb City Well No. 10 was 840 mg/L. This well is located near the mining belt and the high dissolved-solids content indicates the possibility of mine-water contamination of the deep aquifer on the east side of Webb City. This well has been abandoned as a source of municipal water because of the high mineralization of the water (Raymond Lawrence, Supt. Webb City Water Dept., oral commun., 1976).

SURFACE WATER

Center Creek, Turkey Creek, and Short Creek drain about 70, 18, and 5 percent of the mining area, respectively. Some physical and hydrologic characteristics of these streams are given in table 6. All three streams flow westward and are characterized by alternating pools and riffles, and mixed sand, gravel, and boulder bottoms.

The lower part of Center Creek, the largest of the three streams, flows through the northern part of the mining area and into the Spring River near the Missouri-Kansas state line. Most of the baseflow originates in the headwater area, with little or no increase and some losses in the lower reach (Feder and others, 1969, p. 54). About 1,970 acres of tailings piles having a total volume of approximately 38 million yd^3 (cubic yards), cover the lower part of the basin (Joseph R. Miller, Ozark Gateway Council of Governments, written commun., 1977). Most of these tailings are in the Oronogo-Duenweg mining belt. Discharges from at least three flowing mines enter Center Creek.

Turkey Creek, south of and parallel to Center Creek, flows through the northern part of Joplin and into the Spring River in Kansas, just across the state line. It is located in the center of the mining area. Tailings piles are scattered throughout the basin and cover an area of about 600 acres, with a total volume of about 10 million yd^3. The flow and quality of water in Turkey Creek are greatly altered by sewage plant discharge at Joplin, industrial discharges, and mine-water discharge from at least one abandoned mine.

Short Creek, south of and parallel to Turkey Creek is a small stream that originates just west of Joplin. After crossing the state line it flows 4.3 mi (miles) in Kansas before entering the Spring River. Although Short Creek has a total drainage area of 18 mi^2 (square miles) only about 7.6 mi^2 contribute to the flow at the state line. Mining activities in the upper part of the basin have left about 185 acres (2.9 million yd^3) of tailings piles scattered on the surface.

Tailings Areas

The distribution and size of tailings piles on the surface generally correspond to the distribution and size of mines beneath the surface. However, some of the ore was removed from the area for processing and some of the tailings have been removed to be used for road surfacing and railroad ballast, or ground into sand for sand blasting. The greatest concentration of tailings

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(13)

BY GMC DATE 10/11/85 DIV _____ SHEET 1 OF _____
CHKD BY _____ DATE _____ DEPT _____ W.O. NO. _____
PROJECT Jasper Co. HRS Short Creek Basin
SUBJECT TCR 5C Target Wells

Kansas Geological Survey 913/864-4321

Tim Sprvill

Regarding: "Assessment of Water Resources in Lead-Zinc Mined Areas in Cherokee County, Kansas, and Adjacent Areas" Report.

Is the well referred to as Map No. 111 on page 10 Map and pg 82 Analysis a well used for drinking purposes?

The well is located on the property of Addie K. Brown and as far as Tim knew was one of two wells (other well ~ 30 feet deep, well # 111 180 feet deep) used as the sole source of water supply for the Brown residence.

Target Wells (14)

ASSESSMENT OF WATER RESOURCES IN LEAD-ZINC MINED AREAS IN CHEROKEE COUNTY, KANSAS, AND ADJACENT AREAS

Refence # 8

U.S. GEOLOGICAL SURVEY
Open-File Report 84-439

Prepared in cooperation with the
KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

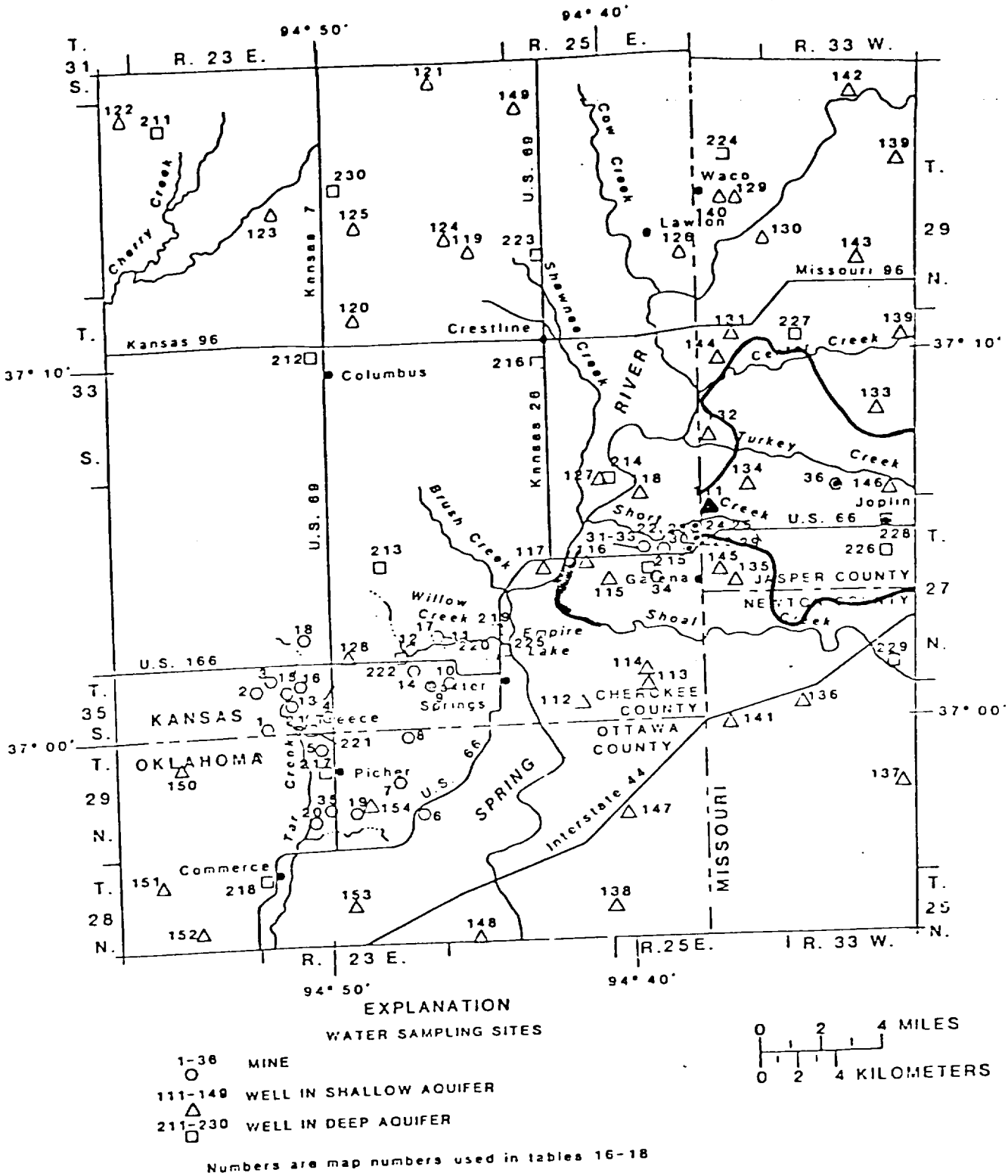

Figure 3.--Location of ground-water sampling sites.

TABLE 20.--WATER-QUALITY DATA FOR WELLS IN SHALLOW AQUIFER

[Values given in either feet, micromhos per centimeter at 25 C(umhos), pH units, degrees Celsius(deg C), milligrams per liter(mg/L), or micrograms per liter(ug/L)]

MAP NUMBER (IN FIGURE 3)	STATION NUMBER	DATE OF SAMPLE	DEPTH OF WELL, TOTAL (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY FIELD (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)
[redacted]	[redacted]	81-08-12	180	490	6.8	18.8	130	5.5	10	.2	190	130
112	370032094411301	82-03-18	200	433	7.0	17.5	93	3.0	3.7	1.0	180	37
113	370108094390101	81-07-31	180	340	7.1	15.5	62	2.0	4.0	.6	160	17
114	370124094390501	81-07-31	181	410	6.2	16.5	64	3.0	11	1.0	140	19
115	370408094401201	81-07-30	98	460	6.7	15.5	72	3.5	12	2.0	87	120
116	370428094405401	82-03-16	160	574	7.5	16.5	120	5.0	6.0	.7	160	140
117	370428094424401	81-07-31	243	1440	8.5	17.0	230	34	45	4.0	220	540
118	370639094391201	82-03-16	--	676	7.1	15.0	130	4.0	21	2.0	250	94
119	371830094444201	82-03-18	347	747	7.1	19.5	74	23	67	4.0	320	120
120	371051094474701	81-07-31	332	790	7.6	20.0	55	26	65	5.0	250	75

MAP NUMBER (IN FIGURE 3)	STATION NUMBER	DATE OF SAMPLE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)
[redacted]	[redacted]	81-08-12	22	.1	8.0	--	3.9	0	100	10	0	330
112	370032094411301	82-03-18	7.4	.1	7.0	282	--	0	100	0	10	20
113	370108094390101	81-07-31	2.0	.1	7.0	192	.00	0	0	1	0	10
114	370124094390501	81-07-31	23	.1	9.0	221	2.80	0	100	3	0	10
115	370408094401201	81-07-30	5.1	.2	10	277	.10	0	100	0	0	5700
116	370428094405401	82-03-16	5.1	.2	8.0	379	--	0	100	1	10	3700
117	370428094424401	81-07-31	14	.3	8.0	--	.10	0	100	1	10	1300
118	370639094391201	82-03-16	17	.1	9.0	456	--	0	100	4	10	30
119	371830094444201	82-03-18	9.2	.7	8.0	515	--	0	100	0	0	40
120	371051094474701	81-07-31	55	1.1	10	436	.10	0	100	2	0	30

TABLE 20.--WATER-QUALITY DATA FOR WELLS IN SHALLOW AQUIFER--CONTINUED

MAP NUMBER (IN FIGURE 31)	STATION NUMBER	DATE OF SAMPLE	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, DISSOLVED (UG/L AS MN)	SELENIUM, DISSOLVED (UG/L AS SE)	ZINC, DISSOLVED (UG/L AS ZN)
111	370558094370001	81-09-12	0	50	0	1500
112	370032094411301	82-03-19	0	10	1	580
113	370100094390101	81-07-31	0	0	0	130
114	370124094390501	81-07-31	0	10	0	20
115	370408094401201	81-07-30	0	100	0	400
116	370420094405401	82-03-16	0	180	0	540
117	370420094424401	81-07-31	0	420	2	810
118	370639094391201	82-03-16	30	0	2	340
119	371830094444201	82-03-18	0	30	1	50
120	371051094474701	81-07-31	0	10	1	10

WESTON
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(18)

BY GMC DATE 10/11/85 DIV _____ SHEET 1 OF 2
CHKD BY _____ DATE _____ DEPT _____ W.O. NO. _____
PROJECT Jasper Co. HRS Short Creek Basin
SUBJECT TCR 6C Target Wells

Missouri Dept. of Natural Resources
314/364-1752
Gene Hale
Water Resources Secretary

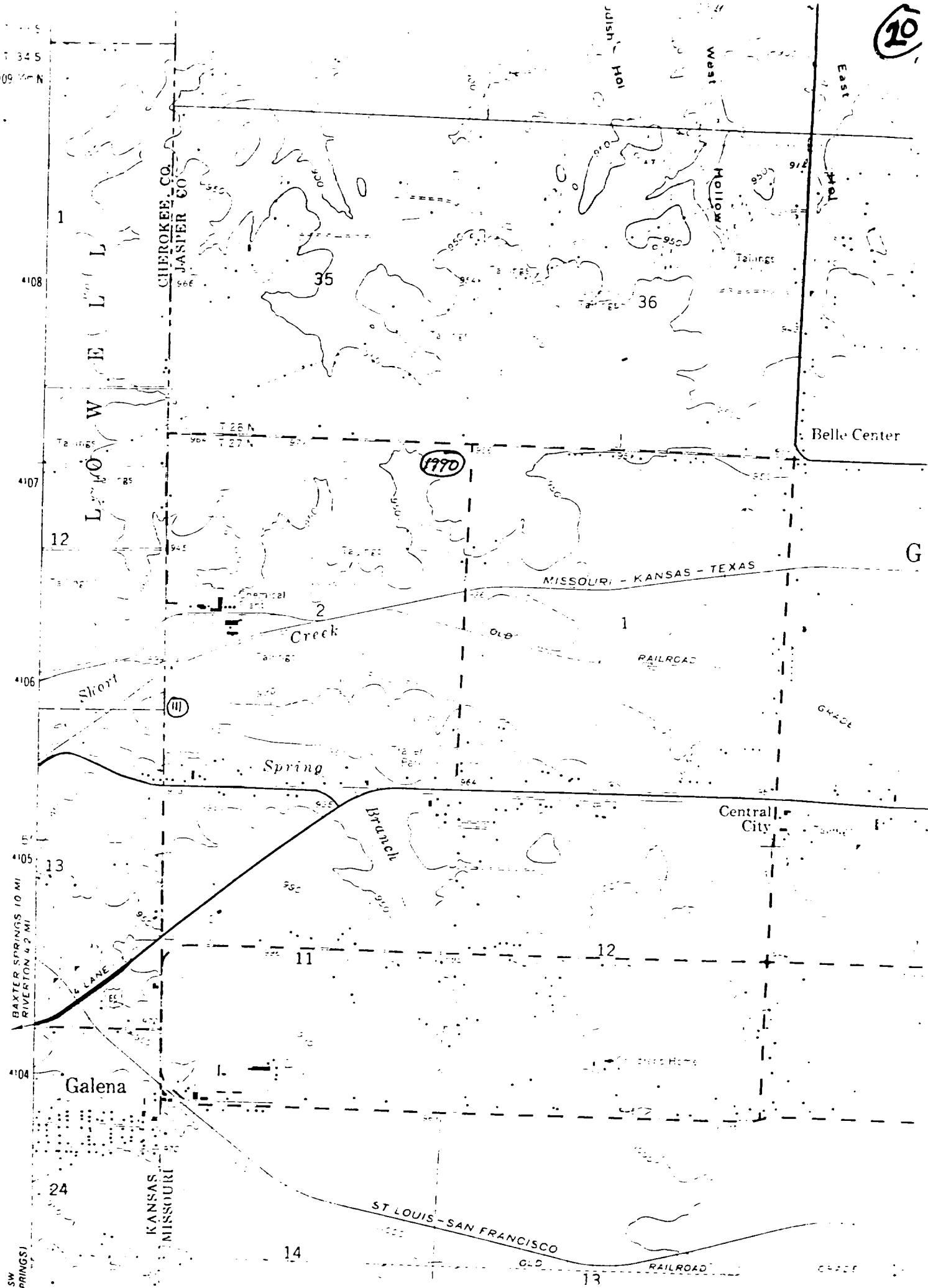
looked up well logs in the Shoal Creek drainage basin (refer to enclosed list of logs) in Townships 27 N Range 33 W, There were 8 in this region on file.

Jim Van Dyke, Geologists also looked at the well logs and confirmed that

# 6611	?S?, T27N, R33W	Turkey Creek
# 8297	SW¼ SW¼ Sect. 2, T27N, R33W	Turkey Creek
# 1992	Sect 1, T27N, R34W	Short Creek
# 1990	NE¼ NE¼ Sect. 2 T27N R34W	Short Creek
# 1994	Sect 2, T27N, R34W	Short Creek

were drinking water wells.

LOCATION	SHALLOW WELLS MISSISSIPPIAN WITH MGS LOG #s	INTERMEDIATE DEPTH WELLS OPEN TO MISSISSIPPIAN AND ORDOVICIAN WITH MGS LOG #s	DEEP WELLS OPEN ONLY TO ORDOVICIAN WITH MGS LOG #s
TOWNSHIP 27 RANGE 32	#1,400 TD 250' #7,801 TD 175' #7,886 TD 287' #8,925 Csg. 165' TD 165' #8,919 TD 125' #7,927 TD 300' #7,521 TD 180' #4,307 TD 200'	#22,404 Csg. 21' TD 500' #1,900 TD 950'	#16,096 Csg. 342' TD 1,228' #12,632 Csg. 400' TD 1,402' #6,171 Csg. 405' TD 1,402' #6,238 Csg. 375' TD 1,376' #6,645 Csg. 349' TD 1,390'
TOWNSHIP 27 RANGE 33	#7,799' TD 250' #8,921 TD 131' #3,105 TD 203' #6,611 TD 315' #8,297 S2 SW,SW TD 270'	#1,983 TD 903' #1,961 Csg. 350' TD 931' #2,834 Csg. 908' TD 909'	#3,069 TD 990' #9,220 Csg. 410' TD 1,245' #4,227 Csg. 452' TD 1,300' #4,770 TD 1,000' #3,002 Csg. 541' TD 1,092'
TOWNSHIP 27 RANGE 34	#1,992 S1 TD 244' #1,990 S2 NE,NE TD 203' #1,994 S2 TD 218'	#1,984 Csg. 478' TD 911' #14,394 Csg. 354' TD 920'	#12,698 Csg. 472' TD 1,599' #12,554 Csg. 400' TD 1,415' #23,040 Csg. 400' TD 1,340'
TOWNSHIP 28 RANGE 32	#8,369 TD 323' #9,100 TD 313' #9,097 TD 331' #9,148 TD 705' #9,167 TD 207.5' #9,071 TD 208' #7,772 Csg. 11' TD 217' #9,161 TD 215' #9,166 TD 219' #9,113 TD 217.5'		#4,316 Csg. 450' TD 1,230.5' #13,446 Csg. 459' TD 1,473' #2,731 TD 1,415' #2,035 Cas. 344' TD 1,715'
TOWNSHIP 28 RANGE 33	#9,151 TD 195' #4,041 TD 335' #4,283 TD 210' #10,788 Csg. 44' TD 350' #9,128 TD 252' #9,286 Csg. 35' TD 230' #23,313 Csg. 20' TD 220' #12,294 Csg. 26' TD 247' #9,999 Csg. 58.5' TD 247' #19,434 TD 260'	#2,730 Csg. 302' TD 900' #3,248 Csg. 390' TD 925' #9,240 Csg. 425' TD 925' #9,558 Csg. 400' TD 930' #4,678 Csg. 425' TD 950' #14,314 Csg. 310' TD 896'	#26,581 Csg. 450' TD 1,500' #27,468 Csg. 450' TD 1,450' #25,183 Csg. 505' TD 1,510' #27,321 Csg. 520' TD 1,455 #12,600 Csg. 420' TD 1,200'
TOWNSHIP 29 RANGE 32	#17,200 Csg. 36' TD 315' #8,401 TD 255' #11,787 Csg. 40' TD 227' #6,821 TD 246' #7,277 TD 248.5' #7,350 TD 290' #4,278 TD 300' #4,288 TD 345' #4,110 TD 335' #4,085 TD 324' #4,068 TD 277' #4,074 TD 324' #4,271 TD 272' #9,579 TD 235'	#9,272 TD 406'	#28,244 Csg. 550' TD 1,100' #14,906 Csg. 433' TD 1,335' #28,302 Csg. 550' TD 1,225'


20
CHEROKEE CO.
JASPER CO.
LOWELL
West Hollow
East Hol
Belle Center
Tailings
MISSOURI - KANSAS - TEXAS
Chemical Plant
Creek
Short
Spring
Branch
OLD RAILROAD
GRADE
Central City
BAXTER SPRINGS 10 MI
RIVERTON 4.2 MI
4 LANE
Galena
KANSAS
MISSOURI
ST LOUIS - SAN FRANCISCO
OLD RAILROAD
1990
35
36
1
12
2
13
11
24
14

WESTON
DESIGNERS CONSULTANTS

(21)

BY GMC DATE 10/14/85 DIV _____ SHEET 1 OF 3
CHKD BY _____ DATE _____ DEPT _____ W.O. NO. _____
PROJECT Jasper Co. HRS Short Creek Basin
SUBJECT Target wells

- Distance from tailings piles to drinking water well.

Refer to map

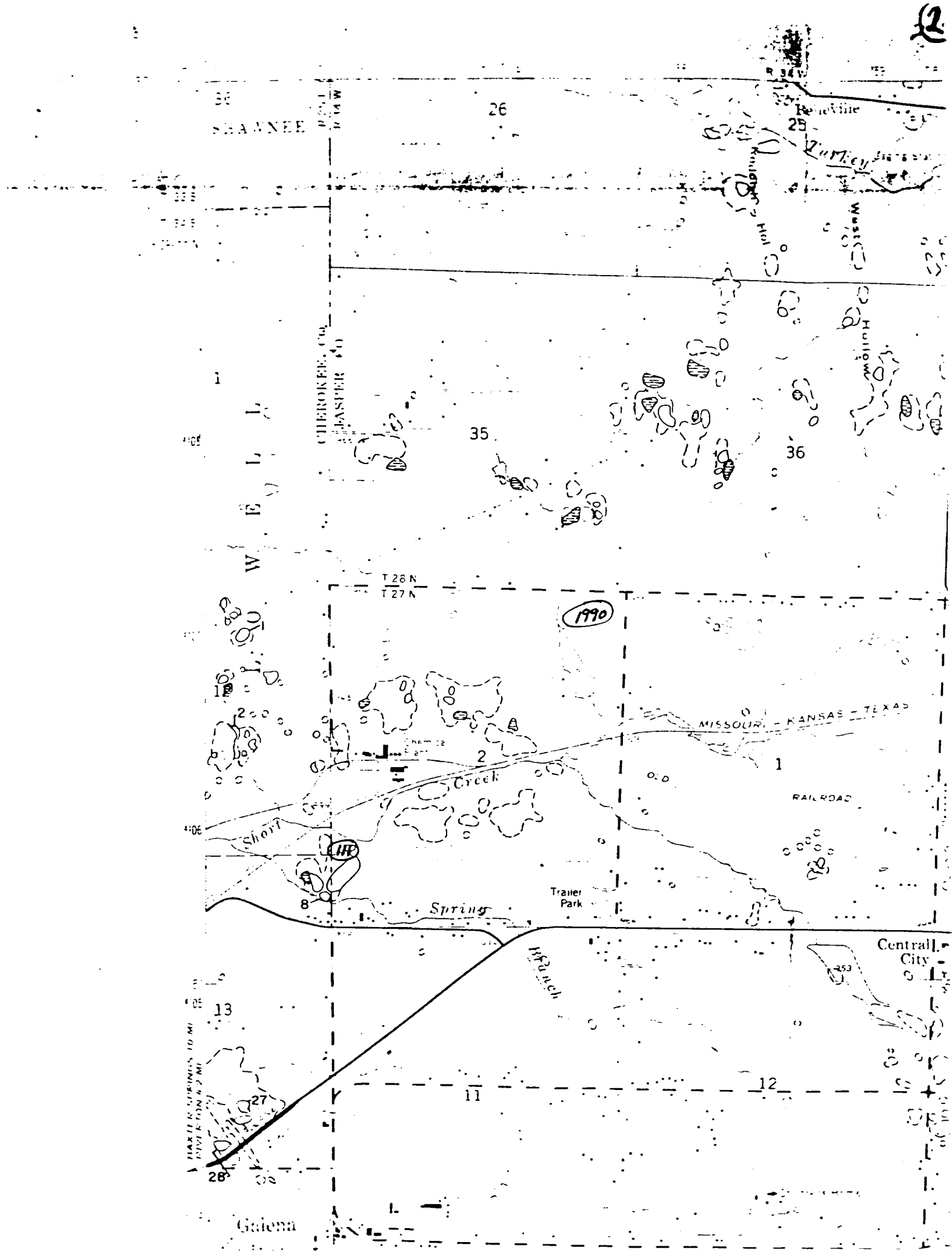
The wells, previously described in the enclosed TCRs, lie in Section 2, Township 27N, Range 34W. The enclosed map shows specific locations for two wells.

Well 111 (KGS report - Ref. # 8) lies directly adjacent, < 2000 feet, from several existing and former tailing pile locations.

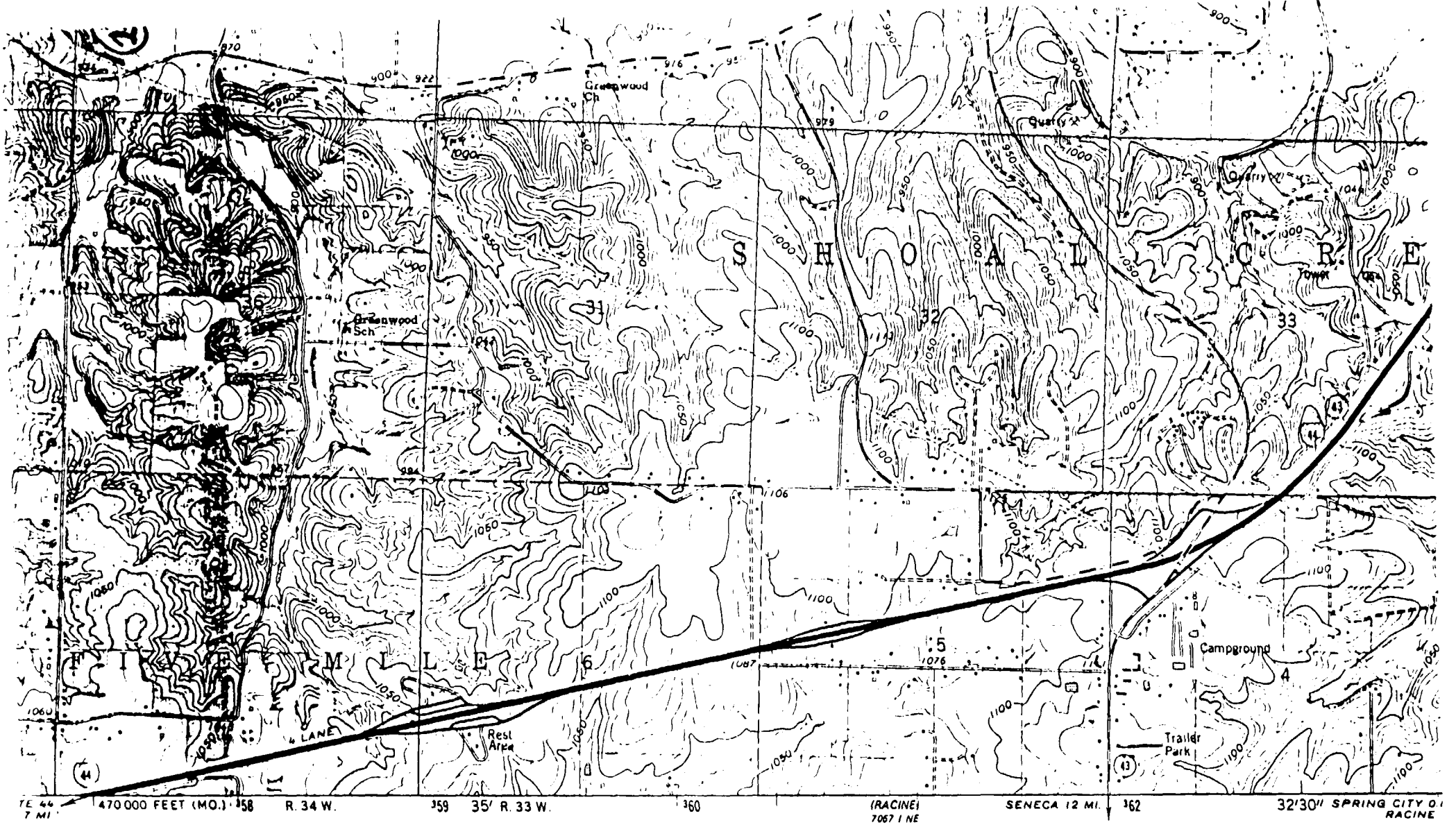
Well 1990 lies approx 2000 feet from former tailing piles and approx 1 mile from existing piles.

Other well locations in Section 2 were not specifically identified.

RFW 338-5-81



SHAWNEE
26
25
Reneville
Turkey
West
Hollow
CHEROKEE CO.
JASPER CO.
1
35
36
T 28 N
T 27 N
1990
MISSOURI - KANSAS - TEXAS
2
1
Creek
RAILROAD
Short
Trailer Park
Spring
Branch
Central City
13
11
12
27
28
Galena



gical Survey

SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

., west zone

MN
GN
0°56′ 17 MILS
6½° 116 MILS

UTM GRID AND 1978 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

gs are shown
nes where
on is unchecked
aphs taken
hecked

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092,
AND THE DIVISION OF RESEARCH AND TECHNICAL INFORMATION
MISSOURI DEPARTMENT OF NATURAL RESOURCES, ROLLA, MISSOURI 65401
AND STATE GEOLOGICAL SURVEY, LAWRENCE, KANSAS 66044
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUA

Observed Release

ASSESSMENT OF WATER RESOURCES IN LEAD-ZINC MINED AREAS IN CHEROKEE COUNTY, KANSAS, AND ADJACENT AREAS

(24)

Reference 8

U.S. GEOLOGICAL SURVEY
Open-File Report 84-439

Prepared in cooperation with the
KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

(25)

TABLE 21.--WATER-QUALITY DATA FOR MINES IN SHALLOW AQUIFER--CONTINUED

MAP NUMBER (IN FIGURE 3)	STATION NUMBER	DATE OF SAMPLE	ALKALINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)
10	370108094455201	81-12-08	--	--	--	--	--	--	--	--	--	--
		81-12-08	--	--	--	--	--	--	--	--	--	--
		81-12-09	--	--	--	--	--	--	--	--	--	--
		81-12-08	260	450	25	.4	11	580	--	0	100	0
12	370213094472501	81-11-20	--	--	--	--	--	--	--	--	--	--
		81-11-20	120	500	<5.0	--	14	834	.20	0	0	4
		81-11-20	--	--	--	--	--	--	--	--	--	--
		81-11-20	--	--	--	--	--	--	--	--	--	--
		81-11-20	--	--	--	--	--	--	--	--	--	--
		81-11-20	--	--	--	--	--	--	--	--	--	--
		81-11-20	--	--	--	--	--	--	--	--	--	--
		81-11-20	--	--	--	--	--	--	--	--	--	--
		81-11-20	--	--	--	--	--	--	--	--	--	--
		82-03-16	140	630	10	.2	11	--	--	0	0	6
		82-03-16	--	--	--	--	--	--	--	--	--	--
		82-03-16	150	640	9.2	.2	11	--	--	10	0	4
		82-03-16	--	--	--	--	--	--	--	--	--	--
		82-03-16	150	640	9.7	.2	11	--	--	10	100	5
13	370056094511101	81-11-19	180	480	<5.0	--	14	863	.00	10	100	1
14	370146094465401	82-03-17	5.0	1500	33	1.3	18	--	--	20	0	5
		82-03-17	--	--	--	--	--	--	--	--	--	--
		82-03-17	--	--	--	--	--	--	--	--	--	--
		82-03-17	--	--	--	--	--	--	--	--	--	--
		82-03-17	21	1700	36	1.2	17	--	--	20	0	2
15	370109094510701	81-08-13	130	170	2.0	.7	6.0	350	.10	0	0	0
		81-11-19	86	190	<5.0	--	5.0	351	.20	--	--	--
16	370120094505301	82-03-17	120	260	4.6	.8	7.0	534	--	0	100	12
		82-03-17	--	--	--	--	--	--	--	--	--	--
		82-03-17	--	--	--	--	--	--	--	--	--	--
		82-03-17	--	--	--	--	--	--	--	--	--	--
17	370232094460101	82-03-18	84	460	4.2	.7	8.0	736	--	0	0	5
		82-03-18	--	--	--	--	--	--	--	--	--	--
		82-03-18	290	1600	8.8	1.7	8.0	--	--	10	100	58
		82-03-18	--	--	--	--	--	--	--	--	--	--
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		82-03-15	20	140	13	.2	9.0	275	--	0	100	200

TABLE 21.--WATER-QUALITY DATA FOR MINES IN SHALLOW AQUIFER--CONTINUED

MAP NUMBER (IN FIGURE 3)	STATION NUMBER	DATE OF SAMPLE	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, DISSOLVED (UG/L AS MN)	SELENIUM, DISSOLVED (UG/L AS SE)	ZINC, DISSOLVED (UG/L AS ZN)
10	370108094455201	81-12-05	--	--	--	--	--	--
		81-12-08	--	--	--	--	--	--
		81-12-08	--	--	--	--	--	--
		81-12-08	20	2100	0	410	2	20
12	370213094472501	81-11-20	--	--	--	--	--	--
		81-11-20	0	10	0	70	3	5400
		81-11-20	--	--	--	--	--	--
		81-11-20	--	--	--	--	--	--
		81-11-20	--	--	--	--	--	--
		81-11-20	--	--	--	--	--	--
		81-11-20	--	--	--	--	--	--
		81-11-20	--	--	--	--	--	--
		81-11-20	--	--	--	--	--	--
		82-03-16	20	30	0	30	4	4600
		82-03-16	--	--	--	--	--	--
		82-03-16	10	20	0	30	5	4800
		82-03-16	--	--	--	--	--	--
		82-03-16	20	10	0	20	5	4700
13	370056094511101	81-11-19	10	1500	0	450	3	1100
14	370146094465401	82-03-17	10	30	10	2500	26	940
		82-03-17	--	--	--	--	--	--
		82-03-17	--	--	--	--	--	--
		82-03-17	--	--	--	--	--	--
		82-03-17	20	20	0	890	31	900
15	370109094510701	81-08-13	10	60	0	730	0	180
		81-11-19	--	--	--	--	--	--
16	370120094505301	82-03-17	10	10	0	250	2	4200
		82-03-17	--	--	--	--	--	--
		82-03-17	--	--	--	--	--	--
		82-03-17	--	--	--	--	--	--
17	370232094460101	82-03-18	10	50	0	40	7	530
		82-03-18	--	--	--	--	--	--
		82-03-18	20	64000	10	2600	12	22000
		82-03-18	--	--	--	--	--	--
[illegible]	[illegible]	[illegible]	40	20	1900	60	0	38000
		82-03-15	60	10	1400	40	1	42500