Supplemental Hydrologic Characterization
Section 12 Mine (NM MK046RE)

Prepared for Southwest Resources, Inc.

July 16, 2018

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, NM 87508 (505) 466-8120

Introduction

The Section 12 Mine is an underground uranium mine located on private land in the southwest quarter of Section 12, Township 14 North, Range 10 West, in McKinley County, New Mexico. Located in the Ambrosia Lake sub-district of the Grants Uranium District, 27 miles north of Milan, the mine was locally known as the Ambrosia Lake Mine (McLemore and Chenoweth 1991). The mine was operated in 1959 and 1962 by Rio de Oro and from 1974-1982 by Cobb Resources. Mining operations are currently inactive. Southwest Resources, Incorporated (SWR), is the current surface and mineral rights owner.

The total operating area of the Section 12 Mine is 18 acres more or less (Figure 1). Features of the mining operation including an access road, ore loadout area, equipment yard, a mine shaft with a head frame and hoist, hoist (mechanical) house, metal office building, parking areas and driveways around the facilities, piles of spoil and waste rock, and two vent shafts. A third vent shaft, located on the northern boundary of the quarter section was previously closed and sealed at the surface and will not be reclaimed.

Geology

The Section 12 Mine is located at the southern edge of the San Juan Basin in the Colorado Plateau physiographic province, an area containing plateaus, mesas, and tablelands of sedimentary rock. The surface geology of the mine consists of "primarily stream alluvium subjected to eolian processes – sand and silty sand occupying low-lying flat areas of deflation and eolian deposition on lee sides of bedrock hills and structures with occasional gravel lag deposits" (Ferguson and McCraw 2010, 2016). Bedrock beneath the Section 12 Mine consists of the following stratigraphic units in descending sequence: alluvium/weathered Mancos shale; the Tres Hermanos C, B and A sandstones, the Dakota Formation; and the Westwater Canyon Member of the Morrison Formation, the Bluff Sandstone Formation; and the Todilto Limestone formation.

Uranium ore from the Section 12 Mine was mined from tabular deposits in the Westwater Canyon Member of the Jurassic Morrison sandstone formation (McLemore 1983). These deposits were generated by the progressive infiltration and migration of groundwater through sandstones until the uranium in the water interacted with reductants in the sandstones and was concentrated in a series of planar facies (Hansley 1988, Dahlkamp 1993).

Soils

Native soils on site consist of silt, slightly clayey sands. The majority of soils (62%) within the mine permit area and around the perimeter of Ambrosia Lake is composed of the Sparank-San Mateo-Zia complex, 0 to 3 percent slopes (Map Unit Symbol 230, Figure 2). Sparank soils are found in flood plains on valley floors and valley sides. These soils are derived from calcareous sandstone stream alluvium (NRCS 2018). A typical Sparank soil profile consists of silty clay loam in the A horizon (0 to 2 inches), and clay in the C1 horizon (2 to 25 inches) and in the C2 horizon (25 to 65 inches). The capacity of the most limiting layer to transmit water (Ksat) is moderately low (0.01 to 0.06 in/hr) and the depth to restrictive features is more than 80 inches as is the depth to the water table. These are well drained soils with high runoff potential resulting in frequent flooding. Available water storage in the soil profile, is also high (about 10.1 inches).

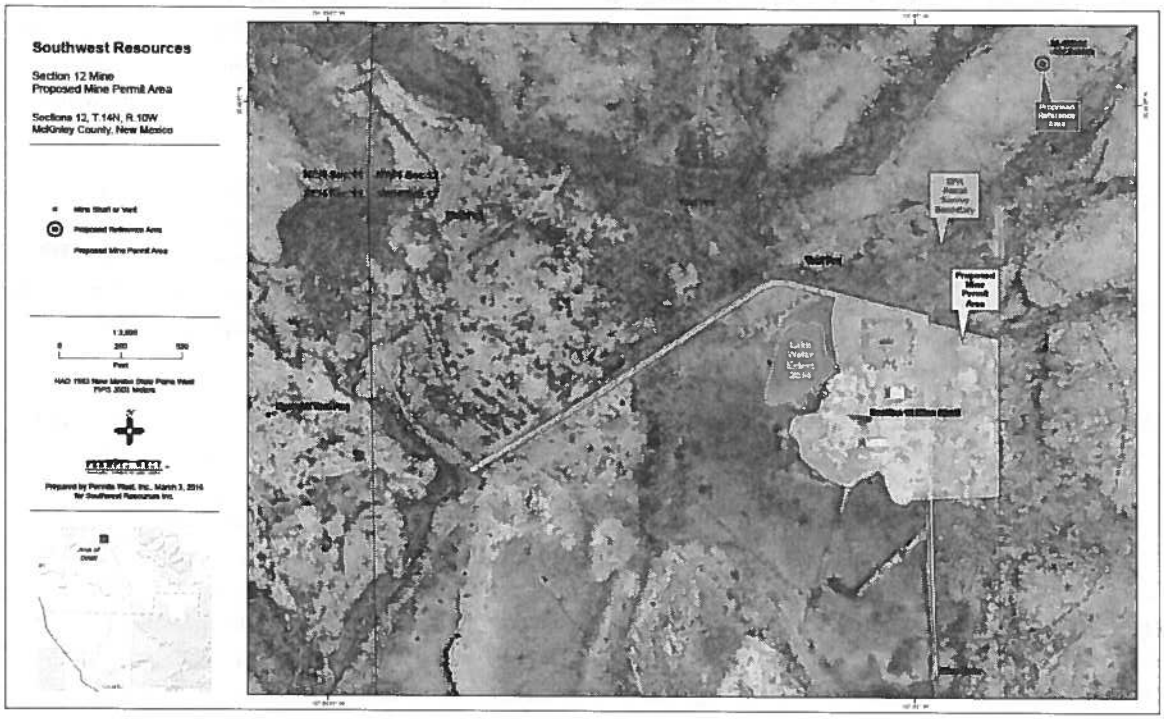


Figure 1. Section 12 Mine – Proposed Permit Area

San Mateo soils are found on flood plains on valley floors and sides and are derived from calcareous sandstone stream alluvium (NRCS 2018). A typical profile of San Mateo soil consists of clay loam in the A horizon (0 to 2 inches) and in the C1 horizon to 15 inches), sandy clay loam in the C2 horizon (15 to 30 inches), clay loam in the C3 horizon (30 to 39 inches), sandy loam in the C4 horizon (39 to 45 inches), and clay loam in the C5 horizon 45 to 65 inches). The capacity of the most limiting layer to transmit water is moderately high to high (0.20 to 0.57 in/hr) and the depth to restrictive features is more than 80 inches as is the depth to the water table. These are well drained soils with medium runoff potential resulting in frequent flooding. Available water storage in the soil profile is also high (about 10.7 inches).

Zia soils are found on stream terraces on valley floors and alluvial fans of valley sides. These soils are derived from calcareous sandstone stream alluvium (NRCS 2018). A typical profile of the Zia map unit consists of fine sandy loam (0 to 20 inches), fine sandy loam in the Bw horizon (3 to 12 inches), and fine sandy loam in the 2C1 horizon (12 to 20 inches), sandy loam in the 2C2 horizon (20 to 28 inches), and fine sandy loam in the 2C3 horizon (28 to 70 inches). The capacity of the most limiting layer to transmit water is high (1.98 to 5.95 in/hr) and the depth to restrictive features and water is more than 80 inches. These somewhat excessively drained soils have low runoff potential and rarely flood. Available water storage in the soil profile is moderate (about 8.1 inches).

The dense and low permeability of the clays in the Sparank-San Mateo-Zia soil complex makes it a poor growth medium for revegetation. Plant roots have difficulty penetrating the dense clay material and the low permeability of prevents rainfall from infiltrating in sufficient quantity to sustain vegetation on these lakebed clays. Because the Sparank-San Mateo Zia soil complex is the dominant soil at the Section 12 Mine, it is anticipated that additional non-clay soils will be required to provide sufficient rooting depth and water storage capacity for revegetation success at the mine.

Soils along the northeastern, and southern boundaries of the Section 12 Mine consist of the Penistaja-Tintero soil complex, 1 to 10 percent slopes (Map Unit Symbol 205, Figure 2). Penistaja soils are typically found on the side slopes, treads, of cuestas, mesas, and valley sides. These soils are derived from eolian deposits and sandstone/shale slope alluvium (NRCS 2018). A typical profile of Penistaja soil consists of sandy loam in the A horizon (0 to 3 inches), sandy clay loam in the Bt horizon (3 to 19 inches), and sandy loam in the Bk horizon (19 to 65 inches). The depth to restrictive features is more than 80 inches as is the depth to water table. The capacity of the most limiting layer to transmit water is moderately high to high water (0.57 to 1.98 in/hr), and the depth to restrictive features is more than 80 inches as is the depth to water table. These are well drained soils with moderate water storage capacity (about 8.5 inches).

Tintero soils are similarly found on the side slopes of valleys, mesas, and cuestas and are also derived from eolian deposits and sandstone slope alluvium. A typical Tintero soil profile consists of fine sandy loam throughout the A horizon (0 to 4 inches), Bt horizon (4 to 15 inches) and the Bk1 horizon (15 to 48 inches) and loamy fine sand in the Bk2 horizon to depth (48 to 65 inches). The depth to restrictive features is more than 80 inches as is the depth to water table. These are somewhat excessively drained soils with low runoff potential, high capacity of the most limiting layer to transmit water (1.98 to 5.95 in/hr), and moderate water storage capacity (about 7.9 inches). Although deposits of the Penistaja-Tintero soil complex are rather limited on the Section 12 Mine property, the depth, loamy nature, and drainage properties of this soil complex make it suitable as a plant growth medium. Two soil borrow pits will be developed in a part of the Section 12 Mine that contains this soil complex to provide additional volumes of topsoil and subsoil needed for the reclamation of the mine.

A small inclusion of the Hagerwest-Bond fine sandy loams, 1 to 8 percent slopes (Map Unit Symbol 220, Figure 2) is found at the north edge of Don Andres Hill in the southwestern corner of Section 12 and the mine site. Hagerwest soils are found on the backslopes and foot slopes and crests of mesas, dip slopes, cuestas, and hills. These soils are somewhat shallower and are formed from eolian deposits over alluvium derived from sandstone and shale. A typical profile of the map unit consists of fine sandy loam (0 to 2 inches), sandy clay loam (2 to 13 inches), sandy clay loam (13 to 19 inches), sandy loam (19 to 35 inches), and bedrock (35 to 40 inches). The depth to restrictive features is more than 80 inches as is the depth to water table. Hagerwest soils are well drained, with medium runoff class, very low to moderately high capacity to transmit water, no frequency of flooding or ponding and low water storage capacity (about 4.8 inches).

Bond soils are also found on the dip slopes, back slopes, and foot slopes of cuestas, hills, mesas, and ridges. This map unit is formed from eolian deposits over alluvium derived from sandstone and shale. A typical profile of the Bond soil consists of fine sandy loam in the A horizon (0 to 2 inches) and in the Bt1 horizon (2 to 5 inches), sandy clay loam in the Bt2 horizon (5 to 14 inches) and a bedrock layer (14 to 20 inches) at depth. The depth to restrictive features is more than 80 inches as is the depth to water table. Bond soils are well drained with high runoff class, very low to moderately high (0.00 to 0.20 inch/hr) capacity to transmit water, no frequency of flooding or ponding, and very low water storage capacity (about 2 inches).

Table 1. Soil Map Unit Description (NRCS 2018)

McKinley County Area, McKinley County and Parts of Cibola and San Juan Counties (NM692)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
205	Penistaja-Tintero complex, 1 to 10 percent slopes	2.8	5.6%
220	Hagerwest-Bond fine sandy loams, 1 to 8 percent slopes	0.30	0.6%
230	Sparank-San Mateo-Zia complex, 0 to 3 percent slopes	37.1	74.3%
265	Uranium mined lands	9.8	19.6%
Totals for Area of Interest (See Figure 2 below)		50	100%

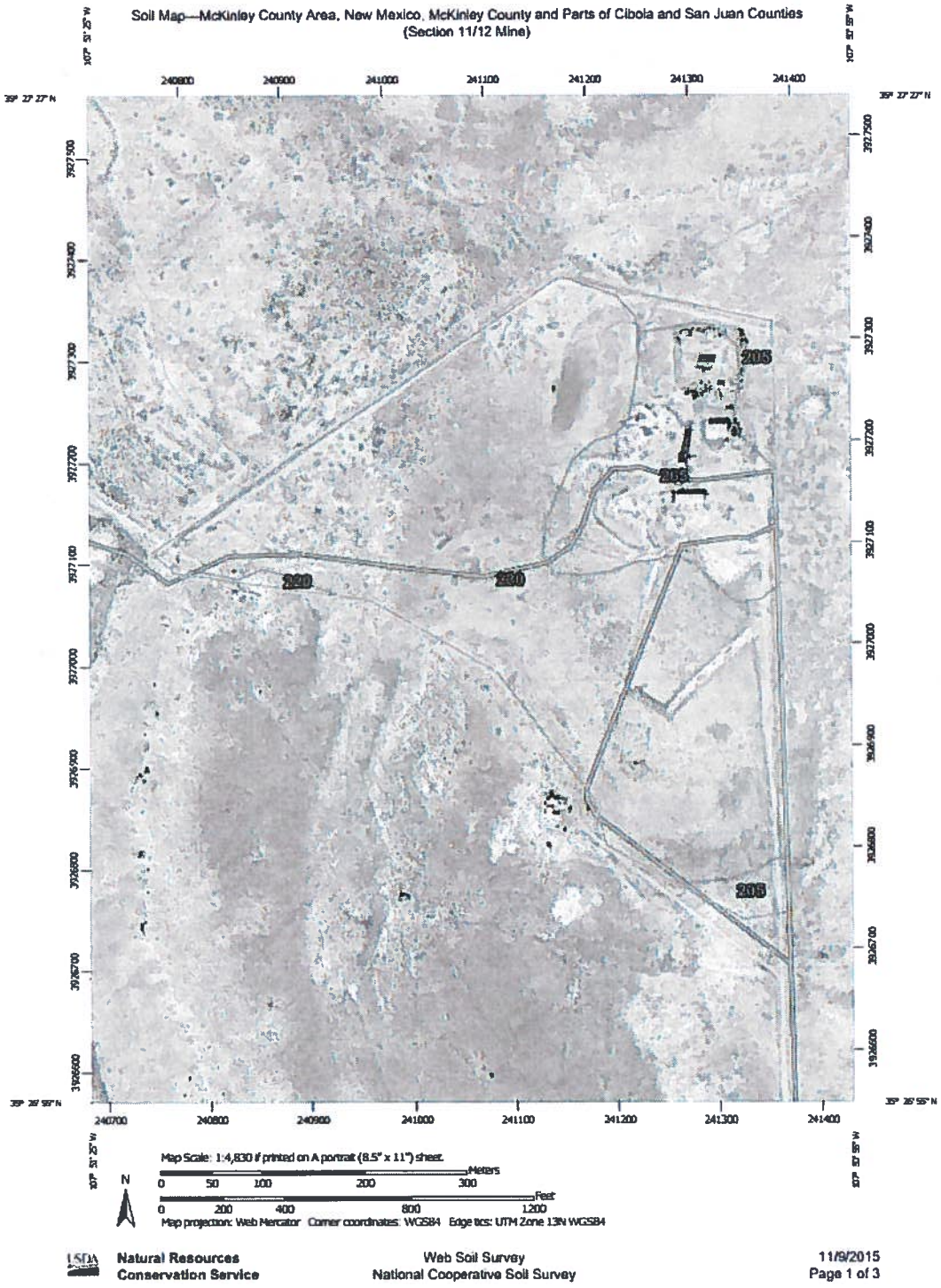


Figure 2. Soil Map – Section 12 Mine

Surface Water

Most of the streams in the area are intermittent and only flow during brief periods of storm runoff (John and West 1963). Two intermittent drainages located northeast and northwest of the mine previously drained into Ambrosia Lake. These were diverted with the construction of an earthen berm/dam to flow west into Martin Draw in Sections 11 and 10 sometime in the early 1900s. Figures 1 and 2, as well as an aerial photograph of Ambrosia Lake from 1935 (Figure 3), show the berm around the north and northwest edges of Ambrosia Lake. Consequently, Ambrosia Lake now receives water from overland surface flows only after heavier precipitation events.

Maryann Wasiolek of Hydroscience Associates, Inc. (HAI 2015) writes ...

> Ambrosia Lake itself is a shallow, closed depression which occasionally holds water, but is often dry for years at a time, a condition which has been commented on by various observers for at least the past fifty years. For example, according to Cooper and John, 'Ambrosia Lake, Casamero Lake and Smith Lake are natural depressions that are normally dry and contain water only after heavy rains' (Cooper & John, 1968, p. 11). Twenty years later in 1989, Chenoweth described Ambrosia Lake as 'a small, ephemeral lake situated in the SW1/4 sec. 12, T14N, R10W. It is now dry, and is the site of Cobb Nuclear's Section 12 shaft (Chenoweth, 1989, p. 297). The eastern part of the lake reportedly held some water during part of 2014, but HAI personnel have observed it to be dry on various occasions during the last 10 years. If the lake were fed by a shallow groundwater aquifer, it would hold water permanently. Its ephemeral nature indicates that it is not fed by groundwater inflow from a shallow aquifer. It is, rather, an ephemeral, playa lake unconnected to a groundwater aquifer. Such features typically form in low areas in the southwest, developing beds of fine silt and clay which impede downward movement of water during precipitation events and hold it temporarily before it is evaporated.

Groundwater

Groundwater was reportedly encountered at a depth of 550 feet according to NMED records related to a previous Part 3 Minimal Impact Exploration Permit Application prepared by Interra for the Section 12 Mine in the last decade. However, the depth to groundwater was measured at 630 feet during the installation of the Section 12 mine shaft in 1981, and other agency reviews of Office of the State Engineer records show that the depth to groundwater with respect to historic mining operations closest to the proposed permitted area exceeds 700 feet (Table 2).

Oil and gas well records from the New Mexico Oil Conservation Division also support these observations. For example, two well applications and test well logs from 1949 -1951, 1953, and 1959 describe water-bearing strata for the southwestern corner of Section 11 as being located at 760 feet, and at 2,500 feet in the Shinarump Formation, respectively (See Supplemental Attachment 1). A third log for a 1959 test well drilled in the northwest corner of Section 14 identified salt water at 720 feet (See Supplemental Attachment 1).

Hydroscience Associates, Inc. (HAI 2015) also reviewed the OSE WATERS database and cross-checked the wells identified in that database (Table 3) with other reports and tabulations of wells, monitoring wells, and mine shafts located within four miles of the Section 12 Mine including: Table 1 of Stone et al. (1983); Table 2 of Brod and Stone (1981); and Table 1 of Cooper and John (1968). Figure 4 shows the locations of the wells listed in Table 3 (HAI 2015).

Figure 3. 1935 SCS RGW 149 5797 aerial photo showing berm around north and northwest sides of lakebed (Earth Data Analysis Center, University of New Mexico)

Table 2. Depth to groundwater of historic mining operations within 4 miles from the Dysart II mine, located west of the Section 12 Mine in the east half of Section 11[1]

Distance from Dysart II (miles)	OSE record number	Owner's last name	finish date	depth well (ft)	depth to water (ft)
1.0 - 2.0	B 00366	RIO ALGOM MINING LLC	12/31/1955	760	0
	B 00372	SABRE-PIñON CORPORATION	09/12/1956	796	0
	B 00373	RIO ALGOM MINING LLC	12/31/1956	1003	0
	B 00994	RIO ALGOM MINING LLC	01/02/1958	827	0
2.0 – 3.0	B 00143	ANDREWS	07/18/1960	90	60
	B 00362	RIO ALGOM MINING LLC	11/30/1956	3093	0
	B 00363	RIO ALGOM MINING LLC	04/30/1956	745	0
	B 00371	SABRE-PIñON CORPORATION	08/25/1956	752	0
	B 00522	UNITED NUCLEAR-HOMESTAKE PTNRS	02/07/1978	70	0
	B 00522	UNITED NUCLEAR-HOMESTAKE PTNRS	02/07/1978	70	0
	B 00994	RIO ALGOM MINING LLC	09/18/1958	857	0
3.0 – 4.0	B 01087	ALBERS BROTHERS	05/25/1985	651	566
	B 01246	ELKINS	04/29/1992	1200	700

[1]The Dysart II mine shaft is located approximately .30 miles west of the Section 12 mine. Table source: Memorandum from Dana Bahar, Manager, Superfund Oversight Section Ground Water Quality Bureau, New Mexico Environment Department to LaDonna Turner, Site Assessment Manager Technical and Enforcement Branch U.S. Environmental Protection Agency, Region 6: "Pre-CERCLIS screening assessment of the Dysart #2 mine (Grants Mining District), McKinley County, New Mexico." Dated August 4, 2010. ftp://ftp.rnrenv.state.nm.us/.../Dysart%20%23 2%2006 16201 0.doc. Accessed by interra February 18, 2013.

Additional reviews of topographic maps and hydrologic studies of the Ambrosia Lake area by HAI (2015) did not identify any reports of springs, seeps, or shallow groundwater in the area. Still, many of the area's alluvial deposits and formations that contain groundwater are variously connected by their porous substrates -- though the confining shale layers of the Chinle Group that underlie Ambrosia Lake are thought to retard upward migration of water into the Morrison Formation's Westwater Member (Langman, Sprague, and Durall 2012).

Hydrologic Associate's analysis of the geohydrology at the Section 12 Mine and the area surrounding the mine (HAI 2015), identified only one well as being completed in streambed alluvium. The well, B-00143, is located approximately two and a half miles north-northeast and upgradient of the Section 12 shaft in the streambed alluvium of an unnamed stream course that formerly drained into Ambrosia Lake. The well was reportedly completed to a depth of 90 feet as a domestic well in 1960. However, the well only appears as a single data point in the OSE WATERS database and is not indicated in any of the other reports on the hydrogeology, locations, and characteristics of known groundwater wells of the area (i.e. Cooper and John 1968, Brod and Stone 1981, or Stone et al. 1983). Again, Maryann Wasiolek of HAI (2015) notes ...

> The well log for B-00143 describes the aquifer as "sand and gravel, red shale." Recent geologic mapping by Ferguson and McCraw (2010) identifies the aquifer in the area of the well as stream bed alluvium (Qa). They describe Qa as "Stream alluvium (Quaternary)-Gravel, sand and silty sand in stream channels." Qa is confined on their map to the immediate area of a stream drainage, and is not the same geologic unit as is mapped in the vicinity of Section 12. Outside of stream channels, the Quaternary alluvial deposits are designated as either alluvial fan deposits (Qaf), or as alluvium which has been subjected to eolian processes; i.e., windblown sands and silts (Qae). Qae is present in the area of Ambrosia Lake and the Section 12 shaft; it is described by Ferguson and McCraw (2010) as "Primarily stream alluvium subject to eolian processes (Quaternary) - Sand, and silty sand occupying low-lying flat areas, often showing areas of deflation and eolian deposition on lee sides of bedrock hills and structures. Occasional gravel lag deposits." These are different materials than those purportedly tapped by well B-00143.

More recently, a livestock well (WATERS B01181) in Section 10, to the west of the Section 12 Mine, was drilled in the last decade to 1,060 feet with water at the 800 foot depth (Table 3). A second existing livestock well (WATERS B01246) in Section 14, (southwest of the Section 12 Mine) which was developed in 1992 with water reported at a 700 foot depth (Table 2), was recently redeveloped (Richard Stevenson pers. comm. March 2018) with a new depth to water of 860 feet – reflecting a significant drawdown of the area's potentiometric surface.

A hydrologic analysis by Engineering/Remediation Resources Group, Inc. (ERRG 2010) for Region 6, EPA, notes that mine dewatering and groundwater withdrawals in the Grants Uranium Region have caused water levels to decline significantly since measurements began in 1946. North of Bluewater, groundwater levels declined approximately 40 to 45 feet between the start of measurements and 1963 (John and West 1963). Also, more than 250,000 acre-feet of water was pumped from the Ambrosia Lake Valley located three miles south-southeast of the Section 12 Mine, resulting in more than 500 feet of drawdown in the potentiometric surface of the area (ERRG 2010). Water levels have been recovering since mining ended in 1986; however, Erskine and Ardito (2008, cited in ERRG 2010) note that it may take hundreds to thousands of years for these levels to fully recover.

Groundwater Quality

Total dissolved solids in groundwater varies considerably across the Grants Uranium District with Dam et al. (1990) reporting averaged concentrations of 480 to 2,300 mg/L near the Ambrosia Lake area. Although Ambrosia Lake occasionally contains (non-potable) water from surface runoff, the Section 12 Mine is a dry mine. The closest data points for ground water quality to the Section 12 Mine, are from the Section 22 Mine (1,465 mg/L) and the Section 23 Mine (402 mg/L), both located approximately one mile south-southwest of the Section 12 head frame in the Ambrosia Lake Valley (Intera, 2014; Figure 5).

Table 3. Water wells within 4,800 meters (2.98 miles) of the Section 12 mine (compiled from NMOSE WATERS database by Hydroscience Associates, Inc. 2015)

WR File Nbr	Owner	Use	Source	q64	q16	q4	Sec	Tws	Rng	X	Y	Distance from Section 12 Mine	Finish Date	Depth Well	Depth Water	Aquifer
B 00366 *	Rio Algom Mining	MIN	Artesian		1	4	24	14N	10W	241563	3924043	3070	12/31/1955	760		Jm
B 00372	Sabre-Pinon Corp.	MIN			4	1	23	14N	10W	239552	3924525	3105	9/12/1956	796		Jm
B 00994 S5	Rio Algom Mining	MIN	Shallow	4	1	3	17	14N	09W	244128	3925430	3295	4/5/1959	1094		Jm
B 00994 S4	Rio Algom Mining		Shallow	1	1	4	19	14N	09W	243086	3924087	3510	3/16/1970	779		Jm
B 00994	Rio Algom Mining	MIN	Shallow	3	4	3	24	14N	10W	241046	3923554	3555	9/18/1958	857		Jm
B 00373	Rio Algom Mining	MIN	Artesian	4	1	2	22	14N	10W	238453	3924864	3610	12/31/1956	1003		Jm
B 00994 S6	Rio Algom Mining	MIN	Shallow	4	1	2	22	14N	10W	238453	3924864	3610	1/2/1958	827		Jm
B 00363	Rio Algom Mining	MIN	Artesian	2	2	4	22	14N	10W	238835	3924236	3771	4/30/1956	745		Jm
B 01881	Jerry Elkins	STK	Shallow	1	1	1	10	14N	10W	237674	3928251	3792	12/14/2014	1060	800	Jm
B 00143	Andrews	DOM	Shallow	4	3	1	35	15N	10W	239462	3930833	4154	7/18/1960	90	60	Qa
B 00362	Rio Algom Mining	MIN	Artesian	4	1	4	22	14N	10W	238435	3924036	4186	11/30/1956	3093		P & Tr
B 00371	Sabre-Pinon Corp.	MIN			3	1	25	14N	10W	240716	3922861	4278	8/25/1956	752		Jm
B 00364	Anderson Development Corp.	MIN	Artesian	1	2	2	30	14N	09W	243460	3923276	4399	8/31/1956	735		Jm
B 00365	Anderson Development	MIN	Artesian		2	3	20	14N	09W	244399	3923952	4427	1/31/1956	793		Jm
B 00994 S	Rio Algom Mining	MIN	Shallow	4	3	1	30	14N	09W	242425	3922703	4542	3/23/1968	810		Jm
B 00522 *	UNC-Homestake Ptrnrs.	MON		2	2	4	25	14N	10W	242009	3922518	4639	2/7/1978	70		Psa

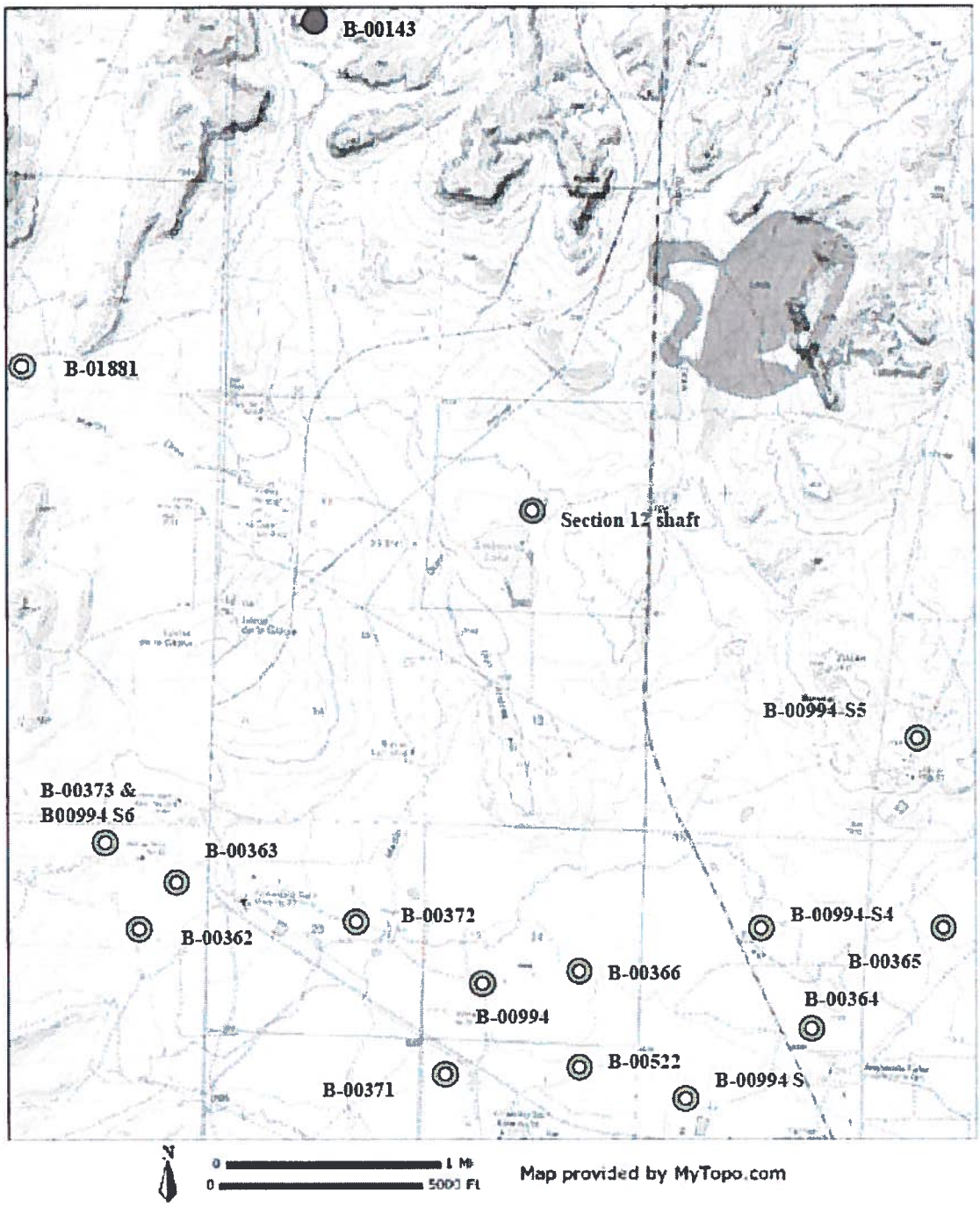


Figure 4. Locations of wells within 4,800 m of the Section 12 headframe/shaft (compiled from NMOSE WATERS database by Hydroscience Associates, Inc. 2015)

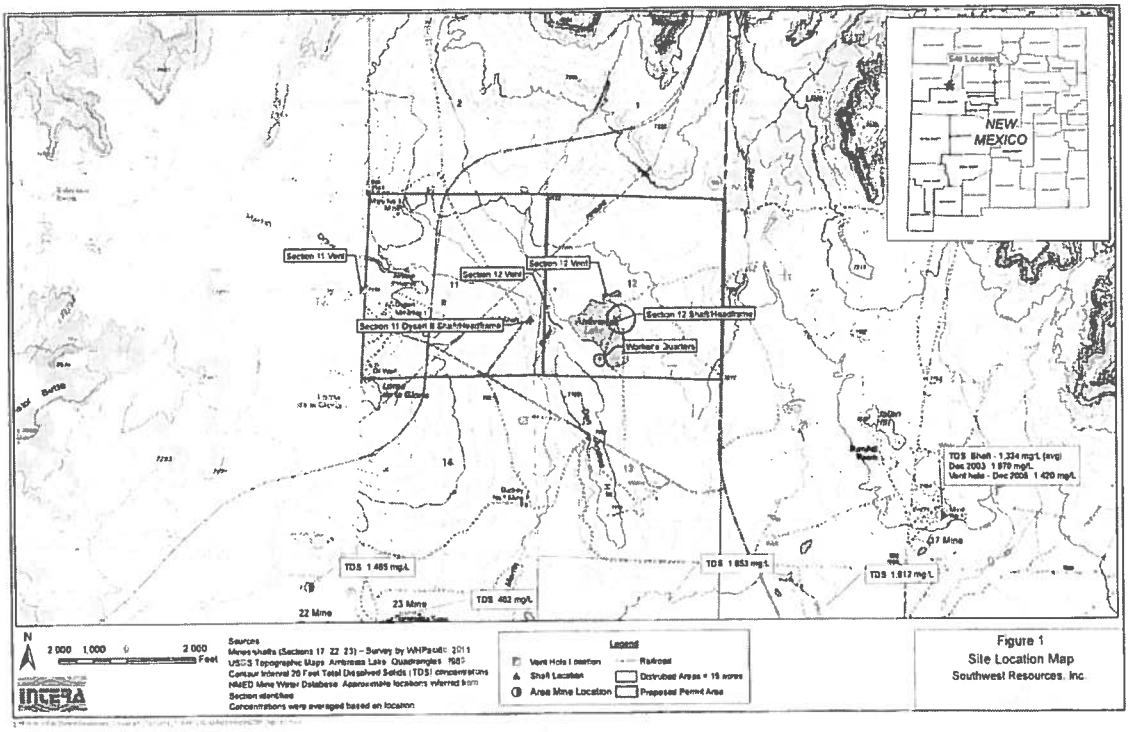


Figure 5. Groundwater and mine water quality – Average concentrations - total dissolved solids (Intera 2014)

References

Brod, R.C., and Stone, W.J. 1981. Hydrogeology of Ambrosia Lake-San Mateo area, McKinley and Cibola Counties, New Mexico. NMBMMR Hydrologic Sheet 2.

Chenoweth, W.L. 1989 Geology and production history of uranium deposits in the Dakota Sandstone, McKinley County, New Mexico. New Mexico Geology, v. 11, p. 21-29.

Cooper, J.B. and John, E.C. 1968. Geology and ground-water occurrence in southeastern McKinley County, New Mexico: NMOSE Technical Report 35.

Dam, W.L., J.M. Kernodle, G.W. Levings, and S.D. Craig, 1990. Hydrogeology of the Morrison Formation in the San Juan Structural Basin, New Mexico, Colorado, Arizona and Utah." Department of the Interior, U.S. Geological Survey, ATLAS HA-720-J.

Dahlkamp, F. J. 1993. Uranium Ore Deposits. Springer-Verlag. Berlin, Germany.

Environmental Protection Agency (EPA), 2011. Region 6, Airborne Spectral Photometric Environmental Collection Technology (ASPECT) Survey. https://www.epa.gov/sites/production/files/2015-05/documents/nm_grants_aerial-radiological-survey-of-the-ambrosia-lake-uranium-mines.pdf

Engineering/Remediation Resources Group, Inc. (ERRG). April 2010. Groundwater Pathway Assessment Report: Uranium Migration in the Navajo Nation and Shallow Water Sources (Eastern and North Central Region Mines. Report prepared for U.S. Environmental Protection Agency, Region 9 under TDD No.: TO1-09-08-02-0001, Contract No.: EP-S9-07-01. Available at: https://www.nrc.gov/docs/ML1032/ML103280554.pdf

Erskine, D.W., and C. Ardito, 2008. Finding Benchmarks at Uranium Mine Sites. Southwest Hydrology: The Resource for Semi-Arid Hydrology. Volume 7, No. 6. November/December.

Ferguson, C., and D. McCraw. 2010. Geologic map of the Ambrosia Lake quadrangle, McKinley County, New Mexico: NMBGMR Draft geologic map OFGM 203.

Ferguson, Charles, and McCraw, Dave, 2016. Geologic map of the Ambrosia Lake quadrangle, McKinley County, New Mexico: NMBGMR Geologic map OFGM 203.

Hansley, P. L. Uranium ore in the Mariano Lake Valley cores and the genesis of coffinite in the Grants uranium region, New Mexico. (Evolution of sedimentary basins San Juan Basin; Ch. A) U.S. Geological Survey bulletin; 1808-A. pp. A1-A28.

Hydroscience Associates, Inc. 2015. Technical Memorandum: Groundwater conditions near the Section 12 shaft. Prepared for Southwest Resources and Permits West, Inc. November, 23, 2015.

Granger, H.C, and Santos, E.S., 1982, *Geology and ore deposits of the Section 23 mine, Ambrosia Lake district, New Mexico*: USGS OFR 82-207.

Kelly, T.E., Link, R.L., and Schipper, M.R., 1980, "Effects of uranium mining on ground water in Ambrosia Lake area, New Mexico:" in NMBMMR Memoir 38, *Geology and mineral*

technology of the Grants uranium region 1979, pp. 313-319.
John, E.C., and S.W. West, 1963. Ground Water in the Grants District. Geology and Technology of the Grants Uranium Region, Memoir 15. New Mexico Bureau of Mines and Mineral Resources.

Langman, J.B., Sprague, J.E., and Durall, R.A. 2012. Geologic framework, regional aquifer properties (1940s–2009), and spring, creek, and seep properties (2009–10) of the upper San Mateo Creek Basin near Mount Taylor, New Mexico. U.S. Geological Survey Scientific Investigations Report 2012–5019.

McLemore, V. T., 1983, Uranium and thorium occurrences in New Mexico: distribution, geology, production, and resources; with selected bibliography: New Mexico Bureau of Mines and Mineral Resources, Open-file Report OF-183, 950 p., also U.S. Department of Energy, Report GJBX-11(83).

McLemore, V.T. and W.L. Chenoweth, 1991. Uranium mines and deposits in the Grants District, Cibola and McKinley Counties, New Mexico. New Mexico Bureau of Mines and Mineral Resources, Open-file Report 353.

Natural Resources Conservation Service (NRCS), Soil Survey Staff, United States Department of Agriculture. 2018. Web Soil Survey. Available at: https://websoilsurvey.sc.egov.usda.gov/.

NMOSE, current, WATERS database.

Stone, W.J., Lyford, F.P., Frenzel, P.F., Mizell, N.H., and Padgett, E.T., 1983, Hydrogeology and water resources of San Juan Basin, New Mexico: NMBMMR Hydrologic Report 6.

Attachment 1

Well applications and well logs, Sections 11 and 14, T. 14N., R. 10W., McKinley County, NM

Well No. 1, SW/SW, Section 11, T. 14N, R. 10W., McKinley County, NM

Grants, New Mexico.
April 1st, 1953.

APR 6 1953

Oil Conservation Commission,
Santa Fe, New Mexico.

Attention;
Mr.Dick Spurrier.

Re;
J.K.Wadley-S.Dysart #1 Well
in SW corner of Section 11,
Twp 14 North, Range 10 West,
McKinley County, New Mexico.

Dear Mr.Spurrier;-

Since I do not have your proper forms for giving notice of intention to plug well, I will give you all of the information that is usually required and hope that it will be acceptable to you in lieu of your regular form.

Our Intention to Drill this well was prepared and signed on November 17th, 1952 and was promptly, thereafter, approved by you. A rotary rig was moved to this location on November 19th, 1952. On November 30th, drilling was commenced and 62.15 feet of 9 5/8 surface pipe was set. Circulation was lost numerous times before we reached the depth of 815 feet. Contractor had a lot of rig trouble, te weather got very cold and so the well was filled, by Halliburton Cementing Co, from bottom to 276 feet with cement and we temporarily quit the well on December 15th, 1952.

On February 19th, 1953, we filled the hole with cement from a depth of 276 feet to a depth of 25 feet. On March 2nd, we moved a rotary rig to the location and resumed work. A water sand, the bottom of which appered to be at 765, kept taking up our mud so that we had a lot of trouble in keeping circulation. On March 16th, 1953, we run 813½ feet of 20 lb 7 inch casing to the then bottom of the hole. We then resumed drilling and continued to drill until a depth of 2649 Ft was reached. We did not encounter any show of oil or gas in any of the formation that were drilled through.

On March 31st, 1953, we decided to quit the well. It was left full of heavy mud. The surface pipe was left in the hole. The 813½ feet of 7 inch was left in the hole and we put a 10 sack cement plut in the 7 inch casing. We have left the well in such condition so that if we should ever desire to drill the well deeper it can be done and if we never drill it deeper, we feel sure that the casing that is left in the hole will permanently protect the surface waters that may have been encountered in this hole.

Thank you for the courteous service you extended to us during the drilling of this well. I hope the above information may be accepted by your department in lieu of your regular forms.

Yours very truly,

J.K.Wadley

by [signature]

Well No. 1, SW/SW, Section 11, T. 14N, R. 10W., McKinley County, NM

(Form C-101)
(Revised 7/1/52)

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

NOTICE OF INTENTION TO DRILL OR RECOMPLETE

Notice must be given to the District Office of the Oil Conservation Commission and approval obtained before drilling or recompletion begins. If changes in the proposed plan are considered advisable, a copy of this notice showing such changes will be returned to the sender. Submit this notice in QUINTUPLICATE. One copy will be returned following approval. See additional instructions in Rules and Regulations of the Commission.

Tucumcari, New Mexico (Place) November 17th, 1952 (Date)

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Gentlemen:

You are hereby notified that it is our intention to commence the (Drilling) (Recompletion) of a well to be known as

J. K. Wadley (Company or Operator)

Gulf Federal (Lease), Well No. One, in (Unit). The well is

located 330 feet from the East line and 330 feet from the South line of Section 11, T. 14 N., R. 10 W., NMPM.

(GIVE LOCATION FROM SECTION LINE) Pool, McKinley County

D	C	B	A
E	F	G	H
L	K	J	I
M	N	O	P

If State Land the Oil and Gas Lease is No.

If patented land the owner is Federal

Address 1021 Fourth Ave., N.E. Albuquerque, New Mexico

We propose to drill well with drilling equipment as follows:

rotary rig

The status of plugging bond is a $10,000.00 blanket one written by Fidelity Company of Santa Fe, New Mexico.

Drilling Contractor Williams Drilling Company of San Angelo, Texas.

We intend to complete this well in the

formation at an approximate depth of 6000 ft. or 6000 feet

CASING PROGRAM

We propose to use the following strings of Casing and to cement them as indicated:

Size of Hole	Size of Casing	Weight per Foot	New or Second Hand	Depth	Sacks Cement
12 "	8 5/8"	24 lb	new	60'	top to bottom
If the well appears to be a producer, we will run either 5" or 4" liner casing from the top of the hole down through the producing formation and cement it with enough cement to properly complete the well as a producer as per your rules.					

If changes in the above plans become advisable we will notify you immediately.

ADDITIONAL INFORMATION (If recompletion give full details of proposed plan of work.)

RECEIVED
NOV 19 1952
OIL CON. COM.
DIST. 3

NOV 17 1952

Approved ....., 19.....
Except as follows:

Sincerely yours,

J. K. Wadley (Company or Operator)

By J. K. Jennings

Position Field agent

Send Communications regarding well to

Name J. K. Wadley

Address Tucumcari, New Mexico

OIL CONSERVATION COMMISSION

By R. R. Spurrier

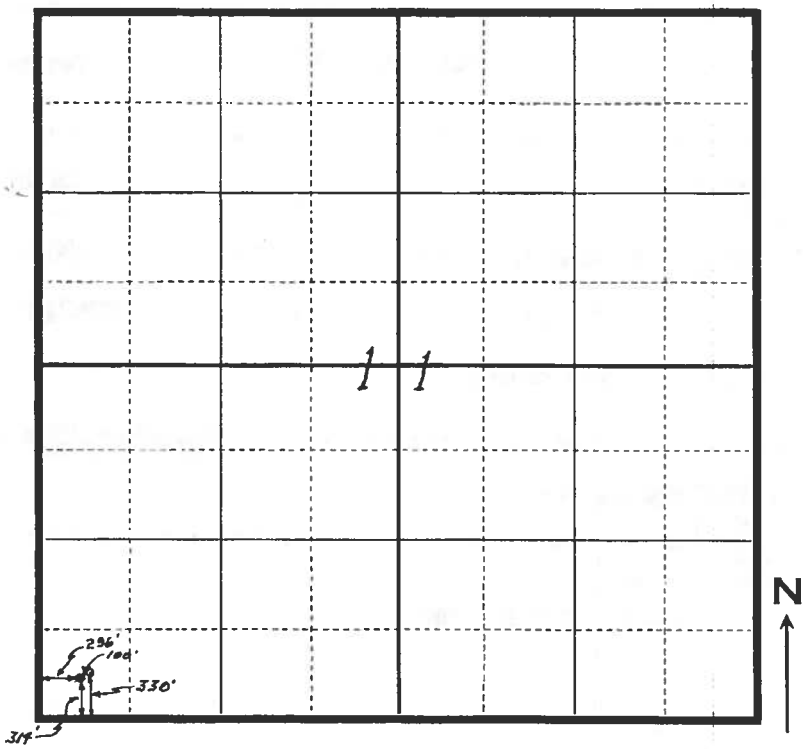
Title

Company J.K. WADLEY

Lease S. DYSART- Well No. 1

Section 11 Township 14N. Range 10W. N. M. P. M.

Location North 330 feet from South line and East 396 feet from West line of Section



McKinley County, New Mexico. Scale: 4 Inches = 1 Mile.

This is to certify that the above plat was made from field notes of actual surveys made by me or under my supervision and that the representations thereon set forth are true and correct to the best of my knowledge and belief.

Edmund Rau

NEW MEXICO REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR NO. 81

Seal:

Surveyed November 12, 1952

• Existing well -- S. Dysart Community Lease No. 1

° Proposed drilling-site

Well No. 1, SW/SW, Section 11, T. 14N, R. 10W., McKinley County, NM

(Form C-103)
(Revised 7/1/52)

NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

MISCELLANEOUS REPORTS ON WELLS

Submit this report in TRIPLICATE to the District Office, Oil Conservation Commission, within 10 days after the work specified is completed. It should be signed and filed as a report on Beginning Drilling Operations, Results of test of casing shut-off, result of plugging of well, result of well repair, and other important operations, even though the work was witnessed by an agent of the Commission. See additional instructions in the Rules and Regulations of the Commission.

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
NOV 1 81953

Indicate Nature of Report by Checking Below

REPORT ON BEGINNING DRILLING OPERATIONS		REPORT ON RESULT OF TEST OF CASING SHUT-OFF		REPORT ON REPAIRING WELL	
REPORT ON RESULT OF PLUGGING WELL	X	REPORT ON RECOMPLETION OPERATION		REPORT ON (Other)	

April 1st, 1953 (Date) Texarkana, Arkansas (Place)

Following is a report on the work done and the results obtained under the heading noted above at the

J. K. WADLEY (Company or Operator) S. DIXART (Lease)

Strawn Drilling Company, San Angelo, Texas (Contractor), Well No. One in the SW ¼ SW ¼ of Sec. 11,

T. 14 N., R. 10 W., NMPM., Wildcat Pool, McKinley County.

The Dates of this work were as folows: See below.

Notice of intention to do the work (was) (~~xxxx~~) submitted on Form C-102 on November 17th (Cross out incorrect words), 19 52,

and approval of the proposed plan (was) (~~xxxx~~) obtained.

OIL CONSERVATION COMMISSION
AZTEC DISTRICT OFFICE
No. Copies Received 3
DISTRIBUTION
Operator 1
Santa Fe 1
Proration Office
State Land Office
U. S. G. S.
Transporter
File 1 ✓

DETAILED ACCOUNT OF WORK DONE AND RESULTS OBTAINED

(SEE REVERSE SIDE)

RECEIVED
FEB 4 53
OIL CON. COM.
DIST. 3

Witnessed by H. D. Haberyan (Name) K. E. Jennings (Company) Field Agent (Title)

Approved:
OIL CONSERVATION COMMISSION
Emery C. Arnold (Name)
Oil and Gas Inspector (Title) 12-7-53 (Date)

I hereby certify that the information given above is true and complete to the best of my knowledge.

Name H. D. Haberyan
Position Land and Tax Agent
Representing J. K. Wadley
Address Texarkana, Arkansas Texas

See Reverse Side.

Our Intention to Drill this well was prepared and signed on November 17th, 1952 and was promptly, thereafter, approved by you. A rotary rig was moved to this location on November 19th, 1953. On November 30th, drilling was commenced and 62.15 feet of 9 5/8 surface pipe was set. Circulation was lost numerous times before we reached the depth of 813 feet. Contractor had a lot of rig trouble, the weather got very cold and so the well was filled by Halliburton Cementing Co. from bottom to 276 feet with cement and we temporarily quit the well on December 29th, 1952.

On February 19th, 1953, we filled the hole with cement from a depth of 276 feet to a depth of 25 feet. On March 2nd, we moved a rotary rig to the location and resumed work. A water sand, the bottom of which appeared to be at 763, kept taking up our mud so that we had a lot of trouble in keeping circulation. On March 16th, 1953, we ran 813½ feet of 20 lb 7 inch casing to the then bottom of the hole. We then resumed drilling and continued to drill until a depth of 2649 ft. was reached. We did not encounter any show of oil or gas in any of the formations that were drilled through.

On March 31st, 1953, we decided to quit the well. It was left full of heavy mud. The surface pipe was left in the hole. The 813½ feet of 7 inch was left in the hole and we put a 10 sack cement plug in the 7 inch casing. We have left the well in such condition so that if we should ever desire to drill the well deeper it can be done and if we never drill it deeper, we feel sure that the casing that is left in the hole will permanently protect the surface waters that may have been encountered in this hole.

In the event that the operator should decide to pull casing or in any way alter the condition of this well in the future, it will first be necessary that a new one well bond be filed with the Commission

Emery C Arnold

Oil and Gas Inspector Dist. #3.

Redrill of Well No. 1, SW/SW Section 11, T. 14N., R. 10W., McKinley County, NM

NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

Form C-101
Revised (12/1/55)

NOTICE OF INTENTION TO DRILL

Notice must be given to the District Office of the Oil Conservation Commission and approval obtained before drilling or recompletion begins. If changes in the proposed plan are considered advisable, a copy of this notice showing such changes will be returned to the sender. Submit this notice in QUINTUPLICATE. One copy will be returned following approval. See additional instructions in Rules and Regulations of the Commission. **If State Land submit 6 Copies Attach Form C-128 in triplicate to first 3 copies of form C-101**

Albuquerque, New Mexico (Place) 27 April, 1959 (Date)

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Gentlemen:

You are hereby notified that it is our intention to commence the Drilling of a well to be known as

Stella Dysart (Company or Operator)

Community Lease (Lease), Well No. 2, in M (Unit). The well is located 330 feet from the south line and 330 feet from the west line of Section 11, T. 14 N, R. 10 W, NMPM.

(GIVE LOCATION FROM SECTION LINE) wildcat ✓ Pool, McKinley County

D	C	B	A
E	F	G	H
L	K	J	I
M	N	O	P

If State Land the Oil and Gas Lease is No.

If patented land the owner is Stella Dysart

Address 1013 Fruit Avenue, NW, Albuquerque, New Mexico

We propose to drill well with drilling equipment as follows:

National 212 rotary rig

The status of plugging bond is on file at Santa Fe

Drilling Contractor Aspen Drilling Co.

We intend to complete this well in the Precambrian formation at an approximate depth of 4700 feet.

RECEIVED
APR 29 1959
OIL CON. COM.
DIST. 3

CASING PROGRAM

We propose to use the following strings of Casing and to cement them as indicated:

Size of Hole	Size of Casing	Weight per Foot	New or Second Hand	Depth	Sacks Cement
10¾	8-5/8	24	used	500	200

If changes in the above plans become advisable we will notify you immediately.

ADDITIONAL INFORMATION (If recompletion give full details of proposed plan of work.)

Surface casing will be set into the Recapture Creek member of the Morrison formation so as to protect uranium deposits in the Westwater sandstone member in the Ambrosio Lake district. WELL TO BE DRILLED AS TIGHT HOLE

Approved 4-29, 19 59
Except as follows:

OIL CONSERVATION COMMISSION
By Emery C. Arnold

Sincerely yours,

Stella Dysart (Company or Operator)

By Henry S. Birdseye

Position Consulting Geologist

Send Communications regarding well to

Name Henry S. Birdseye

Address Box 8294, Albuquerque, N. M.

COMPANY ~~Aspen Drilling Co.~~ Stella Dysart

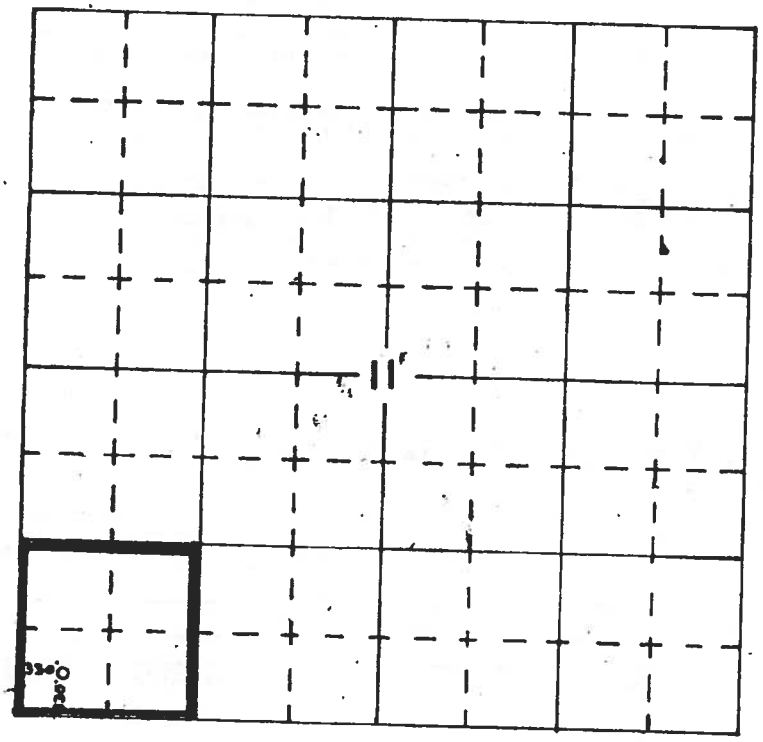
WELL NAME & NO. STELLA DYSART No. 2 LEASE NO. COMMUNITY LEASE

LOCATION 330' FROM THE WEST LINE AND 330' FROM THE SOUTH LINE

BEING IN S.W. 1/4, S.W. 1/4, S.W. 1/4

SEC. 11, T. 14 N., R. 10 W., N.M.P.M., McKINLEY COUNTY, NEW MEXICO

GROUND ELEVATION 7178'



SCALE -- 4 INCHES EQUALS 1 MILE

SURVEYED APRIL 9, 19 59

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

John D. Josey, Jr.

JOHN D. JOSEY, JR., P.E.
P.E. & L.S. NO. 997

PREPARED BY

GRANTS ENGINEERING CO.
316 W. SANTA FE GRANTS, N.M.

Redrill of Well No. 1, SW/SW, Section 11, T. 14N., R. 10W., McKinley, County, NM

Form C-103
(Revised 3-55)

NEW MEXICO OIL CONSERVATION COMMISSION
MISCELLANEOUS REPORTS ON WELLS
(Submit to appropriate District Office as per Commission Rule 1106)

COMPANY Stella Dysart, P. O. Box 8294, Albuquerque, New Mexico
(Address)

LEASE Community WELL NO. 2 UNIT M S 11 T 14 N R 10 W

DATE WORK PERFORMED 5/4 - 5-18-59 POOL wildcat

This is a Report of: (Check appropriate block)

[x] Beginning Drilling Operations
[x] Plugging
[ ] Results of Test of Casing Shut-off
[ ] Remedial Work
[ ] Other

Detailed account of work done, nature and quantity of materials used and results obtained.

Well was spudded 5/2/59. Used 8-5/8" 24# surface casing was cemented at 507 feet with 300 sacks neat cement, circulated on 5/4/59. Setting time 10 hours.

Well was plugged and abandoned on 5/18/59. Neat cement plugs set by Halliburton:
50 sacks 2430-2680 to shut off water in Glorieta
40 sacks 404-507 feet at bottom of surface casing
10 sacks 0-55 feet with surface marker.

THIS IS A TIGHT HOLE

FILL IN BELOW FOR REMEDIAL WORK REPORTS ONLY

Original Well Data:

DF Elev. _____ TD _____ PBD _____ Prod. Int. _____ Compl Date _____

Tbng. Dia _____ Tbng Depth _____ Oil String Dia _____ Oil String Depth _____

Perf Interval (s) _____

Open Hole Interval _____ Producing Formation (s) _____

RESULTS OF WORKOVER:	BEFORE	AFTER
Date of Test		
Oil Production, bbls. per day		
Gas Production, Mcf per day		
Water Production, bbls. per day		
Gas-Oil Ratio, cu. ft. per bbl.		
Gas Well Potential, Mcf per day		

Witnessed by _____ _____ (Company)

OIL CONSERVATION COMMISSION

Name Original Signed Emery C. Arnold
Title Supervisor Dist. # 3
Date MAY 2 2 1959

I hereby certify that the information given above is true and complete to the best of my knowledge.

Name Henry S. Birdseye
Position Consulting Geologist
Company Stella Dysart

RECEIVED
MAY 22 1959
OIL CON. COM.
DIST. 3

HENRY S. BIRDSEYE

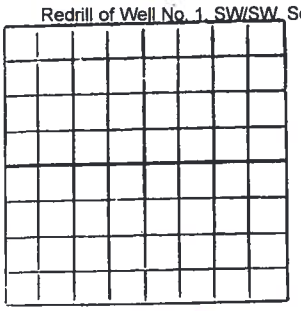
PAGE NO._____

Stella Dysart #2 Community Lease wildcat
SW SW Sec. 11, T14N, R10W, McKinley Co.

Drill stem test #1 2580-2610. Open 45 min. Good blow, died in 40 min.
Recovered 90' drilling mud, 1680 feet fresh water.

Redrill of Well No. 1, SW/SW, Section 11, T. 14N., R. 10W., McKinley, County, NM

(Revised 7/1/52)
(Form C-105)



AREA 640 ACRES
LOCATE WELL CORRECTLY

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

WELL RECORD

Mail to District Office, Oil Conservation Commission, to which Form C-101 was sent not later than twenty days after completion of well. Follow instructions in Rules and Regulations of the Commission. Submit in QUINTUPLICATE. If State Land submit 6 Copies

Stella Dysart (Company or Operator) Community Lease (Lease)

Well No. 2, in SW ¼ of SW ¼, of Sec. 11, T. 14N, R. 10W, NMPM.

wildcat Pool, McKinley County.

Well is 330 feet from south line and 330 feet from west line of Section 11. If State Land the Oil and Gas Lease No. is

Drilling Commenced 2 May, 19 59 Drilling was Completed 17 May, 19 59

Name of Drilling Contractor Aspen Drilling Co.

Address 3010 Monte Vista Blvd., NE, Albuquerque, N. M.

Elevation above sea level at Top of Tubing Head 7178 ground level The information given is to be kept confidential until August 18, 19 59

OIL SANDS OR ZONES

No. 1, from ..... to ..... No. 4, from ..... to .....

No. 2, from ..... to ..... No. 5, from ..... to .....

No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from 2580 to 2660 feet. 1700 feet fill-up on DST

No. 2, from ..... to ..... feet. .....

No. 3, from ..... to ..... feet. .....

No. 4, from ..... to ..... feet. .....

CASING RECORD

SIZE	WEIGHT PER FOOT	NEW OR USED	AMOUNT	KIND OF SHOE	CUT AND PULLED FROM	PERFORATIONS	PURPOSE
8-5/8	24#	used	507				surface

MUDDING AND CEMENTING RECORD

SIZE OF HOLE	SIZE OF CASING	WHERE SET	NO. SACKS OF CEMENT	METHOD USED	MUD GRAVITY	AMOUNT OF MUD USED
11	8-5/8"	507	300	displacement	8.8	

RECORD OF PRODUCTION AND STIMULATION

(Record the Process used, No. of Qts. or Gals. used, interval treated or shot.)

RECEIVED
MAY 22 1959
OIL CON. COM.
DIST. 3

Result of Production Stimulation .....

Depth Cleaned Out .....

RECORD OF DRILL-STEM AND SPECIAL TESTS

Redrill of Well No. 1, SW/SW, Section 11, T. 14N., R. 10W., McKinley, County, NM

If drill-stem or other special tests or deviation surveys were made, submit report on separate sheet and attach hereto

TOOLS USED

Rotary tools were used from 0 feet to 2968 feet, and from ..... feet to ..... feet

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet.

PRODUCTION

Put to Producing ....., 19.....

OIL WELL: The production during the first 24 hours was ..... barrels of liquid of which ..... % was was oil; ..... % was emulsion; ..... % water; and ..... % was sediment. A.P.I. Gravity .....

GAS WELL: The production during the first 24 hours was ..... M.C.F. plus ..... barrels of liquid Hydrocarbon. Shut in Pressure ..... lbs.

Length of Time Shut in .....

PLEASE INDICATE BELOW FORMATION TOPS (IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE):

Southeastern New Mexico		Northwestern New Mexico	
T. Anhy	T. Devonian	T. Ojo Alamo	
T. Salt	T. Silurian	T. Kirtland-Fruitland	
B. Salt	T. Montoya	T. Farmington	
T. Yates	T. Simpson	T. Pictured Cliffs	
T. 7 Rivers	T. McKee	T. Menefee	
T. Queen	T. Ellenburger	T. Point Lookout	
T. Grayburg	T. Gr. Wash	T. Mancos	
T. San Andres	T. Granite	T. Dakota	surface
T. Glorieta	T.	T. Morrison	60
T. Drinkard	T.	T. Penn	
T. Tubbs	T.	T. Todilto	1028
T. Abo	T.	T. Entrada	1075
T. Penn	T.	T. Chinle	1280
T. Miss	T.	T. Shinarump	2579

FORMATION RECORD

From	To	Thickness in Feet	Formation
0	60	60	Dakota
60	1028	968	Morrison-Bluff-Summerv.
1028	1075	47	Todilto
1075	1280	205	Entrada
1280	2579	1299	Chinle
2579	2660	81	Shinarump
2660	2968	308	Moenkopi-SanAndres-Glor.

From	To	Thickness in Feet	Formation

OIL CONSERVATION COMMISSION
AZTEC DISTRICT OFFICE
No. Copies Received 5
DISTRIBUTION

	NO. FURNISHED	
[illegible]	1	
Santa Fe	1	
[illegible]		
[illegible] Land Office		
U. S. G. S.	2	
Transporter		
Transporter		
File		
File	1	✓

ATTACH SEPARATE SHEET IF ADDITIONAL SPACE IS NEEDED

I hereby swear or affirm that the information given herewith is a complete and correct record of the well and all work done on it so far as can be determined from available records.

5/20/59 (Date)

Company or Operator Stella Dysart Address Box 3294, Albuquerque, N.M.

Name Henry H. Binder Position or Title Consulting Geologist

Redrill of Well No. 1, SW/SW, Section 11, T. 14N., R. 10W., McKinley, County, NM

(Form C-102)
(Revised 7/1/52)

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

MISCELLANEOUS NOTICES

Submit this notice in TRIPLICATE to the District Office, Oil Conservation Commission, before the work specified is to begin. A copy will be returned to the sender on which will be given the approval, with any modifications considered advisable, or the rejection by the Commission or agent, of the plan submitted. The plan as approved should be followed, and work should not begin until approval is obtained. See additional instructions in the Rules and Regulations of the Commission.

Indicate Nature of Notice by Checking Below

NOTICE OF INTENTION TO CHANGE PLANS		NOTICE OF INTENTION TO TEMPORARILY ABANDON WELL		NOTICE OF INTENTION TO DRILL DEEPER	
NOTICE OF INTENTION TO PLUG WELL	X	NOTICE OF INTENTION TO PLUG BACK		NOTICE OF INTENTION TO SET LINER	
NOTICE OF INTENTION TO SQUEEZE		NOTICE OF INTENTION TO ACIDIZE		NOTICE OF INTENTION TO SHOOT (Nitro)	
NOTICE OF INTENTION TO GUN PERFORATE		NOTICE OF INTENTION (OTHER)		NOTICE OF INTENTION (OTHER)	

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Box 8?94, Albuquerque, New Mexico (Place) May 18, 1959 (Date)

Gentlemen:

Following is a Notice of Intention to do certain work as described below at the Stella Dysart (Company or Operator) Well No. 2 in H (Unit)

SW ¼ SW ¼ (40-acre Subdivision) of Sec. 11, T. 14N, R. 10W (Lease) NMPM., wildcat Pool

McKinley County.

FULL DETAILS OF PROPOSED PLAN OF WORK
(FOLLOW INSTRUCTIONS IN THE RULES AND REGULATIONS)

Due to lost circulation in the Glorieta sandstone, is was not possible to drill deeper than 2968 feet. It is intended to plug the well as follows:

50 sacks neat cement 2430-2680 feet to shut off freshwater in Chinarump
40 sacks neat cement at 507 feet (bottom of surface casing)
10 sacks neat cement at surface, with marker

Verbal approval from Emery C. Arnold by telephone 7:30 a.m. 5-18-59

THIS IS A TIGHT HOLE.

RECEIVED
MAY 22 1959
OIL CON. COM
DIST. 3

MAY 22 1959
Approved ....., 19.....
Except as follows:

Stella Dysart
Company or Operator
By Henry S. Birdseye
Position Consulting Geologist
Send Communications regarding well to:
Name Henry S. Birdseye
Address Box 8?94, Albuquerque, N. M.

Approved
OIL CONSERVATION COMMISSION
By Original Signed Emery C. Arnold
Title Supervisor Dist. # 3

NE/4, Section 14, T. 14N., R. 10W., McKinley County, NM

Form 9-331a
(Feb. 1951)

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

(SUBMIT IN TRIPLICATE)

Land Office Santa Fe

Lease No. [illegible]

Unit

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	X	SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

May, 1960

Well No. 14-1 is located 660 ft. from {N/S} line and 1980 ft. from {E/W} line of sec. 14

N. E. 1/4 Sec. 14 (¼ Sec. and Sec. No.) | 14N (Twp.) | 10W (Range) | New Mexico (Meridian)

Wildcat (Field) | McKinley (County or Subdivision) | New Mexico (State or Territory)

The elevation of the derrick floor above sea level is 7011 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

4750 foot test to granite. Set 10¾ O.D. 32.75# surface casing to be set at 350 feet, with cement circulated. Contractor: Aspen Drilling Co.

Verbal approval from A. McGrath 4:45 p.m. 5/27/60

RECEIVED
MAY 31 1960
OIL CON. COM.
DIST. 3

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Wallie Dysart

Address Box 639

Albuquerque, New Mexico

By Henry S. Bridges

Title Consulting Geologist

GPO 862040

NE/4, Section 14, T. 14N., R. 10W., McKinley County, NM

NEW MEXICO
OIL CONSERVATION COMMISSION

Form C-128

Well Location and/or Gas Proration Plat

Date 21 May, 1959

Operator Stella Dysart Lease Federal (NM 060207)

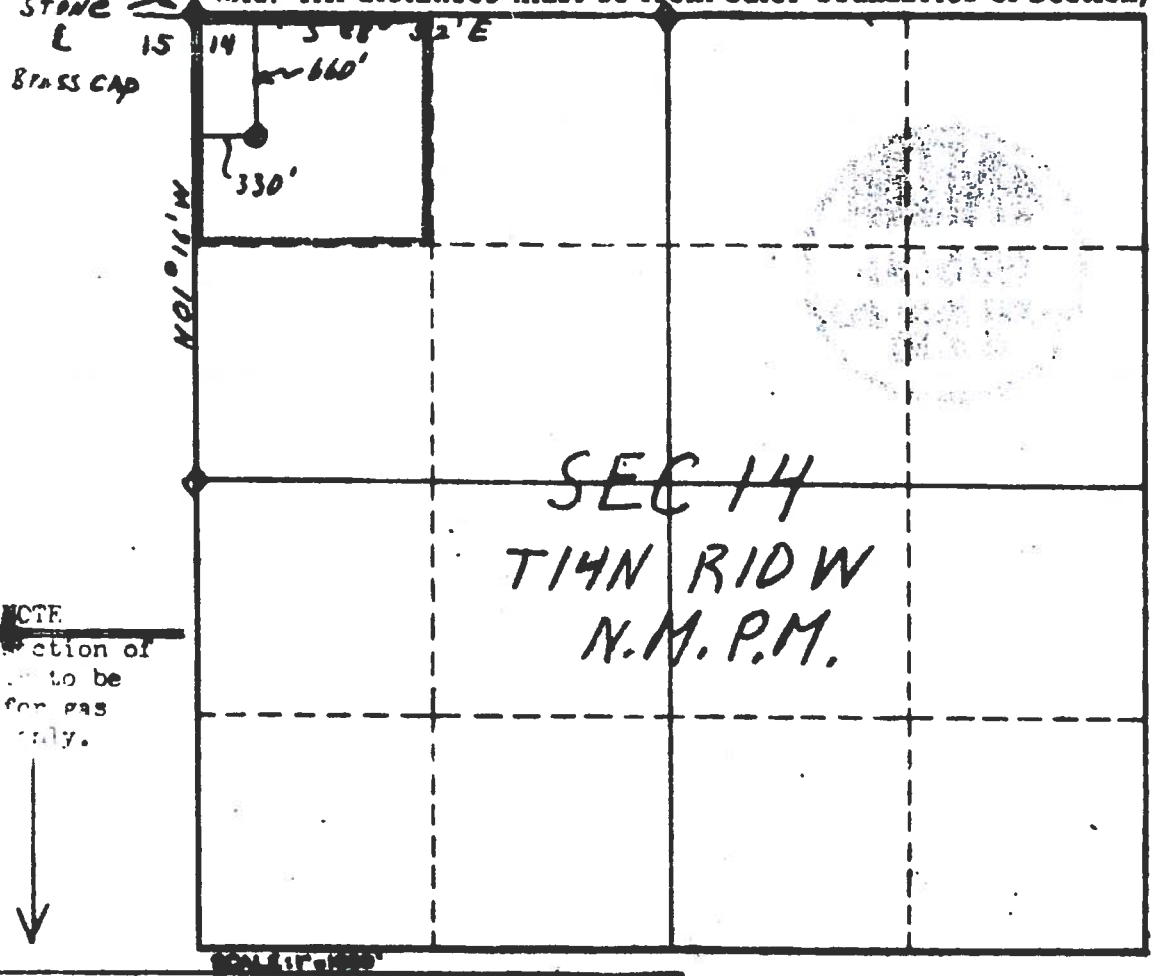
Well No. 14-1 Section 14 Township 14 North Range Ten West (10) NMPM

Located 660.0 Feet From North Line, 330.0 Feet From West Line.

McKinley County, New Mexico. G. L. Elevation 7,210.6

Name of Producing Formation wildcat Pool Dedicated Acreage 40

(Note: All distances must be from outer boundaries of Section)



NOTE: In all cases location of wells to be used for gas wells only.

1. Is this Well a Dual Comp. ? Yes ___ No ___.

2. If the answer to Question 1 is yes, are there any other dually completed wells within the dedicated acreage? Yes ___ No ___.

Name Henry S. Birdseye

Position Consulting Geologist

Representing Stella Dysart

Address [illegible], Albuquerque, New Mexico

This is to certify that the above plat was prepared from field notes of actual surveys made by me or under my supervision and that the same are true and correct to the best of my knowledge and belief.

Date Surveyed 21 May, 1959

Registered Professional Engineer and/or Land Surveyor

Box 221 P
MILAN, N.M.

NE/4, Section 14, T. 14N., R. 10W., McKinley County, NM

Form 9-330

Budget Bureau No. 42-R355.4.
Approval expires 12-31-60.

U. S. LAND OFFICE Santa Fe
SERIAL NUMBER NM 060207
LEASE OR PERMIT TO PROSPECT

RECEIVED
JUL 1 1959
OIL CON. COM.
DIST. 3

RECEIVED

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOCATE WELL CORRECTLY

LOG OF OIL OR GAS WELL

Company Stella Dysart Address c/o Birdseye, P O Box 8294, Albuquerque N.M.

Lessor or Tract Fee Field wildcat State New Mexico

Well No. 14-1 Sec. 14 T. 14N R. 10W Meridian NMPM County McKinley

Location 660 ft. {N. / S.} of N Line and 330 ft. {E. / W.} of W Line of Sec. 14 Elevation 7221 DF
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed Henry S. Birdseye

Date 27 June, 1959 Title Consulting Geologist

The summary on this page is for the condition of the well at above date.

Commenced drilling 22 May, 1959 Finished drilling 13 June, 1959

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from ____ to ____ No. 4, from ____ to ____

No. 2, from ____ to ____ No. 5, from ____ to ____

No. 3, from ____ to ____ No. 6, from ____ to ____

IMPORTANT WATER SANDS

No. 1, from 250 to 2670 No. 3, from ____ to ____

No. 2, from ____ to ____ No. 4, from ____ to ____

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
10¾	32.75#		nex	550					Surface

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used

PLUGS AND ADAPTERS

Heaving plug—Material ____ Length ____ Depth set ____

Adapters—Material ____ Size ____

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 4758 feet, and from ____ feet to ____ feet

Cable tools were used from ____ feet to ____ feet, and from ____ feet to ____ feet

DATES

____, 19____ Put to producing ____, 19____

The production for the first 24 hours was ____ barrels of fluid of which ____% was oil; ____% emulsion; ____% water; and ____% sediment. Gravity, °Bé. ____

If gas well, cu. ft. per 24 hours ____ Gallons gasoline per 1,000 cu. ft. of gas ____

Rock pressure, lbs. per sq. in. ____

EMPLOYEES

FOLD | MARK

NE/4, Section 14, T. 14N., R. 10W., McKinley County, NM

HISTORY OF OIL OR GAS WELL

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "sidetracked" or left in the well, give its size and location. If the well has been dynamited, give date, size, position, and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

DST #1. 4189-4204. Open 20 min. Weak blow air, died in 12 min. Rec. 5 ft. drilling mud, no shows. Flow press. 0. SIP (30") 0.

DST #2. 4211-4228. Misrun

DST #3. 4500-4515. Open 2 hrs. Weak blow air, increased to good blow in 1½ hrs., decreased to weak blow at end of test. Rec. 720 ft. of salt water and salt-water-cut mud. FP 70-215. No SIP. HP 2235-2205.

Well plugged by HOCO with neat cement as follows: (6-19-59)

0-30'	10 sacks, with marker
510-550'	15 sacks
2540-2570'	15 sacks
2690-2720'	15 sacks
4450-4480'	100 sacks

Location cleared, pits filled on 6-23-59.

LOG OF OIL OR GAS WELL

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RECEIVED
JUL 1 1959
OIL CON. COM.
DIST. 3

NE/4, Section 14, T. 14N., R. 10W., McKinley County, NM

Form 9-331a
(Feb. 1951)

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

(*SUBMIT IN TRIPLICATE*)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office [illegible]

Lease No. [illegible] 060207

Unit

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL	[illegible]		

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

1 June, 19[illegible]

Well No. [illegible] is located [illegible] ft. from {N/S} line and [illegible] ft. from {E/W} line of sec. 14

[illegible] (¼ Sec. and Sec. No.) 14 N (Twp.) 1[illegible] (Range) [illegible] (Meridian)

[illegible] (Field) McKinley (County or Subdivision) [illegible] (State or Territory)

The elevation of the derrick floor above sea level is [illegible] ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

[illegible]

RECEIVED
JUL 1 1959
OIL CON. COM.
DIST. 3

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company [illegible]

Address [illegible]

[illegible], New Mexico

By [illegible] (signature)

Title

U. S. GOVERNMENT PRINTING OFFICE : 1956—O-393560

NE/4, Section 14, T. 14N., R. 10W., McKinley County, NM

Form 9-331a
(Feb. 1951)

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

Land Office [illegible]

Lease No. [illegible]

Unit

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RECEIVED
JUN [illegible]

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	X
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

7 [illegible], 19[illegible]

Well No. [illegible] is located [illegible] ft. from {N/S} line and [illegible] ft. from {E/W} line of sec. [illegible]

[illegible] (¼ Sec. and Sec. No.) [illegible] (Twp.) [illegible] (Range) [illegible] (Meridian)

[illegible] (Field) [illegible] (County or Subdivision) [illegible] (State or Territory)

The elevation of the derrick floor above sea level is [illegible] ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

RECEIVED
JUL 1 1959
OIL CON. COM.
DIST. 3

[illegible]

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company [illegible]

Address [illegible]

[illegible]

By Henry S. Birdseye

Title Consulting Geologist

U.S. GOVERNMENT PRINTING OFFICE: 1956—O-393560