Hydrogeologic Report for Proposed Emma Expansion Project

Prepared for

Freeport-McMoRan Tyrone Inc.

Prepared by

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1. Introduction

Daniel B. Stephens & Associates, Inc. (DBS&A) has prepared this hydrogeologic report to support permitting documents being prepared by Freeport-McMoRan Tyrone Inc. (Tyrone) and other consultants for the proposed expansion to the Tyrone Mine, referred to as the Emma Expansion Project (Emma), located in Grant County, New Mexico south of the existing Tyrone Mine (Figure 1). Mine facilities at Emma will include an open pit, stockpiles to store non-acid-generating materials (i.e., salvageable topdressing and waste rock), and a haul road to transport ore and waste rock to the Tyrone Mine. The facilities will be reclaimed after mining, as required under the New Mexico Mining Act. Ore will be placed on existing leach stockpiles , and non-acid-generating waste rock will be placed on two new waste rock stockpiles: (1) the 6HW stockpile to be constructed on existing disturbed area at the Tyrone Mine, and (2) the EMW stockpile to be constructed adjacent to the proposed Emma open pit.

Tyrone is seeking to modify both their mining act permit (GR010RE) and discharge permit 396 (DP-396) to include operations at Emma. These permits are issued through the Mining and Minerals Division (MMD) of the New Mexico Energy, Minerals and Natural Resources Department and New Mexico Environment Department (NMED), respectively. Figure 1 shows both a topographic extent (i.e., catchment area) for the proposed open pit and a proposed Emma open pit boundary. The catchment area is based on design drawings for the open pit, and is 116.3 acres. The proposed Emma open pit boundary is larger (approximately 200 acres), and includes an additional buffer area to allow for slight deviations in the pit configuration that may occur during construction, as well as minor mine management utilities.

This hydrogeologic report describes the geology and hydrology at Emma, including discussion of potential impacts of the proposed mining operation on surface water and groundwater resources. It is intended to help address the requirements of Section 69-36-5 of the Mining Act, 19.10.5 NMAC, and the Copper Mine Rule (20.6.7 NMAC) that pertain to geology, surface water hydrology, and groundwater. The hydrologic report includes the following:

- Description of the local climate (Section 2), including mean annual precipitation and estimate of annual evaporation.
- Description of the nearby surface water drainages, with maps showing their locations and flow directions (Section 3).

- Description of the geology at and near Emma (Section 4.1), including discussions of the major rock units and major structural features (e.g., faults). Surface geologic maps and cross sections are used to show the geology beneath Emma.
- Description of the hydrogeologic setting at Emma (Section 4.2), including the type of water-bearing rock, groundwater flow direction, and potential groundwater yield. A groundwater potentiometric map and cross sections are used to support the discussion. The cross sections show depth to water and major hydrogeologic formations and structures. Section 4.2 also presents the results of pumping tests conducted at groundwater monitoring locations near Emma. These tests were conducted in May 2021 and provide estimates of transmissivity and hydraulic conductivity for the water-bearing rock.
- Description of a water balance for the Emma open pit (Section 5) that is used to estimate inflow rates to the open pit and determine the hydrologic characteristics of a pit lake if one were allowed to form at closure.
- The descriptions include discussion of the potential for water quality impacts and measures to be implemented by Tyrone to avoid water quality impairment or provide containment, including assessment of the facility's effects on the hydrologic balance.

This hydrogeologic report supplements information provided in the Tyrone Master Document (TMD), which Tyrone originally submitted to NMED in October 2015 (DBS&A, 2015). The TMD, officially titled *Application Requirements for Discharge Permits at a Copper Mine Facility (20.6.7 NMAC)*, provides facility information required by 20.6.7 NMAC for the Tyrone and Little Rock Mines. The information includes descriptions of mine geology, surface water hydrology, and hydrogeology. The TMD was last amended on June 9, 2017 (DBS&A, 2017b). The information presented in this report is focused on the area south of the Tyrone Mine in the general vicinity of Emma. This area is not described in the current TMD (DBS&A, 2017b). This report also supplements the mining operations site assessment prepared by Dames & Moore (1994).

2. Climate

Emma is located in a region of semiarid climate. Ground surface elevations range from about 6,100 to 6,300 feet above mean sea level (feet msl). The climate is warm and dry, with annual evaporation far exceeding annual precipitation.

Tyrone maintains several meteorological stations at various locations throughout the Tyrone and Little Rock Mines (DBS&A, 2017b). Mean annual precipitation recorded at the Tyrone General Offices (G.O.) meteorological station is 16 inches, falling primarily as rain during the monsoon season from July through October. Snow may fall between November and March. The G.O. meteorological station period of record includes precipitation data from 1990 to present.

Estimated mean annual open water evaporation for the area is 56.5 inches (DBS&A, 2014). This estimate was calculated using the FAO-56 monthly Penman-Monteith method (Allen et al., 1998) and climate data for the period 1981 through 2010.

3. Surface Water Drainages

Emma is located on a topographic high situated between two major drainages (Figure 2). Upper Oak Grove Creek (a.k.a. Upper Oak Grove Wash) is located to the north and Cherry Creek is located to the south. Although these two drainages are referred to as creeks on U.S. Geological Survey (USGS) topographic maps, they are ephemeral washes that flow only in response to precipitation events, and are not perennial surface water features. The drainages originate in the Big Burro Mountains located to the west, and are tributary to Lower Oak Grove Wash located to the east. Upper Oak Grove Wash and Cherry Creek naturally divert stormwater originating in the Big Burro Mountains around Emma (Figure 2). The two drainages are areas of focused recharge to the underlying groundwater system but, because they are ephemeral, are not directly connected to underlying groundwater.

The existing terrain at Emma slopes predominantly to the east. Because Emma is located on a topographic high, small, upland drainages originate on or very near the site. Many of these drainages become more distinct to the east (near Highway 90) as they merge with other drainages, and are tributary to Lower Oak Grove Wash. There is one drainage that originates just west of the proposed open pit that flows across the northwest end of the pit boundary. This drainage is tributary to Upper Oak Grove wash (Figure 2). Springs do not exist at Emma.

In September 2021, Tyrone installed automated surface water samplers in some of the ephemeral drainages at Emma. The automated samplers were placed west (upgradient) of Emma to determine background water quality of stormwater flowing across and near the site. Figure 2 shows the locations of the automated samplers. Water quality samples were retrieved from the EMSW-1 and EMSW-3 automated samplers on September 27 and 28, 2021, as stormwater had collected in them during recent rains. Locations EMSW-2 and EMSW-4

contained insufficient water, precluding the collection of water quality samples. Tyrone submitted the water quality samples to SVL Analytical, Inc. in Kellogg, Idaho for analysis of major ions and metals. The laboratory results are summarized in Table 1 along with New Mexico livestock, wildlife, and Section 3103 (i.e., groundwater) standards for comparison.

Mining at Emma will create a 500- to 600-foot depression that will cover 116.3 acres. Surface water at Emma will consist of stormwater runoff generated from rainfall within this area. The stormwater will be hydrologically contained within the perimeter of the open pit. The proposed configuration of the Emma open pit will create five catchments where stormwater is expected to collect. Two of these catchments are located at the bottom of the open pit (Main North and Main South), and the other three are located at higher elevations along the north, east, and south sides of the open pit (Upper North, Upper East, and Upper South). Tyrone intends to backfill the Main South, Upper North, Upper East, and Upper South catchment areas during mining operations for water management purposes. The backfill will be graded to direct stormwater to the bottom of the Main North catchment area, where water will be pumped from a water management sump and conveyed to the Tyrone Mine (Figure 3). This effort will minimize the amount of accumulated water. The water will be conveyed from Emma through a new pipeline to the existing 1C and 7A seepage collection conveyance system, which reports to 1A PLS Tank (Golder, 2021a and 2021b).

Tyrone will construct a haul road across Upper Oak Grove Wash to allow for the transportation of ore and potentially acid-generating waste rock from Emma to the Tyrone Mine. The haul road will be elevated above the grade of the wash. Culverts will be installed at the base of the haul road to allow stormwater to flow beneath it. The haul road will be constructed of non-acid-generating materials to avoid impact to surface water quality.

Proposed mining operations at Emma, including advancement of the open pit and construction of the EMW stockpile and haul road, will have minimal impact on the hydrologic balance as defined in 19.10.5.508 NMAC. Stormwater flows in Upper Oak Gove Wash and Cherry Creek will continue around Emma, as they do today, and all stormwater generated within the open pit will be hydrologically contained within the pit perimeter, including stormwater that contacts exposed sulfides and may become impacted.

The proposed location of the Emma open pit is not within a Federal Emergency Management Agency (FEMA) flood zone (Figure 4). Upper Oak Grove Wash and Cherry Creek are not recognized as flood zones in the vicinity of Emma; however, sections of them several miles downstream and east of Emma (off the map view shown in Figure 4) are recognized as flood

zones. The proposed haul road will cross Upper Oak Grove Wash, and will be constructed and maintained to allow stormwater to flow beneath it without jeopardizing its integrity.

4. Geologic and Hydrogeologic Setting

Description of the geologic and hydrogeologic setting at Emma is based on information presented in published reports, as well as site-specific data obtained through exploration borehole drilling and a groundwater investigation conducted in 2021 (DBS&A, 2021). The data include mineralogy, acid-generating potential of the rocks to be mined, groundwater levels, and hydraulic properties of the water-bearing rock.

4.1 Geology

The geology at the Tyrone mine and surrounding area has been described by Edwards (1961), Gillerman (1964), Kolessar (1982), and Mach (2008), and is summarized in geologic maps prepared by Hedlund (1978a, 1978b, 1978c, and 1978d). DBS&A (2017b) also provides a comprehensive description of the geology. The primary rock types and their geographic extents at Emma are illustrated in Figure 5, a generalized surface geology map. Figures 6 and 7 provide generalized geologic cross sections. Additional geologic cross sections are presented in DBS&A (2017b). The fault systems shown in Figure 5 are based on results of detailed geologic mapping conducted by Tyrone in support of mining at Emma, and may differ slightly from those presented in published reports, such as Hedlund (1978c). The Hedlund (1978c) geologic map of the White Signal quadrangle is provided as Appendix A. Appendix B provides borehole logs of 396-2021-01, 396-2021-02, and MB-44, which are groundwater monitoring locations near Emma. The logs include geologic descriptions of the rock units in the proposed Emma Pit area.

4.1.1 Rock Types

Precambrian and Tertiary rocks, as well as Quaternary deposits, are present at the land surface in the area of Emma (Figure 5). Most of the proposed pit area consists of pink to gray Burro Mountain Granite (Precambrian granite [pCg]). The granite can sometimes weather to an orange and brown color. This usually equigranular granite is composed of varying percentages of biotite, microcline, oligoclase, and quartz. Iron oxides are sometimes present on the quartz grains and fracture planes. Silica overprinting, silica veins, and disseminated pyrite are also present within the granite. Mineralization of sulfides increases with increasing depth. A dacite dike of unknown age is shown to crosscut the granite in borehole log 396-2021-01. This dike is

composed of hornblende and plagioclase, with pyrite and silica veining. An aphanitic aplite (pCapl) of similar composition to the Precambrian granite is found in spots throughout the pit area. In addition to the main Precambrian units, there are also a few outcrops of pegmatite (pCpg) to the east and diabase (pCdb) to the northwest of the pit area. The diabase is dark gray to black to green in color, fine to medium grained, and has a general composition of biotite, hornblende, magnetite, plagioclase, and pyroxene (Mach, 2008) (Appendix B).

The Tertiary age rocks in the Emma Pit area are igneous rocks, usually of porphyritic texture. A light gray, medium-grained granodiorite (Tgd) is exposed to the west (Figure 5). Hedlund (1978c) tends to map these rocks as quartz monzonite (Tqm). The granodiorite can have an equigranular or a porphyritic texture, with a composition of biotite, orthoclase, plagioclase, and quartz. A light gray, medium grained quartz monzonite (Tqm) is exposed in the northern portion of the proposed area of the pit (Figure 5). The quartz monzonite also can have an equigranular or a porphyritic texture, with a composition of biotite, hornblende, oligoclase, orthoclase, and quartz (Mach, 2008). There are also several quartz monzonite porphyry dikes (Tqmd) with a texture and composition like the quartz monzonite. The dikes strike primarily east to west. As shown in Figure 6, these dikes are near vertical. At the Little Rock mine, these types of dikes tend to act as impediments to groundwater flow (DBS&A, 2014), and the predominant groundwater flow direction is parallel to them rather than across them.

The Gila Conglomerate (QTg) is a Tertiary-Quaternary rock unit exposed to the east of Emma (Figure 5). It mostly consists of consolidated and unconsolidated conglomerates with interbedded sandstones, basalts, andesites, and rhyolites. The conglomerate contains lithic fragments eroded from older units in the surrounding area; therefore, the color varies from red/brown/tan to gray/white.

Quaternary alluvial deposits (Qal) overlie the older rock units. These deposits are present in the drainages near Emma, including Upper Oak Grove Wash and Cherry Creek (Figure 5). They contain round to angular fragments of the surrounding rock units, which varies the color. The alluvial deposits can be mistaken for weathered Gila Conglomerate (Gillerman, 1964).

4.1.2 Structure

There are two major faults near Emma: (1) the Sprouse-Copeland Fault to the north and (2) an unnamed fault to the south (Figure 5). Tyrone mapped the trace of the Sprouse-Copeland Fault shown in Figure 5; the location of the unnamed fault is from Hedlund (1978c). These faults are also shown in the north to south cross section depicted in Figure 6.

The Sprouse-Copeland Fault is a southwest-northeast striking fault with an approximately 80-degree dip to the southeast. It is a Laramide age fault that exhibits hundreds of feet of displacement (Mach, 2008). Along the north side of the proposed open pit, it crosscuts Precambrian granite (Figure 6). In August 2021, Tyrone conducted a site reconnaissance in the area north of Emma to confirm the presence of the fault and map its trace. The delineation of the fault shown in Figure 5 is based on this site reconnaissance. Field evidence used to map the surface trace of the Sprouse-Copeland Fault included gouge zones, slickenlines (scratches on fault surfaces resulting from shear motion), and exposure of cataclasite (fault breccia) in deeply cut drainages.

Along the southeast side of the Tyrone Mine near the reclaimed 1C Waste Rock stockpile, the Sprouse-Copeland Fault appears to be an impediment to groundwater flow based on differences in groundwater elevations at monitor wells located on opposite sides of the fault (DBS&A, 2017a). The predominant groundwater flow direction in this area is parallel to the fault rather than across it.

The second major fault near Emma is unnamed. The unnamed fault is located to the south of the proposed area of the open pit. It is a west-east striking fault of unknown age that crosscuts Precambrian granite and dips 75 degrees to the north (Hedlund, 1978c).

4.1.3 Mineralogy

Tyrone has characterized the Emma mineralogy. Waste rock from Emma is expected to be similar in nature to that from the Little Rock Mine. Both deposits are defined by near vertical, east-west oriented, sets of sheeted veins that have oxidized in place, leaving behind copper oxide minerals. The Emma mineralogy has been simplified into two categories for the purposes of waste management and potential impacts on water quality: (1) non-potentially acid-generating (NPAG) materials and (2) potentially acid-generating (PAG) materials. The NPAG materials primarily consist of leach cap, black oxides, green oxides, and copper oxides. The PAG materials primarily consist of sulfide-bearing minerals concentrated within the sheeted vein sets as chalcopyrite and chalcocite. The mineralization is hosted primarily in Precambrian granite and Tertiary granodiorite. Mineralization also occurs in the Tertiary quartz monzonite porphyry dikes. Figure 8 presents the distribution of exposed PAG and NPAG materials at the end of mining. Additional information about the mineralogy, materials classification, materials handling plan, and potential impacts to water quality are provided in reports prepared by Life Cycle Geo (LCG, 2021a and 2021b).

As described in Section 5.2, water would accumulate at the bottom of the open pit at the end of mining if dewatering were to stop. The exposed PAG materials within the open pit are expected to impact the quality of this water, causing exceedances of several Section 3103 standards (LCG, 2021a and 2021b). Therefore, Tyrone will install a dewatering system within the Emma Pit to minimize the amount of accumulated water. The water will be pumped from a water management sump and conveyed to the Tyrone Mine through a new pipeline that will connect to the existing 1C and 7A seepage collection conveyance system, which reports to the 1A PLS Tank (Golder, 2021a and 2021b).

4.2 Groundwater Hydrology

The primary water-bearing rock at Emma is Precambrian granite. Groundwater flow within the rock is governed by secondary permeability (joints and fractures). DBS&A conducted a groundwater investigation at Emma in 2021 to support the characterization of groundwater conditions at Emma, including depth to water, groundwater flow direction, and water quality. Two groundwater monitoring sites were constructed: 396-2021-01 and 396-2021-02. 396-2021-01 is located south of the proposed open pit and was kept as a borehole. The upper portion of the borehole is stabilized and sealed with 10-inch-diameter steel surface casing to 20 feet below ground surface (feet bgs) and a surface monument that includes a concrete pad and locking metal riser (Appendix B). The borehole is expected to remain open given the competency of the Precambrian granite in which the borehole was advanced. 396-2021-01 was kept as a borehole because of its low groundwater yield and uncertainty regarding where groundwater was entering the borehole. 396-2021-02 was completed as a monitor well screened in Precambrian granite (Appendix B). It is located west of the proposed open pit. DBS&A (2021) describes the installation of 396-2021-01 and 396-2021-02.

Monitor well MB-44 is located east of Emma, and is screened in Tertiary quartz monzonite that overlies Precambrian granite (Appendix B). The well is monitored in accordance with DP-396 (NMED, 2007). Its period of record includes water level and water quality data from 2002 to present.

Data collected at 396-2021-01, 396-2021-02, and MB-44 are used to characterize groundwater conditions at Emma, as presented in Sections 4.2.1 through 4.2.3. Table 2 summarizes completion information for the three groundwater monitoring locations. Several domestic wells are located in the Apache Mound Subdivision, south of Emma. The domestic wells are discussed in Section 4.2.4.

4.2.1 Groundwater Level and Flow Direction

DBS&A selected locations for 396-2021-01 and 396-2021-02 to form a triangle with the existing monitor well MB-44 (Figure 9). The locations are also outside the proposed extent of the Emma open pit. The network of monitor wells allows a potentiometric surface that spans the area of the proposed open pit to be constructed from depth to water measurements and the hydraulic gradient to be determined. A potentiometric surface based on May 2021 depth to water measurements is shown in Figure 9. The hydraulic gradient is 0.05 foot per foot (ft/ft), and the groundwater flow direction is to the northeast. This groundwater flow direction is consistent with regional groundwater mapping presented in Trauger (1972). Groundwater flows from the Big Burro Mountains (located to west) toward the area beneath Oak Grove Wash (located to the east).

Also shown in Figure 9 is the groundwater level elevation at BH-2020-04, a wireline piezometer installed in a former exploration borehole. Wireline piezometers were placed in the exploration borehole as it was plugged with neat cement. The groundwater level elevation at the wireline piezometer is consistent with the potentiometric surface.

Depth to water at the three monitoring locations ranges from approximately 168 feet (396-2021-01) to approximately 332 feet (MB-44) (Table 3). The range in depth to water measurements is due to the steepness of the hydraulic gradient and differences in land surface elevations between the monitoring locations. Figures 6 and 7 provide hydrogeologic cross sections that show the existing land surface, potentiometric surface, and proposed depth of the Emma open pit. At the proposed location of the open pit, depth to water is 200 to 300 feet below the existing land surface, and the groundwater level is approximately 200 feet above the proposed bottom of the Emma open pit.

The groundwater level elevation at MB-44 is steady. Figure 10 is a hydrograph showing the water level at MB-44. Except for a period between November 2007 and November 2012, the groundwater level elevation at MB-44 has varied by only 2 feet, ranging from approximately 5,808 to 5,810 feet msl.

4.2.2 Pumping Tests and Hydraulic Properties

In May 2021, DBS&A conducted constant-rate pumping tests at 396-2021-01, 396-2021-02, and MB-44. Three separate pumping tests were performed—one for each of the three locations. The groundwater monitoring locations are near Emma (Figure 9) and completed in igneous rock, either Precambrian granite or Tertiary quartz monzonite (Appendix B). The pumping tests were

performed to determine the groundwater hydraulic properties of the igneous rocks (e.g., transmissivity) at Emma in support of characterization of regional groundwater conditions.

For each pumping test, water level response was monitored during both the pumping and recovery periods. Monitor wells 396-2021-02 and MB-44 have sampling pumps that were used for the pumping tests. Tyrone contracted with TL Drilling and Well Service to temporarily install a pump at 396-2021-01 for use during the pumping test. Water levels were monitored and recorded using In-Situ Level TROLL 700 pressure transducers, with readings taken every minute. The pressure transducers were set just a few feet above the top of the pumps. Pumping rates were monitored and recorded using a totalizer flow meter. DBS&A initiated each pumping test by turning on the pump and then allowed pumping to continue until the water level fell to within a few feet of the pressure transducer. Then, the pump was shutoff and water level recovery monitored until the water level rose to within at least 90 percent of its pre-pumping (static) level.

In addition to the pressure transducer and totalizer flow meter data, DBS&A also recorded manual water level and water quality field parameter measurements. Manual water levels were measured with a water level sounder. Water quality field parameters were measured with a YSI multi-meter. Water quality field parameters included pH, specific conductance, oxidation/ reduction potential (ORP), and dissolved oxygen (DO). Field data are provided in Appendix C.

Descriptions of the three pumping tests follow:

- *Borehole 396-2021-01:* The test was conducted on May 21, 2021. The borehole was pumped for 111 minutes at an average pumping rate of 6.2 gallons per minute (gpm). Total drawdown was approximately 194 feet. Field pH and specific conductance were 6.54 and 1,827 microsiemens per centimeter (µS/cm), respectively, at the end of the pumping period. Groundwater at 396-2021-01 took 14 days to recover to a level that was 16.6 feet lower than the pre-pumping (static) level; recovery was very slow.
- *Monitor well 396-2021-02:* The test was conducted on May 26, 2021. The well was pumped for 69 minutes at an average pumping rate of 3.2 gpm. Total drawdown was approximately 81 feet. Field pH and specific conductance were 7.31 and 851 µS/cm, respectively, at the end of the pumping period.
- Monitor well MB-44: The test was conducted on May 27, 2021. The well was pumped for 360 minutes at an average pumping rate of 3.3 gpm. Total drawdown was approximately

64 feet. Field pH and specific conductance were 7.17 and 783 µS/cm, respectively, at the end of the pumping period.

DBS&A analyzed the data from the three pumping tests using AQTESOLV Pro, version 4.50 (HydroSolve, 2000). AQTESOLV is distributed by HydroSOLVE, Inc. and contains a comprehensive suite of standard and published analytical solutions for determining aquifer properties from pumping and slug tests. Table 4 summarizes the pumping test results, which include estimates of transmissivity and hydraulic conductivity using the Theis (recovery) method. Transmissivity is the product of hydraulic conductivity and aquifer thickness. Graphical analyses produced in AQTESOLV are provided in Appendix D. Descriptions of the analyses follow:

- *Borehole 396-2021-01:* The transmissivity value determined from the analysis is 0.0372 square feet per day (ft^2/d) (Table 4). The hydraulic conductivity value calculated from this transmissivity estimate and an assumed aquifer thickness of 597 feet is small, 6.2×10^{-5} feet per day (ft/d). The aquifer thickness used in the calculation is the depth of the boring to the static water level at the beginning of the pumping test.
- *Monitor well 396-2021-02:* The transmissivity value determined from the analysis is 0.8691 ft^2/d (Table 4). The hydraulic conductivity value calculated from this transmissivity estimate and an aquifer thickness of 90.4 feet is 9.6×10^{-3} ft/d. The aquifer thickness used in the calculation is the depth of the bottom of the well screen to the static water level at the beginning of the pumping test.
- *Monitor well MB-44:* The transmissivity value determined from the analysis is 10.46 ft^2/d (Table 4). The hydraulic conductivity value calculated from this transmissivity estimate and an aquifer thickness of 148.2 feet is 7.1×10^{-2} ft/d. The aquifer thickness used in the calculation is the depth of the bottom of the well screen to the static water level at the beginning of the pumping test.

The geometric mean transmissivity calculated from the individual results of the three pumping tests is 0.70 ft^2/d. The geometric mean hydraulic conductivity is 3.5×10^{-3} ft/d. Higher transmissivity and hydraulic conductivity values are observed at the two monitor wells located closer to the Sprouse-Copeland Fault (i.e., 396-2021-02 and MB-44). But in general, the values are low, indicating that the water-bearing granite is low yielding.

It should be noted that the transmissivity and hydraulic conductivity values measured at individual wells are indicative of the permeability of specific fracture zones, as well screens are set across water-yielding fractures. Consequently, the measured values are likely greater than

aquifer-scale "bulk" permeability values that incorporate the entire volume of porous media (i.e., both fractured and unfractured rock).

4.2.3 Groundwater Quality

Initial water quality samples were collected from 396-2021-01 and 396-2021-02 in May and August 2021. The samples were submitted to SVL for analysis of major ions and metals. Table 5 reports the water quality analytical results, which are summarized as follows:

- *396-2021-01:* May 2021 results exceeded Section 3103 standards for fluoride, sulfate, total dissolved solids (TDS), and several metals (arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, and nickel). The water quality at the monitoring location was better in August 2021, but still exceeded standards for fluoride, manganese, sulfate, and TDS. Results of future water quality sampling will help to determine whether the elevated metals concentrations were outliers.
- *396-2021-02:* All detected constituent concentrations were below Section 3103 standards.

Groundwater monitoring at 396-2021-01 and 396-2021-02 will establish baseline water quality at Emma, as mining has not started and regional groundwater at the Tyrone Mine, located to the north, flows toward the north and northeast and not toward Emma. Fluoride, manganese, sulfate, and TDS concentrations at 396-2021-01 appear to be naturally elevated.

Water quality at monitor well MB-44 is good, meeting Section 3103 standards with a few exceptions, and has been steady since the well was installed in 2002. The few exceptions appear to be outliers. Figure 11 is a time-series plot of indicator parameters (sulfate and TDS) at MB-44. Sulfate and TDS concentrations are approximately 180 and 560 mg/L, respectively. The historical record of water quality data for MB-44 is provided in Appendix E.

4.2.4 Nearby Domestic Wells

Figure 12 shows domestic wells in the Apache Mound Subdivision, which is located south of Emma. These are the closest domestic wells to the proposed mine. The domestic well information shown in Figure 12 was obtained from the New Mexico Office of the State Engineer (NMOSE) through their open data website, and represents points of diversion within New Mexico administered by NMOSE (NMOSE, 2021). When DBS&A downloaded the information on September 10, 2021, NMOSE had last updated the information on September 8, 2021.

The Copper Mine Rule stipulates setback limits from private domestic wells and public supply wells for leach stockpiles, waste rock stockpiles, tailing impoundments, and process water and impacted stormwater impoundments. The setbacks are defined in 20.6.7.19 NMAC, as follows:

- Greater than 500 feet from a private domestic water well or spring that supplies water for human consumption
- Greater than 1,000 feet from any water well or spring that supplies water for a public water system

Proposed mining activities at Emma meet these setback requirements, as the nearest domestic well (M-09178) is located more than 2,000 feet from the site (Figure 12). Emma will have a waste rock stockpile for the storage of non-acid-generating materials and stormwater impoundments. The proposed location for the waste rock stockpile is along the north side of the open pit, between Emma and Upper Oak Grove Wash. Stormwater runoff from within the open pit and ancillary mine facilities will be managed in accordance with the DP-396 water management plan (Golder, 2021a). Springs do not exist at Emma.

Burro Mountain Homestead is another subdivision in the general vicinity of Emma that uses domestic wells for water supply. It is located approximately 4 miles west of the proposed mine, well beyond the setback requirements of 20.6.7.19 NMAC.

Most of the domestic wells in the Apache Mound Subdivision appear to be completed in Precambrian granite based on surface geologic mapping of Hedlund (1978c) and rock descriptions provided in well records. Drilling contractors typically submit well records to NMOSE after they construct wells. The well records provide well completion information, including depth to water and rock descriptions. Appendix F provides well records for Apache Mound Subdivision domestic wells. Water-bearing rocks are typically described as fractured granite or fractured quartz monzonite. Granite and quartz monzonite can be mistaken for one another, especially when rock descriptions are interpreted from drill cuttings. When provided, well yields range from a few gpm (less than 5 gpm) to up to 60 gpm.

Some of the shallower wells in the Apache Mound Subdivision may be completed in the alluvium of Cherry Creek.

DBS&A conducted numerical groundwater flow modeling using MODFLOW to estimate potential groundwater drawdown at 40 years from dewatering at the proposed Emma open pit. The report describing the numerical groundwater flow model and its results is provided as

Appendix G. Predicted drawdown after 40 years of dewatering is approximately 2 feet in the area south of Emma, near the Apache Mound Subdivision. Most of the domestic wells near Emma, where 2 feet of drawdown is predicted, have water column thicknesses greater than 100 feet (Appendix G).

Tyrone installed monitoring location 396-2021-01 between Emma and the Apache Mound subdivision. It will serve as a sentinel location to monitor for potential drawdown due to dewatering.

5. Open Pit Water Balance

There is potential for both groundwater and stormwater to accumulate in the Main North area of Emma. This area will be excavated below the water table, so groundwater is expected to flow into it. Tyrone intends to backfill the Main South, Upper North, Upper East, and Upper South catchment areas (Figure 3) during mining operations for water management purposes. The backfill will be graded to direct stormwater to the bottom of the Main North area. A water balance model was developed to determine the hydrologic characteristics of a pit lake if one were allowed to form at the bottom of the Main North area at closure. The water balance model quantifies all inflow and outflow water sources to and within the Emma open pit.

DBS&A developed the water balance model using GoldSim, a Monte Carlo simulation software package for dynamically modeling complex systems (GoldSim Technology Group, 2018). Simulations can be developed either deterministically (single realization) or probabilistically (multiple realizations). The following subsections discuss the water balance modeling approach and results.

5.1 Inflows and Outflows

The Emma water balance model is set up as a 100-year simulation designed to predict closure conditions. The current model framework assumes that mining will be complete by the end of 2026; therefore, the model simulation period is from January 1, 2027 through December 31, 2126. The model uses calendar time and a daily time step.

Water balance for the Emma open pit is defined in Equation 1:

$$V_{pit\ lake} = P + R + GW - E \quad (1)$$

where P = direct precipitation on the ponded water surface (if present)
R = stormwater runoff from within the Emma open pit
GW = groundwater inflow
E = evaporation from the ponded water surface (if present)

The proposed open pit configuration for Emma will create five depressions. Four of the depressions (Main South, Upper North, Upper East, and Upper South) will be backfilled during mining operations and graded to direct stormwater runoff to the bottom of the Main North area (Figure 3). The total catchment area of the Emma open pit is 116.3 acres.

5.1.1 Direct Precipitation

The historical precipitation record of the Tyrone G.O. meteorological station from 1990 through 2021 was used to develop a 100-year synthetic precipitation series for the water balance model. The synthetic precipitation series was created by randomly selecting a month of daily precipitation data from the G.O. historical record for the corresponding month in each year of the synthetic precipitation series. This method maintains seasonal precipitation patterns by using January G.O. precipitation records for January synthetic precipitation values, February G.O. precipitation records for February synthetic precipitation values, and so on. The average annual rainfall for the synthetic series is 16.1 inches per year (in/yr), which is comparable to the G.O. historical precipitation record average annual rainfall of 16.0 in/yr. DBS&A developed the synthetic precipitation series because the water balance model is predictive and estimates future conditions.

Direct precipitation is calculated as daily precipitation depth multiplied by the pond surface area; 100 percent of the rainfall that falls on the ponded surface is captured.

5.1.2 Stormwater Runoff within Open Pit Catchment Area

Stormwater runoff from within the open pit area is calculated using the SCS runoff curve number method (SCS-CN method) (NRCS, 2004a and 2004b) assuming a curve number value of 80 and using the 100-year synthetic series of daily precipitation values. The value of the curve number affects the amount of calculated runoff. Higher values result in more runoff and lower values result in less runoff. While the exposed rocks, high walls, and roads are expected to generate runoff, some pit features, such as benches and berms, are expected to capture stormwater, where it is likely to infiltrate and/or evaporate. A value of 80 was selected because it is a moderate curve number that allows for some abstraction of stormwater, which is expected.

The stormwater runoff depth is calculated using curve number runoff equation, as defined in Equation 2:

$$Q = \frac{(P - I_a)^2}{(P - I_a) + S} \quad P > I_a \qquad (2)$$
$$Q = 0 \quad P < I_a$$

where Q = stormwater runoff depth
P = precipitation depth
S = maximum potential retention after runoff begins
I_a = initial abstraction

Maximum potential retention is calculated using Equation 3:

$$S = \frac{1000}{CN} - 10 \qquad (3)$$

where CN = Curve number

Using a curve number of 80, S is 2.5 inches. Initial abstraction represents the minimum rainfall depth required to produce runoff during a storm event (NRCS, 2004a). Initial abstraction is calculated using Equation 4:

$$I_a = 0.2 \cdot S \qquad (4)$$

Using a CN of 80, the initial abstraction value is 0.5 inch (i.e., at least 0.5 inch of rainfall is required to produce runoff).

The entire stormwater catchment area of the Emma open pit is 116.3 acres (Figure 3). This area includes the catchment areas of all five depressions. Tyrone intends to backfill the four smaller depressions and direct stormwater to the bottom of the Main North area. The volume of stormwater runoff is calculated as the runoff depth determined by the SCS-CN method using the synthetic precipitation series multiplied by the runoff area. The runoff area is the entire catchment area (i.e., 116.3 acres) minus the surface area of any ponded water.

5.1.3 Groundwater Inflow

Groundwater level elevations in the Emma area range from approximately 5,800 feet msl on the northeast side of the proposed open pit to approximately 6,000 feet msl on the southwest side of the proposed open pit (Figure 9). The bottom elevation of the open pit is expected to be

5,700 feet msl. Therefore, the open pit will be excavated below the water table and groundwater will flow by gravity into the deepest portion of the open pit (i.e., Main North area).

DBS&A conducted numerical groundwater flow modeling to predict groundwater inflow to the Emma open pit during active mining and at closure. This is the same groundwater flow modeling that DBS&A used to estimate potential drawdown due to dewatering (Section 4.2.4) and to predict the extent of the groundwater capture zone of the Emma water management sump (Section 6). The report describing the groundwater flow model, including its development and calibration, is provided as Appendix G. DBS&A simulated dewatering in the numerical groundwater flow model using drain cells placed at an elevation of 5,700 feet msl (i.e., at the proposed bottom of the open pit).

As shown in Figure 13, estimated groundwater inflow rates steadily decrease over time. Initially, the estimated groundwater inflow rate is 16.3 gallons per minute (gpm) when groundwater is encountered as the open pit is advanced during the active mining period. At closure, the groundwater inflow rate decreases from 13.8 to 9.0 gpm. The time series of estimated groundwater inflow rates for the closure period (i.e., years 4 through 103) were used as the groundwater inflow rates in the water balance model.

5.1.4 Evaporation from Ponded Water Surface

As described in Section 2, an annual evaporation rate of 56.5 in/yr is used in the water balance model. This annual evaporation rate was multiplied by monthly distribution factors calculated from 1X tailing dam pan evaporation data to determine monthly evaporation rates (Table 6). These monthly evaporation rates are used in the water balance model to estimate daily evaporation, as the water balance model uses a daily time step.

Evaporation from the ponded water surface is calculated as the daily evaporation rate multiplied by the surface area of the pond, limited to the availability of water for evaporation (i.e., cannot evaporate more water than is present).

5.1.5 Stage-Storage Curve Development

DBS&A developed elevation, surface area, and volume relationships, also known as stage-storage curves, for Emma based on the EOY 2026 open pit configuration (Figure 3), but without the placement of backfill in the Main North area (i.e., near the proposed water management sump). The water balance model was developed to determine whether a pit lake would form at the bottom of the Main North area, and to determine the need for future water management at

closure. The backfill grading and water management sump designs were developed as an outcome of the water balance and water quality model predictions.

The water balance model calculates the pond volume in the Main North area based on the calculated inflows to and outflows from the depression. The pond volume is then used to estimate the water level elevation and the pond surface area from the stage-storage curves. The pond surface area is used in the calculation of direct precipitation and evaporation.

5.2 Predicted Pit Lake Levels, Surface Areas, and Volumes

The primary purposes for developing the GoldSim water balance model were to determine hydrologic characteristics of a pit lake within the open pit at closure if one were allowed to form and to estimate inflow rates for the different water sources. The Main North area is the deepest portion of the Emma open pit and has the potential to accumulate water. It will be excavated below the water table and has a large catchment area (Figure 3). In addition, Tyrone intends to backfill the other four depressions (Main South, Upper North, Upper East, and Upper South) during mining operations and grade and cover the backfill to direct stormwater runoff to the bottom of the Main North area.

Initially, stormwater and groundwater inflow to the Main North area exceeds evaporation, resulting in the accumulation of water and formation of a perennial lake (assuming dewatering stopped). Once the surface area of the lake reaches approximately 6.9 acres, stormwater and groundwater inflow are balanced by evaporation and the water level of the lake stabilizes at an elevation of approximately 5,770 feet msl (70-foot water depth). Figure 14 presents the predicted elevation, surface area, and volume of the pit lake.

The pit lake appears to be an evaporative sink, as the simulated water level elevation of the lake is below the interpolated groundwater level elevation along the east side of the Emma open pit. The interpolated groundwater level elevation along the east side of the Emma open pit is at approximately 5,800 feet msl (Figure 9), which is 30 feet higher than the simulated pit lake water level elevation of 5,770 feet msl. This interpretation may change if additional data are collected that show lower groundwater level elevations along the east side of Emma than those currently observed at MB-44.

There are three simulated sources of water to the pit lake in the Main North area: (1) direct precipitation, (2) stormwater runoff from within the open pit catchment area (116.3 acres), and (3) groundwater. Evaporation is the only outflow (i.e., water loss). Figure 15 presents average

annual inflows and outflow for the simulation period. A summary of inflow rates to the pit lake at closure follows:

- The average annual groundwater inflow rate is initially 21.9 ac-ft/yr (13.6 gpm), and steadily decreases to 14.6 ac-ft/yr (9.0 gpm) after 100 years, averaging 16.4 ac-ft/yr (10.2 gpm).
- Average annual stormwater inflow (direct precipitation and stormwater runoff) is 16.0 ac-ft/yr (9.9 gpm).
- Average annual total inflow rate is 32.4 ac-ft/yr (20.1 gpm).
- Maximum annual total inflow rate is 56.2 ac-ft/yr (34.8 gpm).
- Maximum daily total inflow rate is 3,956 gpm.

The water quality of the simulated pit lake is expected to exceed Section 3103 standards (LCG, 2021a and 2021b). Therefore, Tyrone intends to collect and pump the water from a water management sump during active mining and at closure to prevent a pit lake from forming.

6. Predicted Open Pit Capture Zone and Open Pit Surface Drainage Area

DBS&A conducted numerical groundwater flow modeling to predict the extent of the groundwater capture zone from dewatering at the Emma water management sump. This sump will be used during active mining and at closure to collect groundwater and stormwater and pump these fluids to the Tyrone Mine. The numerical groundwater flow modeling was the same as that used to estimate potential drawdown due to dewatering (Section 4.2.4) and to predict groundwater inflow to the bottom of the Emma open pit (Figure 13) that was used in the GoldSim water balance model (Section 5). The modeling was performed using MODFLOW. The report describing the numerical groundwater flow model, including its development and calibration, is provided as Appendix G. DBS&A used the predicted groundwater capture zone to delineate a predicted area of open pit hydrologic containment and a predicted open pit surface drainage area (OPSDA). These areas are defined in 20.6.7.7 NMAC, as follows:

> "Area of open pit hydrologic containment" means, for an open pit that intercepts the water table, the area where ground water drains to the open pit and is removed by evaporation or pumping, and is interior to the department approved monitoring well network installed around the perimeter of an open pit pursuant to Paragraph (4) of Subsection B of 20.6.7.28 NMAC and also limited to the area of disturbance authorized by a discharge permit.

> "Open pit surface drainage area" means the area in which storm water drains into an open pit and cannot feasibly be diverted by gravity outside the pit perimeter, and the underlying ground water is hydrologically contained by pumping or evaporation of water from the open pit.

The area of open pit hydrologic containment and OPSDA are predicted based on numerical groundwater flow modeling because mining and dewatering have not begun. In addition, Tyrone is planning to install additional monitor wells around the perimeter of Emma. The additional monitor wells along with the three existing monitoring locations will be used to confirm groundwater flow directions once mining begins and a cone of depression from dewatering develops. In the meantime, the predictions provide expected extents for the area of open pit hydrologic containment and OPSDA.

DBS&A developed a 103-year MODFLOW simulation to predict the effect that dewatering at Emma is expected to have on groundwater levels and flow direction (Appendix G). The 103-year simulation period represents 3 years of active mining followed by 100 years of closure. The open pit was represented in the MODFLOW model by the proposed EOY 2026 pit configuration shown in Figure 3. Dewatering was simulated using drain cells placed at the bottom of the open pit (i.e., at an elevation of 5,700 feet msl), and the open pit was assumed to be in place at the beginning of the simulation. The groundwater capture zone was delineated from simulated particle tracks and simulated groundwater elevation contours (Figure 16). Particle tracking is a modeling technique used to define groundwater flow paths; particles are placed in a model and their movement is traced based on simulated groundwater elevations. The particles were placed in the MODFLOW model upgradient (west) of Emma. Several particles are captured at the proposed location of the Emma water management sump, representing groundwater flow to the sump and defining a capture zone for the sump.

The groundwater capture zone was overlaid on the proposed extent of the Emma open pit (Figure 17) to delineate a predicted area of open pit hydrologic containment and predicted OPSDA. The proposed extent of the Emma open pit is expected to define an area of disturbance to be authorized by the modification of DP-396 and the stormwater catchment area for the open pit. The predicted area of open pit hydrologic containment and predicted OPSDA occupy the same space; therefore, only the OPSDA is shown in Figure 17. The predicted OPSDA encompasses the deepest portion of the open pit, including the proposed location for the Emma water management sump, and extends to the west. The Upper North area, Upper East area, and a portion of the Upper South area are outside of the predicted OPSDA.

7. Conclusions

This hydrogeologic report describes the geology and hydrology at Emma, including discussion of potential impacts of the proposed mining operation on surface water and groundwater resources. It provides information to support permitting documents being prepared by Tyrone and other consultants for the proposed Emma open pit and its ancillary facilities. It is intended to help meet the requirements of Section 69-36-5 of the Mining Act, 19.10.5 NMAC, and the Copper Mine Rule (20.6.7 NMAC) that pertain to geology, surface water hydrology, and groundwater. Several figures are included to illustrate the geologic and hydrologic regimes.

Emma is located on a topographic high situated between Upper Oak Grove Wash, located to the north, and Cherry Creek, located to the south (Figure 2). These are ephemeral washes that naturally divert stormwater originating in the Big Burro Mountains around Emma. Small, upland drainages originate on or very near the site and will be mined out as the Emma open pit is advanced. The open pit will create a 500- to 600-foot depression that will cover 116.3 acres (Figure 3). Surface water at Emma will consist of stormwater runoff generated from rainfall within the area of the open pit. Tyrone is planning to maintain a dewatering sump at the bottom of the open pit to pump water as it accumulates. The water will be pumped to the Tyrone Mine.

The proposed mining operation will have minimal impact on the areas hydrologic balance, as defined in 19.10.5.508 NMAC. Stormwater flows in Upper Oak Gove Wash and Cherry Creek will continue around Emma, as they do today, and do not require diversions. In addition, all stormwater generated within the open pit will be hydrologically contained within the perimeter of the open pit, including stormwater that contacts PAG materials and may become impacted. The stormwater will ultimately be directed to a water management sump constructed at the bottom of the Main North area, where water will be collected and pumped to the Tyrone Mine. There will be no releases of acid or toxic substances.

Precambrian granite is the primary rock type at Emma (Figures 5). Groundwater is present in the granite and other igneous rock near Emma, with depth to water ranging from approximately 168 feet (396-2021-01) to approximately 332 feet (MB-44). The groundwater level is approximately 200 feet above the proposed bottom of the Emma open pit (Figures 6 and 7). Pumping tests were conducted at the three groundwater monitoring locations near Emma, and demonstrate the hydraulic conductivity of the water-bearing granite is low, especially to the

south at 396-2021-01 (Table 4). The groundwater flow direction at Emma is to the northeast, and the hydraulic gradient is 0.05 ft/ft.

Groundwater quality at Emma is variable. Water quality samples have been collected from 396-2021-01, 396-2021-02, and MB-44. While groundwater quality at 396-2021-02 and MB-44 is good, meeting Section 3103 standards, groundwater quality at 396-2021-01 is poor, exceeding Section 3103 standards for fluoride, manganese, sulfate, and TDS (Table 5). The elevated constituent concentrations at 396-2021-01 appear to be natural, as there are currently no mining activities at Emma and the groundwater flow direction at the Tyrone Mine, located to the north, is to the north/northeast. Continued groundwater monitoring at 396-2021-01 and 396-2021-02 will establish baseline groundwater quality at Emma.

DBS&A developed a water balance model for the proposed Emma open pit configuration shown in Figure 3. The purpose of the water balance was to determine whether a pit lake would form within the open pit at closure if Tyrone were to stop dewatering and to estimate inflow rates for the different water sources (i.e., groundwater and stormwater). The water balance model results show that a pit lake will form in the Main North area if dewatering were to stop. The simulated pit lake water level elevation is 5,770 feet msl. The simulated pit lake covers approximately 6.9 acres and is up to 70 feet deep. The water quality of the pit lake is expected to exceed Section 3103 standards (LCG, 2021a and 2021b). Therefore, Tyrone intends to collect and pump the water from a water management sump during active mining and at closure to minimize the amount of accumulated water and prevent a pit lake from forming. The water management sump will be constructed at the bottom of the Main North area, and the water will be conveyed via pipeline to the Tyrone mine.

DBS&A conducted numerical groundwater flow modeling using MODFLOW to estimate potential drawdown and to predict the extent of the groundwater capture zone from dewatering at Emma. The report describing the numerical model, including its development and calibration, is included as Appendix G. Predicted drawdown after 40 years of dewatering is approximately 2 feet in the area south of Emma near the Apache Mound Subdivision, where several domestic wells are located. These are the closest domestic wells to Emma. The extent of the groundwater capture zone from dewatering at Emma is shown in Figure 16 and was used to help define a predicted OPSDA. Figure 17 presents the predicted OPSDA.

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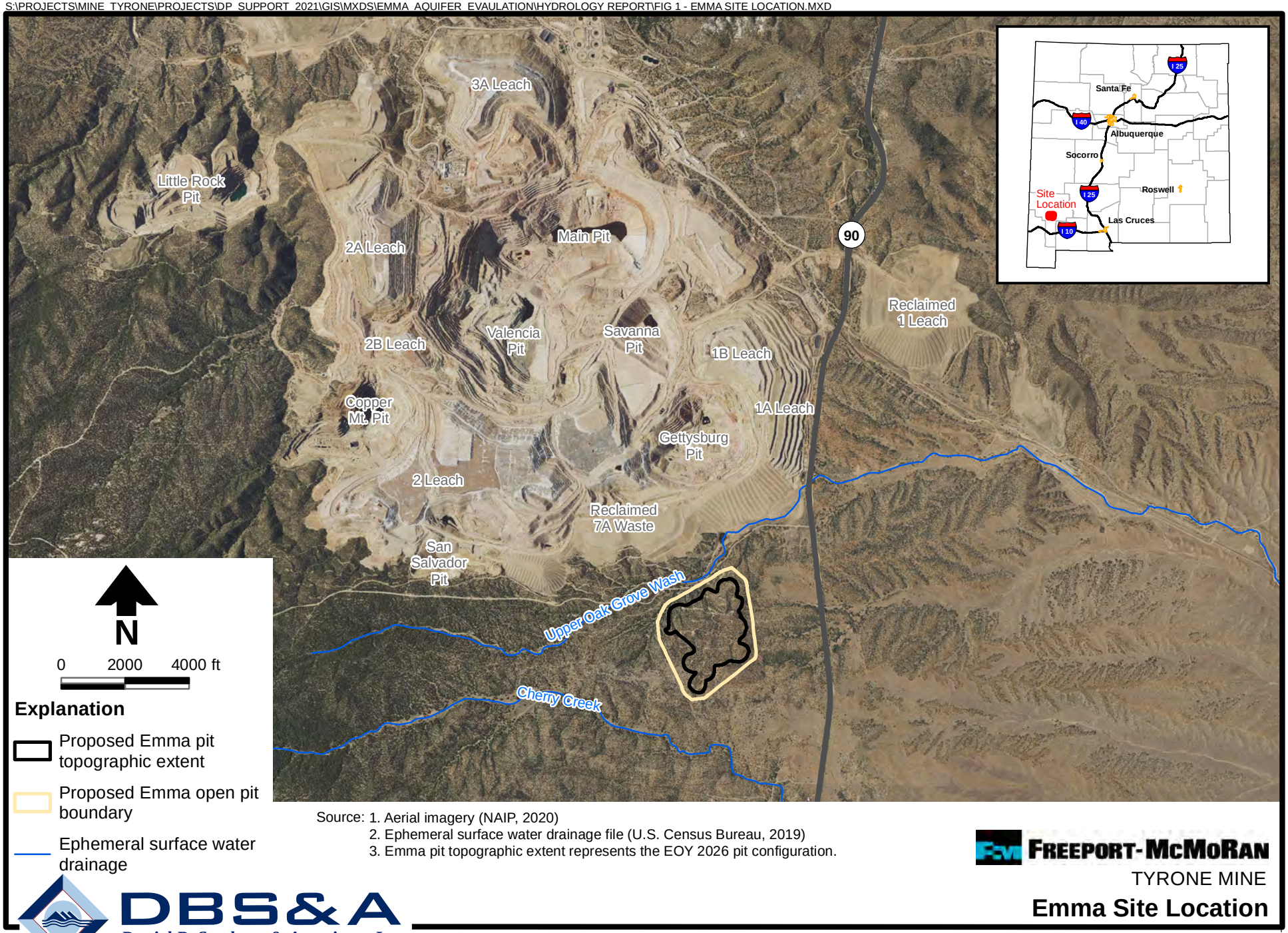
Figures

S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA_AQUIFER_EVAULATION\HYDROLOGY REPORT\FIG 1 - EMMA SITE LOCATION.MXD



Source: 1. Aerial imagery (NAIP, 2020)
2. Ephemeral surface water drainage file (U.S. Census Bureau, 2019)
3. Emma pit topographic extent represents the EOY 2026 pit configuration.

Figure 1

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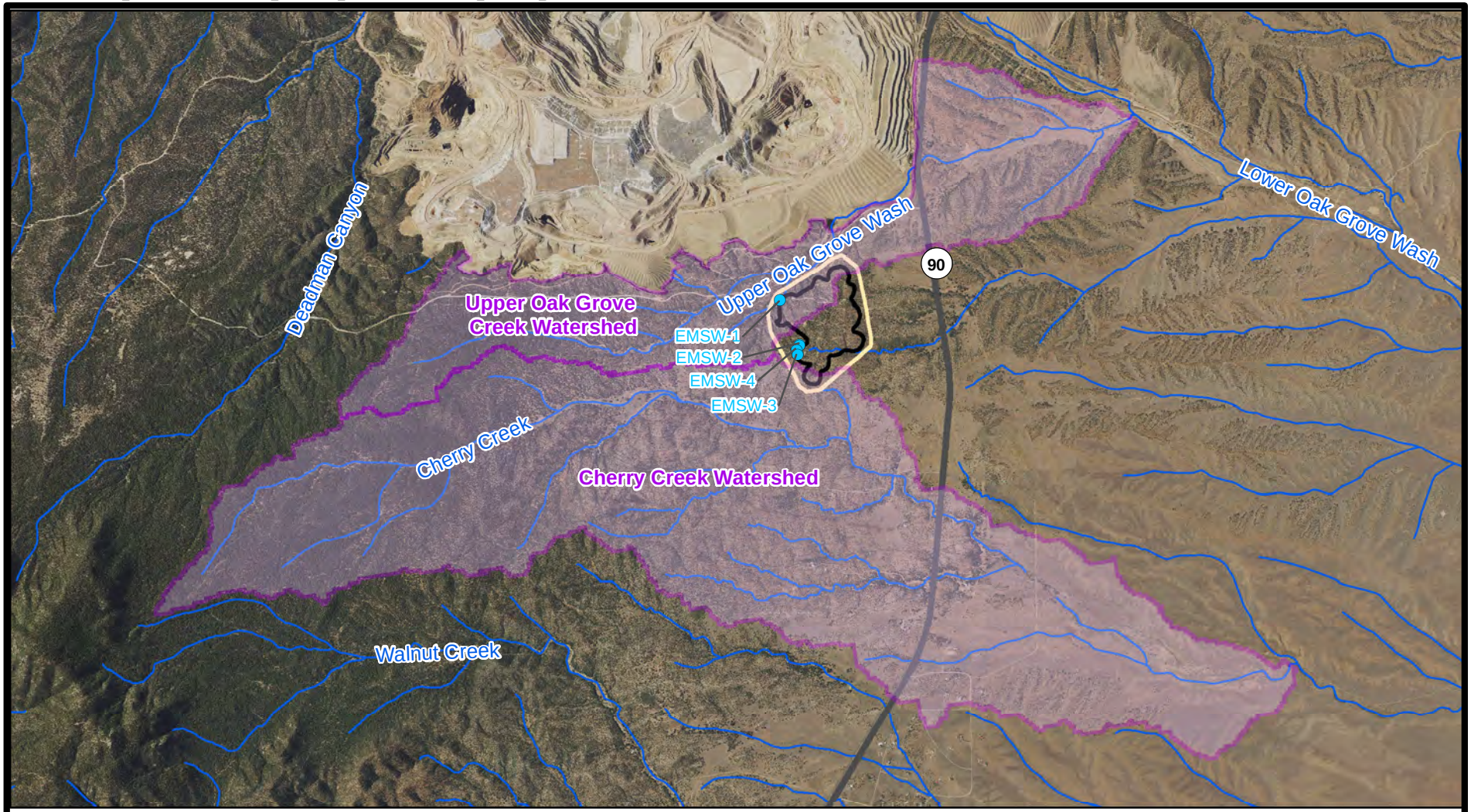
TYRONE MINE

Emma Site Location

S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA_AQUIFER_EVAULATION\HYDROLOGY REPORT\FIG 2 - EXISTING SURFACE WATER DRAINAGE.MXD



N

0 2250 4500 Feet

Explanation

- Proposed Emma pit topographic extent
- Proposed Emma open pit boundary
- Watershed
- Ephemeral surface water drainage
- Stormwater sample location

Source: 1. Aerial image, NAIP (2020).
2. Watersheds developed from USGS StreamStats (2021).
3. Ephemeral surface water drainage file (U.S. Census Bureau, 2019)
4. Emma pit topographic extent represents the EOY 2026 pit configuration.

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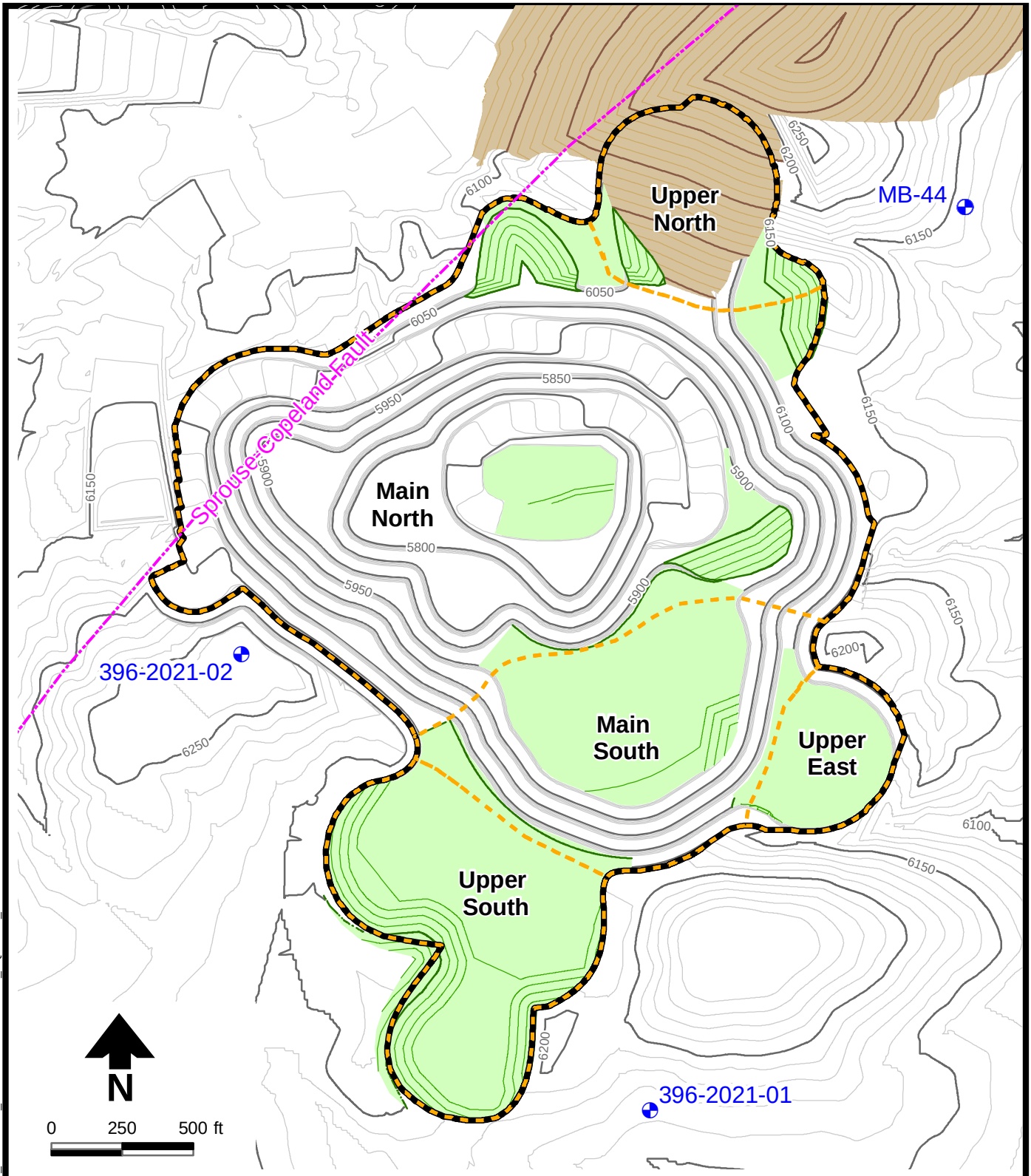
TYRONE MINE

Existing Surface Water Drainages

Figure 2



Explanation

- Monitoring location
- Proposed Emma pit topographic extent
- Subcatchment area
- Proposed backfill area
- EMW stockpile

Source: Topography represents the EOY 2026 pit configuration.

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TYRONE MINE

Open Pit Configuration and Stormwater Catchment

Figure 3

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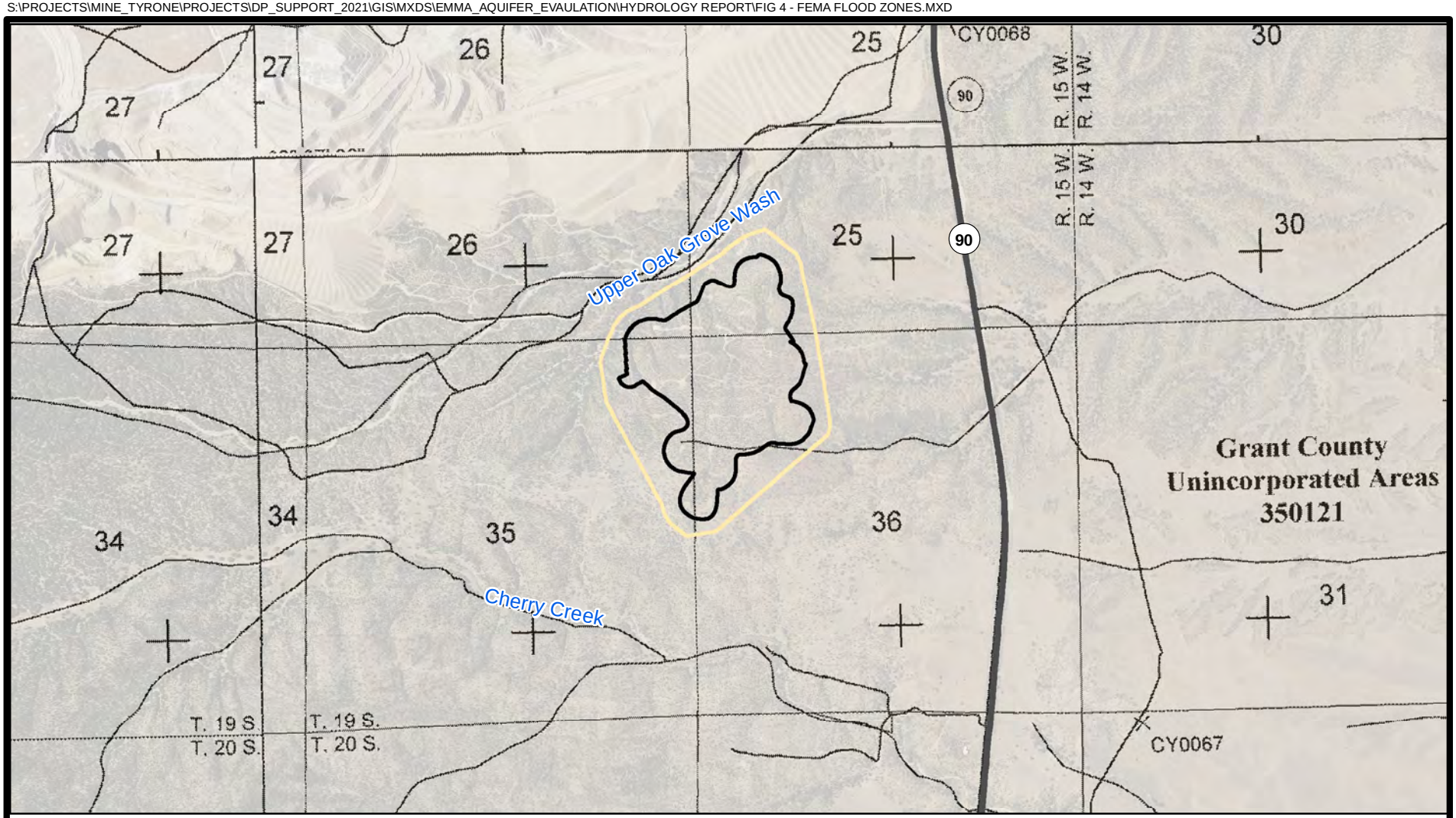
S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA_AQUIFER_EVAULATION\HYDROLOGY REPORT\FIG 3 - CATCHMENT AREAS.MXD

S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA_AQUIFER_EVAULATION\HYDROLOGY REPORT\FIG 4 - FEMA FLOOD ZONES.MXD



N

0 1000 2000 Feet

Explanation

- Proposed Emma pit topographic extent
- Zone A denotes 100-year flood zone
- Proposed Emma open pit boundary

Source:
1. Aerial imagery (NAIP, 2020)
2. FEMA, Flood Insurance Rate Map, Grant County, New Mexico, Panels 1225, 1250, 1235, 1475 and 1500.
3. Emma pit topographic extent represents the EOY 2026 pit configuration.

Note: No Zone A regions are within map view. Nearest Zone A region is more than 2.7 miles east of Emma.

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TYRONE MINE

Figure 4

Federal Emergency Management Agency Flood Zones

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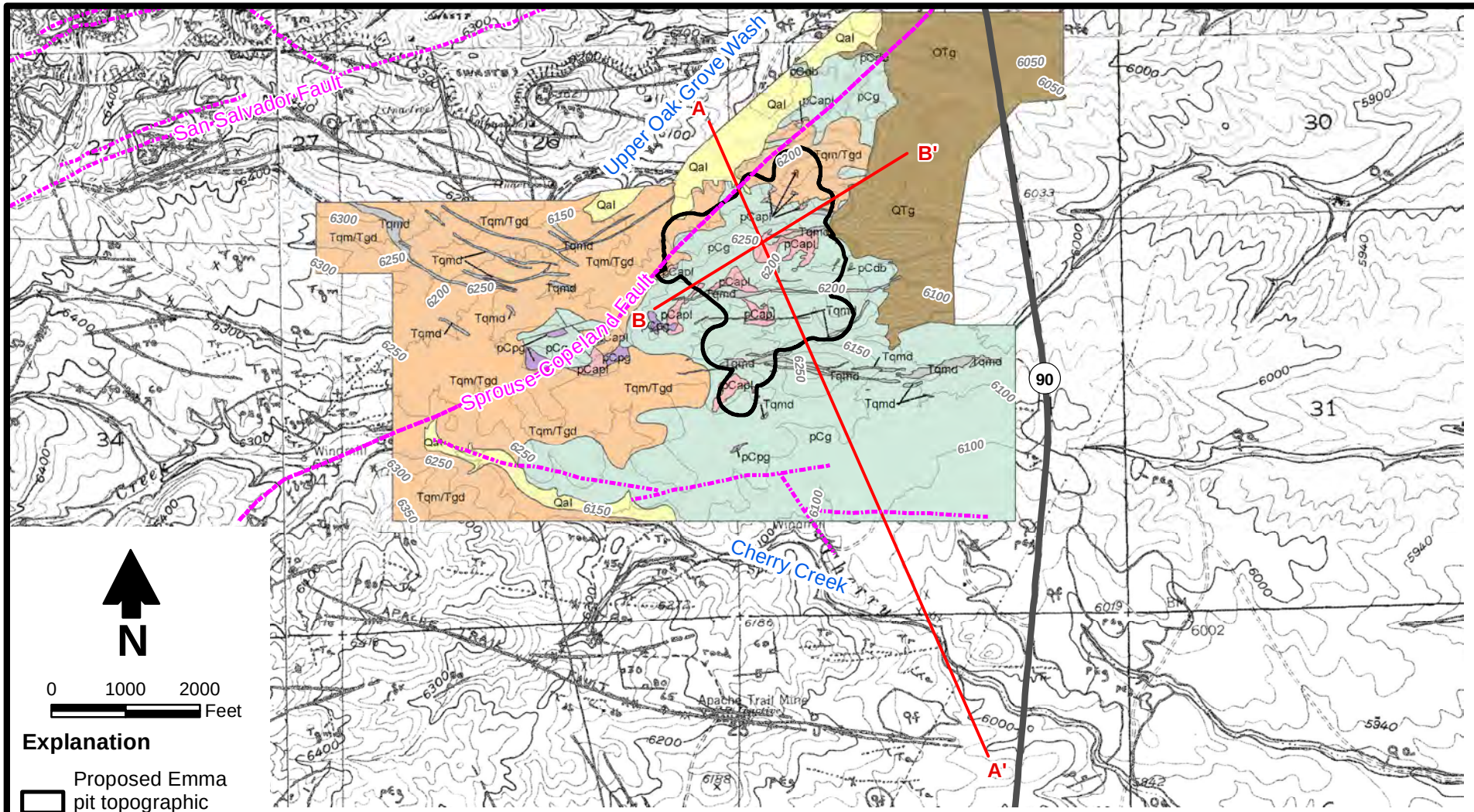
S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA_AQUIFER_EVAULATION\HYDROLOGY REPORT\FIG 5 - GENERALIZED SURFACE GEOLOGY MAP.MXD



Explanation

- Proposed Emma pit topographic extent
- Fault
- Cross section line
- Topography (10-ft contour interval, ft msl)
- (50-ft contour interval, ft msl)

Qal	Quaternary alluvial deposits	pCapl	Precambrian aplite
QTg	Quaternary-Tertiary Gila Conglomerate	pCpg	Precambrian pegmatite
Tqm/Tgd	Tertiary quartz monzonite/Tertiary granodiorite	pCg	Precambrian granite
Tqmd	Tertiary quartz monzonite porphyry dike	pCdb	Precambrian diabase

Source:
1. Emma geology provided by Tyrone, dated 2021.
2. Regional geology from Hedlund (1978c).
3. Emma pit topographic extent represents the EOY 2026 pit configuration.

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TYRONE MINE

Generalized Surface Geology Map

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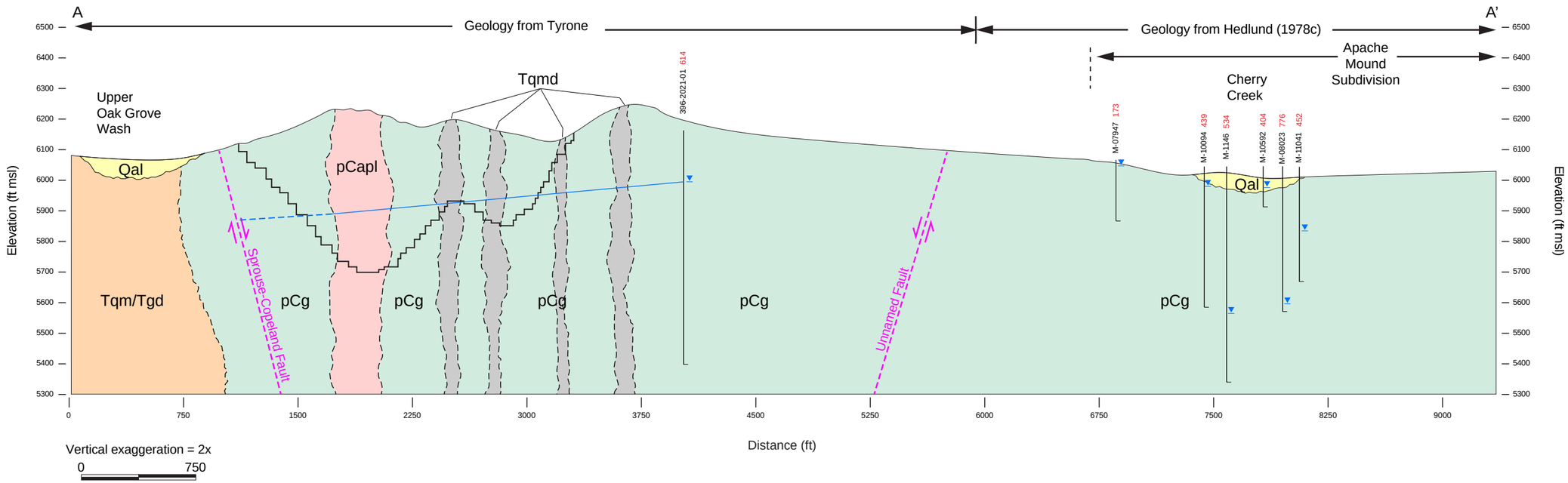
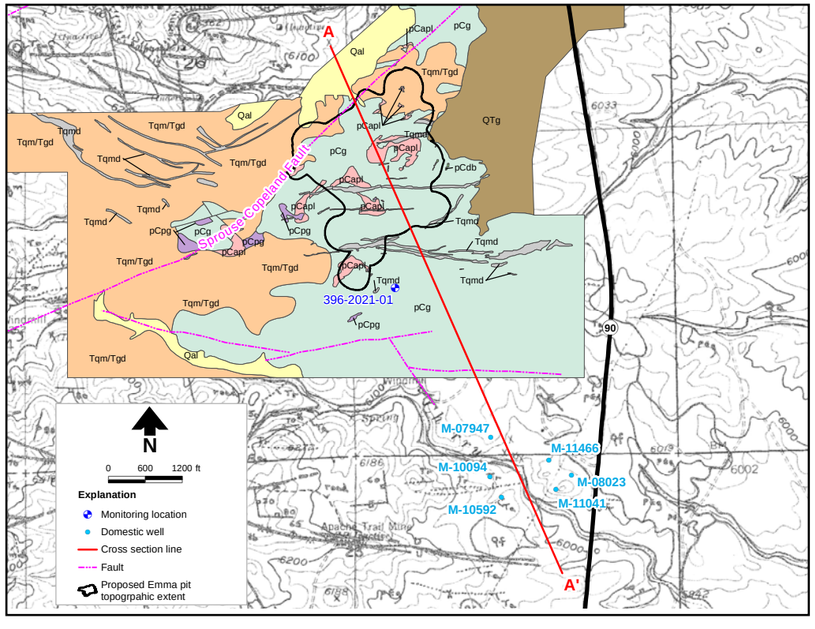
DB20.1392

Figure 5





Note: Emma pit topographic extent represents the EOY 2026 pit configuration.

Explanation

Well
Projection Distance 614
Well ID 396-2021-01
Water Level
Groundwater elevation contour (dashed where inferred)

Geology

Qal	Quaternary alluvium
QTg	Quaternary-Tertiary Gila Conglomerate
Tqm/Tgd	Tertiary quartz monzonite/Tertiary granodiorite
Tqmd	Tertiary quartz monzonite porphyry dike
pCapl	Precambrian aplite
pCpg	Precambrian pegmatite
pCg	Precambrian granite
pCdb	Precambrian diabase

Source: 1. Emma geology provided by Tyrone, dated 2021.
2. Regional geology from Hedlund (1978c).
3. Domestic wells (New Mexico Office of State Engineer, 2021)

Notes: 1. Cross section does not include some of the thinner dikes intersected by the A to A' line.
2. Hedlund (1978c) geology used for very north end of cross section too (i.e., black and white region shown in plan view map).

S:\Projects\Mine_Tyrone\Projects\DP_Support_2021\VR_Drawings\AII\Emma_Apache_Mound_Cross_Section\A-A'-Emma_Apache_Mound\F06_Emma_Apache_Mound_Cross_Section A-A'.ai

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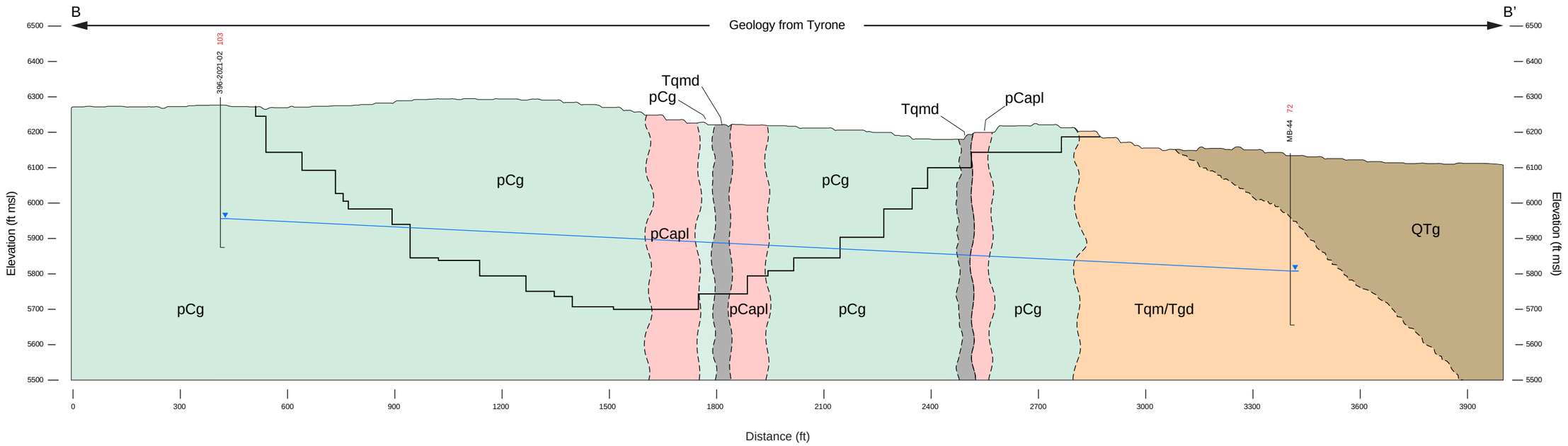
TYRONE MINE

Generalized Hydrogeologic Cross Section A-A'

Figure 6



No vertical exaggeration

0 300

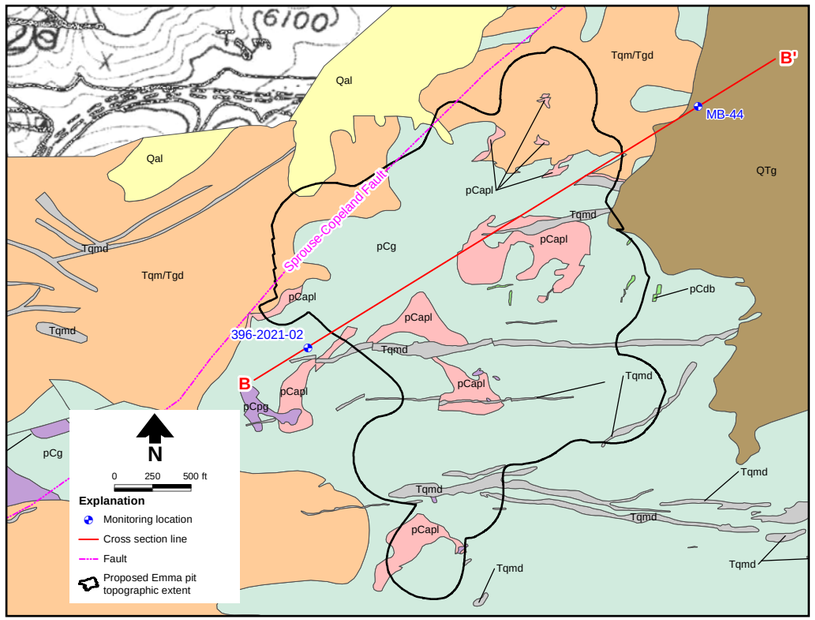
Explanation

- Well
- Projection Distance
- Well ID: 396-2021-02 103
- Water Level
- Groundwater elevation contour (dashed where inferred)

Geology

Qal	Quaternary alluvium
QTg	Quaternary-Tertiary Gila Conglomerate
Tqm/Tgd	Tertiary quartz monzonite/Tertiary granodiorite
Tqmd	Tertiary quartz monzonite porphyry dike
pCapl	Precambrian aplite
pCpg	Precambrian pegmatite
pCg	Precambrian granite
pCdb	Precambrian diabase

Source: 1. Emma geology provided by Tyrone, dated 2021.
2. Regional geology from Hedlund (1978c).



Note: Emma pit topographic extent represents the EOY 2026 pit configuration.

S:\Projects\Mine_Tyrone\Projects\DP_Support_2021\VR_Drawings\All\Emma_Apache_Mound_Cross_Section\B-B'-Emma_Apache_Mound_Cross_Section_SW-NE_B-B'.ai

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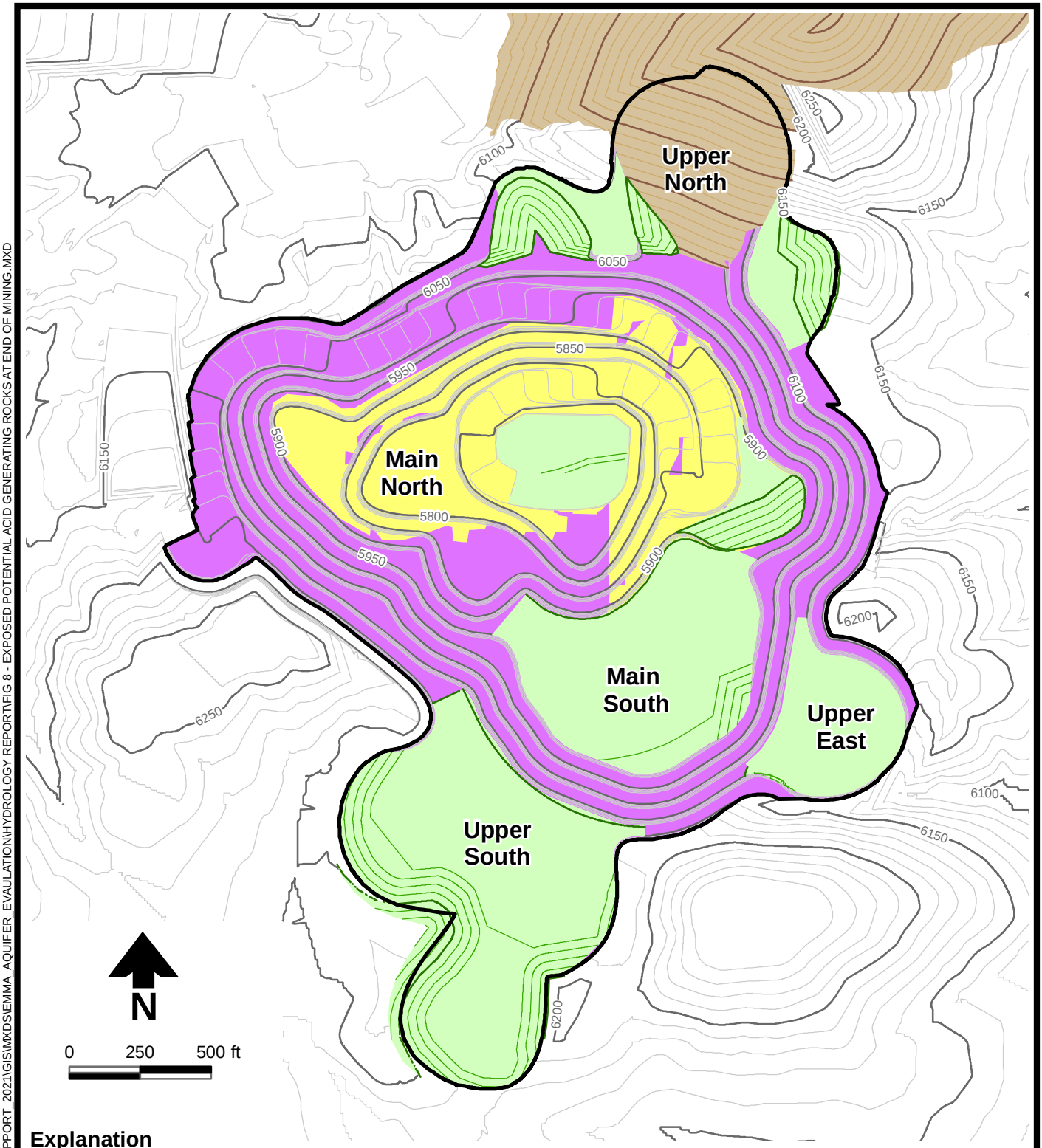
TYRONE MINE

Generalized Hydrogeologic Cross Section B-B'

Figure 7



Explanation

- Proposed Emma pit topographic extent
- Proposed backfill area
- EMW stockpile
- Non-potentially acid-generating rocks
- Potentially acid-generating rocks
- Topography (10-ft contour interval, ft msl)
- (50-ft contour interval, ft msl)

Source: Topography represents the EOY 2026 pit configuration.

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TYRONE MINE

Exposed Potentially Acid-Generating Rocks at End of Mining

Figure 8

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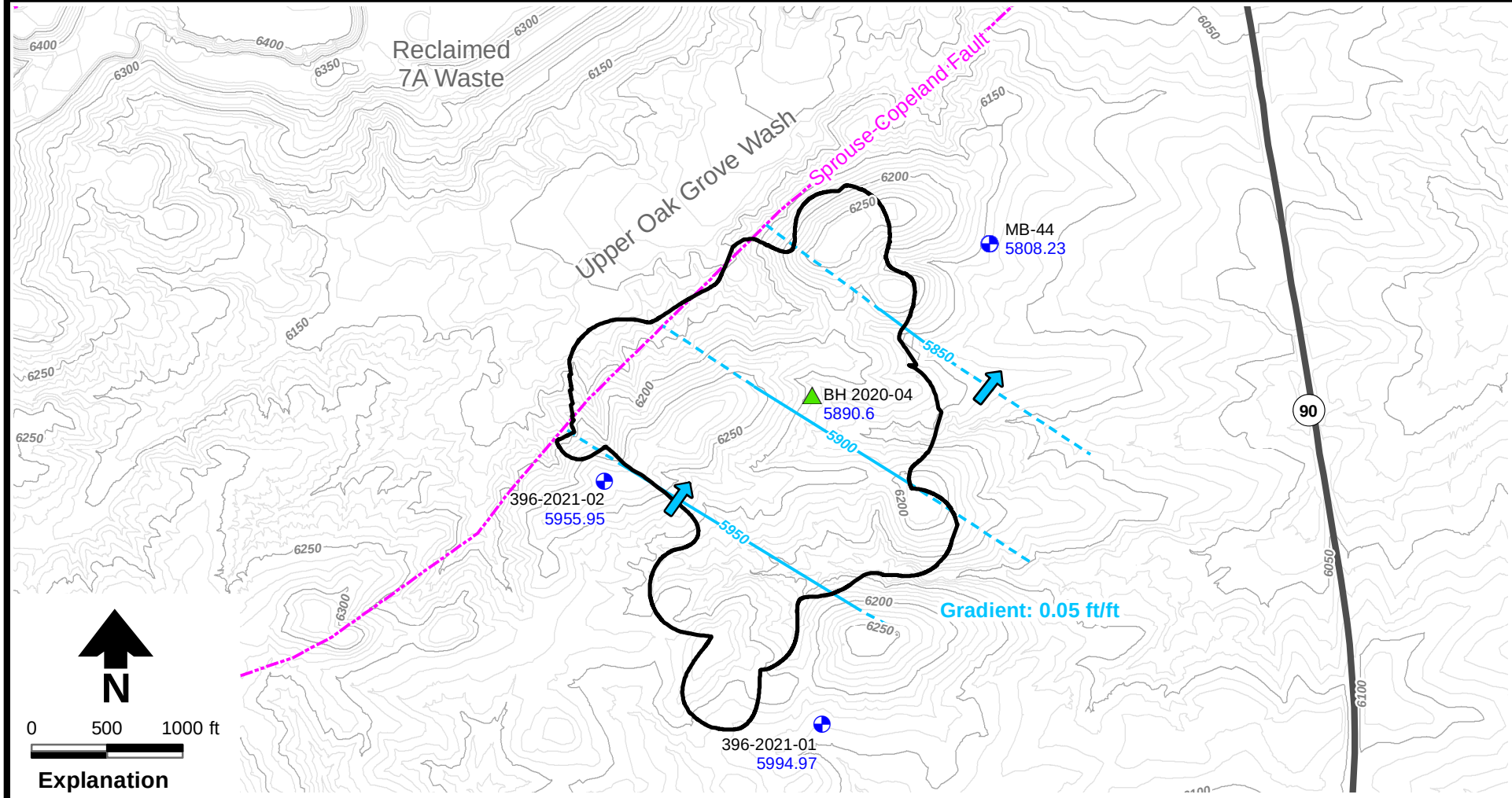
S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA_AQUIFER_EVAULATION\HYDROLOGY REPORT\FIG 8 - EXPOSED POTENTIAL ACID GENERATING ROCKS AT END OF MINING.MXD

S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA_AQUIFER_EVAULATION\HYDROLOGY REPORT\FIG 9 - REGIONAL GW TABLE AND FLOW DIRECTION.MXD



Explanation

MB-44 5808.23 Water level elevation (ft msl)

Monitor location with water level elevation (ft msl)

Wireline piezometer

Groundwater flow direction

Proposed Emma pit topographic extent

Water level elevation contour (ft msl), dashed where inferred (contour interval 50 ft)

Fault

Topography (10-ft contour interval, ft msl)

6450 (50-ft contour interval, ft msl)

Source: 1. Tyrone Mine topography, December 2020.
2. Water level elevation data are for May 2021.
3. Emma pit topographic extent represents the EOY 2026 pit configuration.

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TYRONE MINE

Regional Groundwater Level Elevations and Flow Direction

Figure 9

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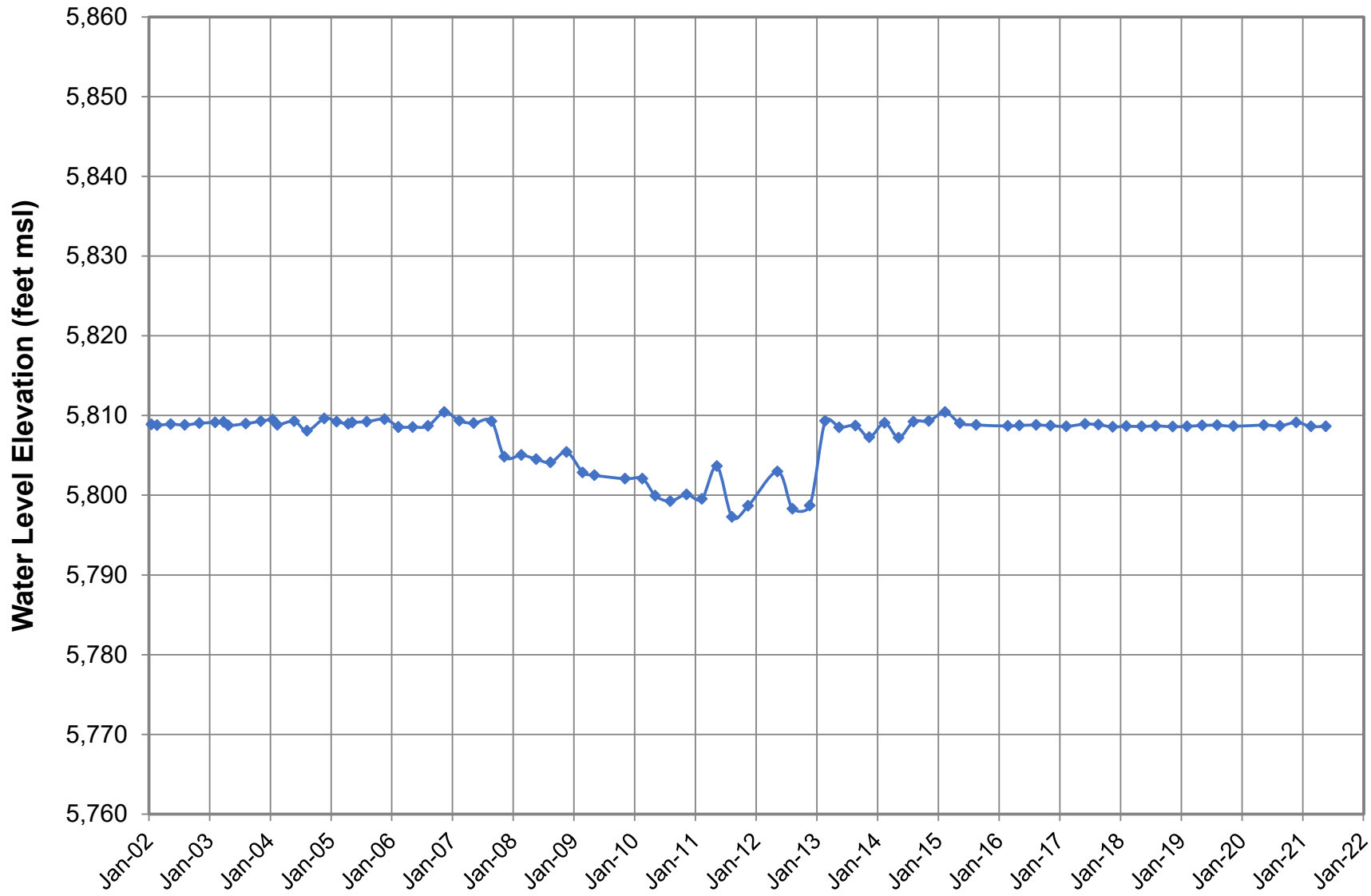
P:_DB20-1392\Emma Hydrogeo Rpt.O-21\Figures\Word\Fig10_MB-44 Hydrograph.docx



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TYRONE MINE

MB-44 Hydrograph

Figure 10

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P:_DB20-1392\Emma Hydrogeo Rpt.O-21\Figures\Word\Fig11_MB-44 Indctr Prmtrs.docx

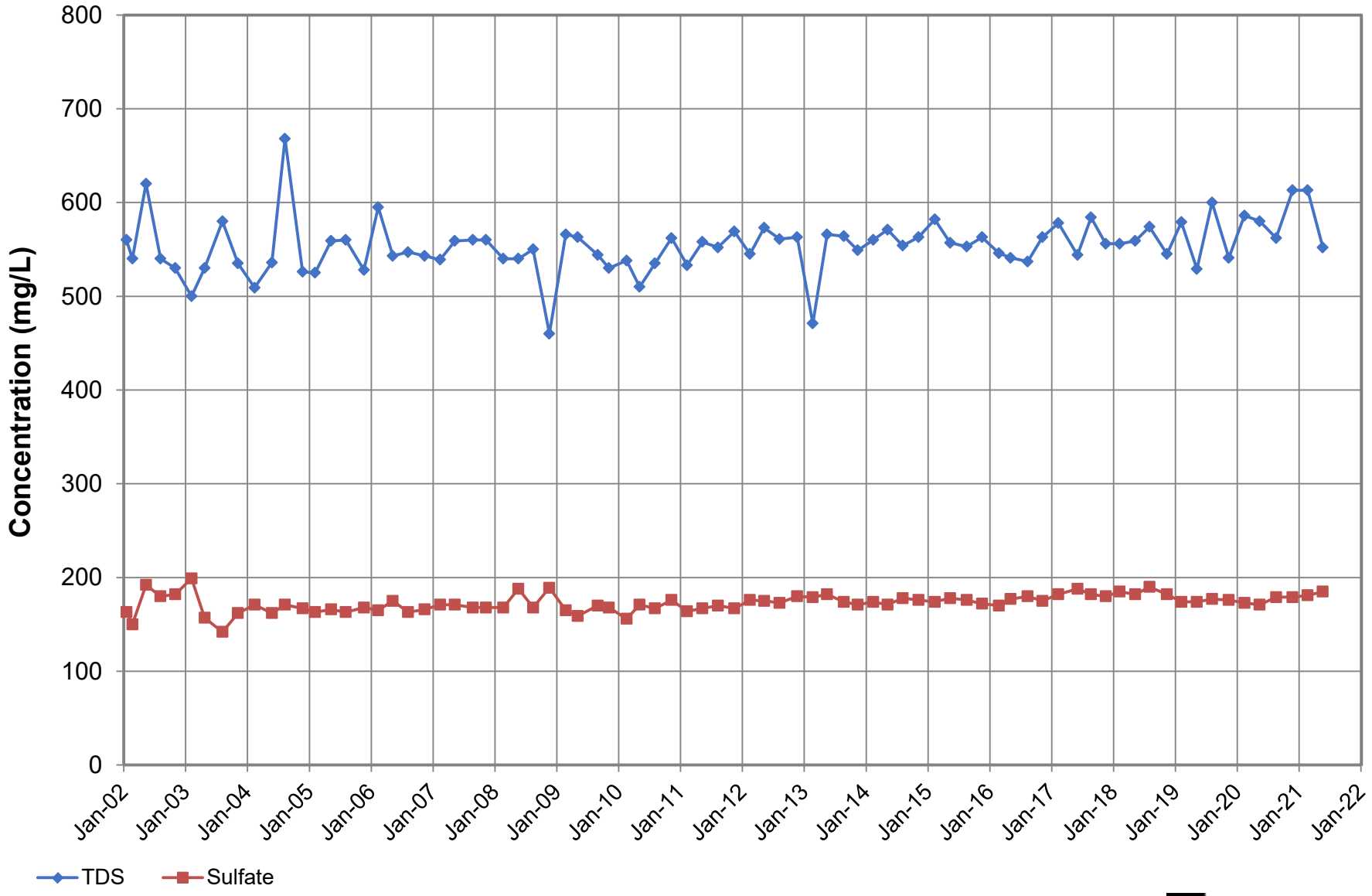

Figure 11

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TYRONE MINE

MB-44 Indicator Parameters

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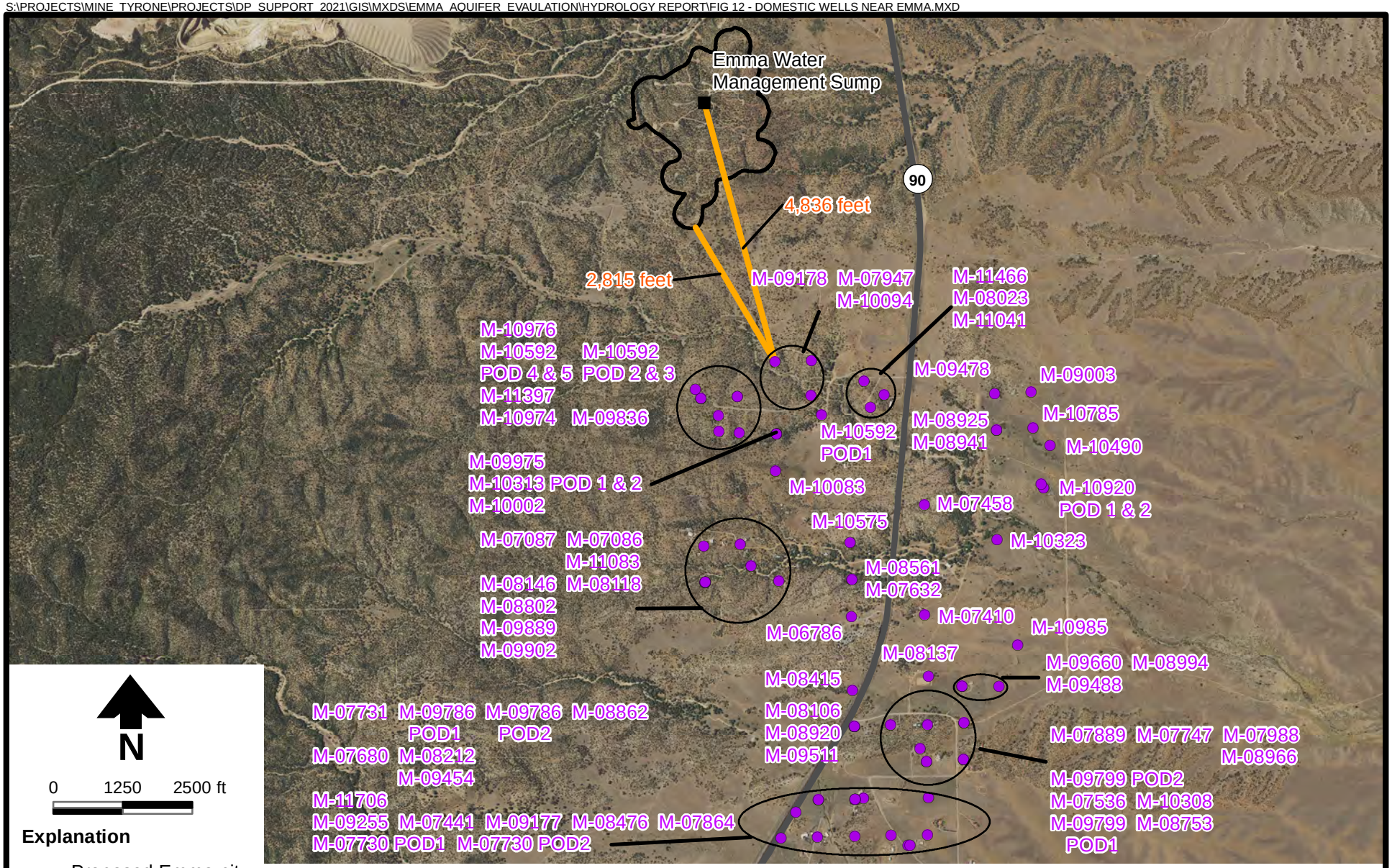
S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA_AQUIFER_EVAULATION\HYDROLOGY REPORT\FIG 12 - DOMESTIC WELLS NEAR EMMA.MXD



Source:
1. Aerial imagery (NAIP, 2020)
2. Domestic wells (New Mexico Office of the State Engineer, 2021)
3. Emma pit topographic extent represents the EOY 2026 pit configuration.

Notes:
1. Well name labels for circled clusters are positioned as the wells are within the clusters.
2. Well locations were obtained via converting PLSS locations (up to Q64) to NAD 1983 coordinates. Therefore, some wells will appear in the same location as other wells.

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TYRONE MINE

Domestic Wells near Emma

Figure 12

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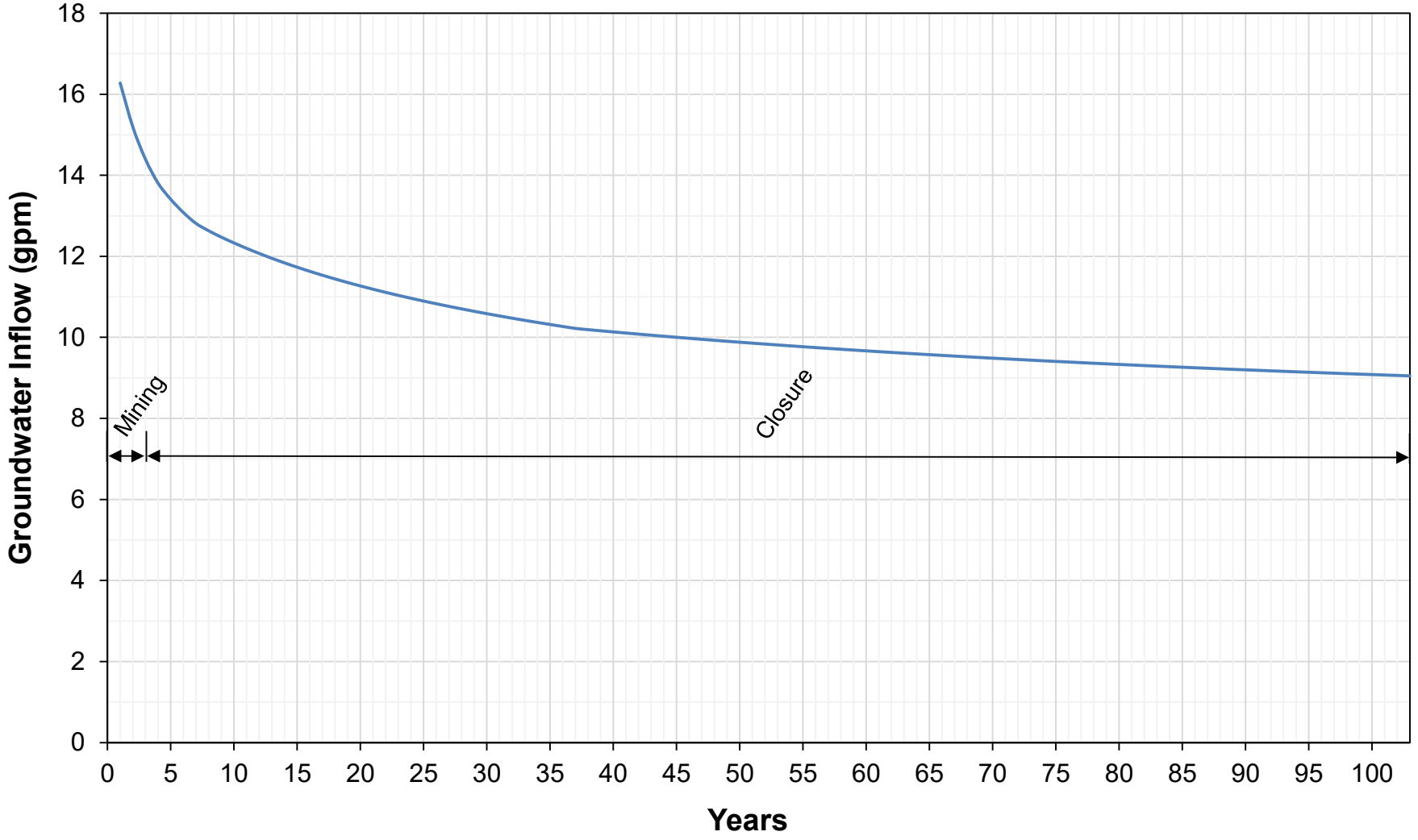

Figure 13

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TYRONE MINE

Predicted Groundwater Inflow Rate

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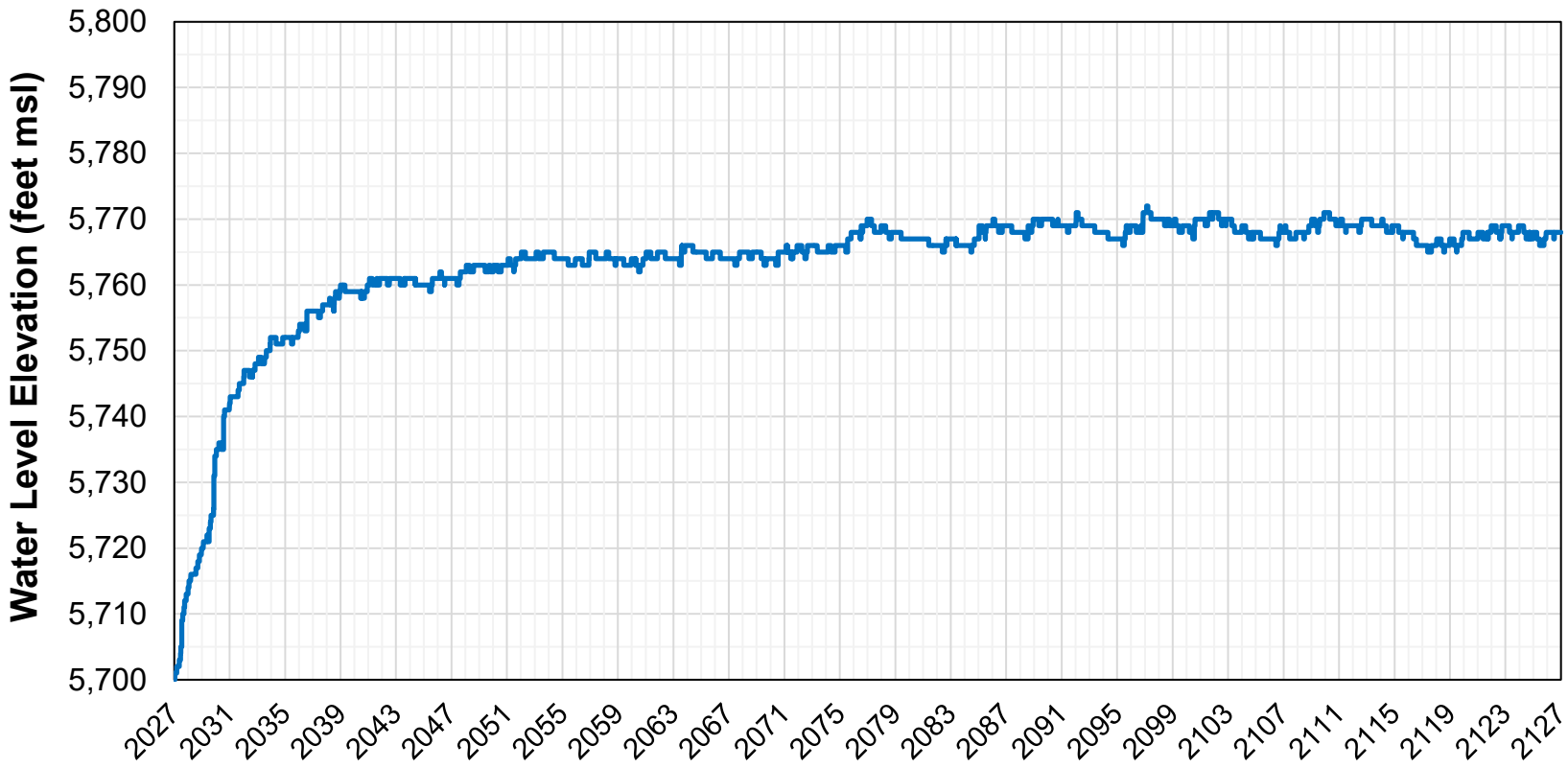
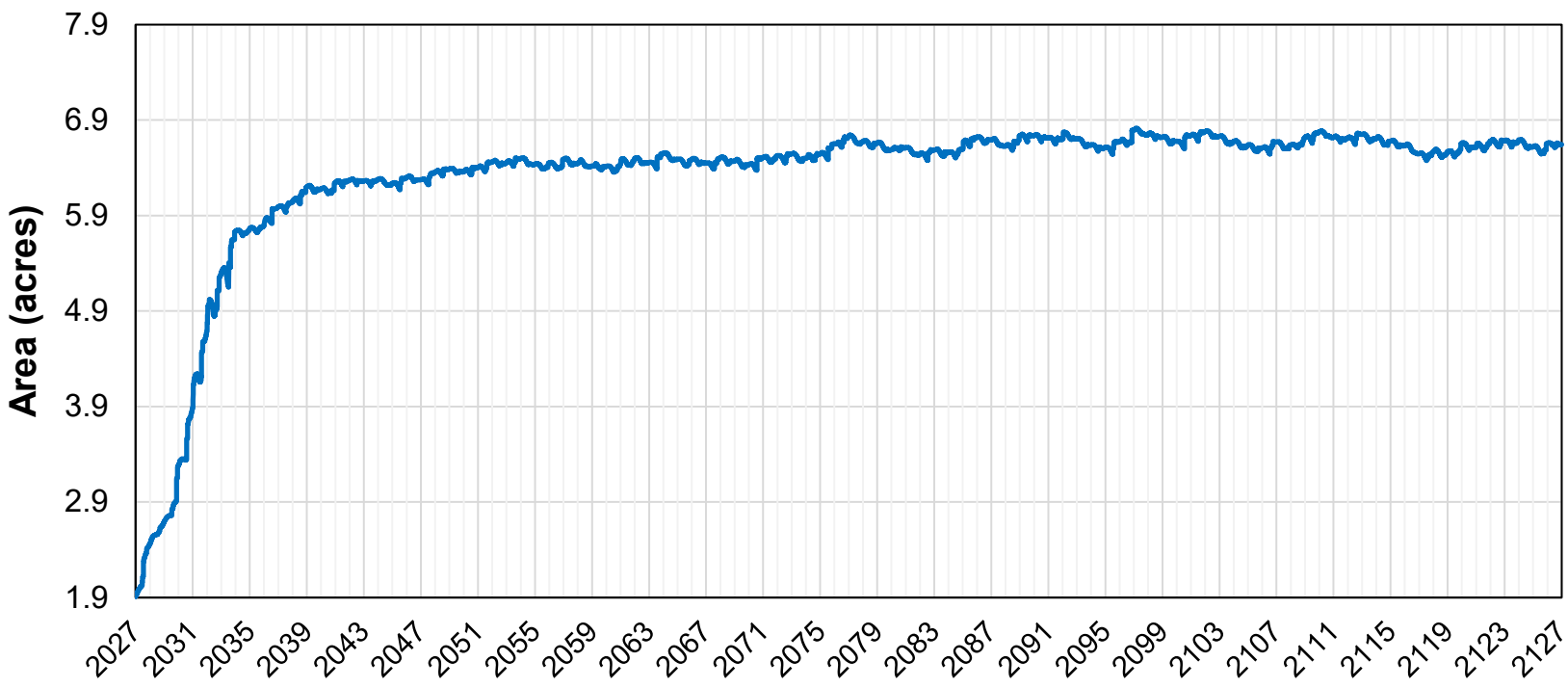
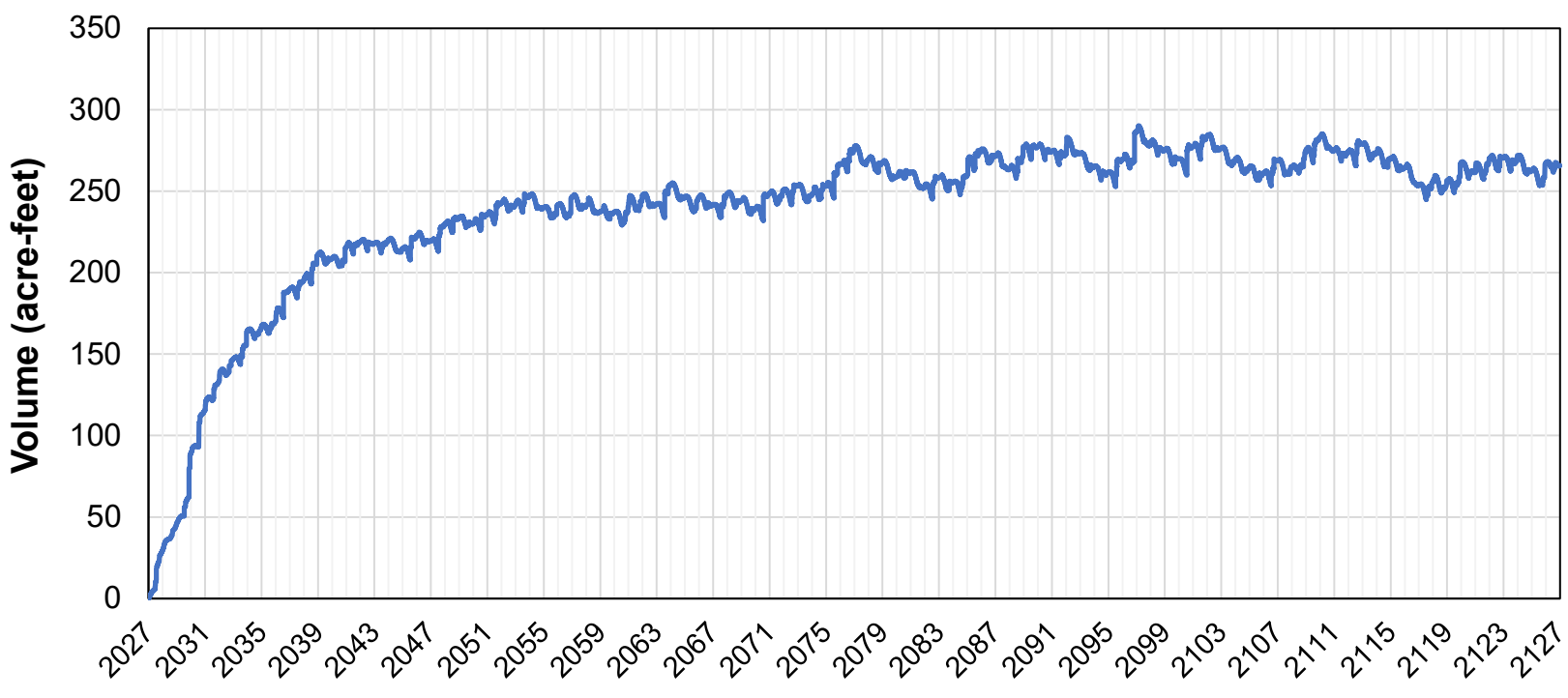


a. Predicted pit lake water level elevation



b. Predicted pit lake surface area



c. Predicted pit lake volume

Note: Predicted closure condition if a pit lake were allowed to form

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TYRONE MINE

Predicted Pit Lake Level, Area, and Volume at Closure
Main North Area

Figure 14

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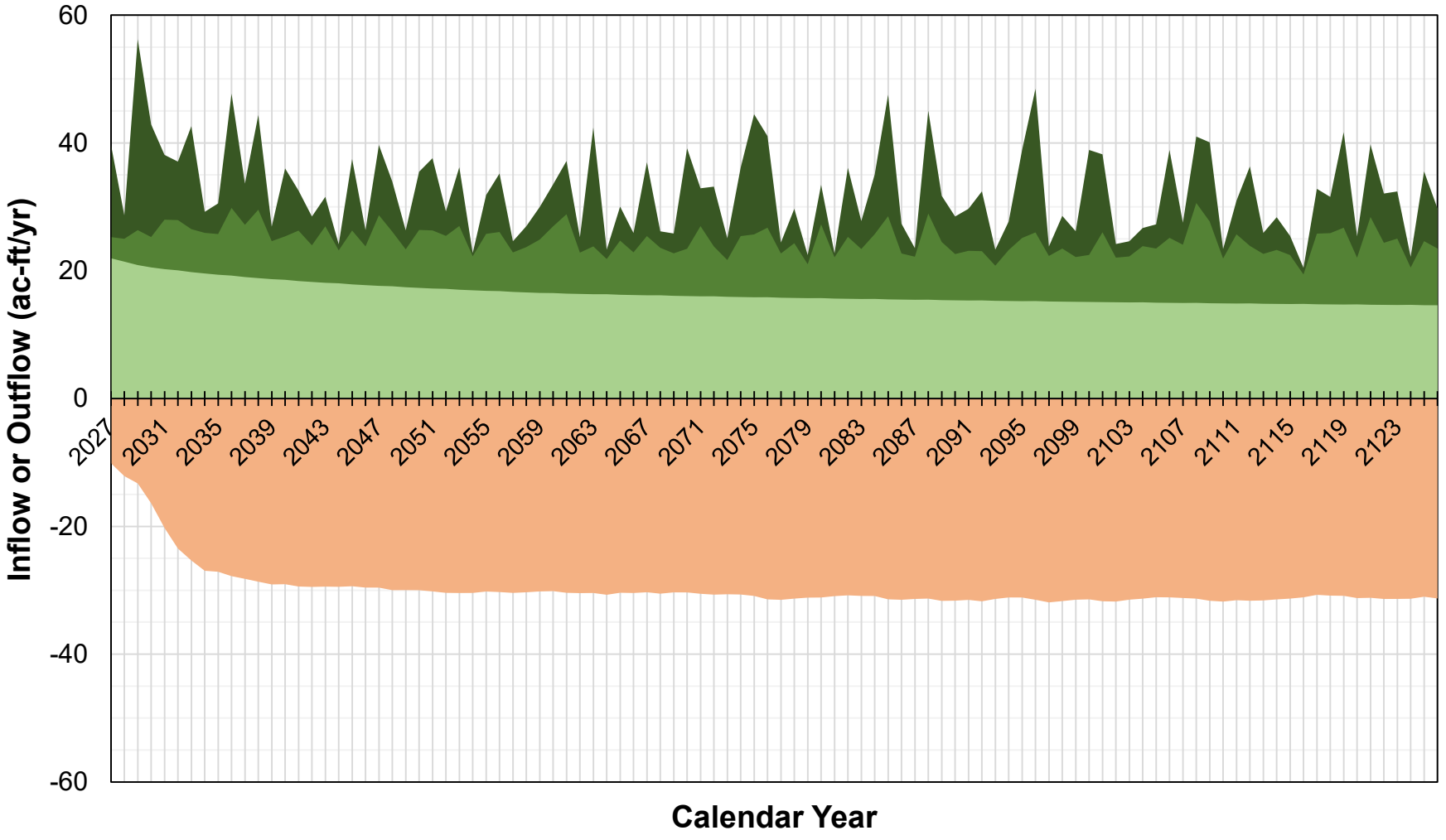
P:_DB20-1392\Emma Hydrogeo Rpt.O-21\Figures\Word\Fig15_Simulated Inflow-Outflow.docx



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TYRONE MINE

Predicted Pit Lake Inflows and Outflows
Main North Area

Figure 15

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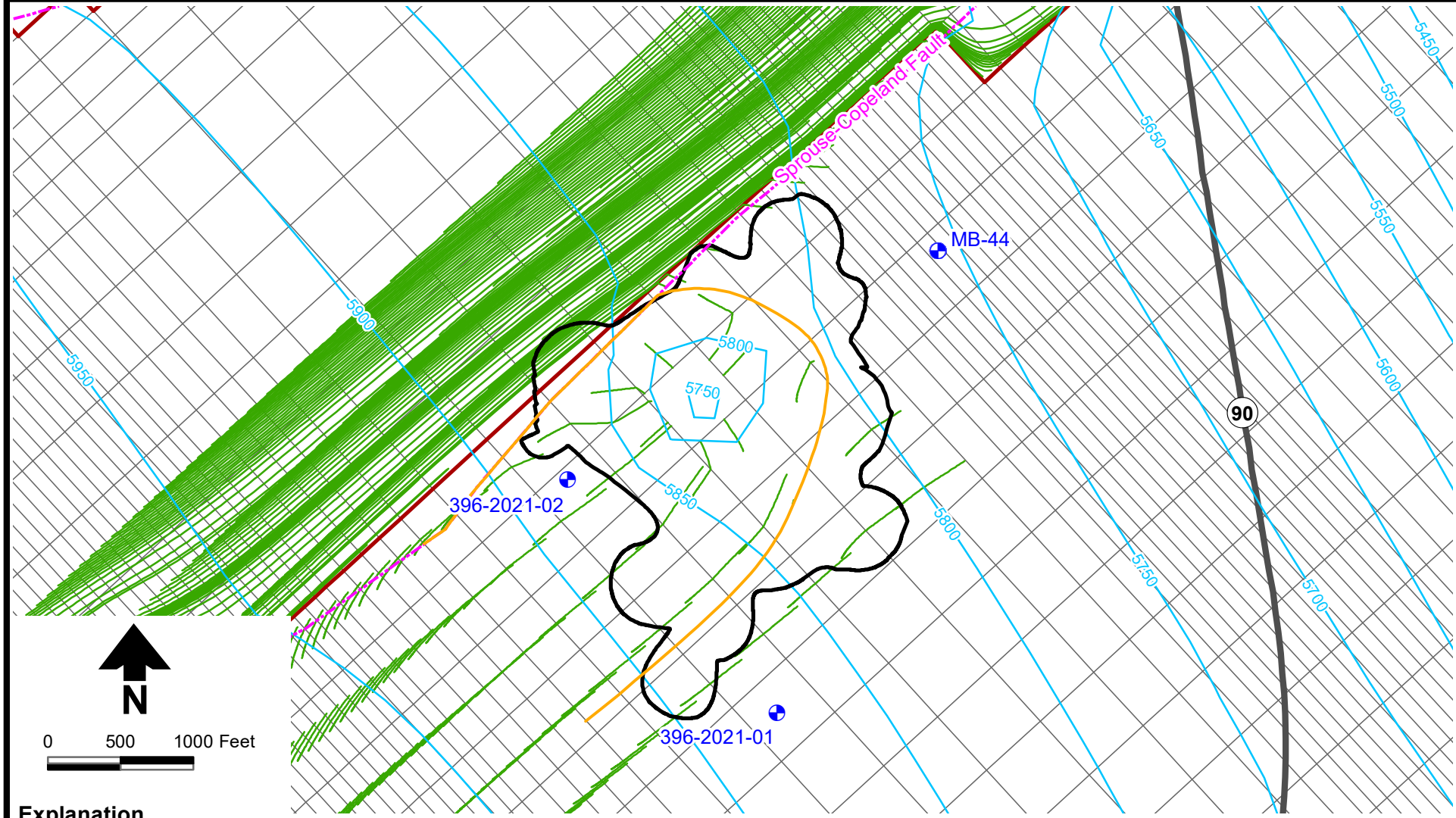
10/19/2021 DB20.1392

S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA_AQUIFER_EVAULATION\HYDROLOGY REPORT\FIG 16 - EMMA GROUNDWATER CAPTRUE ZONE.MXD



Explanation

- Monitoring location
- Fault
- Proposed Emma pit topographic extent
- MODFLOW model grid
- Simulated horizontal flow barrier
- Simulated groundwater elevation contour (100-years post closure, 50-ft contour interval, ft msl)
- Simulated particle trace
- Predicted groundwater capture zone

Source: Emma pit topographic extent represents the EOY 2026 pit configuration.

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TYRONE MINE

Emma Open Pit Predicted Groundwater Capture Zone

Figure 16

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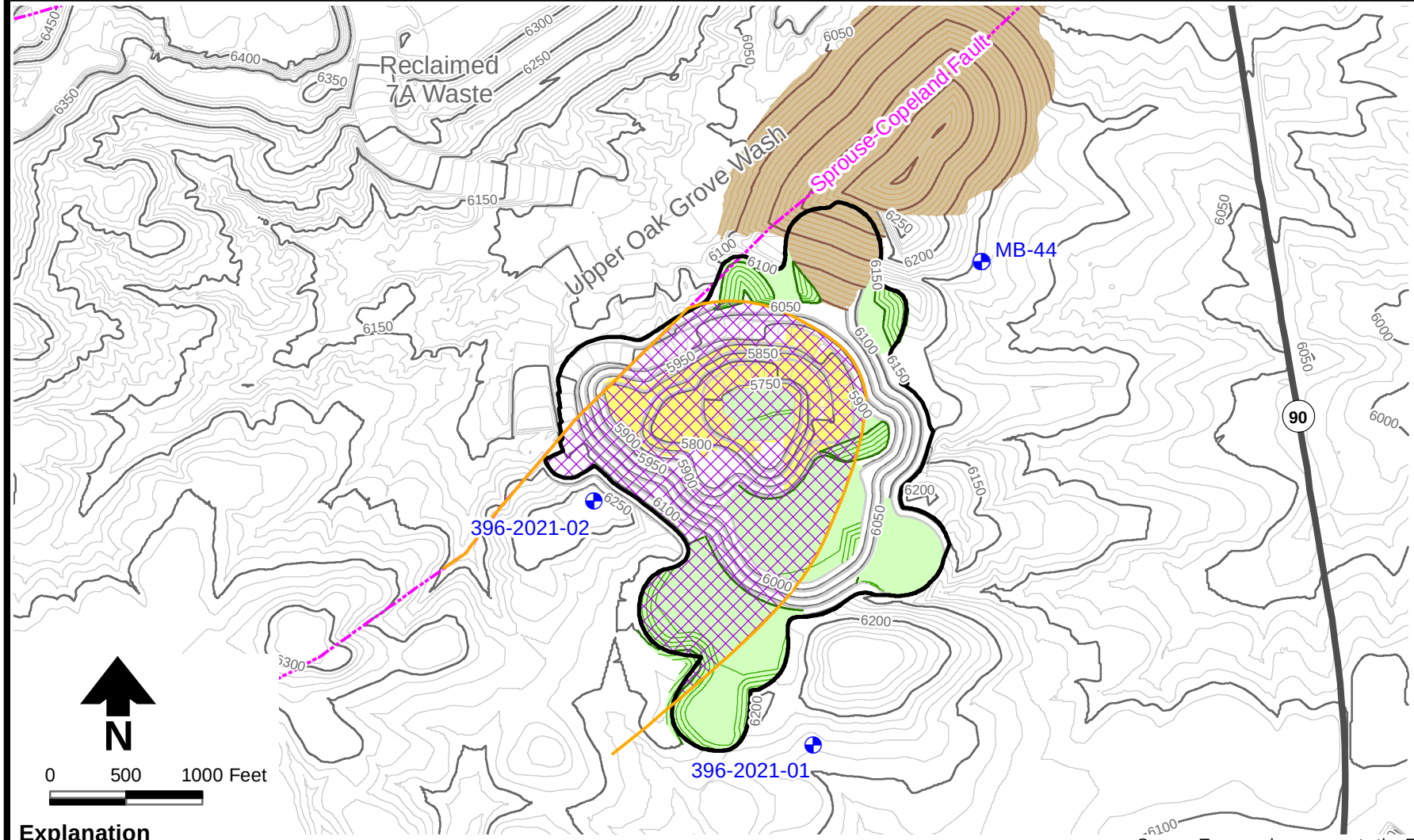
10/20/2021

DB20.1392

S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA_AQUIFER_EVAUATION\HYDROLOGY REPORT\FIG 17 - EMMA OPSDA.MXD



Explanation

- Monitoring location
- Fault
- Proposed Emma pit topographic extent
- Proposed backfill area
- EMW stockpile
- Predicted groundwater capture zone
- Predicted open pit surface drainage area
- Potentially acid-generating rocks
- Topography
  (10-ft contour interval, ft msl)
  (50-ft contour interval, ft msl)

Source: Topography represents the EOY 2026 pit configuration.

Figure 17

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TYRONE MINE

Emma Predicted Open Pit Surface Drainage Area

Tables

Table 1. Ephemeral Drainage Stormwater Quality
Page 1 of 2

Parameter	Concentration (mg/L [a])					
	Water Quality Standard			EMSW-1	EMSW-3	
	Groundwater [b]	Livestock Watering	Wildlife Habitat			
			Sample Identifier	*X1I0593-01*	*X1I0544-02*	*X1I0593-02*
			Sample Date	*9/28/2021*	*9/27/2021*	*9/28/2021*
Aluminum, dissolved	5.0	—	—	0.562	1.1	0.35
Aluminum, total	—	—	—	90.9	15.1	11.4
Alkalinity, bicarbonate	—	—	—	7.5	12.5	1.9
Alkalinity, total	—	—	—	7.5	12.5	1.9
Arsenic, dissolved	0.01	0.2	—	<0.003	<0.003	<0.003
Arsenic, total	—	—	—	0.00849	<0.003	<0.003
Boron, dissolved	0.75	5.0	—	<0.04	<0.04	<0.04
Boron, total	—	—	—	<0.04	<0.04	<0.04
Cadmium, dissolved	0.005	0.05	—	<0.0002	0.00111	<0.0002
Cadmium, total	—	—	—	0.00363	0.00163	0.000944
Calcium, dissolved	—	—	—	3.32	6.73	2.23
Calcium, total	—	—	—	37	7.98	4.26
Chloride, total	250	—	—	0.48	1.88	0.53
Chromium, dissolved	0.05	1	—	<0.0015	<0.0015	<0.0015
Chromium, total	—	—	—	0.0337	0.00813	0.00546
Cobalt, dissolved	0.05	1	—	<0.006	<0.006	<0.006
Cobalt, total	—	—	—	0.0321	0.0075	<0.006
Copper, dissolved	1.0	0.5	—	0.0106	0.267	0.0489
Copper, total	—	—	—	0.628	0.758	0.515
Fluoride, total	1.6	—	—	0.705	0.53	0.41
Iron, dissolved	1.0	—	—	0.294	0.507	0.166
Iron, total	—	—	—	98.3	11	8.87
Lead, dissolved	0.015	0.1	—	<0.003	**0.0161**	<0.003
Lead, total	—	—	—	0.156	0.033	0.0228
Magnesium, dissolved	—	—	—	1.27	2.58	0.89
Magnesium, total	—	—	—	24.9	5.57	3.46
Manganese, dissolved	0.2	—	—	0.0104	**0.355**	0.0175

Footnote explanations and definitions are provided at the end of the table.

Table 1. Ephemeral Drainage Stormwater Quality
Page 2 of 2

Parameter	Concentration (mg/L [a])					
	Water Quality Standard			EMSW-1	EMSW-3	
	Groundwater [b]	Livestock Watering	Wildlife Habitat			
			Sample Identifier	*X1I0593-01*	*X1I0544-02*	*X1I0593-02*
			Sample Date	*9/28/2021*	*9/27/2021*	*9/28/2021*
Manganese, total	—	—	—	2.82	0.568	0.334
Nickel, dissolved	0.2	—	—	<0.001	0.0033	<0.001
Nickel, total	—	—	—	0.0315	0.00892	0.00534
Potassium, dissolved	—	—	—	1.15	6.39	2.02
Potassium, total	—	—	—	1.89	9.35	4.07
pH (s.u.)	6–9	—	—	6.3	6.3	6
Selenium, dissolved	0.05	0.05	—	<0.003	<0.003	<0.003
Selenium, total	—	—	0.005	**0.0114**	<0.003	<0.003
Sodium, dissolved	—	—	—	1.13	0.54	<0.12
Sodium, total	—	—	—	1.89	0.88	0.7
Sulfate, total	600	—	—	6.13	10.4	4.71
Total dissolved solids	1,000	—	—	256	59	50
Zinc, dissolved	10	25	—	<0.01	0.138	0.0281
Zinc, total	—	—	—	1.23	0.319	0.218

Bold indicates that value exceeds at least one listed water quality standard (20.6.2.3103 and 20.6.4 NMAC).

[a] Unless otherwise noted

[b] Section 3103 standard

mg/L = Milligrams per liter

s.u. = Standard units

Table 2. Emma Monitoring Location Completion Information

Well Name	Casing Material and Diameter	Screen Interval (feet bgs)	Total Depth (feet bgs)	Top of Casing Elevation (feet msl)
396-2021-01	Steel surface casing to 20 feet bgs	—	765	6,162.97
396-2021-02	5-inch SCH 80 PVC	355–415	420	6,280.53
MB-44	4-inch SCH 40 PVC	420.5–480.5	480.5	6,140.53

bgs = Below ground surface
msl = Above mean sea level
SCH = Schedule
PVC = Polyvinyl chloride

Table 3. Groundwater Level Data, 2021

Well Name	Top of Casing Elevation (feet msl)	Date	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)
396-2021-01	6,162.97	4/12/2021	169.34	5,993.63
		5/21/2021	168.00	5,994.97
		8/25/2021	167.25	5,995.72
396-2021-02	6,280.53	4/12/2021	324.28	5,956.25
		5/18/2021	324.58	5,955.95
		8/18/2021	324.50	5,956.03
MB-44	6,140.53	2/20/2021	331.90	5,808.63
		5/20/2021	332.30	5,808.23
		8/18/2021	332.10	5,808.43

msl = Above mean sea level
btoc = Below top of casing

Table 4. Hydraulic Properties at Emma Groundwater Monitoring Locations

Well	Analysis	Assumed Thickness (feet)	Transmissivity (ft^2/d)	Hydraulic Conductivity	
				cm/s	ft/d
396-2021-01	Theis recovery	597	0.0372	2.2×10^{-8}	6.2×10^{-5}
396-2021-02	Theis recovery	90.4	0.8691	3.4×10^{-6}	9.6×10^{-3}
MB-44	Theis recovery	148.2	10.46	2.5×10^{-5}	7.1×10^{-2}
		Geometric mean	0.70	1.2×10^{-6}	3.5×10^{-3}

ft^2/d = Square feet per day
cm/s = Centimeters per second
ft/d = Feet per day

Table 5. Water Quality at Emma Groundwater Monitoring Locations
Page 1 of 2

Analyte	Concentration (mg/L [a])						
	Section 3103 Standard	MB-44		396-2021-01		396-2021-02	
		5/20/2021	8/18/2021	5/21/2021	8/25/2021	5/18/2021	8/18/2021
Alkalinity, total (as $CaCO_3$)	NS	218	227	120	126	234	249
Aluminum, dissolved	5.0	<0.080	<0.080	1.03	<0.080	<0.080	0.169
Arsenic, dissolved	0.01	<0.025	<0.025	**1.05**	<0.025	<0.025	<0.025
Bicarbonate (as $CaCO_3$)	NS	218	227	120	126	234	249
Cadmium, dissolved	0.005	<0.0020	<0.0020	**1.00**	<0.0020	<0.0020	<0.0020
Calcium, dissolved	NS	132	128	303	305	121	114
Carbonate (as $CaCO_3$)	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloride	250	27.9	26.8	33.5	29.8	40.6	34.5
Chromium, dissolved	0.05	<0.0060	<0.0060	**0.994**	<0.0060	<0.0060	<0.0060
Cobalt, dissolved	0.05	<0.0060	<0.0060	**0.980**	<0.0060	<0.0060	<0.0060
Copper, dissolved	1.0	<0.0100	<0.0100	**1.06**	<0.0100	<0.0100	<0.0100
Electrical conductivity [b] (µmho/cm)	NS	845	822	1,827	2,043	887	857
Fluoride	1.6	0.342	0.387	**3.09**	**2.52**	0.398	0.371
Iron, dissolved	1.0	<0.100	<0.100	**10.1**	<0.100	<0.100	0.137

Bold indicates that value exceeds the Section 3103 standard (20.6.2.3103 NMAC).

[a] Unless otherwise noted.

[b] Measured in the field

mg/L = Milligrams per liter
NS = No standard
µmho/cm = Micromhos per centimeter
s.u. = Standard units

Table 5. Water Quality at Emma Groundwater Monitoring Locations
Page 2 of 2

Analyte	Concentration (mg/L [a])						
	Section 3103 Standard	MB-44		396-2021-01		396-2021-02	
		5/20/2021	8/18/2021	5/21/2021	8/25/2021	5/18/2021	8/18/2021
Lead, dissolved	0.015	<0.0075	<0.0075	**0.991**	<0.0075	<0.0075	<0.0075
Magnesium, dissolved	NS	14.5	14.6	85.5	66.8	18.1	18.2
Manganese, dissolved	0.2	<0.0080	0.0109	**3.84**	**2.8**	0.175	0.194
Nickel, dissolved	0.2	<0.0100	<0.0100	**0.979**	<0.0100	<0.0100	<0.0100
pH [b] (s.u.)	6–9	7.13	6.98	6.54	6.78	7.45	7.05
Potassium, dissolved	NS	2.12	2.03	29.2	7.58	3.65	3.48
Sodium, dissolved	NS	29.6	29.4	133	119	59.0	50
Sulfate	600	185	180	**1,120**	**1,120**	191	159
Temperature [b] (°C)	NS	24.1	23.9	19.8	23.4	20.7	21.9
Total dissolved solids	1,000	552	551	**1,850**	**1,870**	646	579
Zinc, dissolved	10	<0.0100	<0.0100	1.08	0.0373	<0.0100	0.0292

Bold indicates that value exceeds the Section 3103 standard (20.6.2.3103 NMAC).

[a] Unless otherwise noted.

[b] Measured in the field

mg/L = Milligrams per liter
NS = No standard
µmho/cm = Micromhos per centimeter
s.u. = Standard units

Table 6. Water Balance Monthly Evaporation Rates

Month	1X Dam Distribution Factor	Monthly Evaporation Rate (inches per month)
January	4.2%	2.40
February	4.5%	2.57
March	7.5%	4.25
April	10.2%	5.77
May	13.5%	7.61
June	15.6%	8.79
July	10.8%	6.08
August	9.7%	5.49
September	6.9%	3.93
October	7.9%	4.44
November	5.8%	3.26
December	3.4%	1.93
	Annual total	56.50

Appendix A

Hedlund (1978c) Geologic Map

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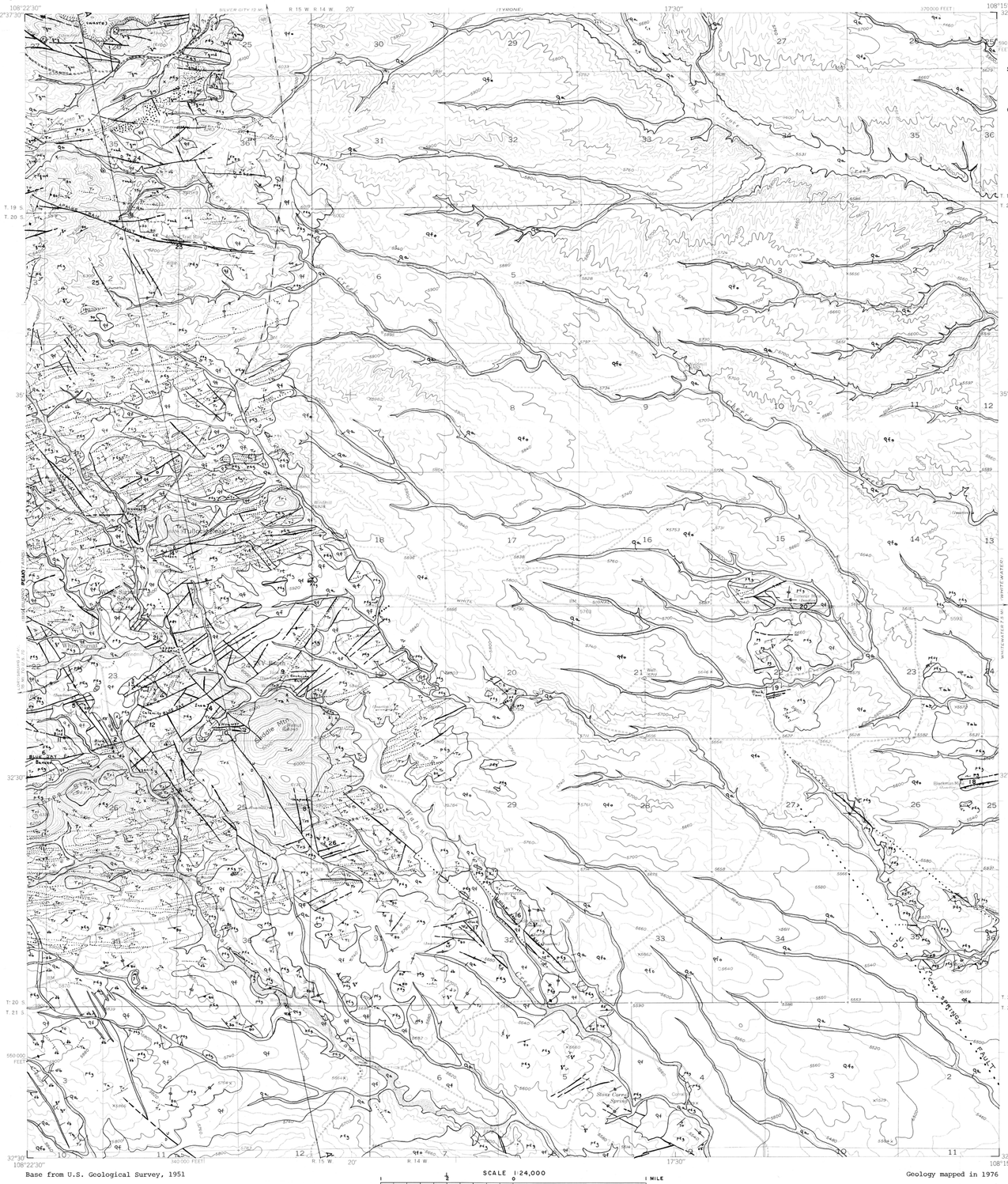
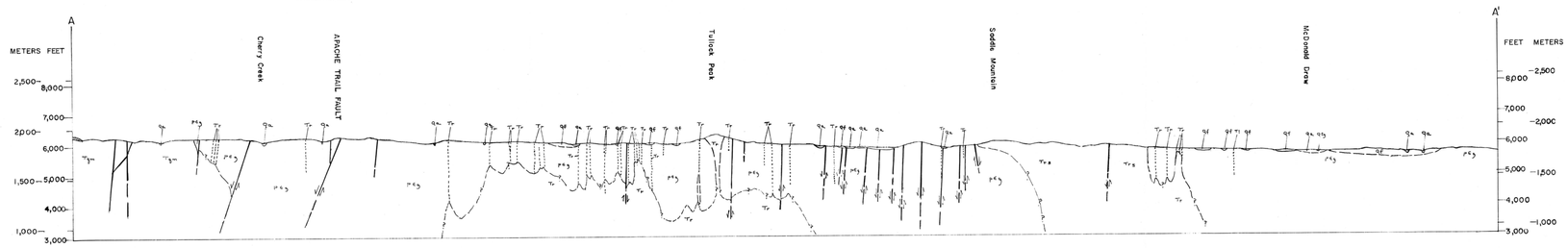
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1041
WHITE SIGNAL QUAD., N. M.





GEOLOGIC MAP OF THE WHITE SIGNAL QUADRANGLE, GRANT COUNTY, NEW MEXICO

By

D. C. Hedlund

1978

CORRELATION OF MAP UNITS

UNCONSOLIDATED SEDIMENTS
- Qa — Holocene
- Qf — Holocene and (or) Pleistocene
- Qfo — Pleistocene
- } QUATERNARY

SEDIMENTARY AND VOLCANIC ROCKS
- QTg — Pliocene and Miocene
- UNCONFORMITY
- Tab — Miocene(?)

CHIEFLY DIKES, PLUGS AND STOCKS
- Tr, Trs, Trt, Tri, Tl, Ta — Eocene and (or) Paleocene
- } TERTIARY

STOCK OF TYRONE
- Tqm, Tqmd, Tqma — Paleocene

UNCONFORMITY

PRECAMBRIAN ROCKS
- db — } PRECAMBRIAN (?,
- UNCONFORMITY
- pCsy — } PRECAMBRIAN Y(?)
- pg
- pCgr, pCg — } PRECAMBRIAN Y

DESCRIPTION OF MAP UNITS

Qa ALLUVIUM (HOLOCENE)--Poorly sorted gravel, sand, and silt deposits; gravels contain fragments of Precambrian granite and Tertiary volcanic rock. Gravel near Gold Lake Mine have been mined for placer gold. Thickness commonly exceeds 3 m

Qtg TERRACE GRAVEL (HOLOCENE AND (OR) PLEISTOCENE)--Moderately sorted cobble and gravel deposits that consist chiefly of Precambrian granitic rocks. Terraces along McDonald Draw are of limited extent and thickness and are generally located at the confluence of two streams. Thickness about 6 m

Qf FAN DEPOSITS (HOLOCENE AND (OR) PLEISTOCENE)--Sheetflood fan deposits contain chiefly subangular to angular, poorly sorted Precambrian granite and Tertiary volcanic rock fragments. Thickness generally less than 20 m

Qfo OLDER FAN DEPOSITS (PLEISTOCENE)--Sheetflood fan deposits, including some residual lag deposits partly derived from the weathered Gila Conglomerate (QTg). Thickness locally exceeds 60 m

QTg GILA CONGLOMERATE (PLEISTOCENE, PLIOCENE, AND MIOCENE)--Poorly sorted, weakly to moderately indurated fanglomerate, conglomerate and sandstone. Probably extensively underlies older fan deposits (Qfo) throughout much of the east half of the quadrangle. Exposed in only one small outcrop in the NW 1/4, sec. 36, T. 19 S., R. 15 W. where rounded boulders and cobbles of quartz monzonite and granite within a coarse sandy matrix are cemented by secondary copper and manganese oxides. Thickness may be as much as 250 m

Tab BASALTIC ANDESITE (MIOCENE?)--Medium- to dark-gray andesite flows and flow breccias with locally reddish-brown, oxidized, rubbly flow margins. Rocks are aphanitic to weakly porphyritic with generally less than 5 percent phenocrysts of plagioclase and oxyhornblende. Maximum thickness about 45 m

RHYOLITE INTRUSIVE ROCKS (EOCENE AND (OR) PALEOCENE)

Tr Rhyolite dikes--Swarms of rhyolite dikes commonly with as many as 13-20 dikes per kilometer. The rhyolite is white to very light gray and contains generally less than 10 percent phenocrysts of sanidine and bipyramidal quartz, and altered biotite with local disseminations of pyrite. Commonly flow laminated parallel to the walls of the dike with coarse orbicular segregations locally present. Some of the dikes become enlarged along strike to form small pluglike bodies. Generally the dikes are less than 30 m thick but some are as much as 60 m across

Tri Rhyolite plugs---Includes a number of elongate plugs in the Tullock Peak-Three Sisters area. At least seven elongate plugs of rhyolite show alinement along a N. 70°-90° E. direction parallel to the dike swarms. Flow laminae are commonly contorted and thin fractures are locally lined with specular hematite. The rhyolite is white to very light gray and contains less than 10 percent phenocrysts of sanidine and bipyramidal quartz. The plugs are commonly less than 600 m long and 150 m across

Trs Rhyolite of Saddle Mountain--A rhyolite sheet that is intrusive into Precambrian granite covers about 2.6 km^2 in the Tullock Peak area. The rhyolite has numerous autobreccia zones along the contact with granite and is locally pervaded by numerous anastomosing veinlets of specular hematite. Generally the rhyolite has less than 10 percent phenocrysts and is commonly aphanitic. The sheetlike intrusion has a lower contact with granite that dips to the northeast

Trt ASH-FLOW TUFF OF TULLOCK PEAK (EOCENE AND (OR) PALEOCENE)--Very light gray, devitrified, welded ash-flow tuff contains conspicuous flattened pumice lapilli as much as 13 mm across. The ash shards are highly deformed and welded with a pronounced eutaxitic texture. Phenocrysts comprise about 4 percent of the rock and include 3 percent bipyramidal quartz and one percent sanidine with minor accessory biotite and iron oxides. Lithic fragments of quartzite and latite comprise about 3-5 percent of the rock

Tl LATITE DIKES (EOCENE AND (OR) PALEOCENE)--Medium-gray, aphanitic latite contains generally less than 5 percent phenocrysts of sanidine, sodic oligoclase, and biotite. Dikes are generally less than 3 m thick, and show less continuity than those of rhyolite

Ta ANDESITE DIKES (EOCENE AND (OR) PALEOCENE)--Dark greenish-gray, aphanitic to porphyritic andesite with minor phenocrysts of sodic andesine (An_{33}), hornblende and clinopyroxene. Generally less than 5 m thick

Tqm QUARTZ MONZONITE OF TYRONE (PALEOCENE)--Medium light gray, modium grained, dominantly holocrystalline with thin marginal porphyritic chilled facies. Generally massive but is locally foliated. The medium-grained, holocrystalline rock commonly contains 9-14 percent orthoclase-anorthoclase, 64-75 percent oligoclase (An_{23-27}), 10-19 percent quartz, 1-5 percent biotite, and as much as 2 percent hornblende. Accessory minerals are sphene, apatite and iron oxides. The orthoclase-anorthoclase grains occur as mantles about the earlier-formed oligoclase or as interstitial grains. Secondary quartz "flooding" is common in areas of altered mineralized rock. Alteration products are commonly sericite, calcite, secondary quartz veinlets, and epidote. A pure biotite sample has yielded a K-Ar age of 56.2±1.7 m.y. (McDowell, 1971)

Tqmd Quartz monzonite dikes--Medium light-gray to grayish-pink, porphyritic rock with bipyramidal quartz phenocrysts as much as 1 cm across. Groundmass forms about 65-70 percent of the dike rock and consists of recrystallized and microcrystalline aggregates of feldspar and quartz. The phenocrysts are of oligoclase (An_{25-27}) (25-30 percent) and resorbed, bipyramidal quartz (5 percent). Accessory minerals are sphene, biotite, hornblende and iron oxides

Tqma Quartz pods and fracture-fillings--Secondary quartz "flooding" is common within the quartz monzonite, especially in secs. 26 and 27, T. 19 N., R. 16 W. where the quartz fills numerous fractures in the monzonite. The associated feldspar are generally reddened

db DIABASE (PRECAMBRIAN?)--Dark greenish-gray rock with subophitic to intergranular texture that contains 60-65 percent andesine (An_{38-40}), 20-30 percent augite, and as much as 12 percent magnetite-ilmenite. Accessory minerals are biotite, chlorite, secondary quartz, and apatite. Some dikes are as much as 1.5 km long and 100 m thick, but in the vicinity of White Signal the dikes are much thinner, generally less than 15 m, less persistent, and are commonly the loci of secondary uranium minerals where the diabase has been faulted

pCsy Syenite (Precambrian Y?)--Pale-red, medium-grained rock that contains chiefly microcline, minor amounts of plagioclase and less than 10 percent quartz. Accessory minerals are biotite, sericite, apatite and iron oxides. Small outcrop in sec. 23, T. 20 S., R. 14 W.

GRANITE OF BURRO MOUNTAIN (PRECAMBRIAN Y)

pCgr Granite--Light pinkish-gray, medium-coarse-grained, leucocratic granite with a hypidiomorphic-granular texture. Rock contains perthitic microcline laths as much as 6 mm long with anhedral to subhedral sodic oligoclase (An_{23}) and quartz grains only a few millimetrs across. Accessory minerals include biotite and apatite

pCg Gneissic granite and granite--Medium light-gray to light pinkish-gray, medium-grained, hypidiomorphic-granular rock that typically contains 30-40 percent perthitic microcline, 25-30 percent oligoclase (An_{20-22}), 37 percent quartz, 2-5 percent biotite, and accessory apatite chlorite, white mica, epidote and iron oxides. In places the granite is weakly to moderately foliated. Locally near the quartz monzonite of the Tyrone stock in sections 35 and 36, the granite is sugary textured and pervaded by secondary quartz veinlets

pg Pegmatite--In the W 1/2, SW 1/4, sec. 30, T. 20 S., R. 15 W. the pegmatites consist of elongate pods of quartz surrounded by thin zones of coarse perthite-muscovite. One pod measures 60 m by about 20 m and has been exploited for rare-earth-bearing minerals. Elsewhere the pegmatites are simple, homogeneous, fine-textured, dike-like masses

CONTACT

FAULT--Showing dip. Dashed where approximately located; dotted where concealed; queried where inferred. U, upthrown side; D, downthrown side. Crosshatched where fault thickens and is intensively silicified

STRIKE AND DIP OF FOLIATION IN IGNEOUS AND METAMORPHIC ROCKS
- Inclined
- Vertical

STRIKE AND DIP OF JOINTS
- Inclined
- Vertical

PROSPECT PIT

ADIT

SHAFT

DRILL HOLE SITE--Most holes are not shown

ZONE OF ABUNDANT QUARTZ FRACTURE-FILLINGS

QUARTZ VEIN

MINERALIZED ROCK--Chiefly base metal sulfides

MINE DUMP

REFERENCES

Gillerman, Elliot, 1964, Mineral deposits of western Grant County, New Mexico: New Mexico State Bureau of Mines and Mineral Resources Bulletin 83, 213 p.

Lovering, T. G., 1956, Radioactive deposits in New Mexico: U.S. Geological Survey Bulletin 1009-L, p. 327-355.

McDowell, F. W., 1971, K-Ar ages of igneous rocks from the western United States: Isochron/West, no. 2, p. 1-16.

Table 1.--*Mines, Prospects, and Mineral Occurrences in the White Signal quadrangle, New Mexico*

[Leaders (---) indicate no data. Metric = for short ton, oz/t, lb]

Map No.	Name	Location Sec.	T.S.	R.W.	Description	Development	References
					PLACER DEPOSIT		
1	Gold Lake Placers	20	20	14	Gold, bismuth, and garnet. Placers mined between 1900 and 1910 and in 1931 and 1932.	At least $3,500 worth of gold extracted in 1931 and 1932.	Gillerman, 1964, p. 101.
					URANIUM AND BASE METAL DEPOSITS		
2	Blue Jay	26	20	15	Radioactive vein along the Blue Jay fault where a rhyolite dike swarm is also present. The quartz-pyrite veins contain tobernite, autunite, and pitchblende.	Open cuts and at least 4 diamond drill holes by the Cities Service Co.	Gillerman, 1964, p. 88-91; Lovering, 1956, p. 344-347.
3	Eugenie	26	20	15	A quartz-pyrite vein strikes N. 55° E. in proximity to a diabase dike which is about 12 m southeast of the shaft. The dike strikes N. 45° W. and fractures within the diabase contain secondary uranium minerals.	The mine was principally operated for gold and copper ore, but 500 lbs. (227 kg) torbernite has also been extracted.	Gillerman, 1964, p. 95.
3-A	Tunnel Site No. 1	26	20	15	Argillized granite near rhyolite dike is slightly radioactive and contains about 0.018 percent equivalent uranium. Oxidized quartz-pyrite veins are several centimeters thick.	Discovery shaft about 3 m deep and adit about 76 m long.	Lovering, 1956, p. 348, 349.
4	Inez	24	20	15	Quartz-pyrite vein strikes N. 75° E. and cuts northwest trending diabase dike. Cross faults displace the diabase dike and fractures within the diabase contain torbernite.	Considerable trenching. Two carloads of ore averaging 0.2 percent U_3O_8 have been shipped.	Gillerman, 1964, p. 93, 94 and 98.
5	Shamrock	23	20	15	Two diabase dikes that strike N. 40° W. are cut by several northeast trending quartz-pyrite veins that contain trace amounts of gold. Secondary uranium minerals are found as fracture-fillings within the diabase at the intersection with the vein.	---	Gillerman, 1964, p. 95.
6	Banner	26-27	20	15	Vein along the Blue Jay fault contains pyrite and unidentified radioactive minerals.	Shaft and several prospect pits.	Gillerman, 1964, p. 91.
7	Tullock	25	20	15	Quartz-pyrite vein strikes N. 70° W. and cuts an older more radioactive vein which strikes N. 45° W. Autunite-pyrite-chalcocite-torbernite ore has been mined from a shaft that is about 80 m deep.	Shaft. At least 25 short tons (22.7 metric tons) of gold-bearing ores have been shipped.	Gillerman, 1964, p. 99, 100.
8	Chapman	25	20	15	Originally operated as a high grade turquoise mine and is excavated in rhyolite of Saddle Mountain near the contact with Precambrian granite. Strong faulting in rhyolite may have had some control over the localization of the quartz-pyrite veins that strike N. 5°-10° W. The ores are slightly radioactive.	---	Gillerman, 1964, p. 102.
9	Bouncing Bet	24	20	15	Quartz-pyrite vein and rhyolite dikes strike N. 30°-35° E. The ferruginous veins show some alteration to malachite and are slightly radioactive.	---	Gillerman, 1964, p. 101.
10	Hummer (Good Luck)	24	20	15	Quartz-pyrite vein adjacent to rhyolite dike strikes N. 70° E. Deposit mined for gold but is also radioactive.	---	Gillerman, 1964, p. 98.
11	Red Bird	23	20	15	Quartz-pyrite vein adjacent to rhyolite dike strikes N. 75°-85° W. Ocherous rock on dump is radioactive.	---	Gillerman, 1964, p. 97
12	Calamity	23	20	15	Quartz-pyrite vein strikes N. 75° E. and intersects a thin diabase dike. The vein was previously mined for gold but is also radioactive.	---	Gillerman, 1964, p. 96.
13	Paddy Ford	23	20	15	Quartz-pyrite vein strikes N. 85° E. About 30 m north of shaft a fault cuts a diabase and rhyolite dike. Where the fault cuts the diabase there are small fracture-fillings of secondary uranium minerals. The vein is 0.3-0.6 m thick and was previously mined for gold (10 oz/t) (311.5 g/t) and silver (8 oz/t) (249.2 g/t).	Shaft 36 m deep.	Gillerman, 1964, p. 95, 96.
14	Red Dodson	14	20	15	East-trending quartz-pyrite vein that is radioactive. Ore minerals within the vein include cerargyrite, argentiferous galena, pyrite, and bismuthinite.	Adit and shaft. The vein was originally mined for silver and as much as 30 short tons (27 metric tons) high grade ore averaged $200-$300 per ton.	Gillerman, 1964, p. 100
15	Golden Eagle	14	20	15	Mine localized at intersection of N. 70° E. and N. 10°-15° W. faults. The quartz-pyrite vein was first mined for gold. The vein is also radioactive especially along the N. 10°-15° W.-striking fault.	---	Gillerman, 1964, p. 99.
					BASE METAL DEPOSITS		
16	Uncle Sam	32	20	14	Silicified fault strikes N. 45° W. and can be traced over a distance of 1,220 m. The ores are silver-rich and the chief minerals are pyrite, galena, argentite, cerargyrite and wolfanite.	Numerous shafts and prospect pits along fault.	Gillerman, 1964, p. 100; Lovering, 1956, p. 349.
17	Tullock (Hoyt No. 2)	32	20	14	Quartz vein along fault that strikes N. 30°-35° W. Ore minerals include pyrite, chalcopyrite, cerargyrite, and some secondary copper minerals.	---	Gillerman, 1964, p. 100.
18	Blackman	26	20	14	Quartz vein along N. 85° E.-striking fault contains pyrite, galena, argentite, and cerargyrite.	Numerous prospect pits and shafts along fault. Mine operated about 1910.	Gillerman, 1964, p. 101.
19	Black Tom	22	20	14	Numerous strong parallel fractures that strike N. 75° W. are filled with quartz, manganese oxides, and sparse amounts of pyrite.	Shaft and prospect pits.	---
20	Timmer	15	20	14	Quartz veins strike N. 80° E. and N. 55° E. and are as much as 1.8 m thick. Ore minerals include pyrite, argentite, and chalcopyrite.	Several shafts.	Gillerman, 1964, p. 101.
21	Copper Glance	23	20	15	Quartz vein as much as 0.9 m wide, strikes N. 45° E., and contains pyrite, chalcopyrite, and chalcocite.	Shaft.	Gillerman, 1964, p. 98, 99.
22	Combination	23	20	15	Sheeted vein system strikes N. 45° E. Pyrite-bearing veins contain as much as 10-12 oz of gold per ton (311.5-383.8 g/t) c.	Three shafts and numerous prospect pits. Past production about 10,000 short tons (9072 metric tons) of ore.	Gillerman, 1964, p. 98.
23	Apache Trail	2	20	15	Vein strikes N. 80° W. and dips 65°-70° N. along the Apache Trail fault. The brecciated silicified granite contains pyrite, galena, specularite, magnetite, and chrysocolla. Gold, bismuth, and fluorite are present in minor amounts. Traces of torbernite are present. Seven semiquantitative spectrographic analyses of vein and dump material show an average of 1,626 ppm copper, 507 ppm lead, and 1,424 ppm zinc.	Several shafts and numerous prospect pits along fault.	Gillerman, 1964, p. 87, 88, 89; Lovering, 1956, p. 341-344.
24	Unnamed	35	19	15	Small fault that strikes N. 70° W. and dips 60° N. contains abundant pyrite. The fault is about 2 m wide and is highly ferruginous. One semiquantitative spectrographic analysis indicates 205 ppm copper, 40 ppm lead, and 160 ppm zinc.	Shaft.	---
25	Unnamed	2	20	15	Quartz-pyrite vein strikes N. 33° W. Some specularite and magnetite along fault. Shaft is filled with water.	Shaft and prospect pit.	---
					PEGMATITE		
26	Unnamed	30	20	14	Two pegmatites with large quartz cores. Probably prospected for radioactive rare-earth minerals.	Open cuts.	---

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1978

For sale by Branch of Distribution, U.S. Geological Survey, Box 25286, Federal Center, Denver, CO 80225

Appendix B

Monitoring Location Completion Logs

DBS&A
Daniel B. Stephens & Associates, Inc.

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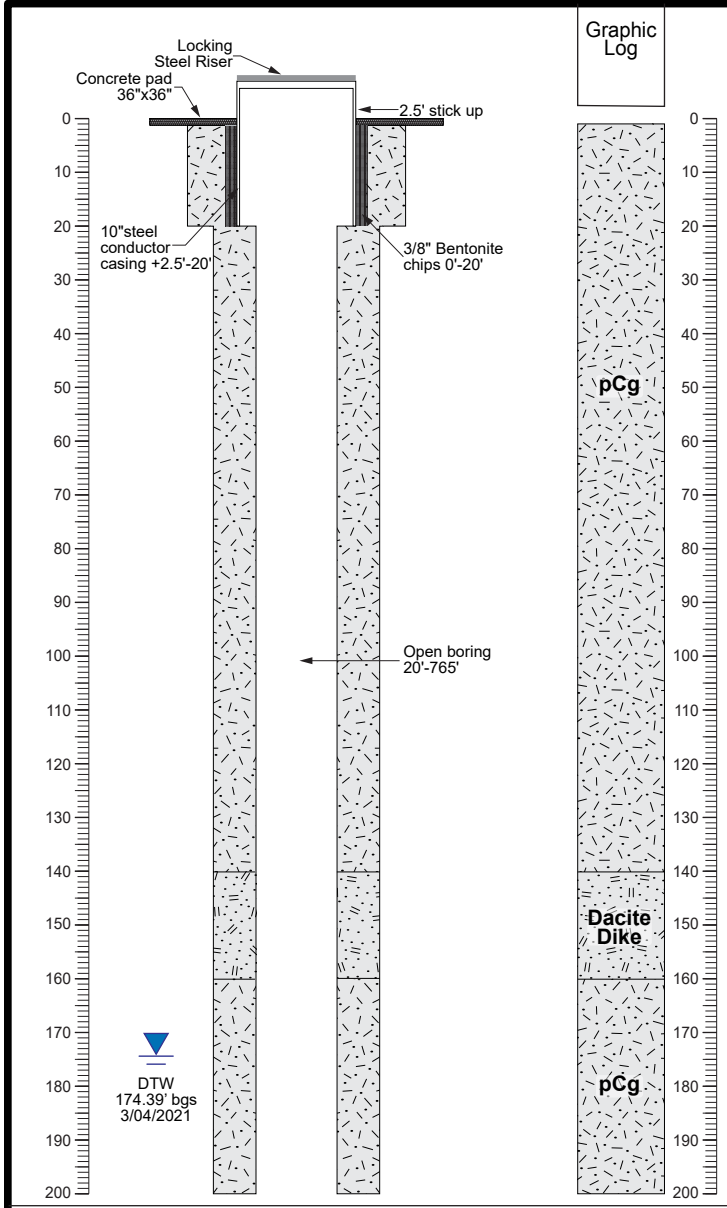

Paste pH (s.u.)	Paste SpC (µs/cm)	Sample Interval (ft bgs)	Rock Unit	Comments and Lithology
- -	- -	0-10	pCg	0-140 Precambrian Granite - Pink and gray, equigranular, composed of pink K-feldspar 30%, translucent quartz 40%, white plagioclase 20%, biotite and hornblende 10%, strong Fe-Oxide on quartz grains. Intermittent silica overprinting and veinlets and disseminated sulfides. Set surface conductor casing to 20'
6.56	725	10-20		
7.66	641	20-30		
7.15	495	30-40		
5.77	202	40-50		
5.67	70	50-60		
5.77	126	60-70		
6.92	173	70-80		
5.24	142	80-90		
5.11	53	90-100		
5.30	73	100-110		
5.89	58	110-120		
6.83	73	120-130		
7.15	35	130-140		
6.90	36	140-150	Dacite Dike	140-160 Dacite Dike - Dark aphanitic hornblende matrix with subhedral plagioclase phenocrysts, strong pyrite ~15%, secondary silica veinlets present.
6.70	26	150-160		
6.66	84	160-170	pCg	160-250 Granite - Weak silica overprinting, porphyritic texture preserved, composed of quartz 70%, K-feldspar 20%, plagioclase 10%, with Fe-oxides, silica veining and disseminated pyrite.
6.18	55	170-180		
6.05	75	180-190		
- -	- -	190-200		Blew out hole @ 190', dry after 60 minutes.

Geologist: M. Zbrozek
Driller: Major Drilling
Date completed: 01/24/2021

Drilling method: Reverse circulation w/ air and water
Bit diameter: 14-3/4" (Surface casing) / 9-7/8" (Borehole)
Sampling: Cuttings

Northing: 18.23'
Easting: 16879.37'
Elevation: 6162.97' msl (top of casing)

Note(s): (1) Depth to water measured below ground surface (feet).
(2) Northing and Easting in the Tyrone Mine coordinate system.

DBS&A
Daniel B. Stephens & Associates, Inc.
4/26/2021 DB20.1392

FREEPORT-McMoRan
TYRONE MINE
Well Log 396-2021-01

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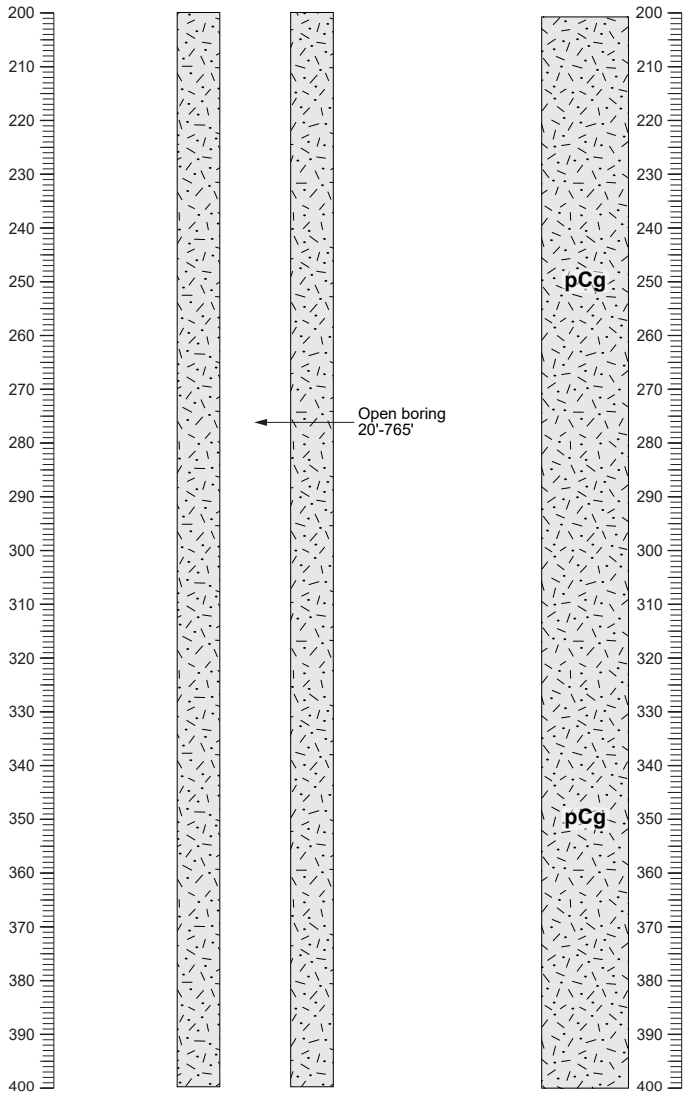

Paste pH (s.u.)	Paste SpC (µs/cm)	Sample Interval (ft bgs)	Rock Unit	Comments and Lithology
6.25	74	200-210		
6.47	64	210-220		Blew out hole @ 210', dry after 60 minutes.
6.65	18	220-230		
6.40	115	230-240		Blew out hole @ 230', dry after 60 minutes.
6.78	140	240-250		
8.07	103	250-260	pCg	250-480 Granite - Equigranular, weakly silicified, gray green, anhedral frosted quartz 40-50%, K-feldspar 20%, Plagioclase 20%, some chlorite and clay replacement of plagioclase, sulfides common. Blew out hole @ 250', dry after 90 minutes.
8.02	123	260-270		
6.29	191	270-280		
5.97	87	280-290		
6.68	74	290-300		
7.15	89	300-310		Blew out hole @ 310', dry after 120 minutes.
7.40	29	310-320		
8.17	31	320-330		
8.09	102	330-340		
8.24	175	340-350		Blew out hole @ 340', drillers trip out of hole. Trace water detected at bottom, determined to be added water.
8.41	107	350-360		
7.81	194	360-370		
8.66	34	370-380		
8.61	84	380-390		
8.45	81	390-400		Blew out hole @ 390', dry after 60 minutes.

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4/26/2021 DB20.1392

FREEPORT-McMoRan
TYRONE MINE
Well log 396-2021-01

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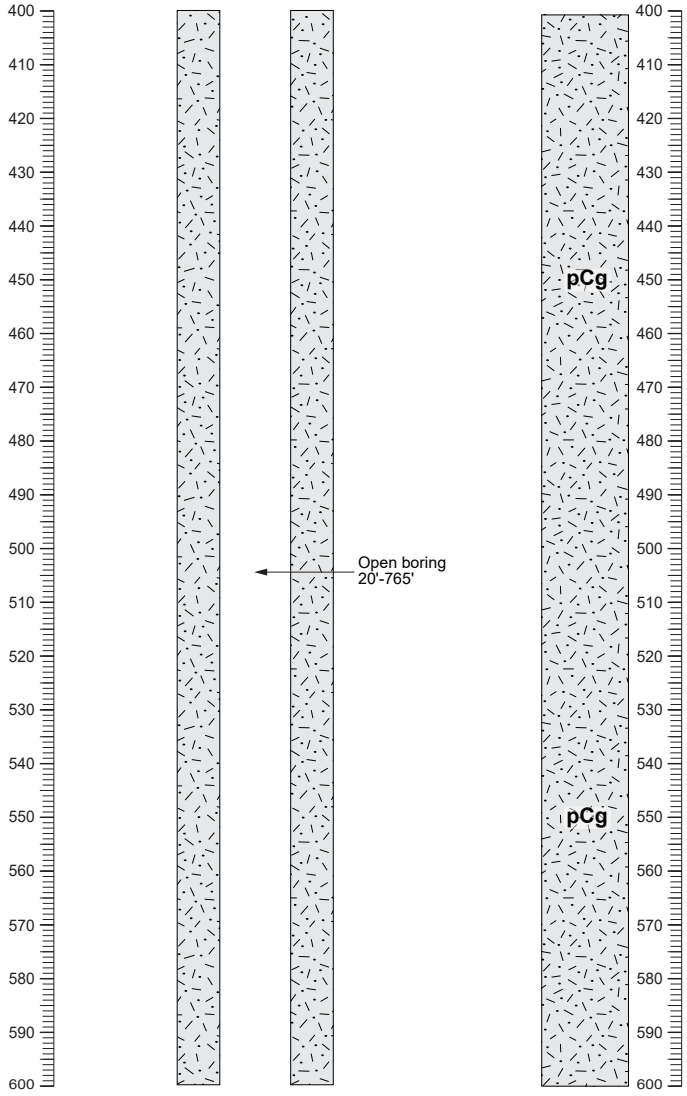

Paste pH (s.u.)	Paste SpC (µs/cm)	Sample Interval (ft bgs)	Rock Unit	Comments and Lithology
6.96	67	400-410		
7.75	160	410-420		Blew out hole @ 410', drillers trip out of hole. Trace water detected at bottom, determined to be added water.
7.95	124	420-430		
8.46	115	430-440		
8.89	105	440-450		
8.71	94	450-460		Blew out hole @ 450', dry after 60 minutes.
8.96	126	460-470		
9.09	72	470-480		
8.72	81	480-490	pCg	480-765 Granite - Grey/Green with weak silica overprinting, equigranular, quartz 40%, pink K-feldspar 30%, plagioclase 30%, disseminated black sulfide minerals, chalcopyrite common.
9.52	52	490-500		Driller trip out of hole to change tooling, dry after 4 hours.
8.95	187	500-510		
8.14	182	510-520		
8.68	184	520-530		
8.72	92	530-540		
9.36	94	540-550		
9.24	124	550-560		Blew out hole @ 550', dry after 120 minutes.
9.15	124	560-570		
9.30	72	570-580		
8.90	90	580-590		
9.05	89	590-600		Blew out hole @ 590', dry after 60 minutes.

Geologist: M. Zbrozek
Driller: Major Drilling
Date completed: 01/24/2021

Drilling method: Reverse circulation w/ air and water
Bit diameter: 14-3/4" (Surface casing) / 9-7/8" (Borehole)
Sampling: Cuttings

Northing: 18.23'
Easting: 16879.37'
Elevation: 6162.97' msl (top of casing)

Note(s): (1) Depth to water measured below ground surface (feet).
(2) Northing and Easting in the Tyrone Mine coordinate system.

DBS&A
Daniel B. Stephens & Associates, Inc.
4/26/2021 DB20.1392

FREEPORT-McMoRan
TYRONE MINE
Well Log 396-2021-01

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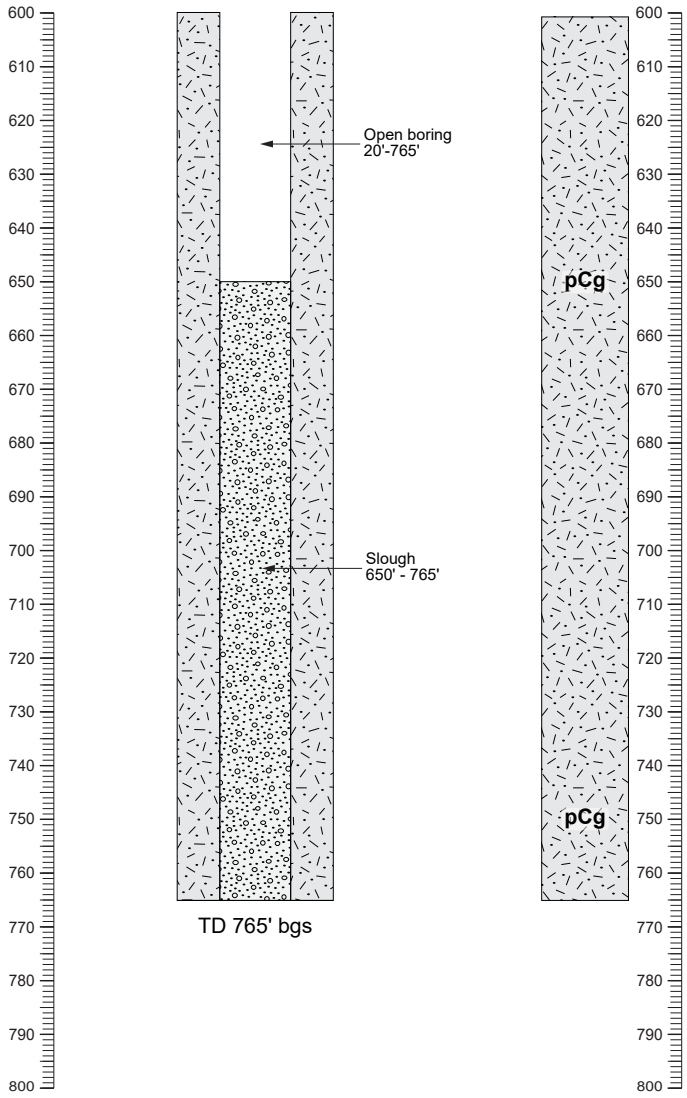

Paste pH (s.u.)	Paste SpC (µs/cm)	Sample Interval (ft bgs)	Rock Unit	Comments and Lithology
9.01	70	600-610	pCg	480-765 Granite - Grey/Green with weak silica overprinting, equigranular, quartz 40%, pink K-feldspar 30%, plagioclase 30%, disseminated black sulfide minerals, chalcopyrite common.
9.12	93	610-620		
9.20	101	620-630		
9.18	141	630-640		Blew out hole @ 630', dry after 60 minutes.
9.21	130	640-650		Rig maintenance @ 640'. Water detected, determined to be added water.
8.69	235	650-660		
8.65	212	660-670		
8.53	348	670-680		
8.91	169	680-690		
8.98	143	690-700		
9.11	144	700-710		
8.51	186	710-720		Blew out hole @ 710', dry after 60 minutes.
8.50	187	720-730		
8.30	153	730-740		
8.97	105	740-750		
9.02	106	750-760		
				Blew out hole @ 765', dry after 120 minutes. Water detected at 502.61' after 1 week.

Geologist: M. Zbrozek
Driller: Major Drilling
Date completed: 01/24/2021

Drilling method: Reverse circulation w/ air and water
Bit diameter: 14-3/4" (Surface casing) / 9-7/8" (Borehole)
Sampling: Cuttings

Northing: 18.23'
Easting: 16879.37'
Elevation: 6162.97' msl (top of casing)

Note(s): (1) Depth to water measured below ground surface (feet).
(2) Northing and Easting in the Tyrone Mine coordinate system.

DBS&A
Daniel B. Stephens & Associates, Inc.
4/26/2021 DB20.1392

FREEPORT-McMoRan
TYRONE MINE
Well Log 396-2021-01

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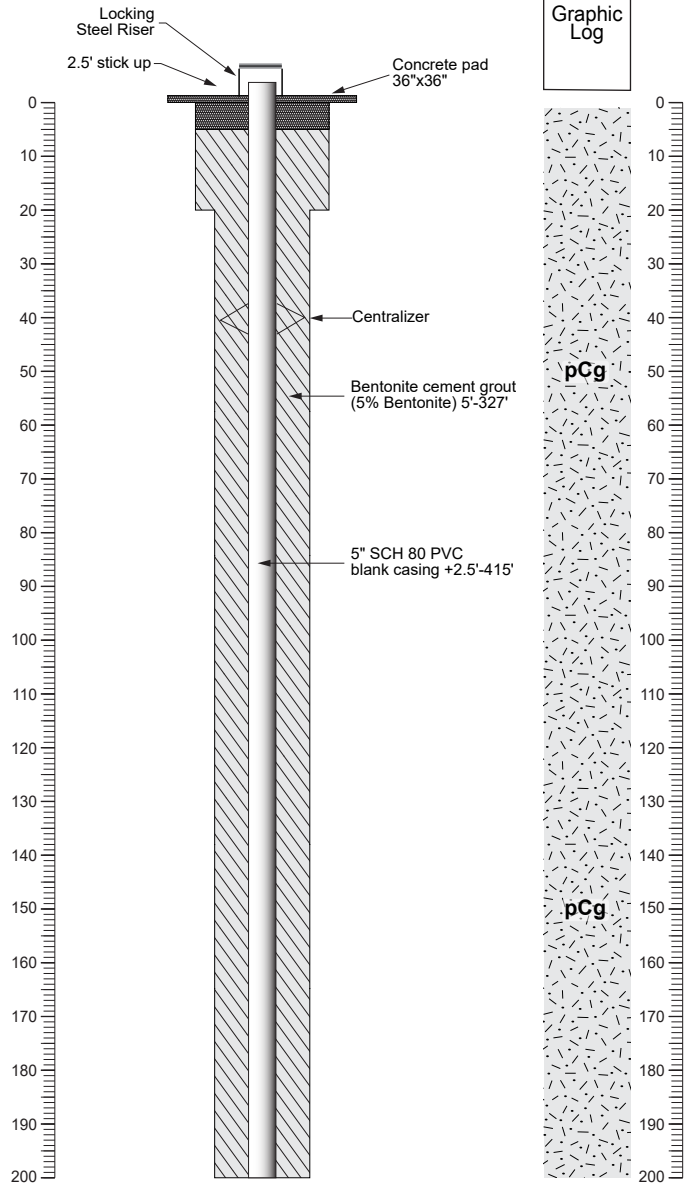

Paste pH (s.u.)	Paste SpC (µs/cm)	Sample Interval (ft bgs)	Rock Unit	Comments and Lithology
7.41	270	0-10	pCg	0-200 Precambrian granite - Weathered, orange and brown, equigranular, equal parts quartz, K-feldspar, and plagioclase w/ trace biotite, Fe-oxide on fracture planes.
7.93	154	10-20		
8.24	66	20-30		
7.51	67	30-40		Drillers adding 2-4 gpm water.
8.00	112	40-50		
8.31	50	50-60		
8.52	114	60-70		
8.18	65	70-80		
7.99	90	80-90		
7.98	32	90-100		
8.01	32	100-110		
7.98	51	110-120		
8.02	56	120-130		
8.02	59	130-140		
7.98	52	140-150		
7.65	76	150-160		
6.83	69	160-170		
6.90	68	170-180		
6.95	65	180-190		
6.97	77	190-200		Blew out hole @ 190', dry after 30 minutes.

Geologist: M. Zbrozek
Driller: Major Drilling
Date completed: 2/25/2021

Drilling method: Reverse circulation w/ air and water
Bit diameter: 14-3/4" (Surface casing) / 9-7/8" (Borehole)
Sampling: Cuttings

Northing: 1626.05'
Easting: 15439.22'
Elevation: 6280.53' msl (top of casing)

Note(s): (1) Depth to water measured below ground surface (feet).
(2) Northing and Easting in the Tyrone Mine coordinate system.

DBS&A
Daniel B. Stephens & Associates, Inc.
4/26/2021 DB20.1392

FREEPORT-McMoRan
TYRONE MINE
Well Log 396-2021-02

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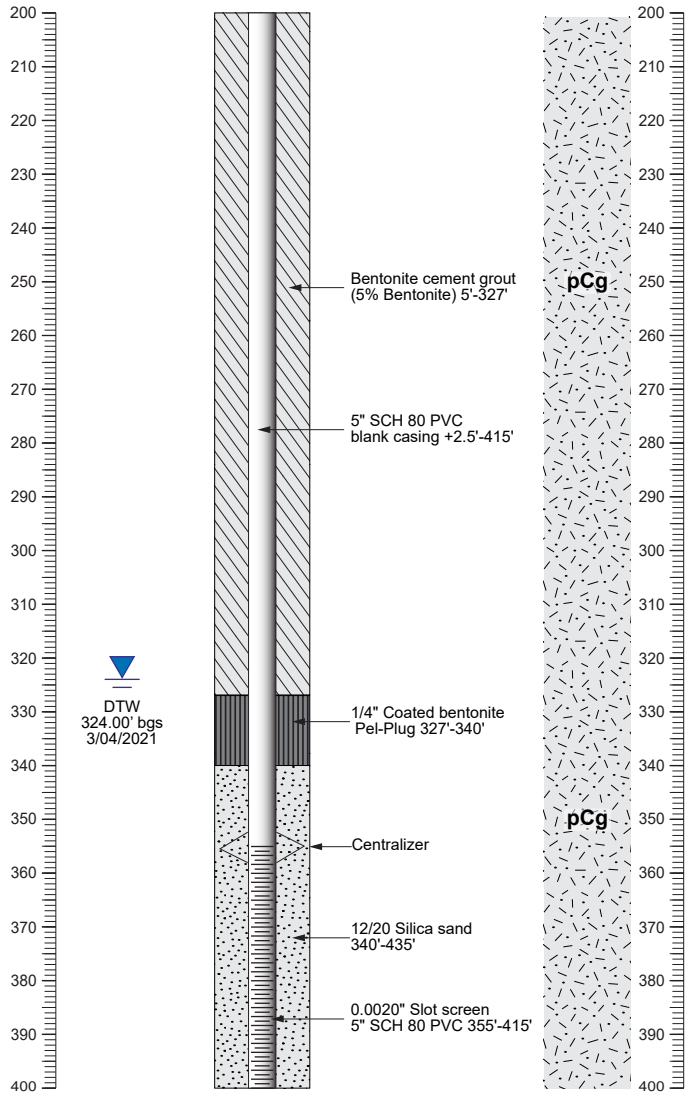

Paste pH (s.u.)	Paste SpC (µs/cm)	Sample Interval (ft bgs)	Rock Unit	Comments and Lithology
7.05	55	200-210	pCg	200-270 Granite - Red/pink and brown, dark red at cyclone, equigranular texture preserved, quartz 30%, K-feldspar 35%, and plagioclase 30%, w/ trace biotite, varicolored Fe-oxides. Increasing fragment sizes.
7.10	97	210-220		
7.02	91	220-230		
7.08	67	230-240		Drillers adding 1-3 gpm water.
6.99	157	240-250		
6.54	86	250-260		Blew out hole @ 250', dry after 90 minutes.
6.69	111	260-270		
3.82	305	270-280	pCg	270-290 Granite - Dark red at cyclone, strong Fe-oxide and clay, disaggregated quartz, irregular fragment sizes, fracture planes common, slicken lines observed on larger cuttings, fracture zone.
3.82	289	280-290		
4.39	363	290-300		
4.76	290	300-310		
5.16	112	310-320		Blew out hole @ 310', dry after 45 minutes.
5.50	97	320-330	pCg	290-350 Granite - Red/pink and brown, dark red at cyclone, weak silicic overprinting, equigranular texture preserved, quartz 40%, K-feldspar 30%, and plagioclase 30%, w/ trace biotite, varicolored Fe-oxides, secondary quartz veinlets, vuggy texture in silica.
5.69	43	330-340		
- -	- -	340-350		
5.84	44	350-360	pCg	350-440 Granite - Red and brown, weak silicic overprinting, equigranular texture preserved, quartz 40%, K-feldspar 30%, and plagioclase 30%, w/ trace biotite, varicolored Fe-oxides common.
- -	- -	360-370		
7.58	84	370-380		Blew out hole @ 370', allow to recover overnight, dry. Drilling adding 2 gpm water.
8.39	34	380-390		
8.85	70	390-400		

Geologist: M. Zbrozek
Driller: Major Drilling
Date completed: 2/25/2021

Drilling method: Reverse circulation w/ air and water
Bit diameter: 14-3/4" (Surface casing) / 9-7/8" (Borehole)
Sampling: Cuttings

Northing: 1626.05'
Easting: 15439.22'
Elevation: 6280.53' msl (top of casing)

Note(s): (1) Depth to water measured below ground surface (feet).
(2) Northing and Easting in the Tyrone Mine coordinate system.

DBS&A
Daniel B. Stephens & Associates, Inc.
4/26/2021 DB20.1392

FREEPORT-McMoRan
TYRONE MINE

Well Log 396-2021-02

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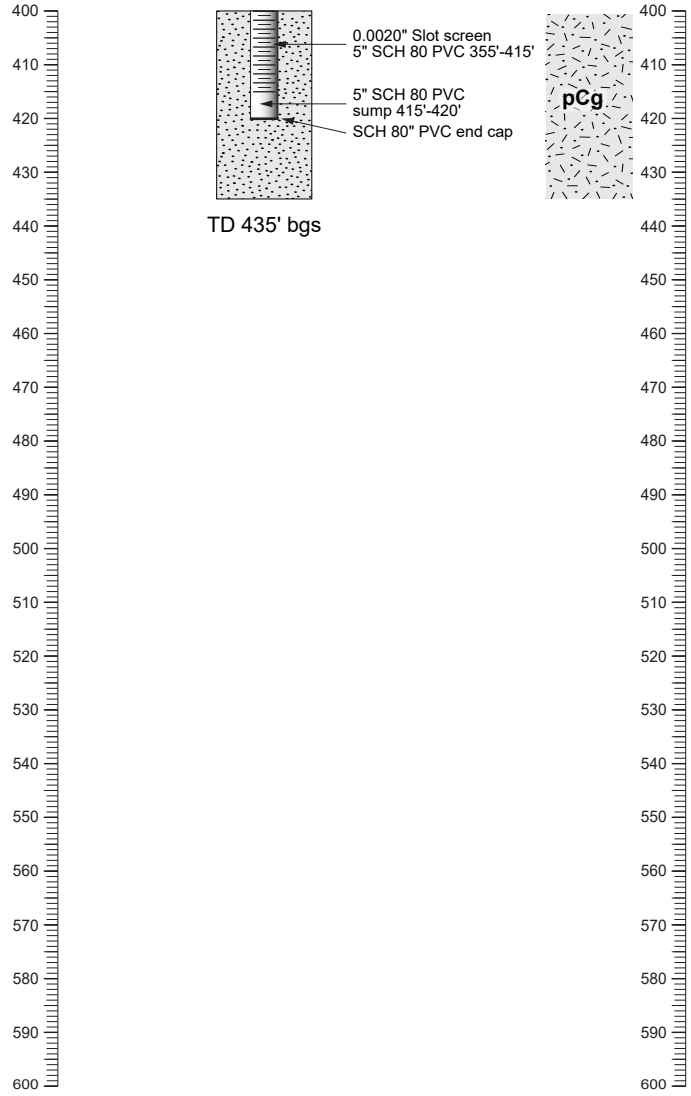


Paste pH (s.u.)	Paste SpC (µs/cm)	Sample Interval (ft bgs)	Rock Unit	Comments and Lithology
- -	- -	400-410	pCg	350-440 Granite - Red and brown, weak silicic overprinting, equigranular texture preserved, quartz 40%, K-feldspar 30%, and plagioclase 30%, w/ trace biotite, varicolored Fe-oxides common.
9.17	26	410-420		Blew out hole @ 410', water recovered to 345.10' after 1.5 hours. Repeat blow out and recovery, 342.95' after 2.5 hours.
8.76	89	420-430		
- -	- -	430-440		Advance boring to 430', drilling adding no water, 15gpm estimated discharge at cyclone. Blew out hole @ 430', water recovered to 319.65' after recovering overnight. Sloughing in borehole.

Geologist: M. Zbrozek
Driller: Major Drilling
Date completed: 2/25/2021

Drilling method: Reverse circulation w/ air and water
Bit diameter: 14-3/4" (Surface casing) / 9-7/8" (Borehole)
Sampling: Cuttings

Northing: 1626.05'
Easting: 15439.22'
Elevation: 6280.53' msl (top of casing)

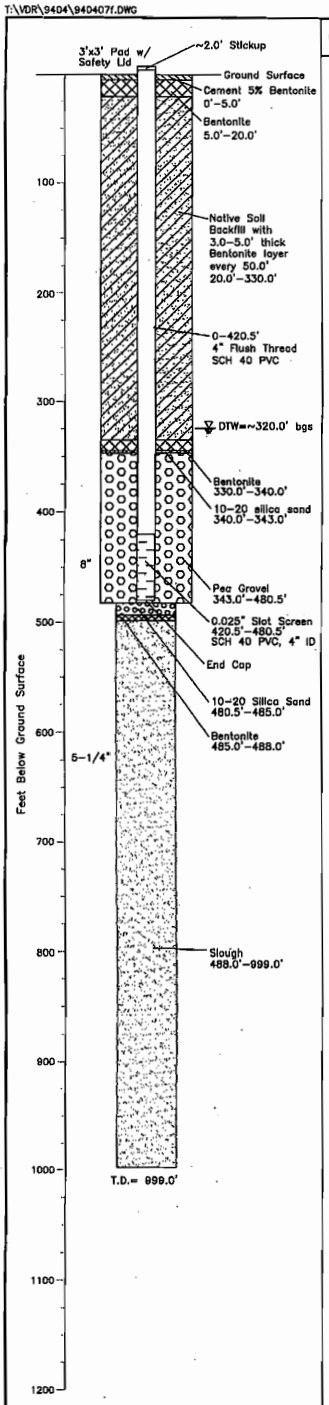
Note(s): (1) Depth to water measured below ground surface (feet).
(2) Northing and Easting in the Tyrone Mine coordinate system.

DBS&A
Daniel B. Stephens & Associates, Inc.
4/26/2021 DB20.1392

FREEPORT-McMoRan
TYRONE MINE

Well Log 396-2021-02

T:\VDR\9404\940407f.DWG



Sample Interval/Depth (feet bgs)	Lithologic Description and Comments
	0.0–129.5 Alluvium, fragments of medium–grained granite and fine–grained aplite in loose sand, gravel, clay
	129.5–308.0 Aphanitic aplite
	308.0–330.0 Quartz monzonite porphyry, medium–grained
	330.0–361.0 Aphanitic aplite, very fine–grained
	361.0–629.0 Quartz monzonite porphyry, medium–grained
	629.0–651.0 Granite, medium–grained
	651.0–681.5 Quartz monzonite porphyry
	681.5–703.0 Aplite, very fine–grained
	703.0–732.0 Granite, medium–grained
	732.0–785.0 Aplite
	785.0–789.0 Granite, medium–grained
	789.0–811.0 Aplite, very fine–grained
	811.0–843.0 Granite, fine–grained
	843.0–869.0 Aplite, very fine–grained
	869.0–989.0 Granite, fine–grained, possible fault gouge below 979
	989.0–999.0 Granite, fine– to medium–grained

Explanation

Bentonite Seal
Gravel Pack
Silica Sand
Screen

Geologist: J. Bussman
Driller: Layne Western
Date Completed: 11–15–01
Drilling Method: Reverse Circulation

Bit Diameter: 8.0 in. O.D./5–1/4 in. O.D.
Total Drill Depth: 999.0'
Screen Interval: 420.5'–480.5'
Sampler Type: Cuttings

Daniel B. Stephens & Associates, Inc.
12–13–01
JN 9404

PHELPS DODGE TYRONE, INC. Tyrone, New Mexico	EAST SIDE	Well Schematic: MB–44

Appendix C

Aquifer Test Field Data

DBS&A
Daniel B. Stephens & Associates, Inc.

396-2021-01 Pumping Test Field Data

Site Name: **Emma South**	Project No.: **DB20.1392.00**	Measured By: **Mike Zbrozek**
Well ID: **396-2021-01**	Casing Diameter: **9-7/8 inch**	Measuring Point: **6162.97 feet msl (top of casing)**
Pump Depth: **363 feet btoc**	Static Water Level: **168.00 feet btoc**	Available Drawdown: **204 feet**
Screened Interval: **NA**	Pump On: Date/Time **5/21/21 - 09:49:00**	Pump Off: Date/Time **5/21/21 - 11:40:18**
Initial Totalizer Reading: **483.63 gallons**	Distance from Pumping Well: **NA**	Duration of Test: **1 hr - 51 min - 18 sec**

Time	Time Since Start (minutes)	Depth to Water (feet)	Drawdown (feet)	Pumping Rate (gpm)	Totalizer (gallons)	pH	Temp. (˚C)	Sp. Cond. (µS/cm)	ORP (mv)	DO (mg/L)	Comments
0949	0.0	168.00	0.0	--	483.63	7.07	19.1	1934	213.7	0.83	
0952	3.0	174.10	6.1	--	--	--	--	--	--	--	
0956	7.0	--	--	--	--	--	--	--	--	--	
0958	9.0	184.75	16.75	--	--	7.11	19.0	1920	208.0	0.95	
1000	11.0	189.60	21.6	--	--	--	--	--	--	--	
1002	13.0	--	--	--	--	--	--	--	--	--	
1004	15.0	198.26	30.26	--	--	7.09	20.6	1918	202.8	1.09	
1010	21.0	209.11	41.11	--	--	7.07	20.6	1919	190.8	0.81	
1015	26.0	220.30	52.30	4.01	588	--	--	--	--	--	
1020	31.0	228.45	60.45	4.88	635	7.04	20.8	1926	186.2	0.99	
1025	36.0	235.42	67.42	4.82	657	--	--	--	--	--	
1030	41.0	245.40	77.4	5.08	692	--	--	--	--	--	
1035	46.0	253.25	85.25	5.44	734	--	--	--	--	--	
1040	51.0	261.25	93.25	5.54	766	--	--	--	--	--	
1045	56.0	271.30	103.3	5.61	798	6.96	20.5	1916	188.1	0.76	
1050	61.0	282.25	114.25	5.81	838	--	--	--	--	--	
1055	66.0	289.65	121.65	5.90	873	--	--	--	--	--	
1100	71.0	299.11	131.11	5.93	905	--	--	--	--	--	
1105	76.0	--	--	5.99	939	6.67	20.1	1849	197.3	0.93	
1110	81.0	315.05	147.05	6.24	989	6.58	19.9	1837	207.2	1.32	
1115	86.0	322.71	154.71	6.26	1022	--	--	--	--	--	
1120	91.0	332.05	164.05	6.34	1061	--	--	--	--	--	

396-2021-01 Pumping Test Field Data

Time	Time Since Start (minutes)	Depth to Water (feet)	Drawdown (feet)	Pumping Rate (gpm)	Totalizer (gallons)	pH	Temp. (˚C)	Sp. Cond. (µS/cm)	ORP (mv)	D.O. (mg/L)	Comments
1125	96.0	339.71	171.71	6.27	1086	6.55	19.8	1826	209.9	1.23	
1130	101.0	347.50	179.50	6.31	1121	--	--	--	--	--	
1135	106.0	355.72	187.72	6.31	1153	6.54	19.8	1827	211.6	1.63	
1140	111.0	361.55	193.55	6.20	1172	--	--	--	--	--	Pump off - 11:40:18
1145	116.0	363.45	--	0.00	1175.60	--	--	--	--	--	Recovery
1150	121.0	362.41	--	0.00	--	--	--	--	--	--	

396-2021-02 Pumping Test Field Data

Site Name: **Emma West**	Project No.: **DB20.1392.00**	Measured By: **Mike Zbrozek**
Well ID: **396-2021-02**	Casing Diameter: **5 inch (nominal)**	Measuring Point: **6280.53 feet msl (top of casing)**
Pump Depth: **410 feet btoc**	Static Water Level: **324.58 feet btoc**	Available Drawdown: **81.5 feet**
Screened Interval: **355-415 feet bgs**	Pump On: Date/Time **5/26/21 - 12:07:07**	Pump Off: Date/Time **5/26/21 - 13:16:00**
Initial Totalizer Reading: **1175.80 gallons**	Distance from Pumping Well: **NA**	Duration of Test: **1 hr - 08 min - 53 sec**

Time	Time Since Start (minutes)	Depth to Water (feet)	Drawdown (feet)	Pumping Rate (gpm)	Totalizer (gallons)	pH	Temp. (˚C)	Sp. Cond. (µS/cm)	ORP (mv)	D.O. (mg/L)	Comments
1210	3	343.90	19.32	2.40	1183	--	--	--	--	--	
1215	8	357.95	33.37	3.90	1207	--	--	--	--	--	
1220	13	--	--	4.02	1228	7.49	21.8	826	152.3	1.61	
1225	18	--	--	3.84	1245	--	--	--	--	--	
1230	23	--	--	--	--	7.82	22.1	806	133.1	1.42	
1235	28	--	--	4.01	1288	--	--	--	--	--	
1240	33	--	--	3.67	1297	--	--	--	--	--	
1245	38	--	--	3.58	1312	7.34	22.2	828	130.7	2.06	
1250	43	--	--	3.54	1328	--	--	--	--	--	
1255	48	--	--	3.46	1342	7.30	22.2	848	135.8	1.87	
1300	53	--	--	3.40	1356	--	--	--	--	--	
1305	58	--	--	3.33	1369	7.31	22.4	851	128.8	1.86	
1309	62	--	--	3.28	1379	--	--	--	--	--	
1316	69	--	--	3.17	1394.69	--	--	--	--	--	Pump Off - 13:16:00
1327	78	383.90	--	0.0	--	--	--	--	--	--	
1330	81	379.10	--	0.0	--	--	--	--	--	--	

MB-44 Pumping Test Field Data

Project Name: **MB-44**	Project No.: **DB20.1392.00**	Measured By: **Mike Zbrozek**
Well ID: **MB-44**	Casing Diameter: **4 inch (nominal)**	Measuring Point: **6140.53 feet msl**
Pump Depth: **460 feet btoc**	Static Water Level: **332.30 feet btoc**	Available Drawdown: **128.39 feet**
Screened Interval: **421-481 feet bgs**	Pump On: Date/Time **5/27/21 - 12:00:00**	Pump Off: Date/Time **5/27/21 - 18:00:00**
Initial Totalizer Reading: **1394.69 gallons**	Distance from Pumping Well: **NA**	Duration of Test: **6 hr - 00 min - 00 sec**

Time	Time Since Start (minutes)	Depth to Water (feet)	Drawdown (feet)	Pumping Rate (gpm)	Totalizer (gallons)	pH	Temp. (˚C)	Sp. Cond. (µS/cm)	ORP (mv)	D.O. (mg/L)	Comments
1200	0	332.30	--	--	1394.69	7.13	22.7	774	185.1	1.76	
1205	5	355.90	23.6	4.26	1416	--	--	--	--	--	
1210	10	--	--	3.83	1433	--	--	--	--	--	
1215	15	366.24	33.94	4.15	1457	--	--	--	--	--	
1220	20	--	--	3.92	1473	7.16	22.8	777	148.7	1.75	
1225	25	370.19	37.89	4.17	1499	--	--	--	--	--	
1230	30	374.42	42.12	--	--	--	--	--	--	--	
1235	35	--	--	3.69	1524	7.14	26.0	782	128.9	1.70	
1240	40	377.05	44.75	3.66	1541	--	--	--	--	--	
1245	45	378.45	46.15	3.63	1558	--	--	--	--	--	
1250	50	--	--	3.65	1577	7.06	24.9	777	123.1	1.77	
1255	55	--	--	3.62	1594	--	--	--	--	--	
1300	60	381.60	49.30	3.61	1611	--	--	--	--	--	
1305	65	--	--	3.59	1628	7.06	25.8	782	122.3	1.79	
1310	70	382.70	50.40	3.58	1645	--	--	--	--	--	
1315	75	--	--	--	--	--	--	--	--	--	
1320	80	384.35	52.05	3.67	1688	7.09	24.6	778	125.2	1.65	Begin 10 min monitoring
1330	90	385.85	53.55	3.54	1713	--	--	--	--	--	
1340	100	386.60	54.3	3.49	1744	--	--	--	--	--	
1350	110	387.73	55.43	3.50	1780	7.10	26.4	777	139.5	1.98	
1400	120	388.37	56.07	3.46	1810	--	--	--	--	--	
1410	130	389.3	57.00	3.47	1846	--	--	--	--	--	Begin 30 min monitoring

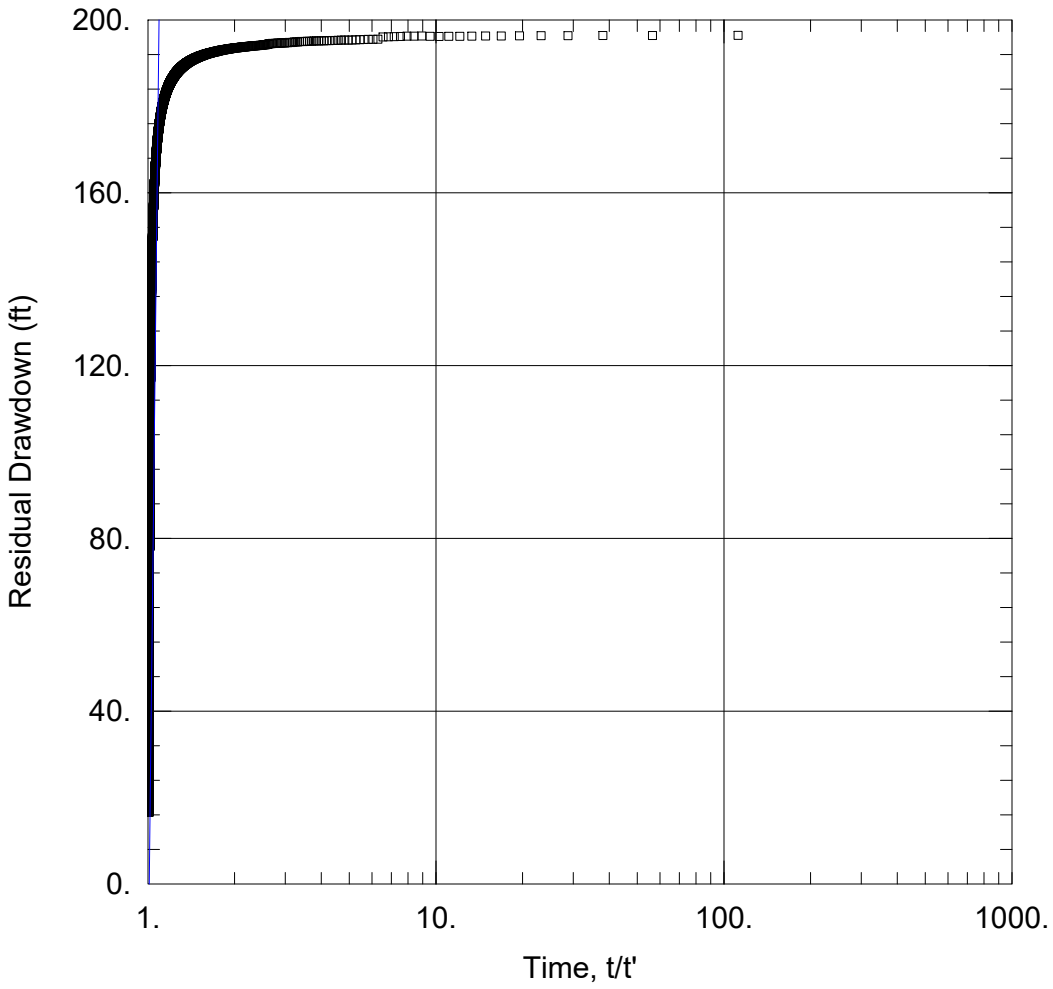
MB-44 Pumping Test Field Data

Time	Time Since Start (minutes)	Depth to Water (feet)	Drawdown (feet)	Pumping Rate (gpm)	Totalizer (gallons)	pH	Temp. (˚C)	Sp. Cond. (µS/cm)	ORP (mv)	D.O. (mg/L)	Comments
1440	160	390.55	58.25	3.44	1945	7.06	24.6	780	134.2	1.20	
1510	190	391.15	58.85	3.41	2043	7.11	25.4	776	137.5	1.34	
1540	220	392.09	59.79	3.40	2142	7.13	25.4	782	146.3	1.55	
1610	250	394.17	61.87	3.37	2236	7.13	24.7	781	139.7	1.49	
1640	280	395.38	63.08	3.33	2328	7.11	24.7	777	138.9	1.52	
1710	310	395.98	63.68	3.32	2423	7.15	25.1	778	134.2	1.68	
1755	340	396.59	64.29	3.30	2567	7.17	24.8	783	137.7	1.52	
1800	370	--	--	--	--	--	--	--	--	--	Pump off - 18:00:00
1805	375	387.56	--	--	--	--	--	--	--	--	Recovery
1810	380	382.21	--	--	--	--	--	--	--	--	
1815	385	374.20	--	--	--	--	--	--	--	--	
1820	390	369.42	--	--	--	--	--	--	--	--	
1825	395	364.17	--	--	--	--	--	--	--	--	
1830	400	360.58	--	--	--	--	--	--	--	--	
1835	405	356.75	--	--	--	--	--	--	--	--	
1840	410	353.52	--	--	--	--	--	--	--	--	

Appendix D

Aquifer Test Analyses

DBS&A
Daniel B. Stephens & Associates, Inc.



396-2021-01 (EMMA SOUTH)

Data Set: S:\...\396-2021-01 (Emma South).aqt
Date: 07/07/21 Time: 09:46:15

PROJECT INFORMATION

Company: DBS&A
Client: FREEPORT-McMoRan TYRONE INC.
Project: DB20.1392.00
Location: Emma South
Test Well: 396-2021-01
Test Date: May 21, 2021

AQUIFER DATA

Saturated Thickness: 597. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
396-2021-01	0	0

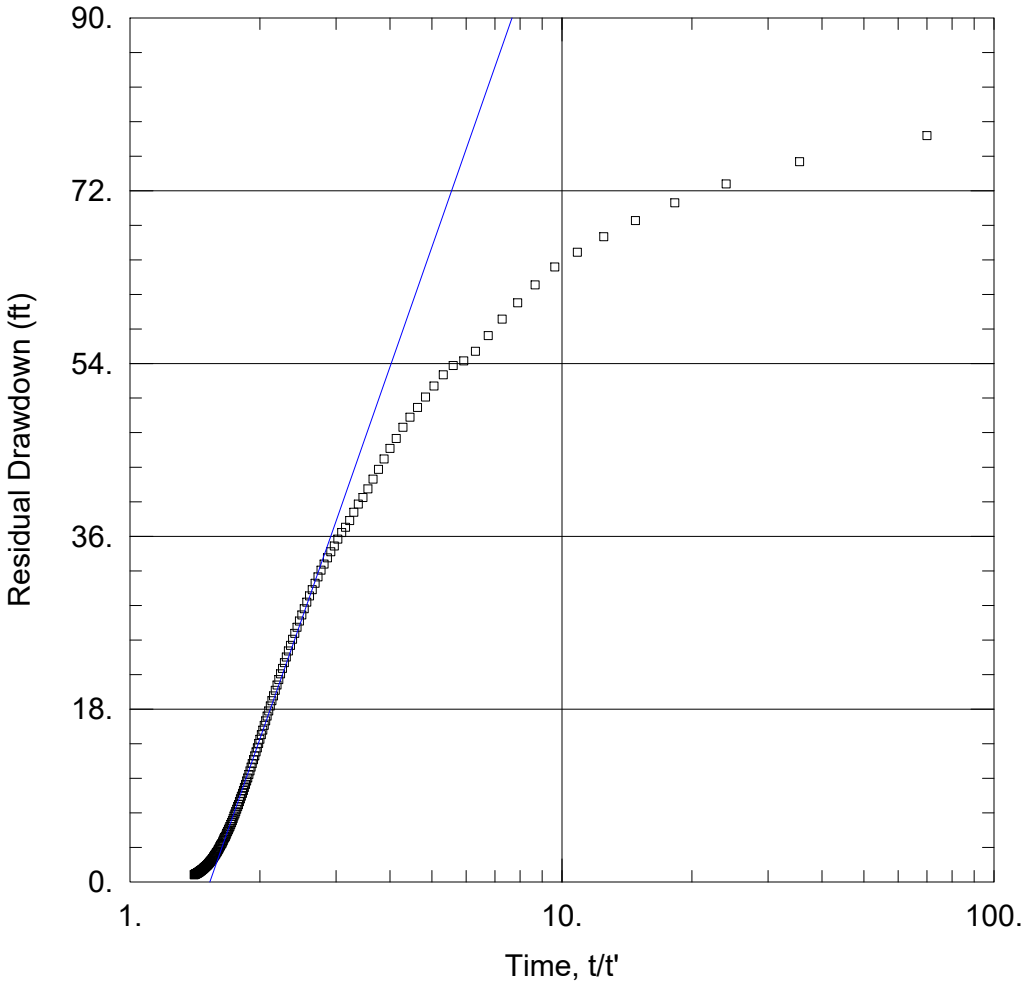
Observation Wells

Well Name	X (ft)	Y (ft)
▫ 396-2021-01	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 0.0372 ft^2/day S/S' = 1.011



396-2021-02 (EMMA WEST)

Data Set: S:\...\396-2021-02 (Emma West).aqt
Date: 07/07/21 Time: 10:23:37

PROJECT INFORMATION

Company: DBS&A
Client: FREEPORT-McMoRan TYRONE INC.
Project: DB20.1392.00
Location: Emma West
Test Well: 396-2021-02
Test Date: May 26, 2021

AQUIFER DATA

Saturated Thickness: 90.4 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
396-2021-02	0	0

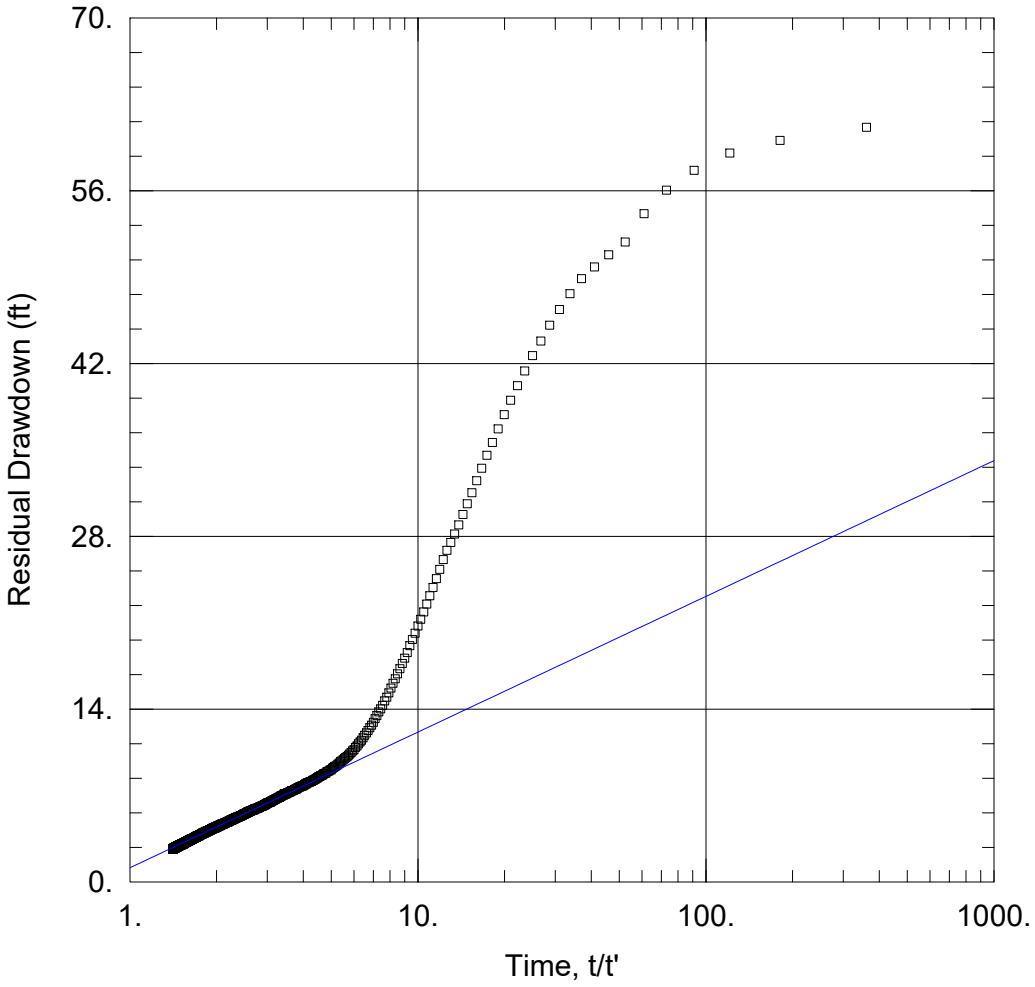
Observation Wells

Well Name	X (ft)	Y (ft)
▫ 396-2021-02	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 0.8691 ft^2/day S/S' = 1.532



MB-44

Data Set: S:\...\MB-44.aqt
Date: 07/07/21 Time: 10:28:16

PROJECT INFORMATION

Company: DBS&A
Client: FREEPORT-McMoRan TYRONE INC.
Project: DB20.1392.00
Location: MB-44
Test Well: MB-44
Test Date: May 27, 2021

AQUIFER DATA

Saturated Thickness: 148.2 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
MB-44	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
MB-44	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 10.46 ft^2/day S/S' = 0.7866

Appendix E

MB-44 Historical Monitoring Data

DBS&A
Daniel B. Stephens & Associates, Inc.

Water Quality Monitoring Data
Monitor Well MB-44

Site Number	Sample Date	Sample Time	Sample Identifier	Reason for No Sample	Depth to Water (feet btoc)	Acidity, Total (mg/l as CaCO3)	Alkalinity, Bicarbonate (mg/l as CaCO3)	Alkalinity, Carbonate (mg/l as CaCO3)	Alkalinity, Total (mg/l as CaCO3)	Aluminum, Dissolved (mg/l)	Arsenic, Dissolved (mg/l)	Boron, Dissolved (mg/l)	Cadmium, Dissolved (mg/l)	Calcium, Dissolved (mg/l)	Chloride (mg/l)	Chromium, Dissolved (mg/l)	Cobalt, Dissolved (mg/l)	Copper, Dissolved (mg/l)	Fluoride (mg/l)	Iron, Dissolved (mg/l)
Water Quality Standar											0.1		0.005		250	0.05	0.05	1	1.6	1
MB-44	01/17/2002	13:40	mb-44		331.65		244	-1		-0.05		0.05	-0.005	113	18	-0.01	-0.01	0.03	0.4	-0.02
MB-44	02/21/2002	15:20	mb-44		331.75			-1		-0.05	-0.005		-0.005	106	27	-0.01	-0.01	0.04	0.5	-0.02
MB-44	05/13/2002	08:00	MB-44		331.62		273	-1		0.07		0.06	-0.005	93.9	40	-0.01	0.02	0.27	0.9	-0.02
MB-44	08/06/2002	09:15	212591		331.72			-1		0.16	-0.005		-0.005	97.5	23	0.01	-0.01	0.44	0.49	-0.02
MB-44	11/01/2002	13:45	215232		331.5			-1		0.38	-0.005		-0.005	126	22	-0.01	-0.01	1.53	0.51	-0.02
MB-44	02/05/2003	15:20	217271		331.4			-1		-0.05	-0.003		0.0007	103	77	0.01	-0.005	0.088	2	-0.05
MB-44	03/27/2003	09:50			331.35															
MB-44	04/24/2003	11:35	219536		331.78			-1		-0.05	-0.003		0.0001	109	30	0.01	-0.005	-0.005	-0.1	-0.05
MB-44	08/07/2003	09:30	221492		331.55	-1		-1	214	0.14	-0.005		-0.001	113	21.8	-0.01	-0.02	0.488	0.37	-0.03
MB-44	11/06/2003	10:10	222769		331.25		206	-1		0.029	-0.01		-0.002	118	25.1	-0.006	-0.006	0.174	0.45	-0.02
MB-44	01/16/2004	08:55			331.05															
MB-44	02/13/2004	10:00	225368		331.7		214	-1		0.033	-0.01		-0.002	118	26.1	-0.006	-0.006	0.0795	0.7	-0.02
MB-44	05/25/2004	13:10	227141		331.25		223	-1		-0.02	-0.01		-0.002	113	22.5	-0.006	-0.006	0.0191	0.51	-0.02
MB-44	08/10/2004	13:20	231728		332.45		227	-1		-0.02	-0.01		-0.002	120	26.4	-0.006	-0.006	-0.003	0.32	-0.02
MB-44	11/22/2004	15:30	236699		330.9		208	-1		0.217	-0.025		0.0021	116	25	-0.006	-0.006	1.23	0.51	-0.06
MB-44	02/04/2005	14:20	243574		331.3		207	-1		-0.03	-0.025		-0.002	120	25.4	-0.006	-0.006	0.025	0.36	-0.06
MB-44	04/15/2005	09:50			331.6															
MB-44	05/09/2005	14:30	248422		331.4		211	-1		-0.03	-0.025		-0.002	114	26.5	-0.006	-0.006	0.12	0.425	-0.06
MB-44	08/04/2005	11:10	264955		331.3		213	-1		0.055	-0.025		-0.002	118	25.7	-0.006	-0.006	0.735	0.397	-0.06
MB-44	11/19/2005	14:40	271353		331		210	-1		-0.03	-0.025		-0.002	113	25.7	-0.006	-0.006	0.083	0.47	-0.06
MB-44	02/11/2006	15:25	274652		332		211	-1		-0.03	-0.025		-0.002	119	24.4	-0.006	-0.006	-0.01	0.45	-0.06
MB-44	05/08/2006	10:30	281410		332		215	-1		-0.03	-0.025		-0.002	124	26.9	-0.006	-0.006	-0.01	0.41	-0.06
MB-44	08/07/2006	15:20	285019		331.85		216	-1		-0.03	-0.025		-0.002	124	22.7	-0.006	-0.006	0.37	0.43	-0.06
MB-44	11/13/2006	10:00	296625		330.1		208	-1	208	-0.08	-0.025		-0.002	120	24.7	-0.006	-0.006	-0.01	0.39	-0.06
MB-44	02/12/2007	14:00	299659		331.2		215	-1	215	-0.08	-0.025		-0.002	121	25.7	-0.006	-0.006	-0.01	0.39	-0.06
MB-44	05/10/2007	14:25	303684		331.5		222	-1	222	-0.08	-0.025		0.0027	130	25.7	-0.006	-0.006	1.22	0.524	-0.06
MB-44	08/24/2007	14:45	307505		331.25		216	-1	216	-0.08	-0.025		-0.002	114	25.2	-0.006	-0.006	-0.01	0.526	-0.06
MB-44	11/10/2007	10:10	313493		335.71		211	-1	211	-0.08	-0.025		-0.002	123	25.4	-0.006	-0.006	-0.01	0.384	-0.06
MB-44	02/20/2008	11:08	316087		335.5		212	-1	212	-0.08	-0.025		-0.002	123	25.2	-0.006	-0.006	-0.01	0.538	-0.06
MB-44	05/19/2008	10:25	317403		336		221	-1	221	-0.08	-0.025		-0.002	115	28.7	-0.006	-0.006	-0.01	0.643	-0.06
MB-44	08/14/2008	09:45	319320		336.42		217	-1	217	-0.08	-0.025		-0.002	126	26.4	-0.006	-0.006	-0.01	0.396	-0.06
MB-44	11/18/2008	10:35	320231		335.1		220	-1	220	-0.08	-0.025		-0.002	118	26.5	0.0085	-0.006	-0.01	0.578	-0.06
MB-44	02/23/2009	09:45	321037		337.67		213	-1	213	-0.08	-0.025		-0.002	118	25.3	-0.006	-0.006	-0.01	0.47	-0.06
MB-44	05/05/2009	13:40	321656		338.03		211	-1	211	-0.08	-0.025		-0.002	124	26.6	-0.006	-0.006	-0.01	0.53	-0.06
MB-44	08/31/2009	14:55	322480				217	-1	217	-0.08	-0.025		-0.002	123	25.1	-0.006	-0.006	0.048	0.486	-0.06
MB-44	11/05/2009	13:58	MB-44		338.47		214	-1	214	-0.08	-0.025		-0.002	125	26.2	-0.006	-0.006	-0.01	0.398	-0.06
MB-44	02/17/2010	09:20	323122		338.45		217	-1	217	-0.081	-0.025		-0.002	120	23.1	-0.0061	-0.0061	-0.01	0.444	-0.061
MB-44	05/05/2010	14:37	323881		340.58		214	-1	214	-0.08	-0.025		-0.002	119	26.7	-0.006	-0.006	-0.01	0.391	-0.06
MB-44	08/03/2010	13:28	324684		341.26		216	-1	216	-0.08	-0.025		-0.002	128	25.9	-0.006	-0.006	-0.01	0.445	0.143
MB-44	11/09/2010	14:16	325409		340.43		212	-1	212	-0.08	-0.025		-0.002	125	28.2	-0.006	-0.006	-0.01	0.503	-0.06
MB-44	02/09/2011	12:10	326211		341		217	-1	217	-0.08	-0.025		-0.002	117	26.6	-0.006	-0.006	-0.01	0.477	-0.06
MB-44	05/11/2011	16:05	326897		336.89		215	-1	215	-0.08	-0.025		-0.002	124	25.9	-0.006	-0.006	-0.01	0.45	-0.06
MB-44	08/10/2011	10:55	327709		343.26		216	-1	216	-0.08	-0.025		-0.002	116	26.9	-0.006	-0.006	-0.01	0.46	-0.06
MB-44	11/15/2011	16:05	328397		341.87		210	-1	210	-0.08	-0.025		-0.002	129	25.8	-0.006	-0.006	-0.01	0.41	-0.06
MB-44	02/15/2012	11:15	329189				215	-1	215	-0.08	-0.025		-0.002	114	25.2	-0.006	-0.006	-0.01	0.59	-0.06
MB-44	05/09/2012	11:20	329925		337.57		214	-1	214	-0.08	-0.025		-0.002	124	24.1	-0.006	-0.006	-0.01	0.43	-0.06
MB-44	08/08/2012	12:49	330775		342.23		223	-1	223	-0.08	-0.025		-0.002	121	25	-0.006	-0.006	-0.01	0.48	0.161
MB-44	11/20/2012	11:33	331523		341.82		232	-1	232	-0.08	-0.025		-0.002	127	25.7	-0.006	-0.006	-0.01	0.45	-0.06
MB-44	02/20/2013	11:22	332369		331.22		216	-1	216	-0.08	-0.025		-0.002	119	25.3	-0.006	-0.006	-0.01	0.47	-0.06
MB-44	05/16/2013	10:22	333120		332.01		214	-1	214	-0.08	-0.025		-0.002	134	25.5	-0.006	-0.006	-0.01	0.46	-0.06
MB-44	08/22/2013	09:35	334090		331.81		213	-1	213	-0.08	-0.025		-0.002	123	25.7	-0.006	-0.006	-0.01	0.38	-0.06
MB-44	11/13/2013	12:48	334856		333.26		219	-1	219	-0.08	-0.025		-0.002	124	25.1	-0.006	-0.006	-0.01	0.44	-0.06
MB-44	02/12/2014	10:56	335741		331.45		218	-1	218	-0.08	-0.025		-0.002	133	25.1	-0.006	-0.006	-0.01	0.42	-0.06
MB-44	05/08/2014	11:05	336507				215	-1	215	-0.08	-0.025		-0.002	122	25.1	-0.006	-0.006	-0.01	0.46	-0.06
MB-44	05/08/2014	11:05	336508		333.31		214	-1	214	-0.08	-0.025		-0.002	122	25.1	-0.006	-0.006	-0.01	0.45	-0.06

Water Quality Monitoring Data
Monitor Well MB-44

Site Number	Sample Date	Sample Time	Sample Identifier	Lead, Dissolved (mg/l)	Magnesium, Dissolved (mg/l)	Manganese, Dissolved (mg/l)	Molybdenum, Dissolved (mg/l)	Nickel, Dissolved (mg/l)	pH (Lab-su)	pH, Field, Standard Units	pH, standard unit	Potassium, Dissolved (mg/l)	Sodium, Dissolved (mg/l)	Specific Conductance (umhos/cm @ 25C)	Specific Conductance,Field (umhos/cm @ 25C)	Sulfate (mg/l)	Temperature, C Water (Degrees Centigrade)	Temperature, F Water (Degrees Fahrenheit)	Total Dissolved Solids (mg/l)	Zinc, Dissolved (mg/l)
Water Quality Standar				0.015		0.2			6-9	6-9	6-9					600			1000	10
MB-44	01/17/2002	13:40	mb-44	-0.05	15.8	1.38	0.07		7.3	7.21	7.21	5.2	43.5	750	691	163	20.2	68.4	560	0.027
MB-44	02/21/2002	15:20	mb-44	-0.05	13.3	0.25		-0.01	7.2	6.75	6.75	3.6	27.8	860	689	150	19.7	67.5	540	0.08
MB-44	05/13/2002	08:00	MB-44	-0.05	13.2	2.39	0.22		7.7	7.02		5.3	79.4	850	687	192	16.8	62.2	620	0.224
MB-44	08/06/2002	09:15	212591	-0.05	11.8	0.17		-0.01		7.19		2.2	23.3		758	180	24.1	75.4	540	0.129
MB-44	11/01/2002	13:45	215232	-0.05	16.1	0.49		-0.01	6.9	7.34		2.3	30.1		786	182	23.4	74.1	530	0.527
MB-44	02/05/2003	15:20	217271	-0.003	13	0.04		-0.005	7.6	6.88		2.3	26		703	199	22.7	72.9	500	0.015
MB-44	03/27/2003	09:50																		
MB-44	04/24/2003	11:35	219536	-0.003	15	-0.02		0.009	8	6.68	6.68	2	23.1		762	157	23.6	74.5	530	0.012
MB-44	08/07/2003	09:30	221492	-0.005	13.3	0.14		-0.01	8.1	6.45	6.45	6.8	26.2		769	142	23.7	74.7	580	0.1
MB-44	11/06/2003	10:10	222769	-0.005	14.3	0.0525		-0.01	7.68	7.25	7.25	2.2	27.8		779	162	24.9	76.8	535	0.049
MB-44	01/16/2004	08:55									7.08				780					
MB-44	02/13/2004	10:00	225368	-0.005	12.9	0.0571		-0.01	7.58	6.9	6.9	2.2	26.5		791	171	23.4	74.1	509	0.0618
MB-44	05/25/2004	13:10	227141	-0.005	13.1	0.0151		-0.01	7.81	6.66		1.9	25.7		785	162	24.2	75.6	536	0.0052
MB-44	08/10/2004	13:20	231728	-0.005	14	0.0026		-0.01	7.57	6.82	6.82	1.8	26.9		785	171	24.3	75.7	668	-0.005
MB-44	11/22/2004	15:30	236699	-0.005	16.1	0.31		-0.01	6.86	6.28	6.28	2.17	29		787	167	23.3	73.9	526	0.379
MB-44	02/04/2005	14:20	243574	-0.005	14.1	0.0102		-0.01	6.95	7.17		1.8	27.5		697	163	16.4	61.5	525	0.012
MB-44	04/15/2005	09:50								6.89					802		24	75.2		
MB-44	05/09/2005	14:30	248422	-0.005	12.9	0.0219		-0.01	7.12	7.13		2.03	25.7		783	166	24.1	75.4	559	0.025
MB-44	08/04/2005	11:10	264955	-0.0075	15.1	0.216		-0.01		6.96		2.06	27.9		783	163	24.3	75.7	560	0.193
MB-44	11/19/2005	14:40	271353	-0.0075	12.7	0.0155		-0.01		7.25		1.89	25.5		807	168	21.8	71.2	528	0.013
MB-44	02/11/2006	15:25	274652	-0.008	12.5	-0.004		-0.01		7.12		1.86	24.8		768	165	23.4	74.1	595	-0.01
MB-44	05/08/2006	10:30	281410	-0.0075	13.6	-0.004		-0.01		6.57		2.02	28.4		812	175	23.8	74.8	543	-0.01
MB-44	08/07/2006	15:20	285019	-0.0075	19.4	0.145		-0.01		7.32		2.31	28.8		816	163	24.7	76.5	547	0.142
MB-44	11/13/2006	10:00	296625	-0.0075	13.5	-0.004		-0.01		6.16		1.94	28.3		8.7	166	23.7		543	-0.01
MB-44	02/12/2007	14:00	299659	-0.0075	13.3	-0.004		-0.01		6.47		2.01	28		834	171	21.8	71.2	539	-0.01
MB-44	05/10/2007	14:25	303684	-0.0075	17	0.412		-0.01		7.41		1.97	27.8		820	171	23.9	75	559	0.461
MB-44	08/24/2007	14:45	307505	-0.008	12.5	-0.004		-0.01		7.33		1.92	26.4		832	168	24.2	75.6	560	-0.01
MB-44	11/10/2007	10:10	313493	-0.0075	15.9	-0.004		-0.01		6.2		2.14	28.3		844	168	23.5	74.3	560	-0.01
MB-44	02/20/2008	11:08	316087	-0.0075	13.8	-0.004		-0.01		7.27		2.04	27.5		821	168	24.2	75.6	540	-0.01
MB-44	05/19/2008	10:25	317403	-0.0075	13.1	-0.004		-0.01		7.1		1.95	26.2		807	188	24.7	76.5	540	-0.01
MB-44	08/14/2008	09:45	319320	-0.0075	13.6	0.0063		-0.01		7.12		2.04	28.1		822	168	24	75.2	550	-0.01
MB-44	11/18/2008	10:35	320231	-0.0075	13.6	-0.004		-0.01		7.26		2.02	25.8		788	189	23.5	74.3	460	-0.01
MB-44	02/23/2009	09:45	321037	-0.0075	12.8	-0.004		-0.01		7.03		1.92	27.7		823	165	24.3	75.7	566	-0.01
MB-44	05/05/2009	13:40	321656	-0.0075	13.6	-0.004		-0.01		7.18		1.93	29.9		827	159	23.9	75	563	-0.01
MB-44	08/31/2009	14:55	322480	-0.0075	13.5	0.0705		-0.01		7.02		2.73	28		630	170	11.6	52.9	544	0.158
MB-44	11/05/2009	13:58	MB-44	-0.0075	13.9	0.0133		-0.01		7.06		1.92	27.7		809	168	23.8	74.8	530	-0.01
MB-44	02/17/2010	09:20	323122	-0.0076	13.4	0.0107		-0.01		7.06		1.94	27.4		823	156	23	73.4	538	-0.0101
MB-44	05/05/2010	14:37	323881	-0.0075	14.6	-0.004		-0.01		6.68		2.12	25.8		822	171	24.1	75.4	510	-0.01
MB-44	08/03/2010	13:28	324684	-0.0075	14.7	0.0102		-0.01		6.44		2.04	28		832	167	24.6	76.3	535	-0.01
MB-44	11/09/2010	14:16	325409	-0.0075	14	-0.004		-0.01		7.58		1.83	27.5		793	176	23.5	74.3	562	-0.01
MB-44	02/09/2011	12:10	326211	-0.0075	13.5	-0.004		-0.01		7.17		2.19	25.6		822	164	23.7	74.7	533	-0.01
MB-44	05/11/2011	16:05	326897	-0.0075	13.7	-0.004		-0.01		7.19		1.95	25.9		805	167	23.2	73.8	558	-0.01
MB-44	08/10/2011	10:55	327709	-0.0075	13	-0.004		-0.01		7.05		1.89	27.5		840	170	24.2	75.6	552	-0.01
MB-44	11/15/2011	16:05	328397	-0.0075	14.4	-0.004		-0.01		7.18		2.08	27.7		809	167	22.9	73.2	569	-0.01
MB-44	02/15/2012	11:15	329189	-0.0075	12.8	-0.004		-0.01		6.98		1.99	28.3		812	176	23.3	73.9	545	-0.01
MB-44	05/09/2012	11:20	329925	-0.0075	13.5	-0.004		-0.01		6.93		1.94	27.4		814	175	23.6	74.5	573	-0.01
MB-44	08/08/2012	12:49	330775	-0.0075	14.2	0.0262		-0.01		6.8		2.19	27.6		832	173	24.2	75.6	561	-0.01
MB-44	11/20/2012	11:33	331523	-0.0075	14.2	-0.004		-0.01		7.04		1.88	28.2		792	180	23.8	74.8	563	-0.01
MB-44	02/20/2013	11:22	332369	-0.0075	14.2	-0.004		-0.01		6.91		2.32	29.6		804	179	23.7	74.7	471	-0.01
MB-44	05/16/2013	10:22	333120	-0.0075	14.9	-0.004		-0.01		6.86		2.17	30.1		847	182	25.3	77.5	566	-0.01
MB-44	08/22/2013	09:35	334090	-0.0075	14.1	-0.004		-0.01		6.92		2.02	27.7		826	174	23.9	75	564	-0.01
MB-44	11/13/2013	12:48	334856	-0.0075	13.9	-0.004		-0.01		7.03		2.2	29.8		822	171	23.9	75	549	-0.01
MB-44	02/12/2014	10:56	335741	-0.0075	15.3	-0.004		-0.01		6.86		2.18	31.7		820	174	23.8	74.8	560	-0.01
MB-44	05/08/2014	11:05	336507	-0.0075	14.3	-0.004		-0.01				2.3	29.4			171			571	-0.01
MB-44	05/08/2014	11:05	336508	-0.0075	14.4	-0.004		-0.01		7.04		2.31	29.1		830	170	24.1	75.4	565	-0.01

Water Quality Monitoring Data
Monitor Well MB-44

Site Number	Sample Date	Sample Time	Sample Identifier	Reason for No Sample	Depth to Water (feet btoc)	Acidity, Total (mg/l as CaCO3)	Alkalinity, Bicarbonate (mg/l as CaCO3)	Alkalinity, Carbonate (mg/l as CaCO3)	Alkalinity, Total (mg/l as CaCO3)	Aluminum, Dissolved (mg/l)	Arsenic, Dissolved (mg/l)	Boron, Dissolved (mg/l)	Cadmium, Dissolved (mg/l)	Calcium, Dissolved (mg/l)	Chloride (mg/l)	Chromium, Dissolved (mg/l)	Cobalt, Dissolved (mg/l)	Copper, Dissolved (mg/l)	Fluoride (mg/l)	Iron, Dissolved (mg/l)
Water Quality Standar											0.1		0.005		250	0.05	0.05	1	1.6	1
MB-44	08/05/2014	15:30	337476		331.32		212	-1	212	-0.08	-0.025		-0.002	125	25.5	-0.006	-0.006	-0.01	0.41	-0.06
MB-44	11/06/2014	10:01	338261		331.22		213	-1	213	-0.08	-0.025		-0.002	125	25.7	-0.006	-0.006	-0.01	0.51	-0.06
MB-44	02/11/2015	10:25	339020		330.09		216	-1	216	-0.08	-0.025		-0.002	129	27.1	-0.006	-0.006	-0.01	0.389	-0.06
MB-44	05/12/2015	15:30	339935		331.5		212	-1	212	-0.08	-0.025		-0.002	120	27.1	-0.006	-0.006	-0.01	0.411	-0.06
MB-44	05/12/2015	15:30	339936				210	-1	210	-0.08	-0.025		-0.002	121	27	-0.006	-0.006	-0.01	0.402	-0.06
MB-44	08/18/2015	11:55	340959		331.72		212	-1	212	-0.08	-0.025		-0.002	126	27.1	-0.006	-0.006	-0.01	0.499	-0.06
MB-44	11/17/2015	14:34	341786				215	-1	215	-0.08	-0.025		-0.002	121	26.2	-0.006	-0.006	-0.01	0.41	-0.06
MB-44	02/24/2016	12:13	342790		331.85		228	-1	228	-0.08	-0.025		-0.002	122	26.4	-0.006	-0.006	-0.01	0.502	-0.06
MB-44	05/03/2016	14:02	343652		331.78		212	-1	212	-0.08	-0.025		-0.002	123	27.3	-0.006	-0.006	-0.01	0.432	-0.06
MB-44	08/12/2016	09:44	344949		331.72		218	-1	218	-0.08	-0.025		-0.002	129	27	-0.006	-0.006	-0.01	0.549	-0.1
MB-44	11/07/2016	10:46	345966		331.81		219	-1	219	-0.08	-0.025		-0.002	124	26.4	-0.006	-0.006	-0.01	0.71	-0.1
MB-44	02/09/2017	10:25	347037		331.9		228	-1	228	-0.08	-0.025		-0.002	123	26.9	-0.006	-0.006	-0.01	0.335	-0.1
MB-44	06/02/2017	14:22	348044		331.6		231	-1	231	-0.08	-0.025		-0.002	126	28.6	-0.006	-0.006	-0.01	0.461	-0.1
MB-44	08/21/2017	10:30	349102		331.69		219	-1	219	-0.08	-0.025		-0.002	123	27.2	-0.006	-0.006	-0.01	0.781	-0.1
MB-44	11/16/2017	11:20	350014		331.96		230	-1	230	-0.08	-0.025		-0.002	127	27.4	-0.006	-0.006	-0.01	0.376	-0.1
MB-44	02/06/2018	11:50	350975		331.88		226	-1	226	-0.08	-0.025		-0.002	125	26.7	-0.006	-0.006	-0.01	0.356	-0.1
MB-44	05/09/2018	10:28	351726		331.91		217	-1	217	-0.08	-0.025		-0.002	125	27.4	-0.006	-0.006	-0.01	0.361	-0.1
MB-44	08/01/2018	09:47	352887		331.83		214	-1	214	-0.08	-0.025		-0.002	124	28.9	-0.006	-0.006	-0.01	0.373	-0.1
MB-44	11/12/2018	09:54	353749		331.94		222	-1	222	-0.08	-0.025		-0.002	126	27.8	-0.006	-0.006	-0.01	0.391	-0.1
MB-44	02/06/2019	09:36	354697		331.89		217	-1	217	-0.08	-0.025		-0.002	126	26.9	-0.006	-0.006	-0.01	0.381	-0.1
MB-44	05/08/2019	13:04	355538		331.78		220	-1	220	-0.08	-0.025		-0.002	116	26.3	-0.006	-0.006	-0.01	-0.1	-0.1
MB-44	08/06/2019	13:47	356566		331.75		215	-1	215	-0.08	-0.025		-0.002	131	27.1	-0.006	-0.006	-0.01	0.36	-0.1
MB-44	11/12/2019	14:40	357276		331.87		214	-1	214	-0.08	-0.025		-0.002	127	28.1	-0.006	-0.006	-0.01	0.36	-0.1
MB-44	02/13/2020	10:40	358187				211	-1	211	-0.08	-0.025		-0.002	134	26.9	-0.006	-0.006	-0.01	0.37	-0.1
MB-44	05/13/2020	11:30	358881		331.74		223	-1	223	-0.08	-0.025		-0.002	123	26.5	-0.006	-0.006	0.0438	0.34	-0.1
MB-44	08/18/2020	09:56	359850		331.82		213	-1	213	-0.08	-0.025		-0.002	129	27.5	-0.006	-0.006	-0.01	0.381	-0.1
MB-44	11/23/2020	09:15	360566		331.4		221	-1	221	-0.08	-0.025		-0.002	129	27	-0.006	-0.006	-0.01	0.36	-0.1
MB-44	02/20/2021	10:45	361473		331.9		217	-1	217	-0.08	-0.025		-0.002	126	27.9	-0.006	-0.006	-0.01	0.342	-0.1
MB-44	05/20/2021		362144				218	-1	218	-0.08	-0.025		-0.002	132	27.9	-0.006	-0.006	-0.01	0.342	-0.1
MB-44	08/18/2021	11:38	367091				227	-1	227	-0.08	-0.025		-0.002	128	26.8	-0.006	-0.006	-0.01	0.387	-0.1

Water Quality Monitoring Data
Monitor Well MB-44

Site Number	Sample Date	Sample Time	Sample Identifier	Lead, Dissolved (mg/l)	Magnesium, Dissolved (mg/l)	Manganese, Dissolved (mg/l)	Molybdenum, Dissolved (mg/l)	Nickel, Dissolved (mg/l)	pH (Lab-su)	pH, Field, Standard Units	pH, standard unit	Potassium, Dissolved (mg/l)	Sodium, Dissolved (mg/l)	Specific Conductance (umhos/cm @ 25C)	Specific Conductance,Field (umhos/cm @ 25C)	Sulfate (mg/l)	Temperature, C Water (Degrees Centigrade)	Temperature, F Water (Degrees Fahrenheit)	Total Dissolved Solids (mg/l)	Zinc, Dissolved (mg/l)
Water Quality Standar				0.015		0.2			6-9	6-9	6-9					600			1000	10
MB-44	08/05/2014	15:30	337476	-0.0075	13.7	-0.004		-0.01		6.93		2.21	29		839	178	24.7	76.5	554	-0.01
MB-44	11/06/2014	10:01	338261	-0.0075	14.1	-0.004		-0.01		6.95		2.13	29		814	176	23.2	73.8	563	-0.01
MB-44	02/11/2015	10:25	339020	-0.0075	15	0.0044		-0.01		6.97		2.07	29.3		784	174	23	73.4	582	-0.01
MB-44	05/12/2015	15:30	339935	-0.0075	13.7	-0.004		-0.01		7.04		2.03	27.6		823	178	23.8	74.8	557	-0.01
MB-44	05/12/2015	15:30	339936	-0.0075	13.8	0.0047		-0.01				2.03	27.8			179			555	-0.01
MB-44	08/18/2015	11:55	340959	-0.0075	13.7	-0.004		-0.01		7.09		2.04	28.6		841	176	24.6	76.3	553	-0.01
MB-44	11/17/2015	14:34	341786	-0.0075	13.8	0.0059		-0.01				2.07	28.8			172			563	-0.01
MB-44	02/24/2016	12:13	342790	-0.0075	13.9	0.0057		-0.01		7.12		2	29		813	170	23.3	73.9	546	-0.01
MB-44	05/03/2016	14:02	343652	-0.0075	14.1	0.0048		-0.01		7.15		2.11	28.9		824	177	23.5	74.3	541	-0.01
MB-44	08/12/2016	09:44	344949	-0.0075	14.7	-0.008		-0.01		7.06		2.13	30.4		834	180	19.3	66.7	537	-0.01
MB-44	11/07/2016	10:46	345966	-0.0075	13.9	-0.008		-0.01		7.04		2.14	27.3		819	175	23.6	74.5	563	-0.01
MB-44	02/09/2017	10:25	347037	-0.0075	14	-0.008		-0.01		6.82		2.13	28.5		823	182	23.9	75	578	-0.01
MB-44	06/02/2017	14:22	348044	-0.0075	14.4	-0.008		-0.01		6.95		2.32	28.9		795	188	24.1	75.4	544	-0.01
MB-44	08/21/2017	10:30	349102	-0.0075	13.8	-0.008		-0.01		7.11		2.24	28.3		823	182	24	75.2	584	-0.01
MB-44	11/16/2017	11:20	350014	-0.0075	14	0.0132		-0.01		7.15		2.07	28.5		829	180	23.9	75	556	-0.01
MB-44	02/06/2018	11:50	350975	-0.0075	13.8	-0.008		-0.01		6.85		2.24	29.2		809	185	23.2	73.8	556	-0.01
MB-44	05/09/2018	10:28	351726	-0.0075	13.9	-0.008		0.0178		6.9		2.03	29.5		818	182	23.4	74.1	559	-0.01
MB-44	08/01/2018	09:47	352887	-0.0075	14.1	-0.008		-0.01		7.06		2	29.1		827	190	24.1	75.4	574	-0.01
MB-44	11/12/2018	09:54	353749	-0.0075	14	-0.008		-0.01		7.13		2.01	29.4		823	182	23.8	74.8	545	-0.01
MB-44	02/06/2019	09:36	354697	-0.0075	14.5	-0.008		-0.01		7.09		1.93	29.2		826	174	23.9	75	579	-0.01
MB-44	05/08/2019	13:04	355538	-0.0075	13.6	-0.008		-0.01		7.01		2.02	26.8		828	174	23.9	75	529	-0.01
MB-44	08/06/2019	13:47	356566	-0.0075	14.3	-0.008		0.0102		6.91		2.07	29.2		836	177	24.1	75.4	600	-0.01
MB-44	11/12/2019	14:40	357276	-0.0075	15.2	-0.008		-0.01		7.18		2.09	29.6		826	176	23.9	75	541	-0.01
MB-44	02/13/2020	10:40	358187	0.0079	14.6	-0.008		-0.01		7.18		2.12	30.4		825	173	23.9	75	586	-0.01
MB-44	05/13/2020	11:30	358881	-0.0075	14	-0.008		-0.01		7.09		2.11	28.1		837	171	24.4	75.9	580	-0.01
MB-44	08/18/2020	09:56	359850	-0.0075	14.5	-0.008		-0.01		6.91		2.04	30		827	179	24	75.2	562	-0.01
MB-44	11/23/2020	09:15	360566	-0.0075	14.9	-0.008		-0.01		7.09		2.16	30.4		822	179	23.8	74.8	613	-0.01
MB-44	02/20/2021	10:45	361473	-0.0075	14.1	0.0203		-0.01		7.1		2.06	28.8		826	181	23.4	74.1	613	0.0169
MB-44	05/20/2021		362144	-0.0075	14.5	-0.008		-0.01		7.13		2.12	29.6			185	24.1	75.4	552	-0.01
MB-44	08/18/2021	11:38	367091	-0.0075	14.6	0.0109		-0.01				2.03	29.4			180			551	-0.01

Appendix F

OSE Logs for Domestic Wells

DBS&A
Daniel B. Stephens & Associates, Inc.

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Joseph E. Stevens Owner's Well No. _____
Street or Post Office Address Box 2104 b
City and State Silver City New Mexico 88062

Well was drilled under Permit No. M6786 and is located in the:

a. _____ ¼ NW ¼ SW ¼ SE ¼ of Section 1 Township 20 S Range 15W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in Grant County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Smith Drilling Company License No. WD792

Address PO Box 1668 Silver City New Mexico 88062

Drilling Began June 20 Completed June 22 Type tools rotary Size of hole 6 in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 365 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 285 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
305	307	2	faulting ib Gr Granite form.	20-25

88 OCT 7 AM 8 1

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6	sch 40	PE	+.5	19.5	20.0	cemented surface casing		

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

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Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received October 4, 1988

Quad _____ FWL _____ FSL _____

File No. M-6786 Use Domestic Location No. 20.15.1.431

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	12	12	clay + conglomerate overburden
12	365	353	green- grey granite-few cracks or alterations

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

88 OCT 7 AM : 21

STATE OF NEW MEXICO

STATE ENGINEER OFFICE
SANTA FE, NEW MEXICO

STATE ENGINEER OFFICE
DEMING

S. E. REYNOLDS
STATE ENGINEER

October 6, 1988

216 S. SILVER
P.O. BOX 844
DEMING, NEW MEXICO 88031
(505) 546-2851
(505) 546-7452

FILE: M-6786

Joseph E. Stevens
c/o Wagon Wheel Realty
P. O. Box 2104
Silver City, New Mexico 88062

Dear Mr. Stevens:

Enclosed is your copy of the well record for domestic well No. M-6786, which has been accepted for filing.

This is the final filing under Domestic Well Permit No. M-6786.

Sincerely,

J. B. Nixon
Engineer, District 3

JBN:sfs
Encl: Well Record
cc: State Engineer

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	M 07086	2	1	3	01	20S	15W	185287	3611422*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date: 05/29/1900 **Drill Finish Date:** 05/30/1900 **Plug Date:**

Log File Date: 06/06/1991 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** 209 feet **Depth Water:**

Water Bearing Stratifications:	Top	Bottom	Description
	45	46	Other/Unknown
	133	134	Other/Unknown

Casing Perforations:	Top	Bottom
	109	209

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 07087	1	1	3	01	20S	15W	185087	3611422*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date: 06/04/1991 **Drill Finish Date:** 06/04/1991 **Plug Date:**

Log File Date: 06/14/1991 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** 145 feet **Depth Water:** 16 feet

Water Bearing Stratifications:	Top	Bottom	Description
	38	41	Shallow Alluvium/Basin Fill

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 07410	1	4	4	01	20S	15W	186280	3610987*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: RICK SMITH

Drill Start Date:	09/23/1993	**Drill Finish Date:**	09/26/1993	**Plug Date:**	
Log File Date:	10/04/1993	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	4.50	**Depth Well:**	385 feet	**Depth Water:**	245 feet

Water Bearing Stratifications:	Top	Bottom	Description
	345	346	Shallow Alluvium/Basin Fill

Casing Perforations:	Top	Bottom
	325	385

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 07441	2	2	3	12	20S	15W	185636	3609800*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date:	01/30/1993	**Drill Finish Date:**	01/31/1993	**Plug Date:**	
Log File Date:	02/02/1993	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	4.00	**Depth Well:**	205 feet	**Depth Water:**	85 feet

Water Bearing Stratifications:	Top	Bottom	Description
	150	156	Basalt/Rhyolite/Tuff

Casing Perforations:	Top	Bottom
	165	205

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 07458	3	4	2	01	20S	15W	186305	3611591*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date:	01/01/1994	**Drill Finish Date:**	01/03/1994	**Plug Date:**	
Log File Date:	01/25/1994	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	6.00	**Depth Well:**	275 feet	**Depth Water:**	160 feet

Water Bearing Stratifications:	Top	Bottom	Description
	195	197	Shallow Alluvium/Basin Fill

Casing Perforations:	Top	Bottom
	200	275

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 07536	1	4	2	12	20S	15W	186253	3610184*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: RICK SMITH

Drill Start Date:	04/10/1994	**Drill Finish Date:**	04/12/1994	**Plug Date:**	
Log File Date:	04/22/1994	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	6.00	**Depth Well:**	465 feet	**Depth Water:**	300 feet

Water Bearing Stratifications:	Top	Bottom	Description
	374	375	Other/Unknown
	420	421	Other/Unknown

***UTM location was derived from PLSS - see Help**

Revised June 1972

Trn#271335

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Michael R. Saffell Owner's Well No. _____

Street or Post Office Address PO BOX 464

City and State Tyrone N.M. 88065

Well was drilled under Permit No. M-07632 and is located in the:

a. _____ ¼ SW ¼ NW ¼ SE ¼ of Section 01 Township 20S Range 15W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in Grant County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor TL Drilling License No. #1513

Address P.O. BOX 1013 Hurley N.M. 88043

Drilling Began 06-12-03 Completed 06-14-03 Type tools Rotary Size of hole 6¼ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 304 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 190 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
247	250	3	Fractured granite (Pink)	15-20

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
8	PVC		+1.0	20.0	21.0	Cemented Surface Casing		
4"	PVC		+1.5	304.0	305.5	Cap on Bottom	244	304

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor TL Drilling

Address PO BOX 1013 Hurley N.M. 88043

Plugging Method Cement

Date Well Plugged 06-20-03

Plugging approved by: _____

State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1	150	213	cement
2	5	150	gravel
3	0	5	cement
4			

FOR USE OF STATE ENGINEER ONLY

Date Received June 27, 2003

Quad _____ FWL _____ FSL _____

File No. M-7632 Use CLOW (DOMESTIC) Location No. 20.15.1.413

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	16	16	Sand Brown & Black
16	100		Granite grey & some yellow
100	350		Granite (Pink)

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Tyson Looney
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

DEMING

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

June 24, 2003

FILE: M-7632

Michael R. Saffell
P.O. Box 464
Tyrone, New Mexico 88065

Greetings:

Enclosed is your copy of Well Record for Change Location of Domestic Well M-7632, which has been approved.

This is the final filing under Change Location of Domestic Well Permit M-7632.

Sincerely,

R. Q. Rogers
Professional Engineer
District 3 Manager

By: Moses R. Montellano
Moses R. Montellano
Assistant Mimbres Basin Supervisor

MRM:mr
Encl: Well Record
cc: State Engineer
034

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 07680	4	4	1	12	20S	15W	185650	3610002*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 6.00 **Depth Well:** 150 feet **Depth Water:**

***UTM location was derived from PLSS - see Help**

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

2011 DEC 19 PM 3:08

OFFICE OF THE STATE ENGINEER DEMING, NM

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
M-7730 POD2 Replacement	M-7730

WELL OWNER NAME(S)	PHONE (OPTIONAL)
G. Harold & or Shari Chandler	388-7500

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
37 Marguerite	Silver City	NM	88061

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	34	50.2	N
	LONGITUDE	108	20	36.2	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

Grant County

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
¼	NE¼	NW¼	SE¼	12	20 ☐ NORTH ☒ SOUTH	15 ☐ EAST ☒ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT
Loma Blanca #2	225		

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD 1486	Derek Kuester	Kuester Well Drilling Co.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
11-23-11	11-27-11	400	400	330

STATIC WATER LEVEL IN COMPLETED WELL (FT): 202

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☒ SHALLOW (UNCONFINED)

DRILLING FLUID: ☒ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☒ ROTARY ☒ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
0	7	8 3/4	PVC Surface Casing	Cemented	6 1/4	Sch 1.40	None
0	400	6 1/4	PVC	Certa-lock	4	Sch 1.40	.032
					(Slotted 320-400)		

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
330	340	10	Crystalline Calcitic Zone	20+

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: Air lift

TOTAL ESTIMATED WELL YIELD (GPM): 20+

FOR OSE INTERNAL USE

WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	M-7730	POD NUMBER	2	TRN NUMBER	485205
LOCATION	20.15.12.412		Replacement		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☒ NO PUMP WELL NOT EQUIPPED
☐ TURBINE ☐ CYLINDER ☐ OTHER SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	300	300	Decomposed Granite (Sandy)	☐ YES ☒ NO
300	330	30	Volcanics	☐ YES ☒ NO
330	340	10	Crystalline Calcitic Zone	☒ YES ☐ NO
340	400	60	Volcanics	☐ YES ☒ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST: METHOD: ☐ BAILER ☐ PUMP ☒ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS – ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Derek Kuester — SIGNATURE OF DRILLER

12-16-11 — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Estevan R. Lopez, P.E.
State Engineer

District 3 Office

P.O. Box 844 / 301 S. Tin Street
Deming, New Mexico 88031
(575) 546-2851
FAX: (575) 546-2290

December 19, 2011

FILE: M-7730

G. Harold & Shari Chandler
37 Marguerite
Silver City, New Mexico 88061

Greetings:

Enclosed is your copy of Well Record for Replacement Well M-7730-POD2, which has been accepted for filing.

Your attention is called to permit M-7730 POD2, to Specific Conditions of Approval, which state as follows:

6C. Upon completion of the new well, the replaced well shall be plugged. A plugging plan shall be filed with and approved by the Office of the State Engineer prior to plugging and a plugging record from a licensed driller shall be filed with the State Engineer's Office within 20 days of completion of plugging of the well.

Plugging Plan of Operations shall be filed and approved PRIOR TO plugging the original well.

Please advise if further discussion would be helpful.

Sincerely,

Charles L. Jackson
District 3 Manager

By: Donna Morton
Donna Morton
Domestic Well Technician
Mimbres Basin

DM:dm
Encl: Well Record
cc: State Engineer
Kuester Drilling (blank plug plan)

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 07731	4	4	1	12	20S	15W	185650	3610002*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date: 11/22/1994 **Drill Finish Date:** 11/24/1994 **Plug Date:**

Log File Date: 01/25/1995 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** 265 feet **Depth Water:** 140 feet

Water Bearing Stratifications:	Top	Bottom	Description
	235	250	Other/Unknown

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 07747	3	2	2	12	20S	15W	186266	3610386*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date: 03/04/1995 **Drill Finish Date:** 03/06/1995 **Plug Date:**

Log File Date: 04/03/1995 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 4.50 **Depth Well:** 260 feet **Depth Water:** 180 feet

Water Bearing Stratifications:	Top	Bottom	Description
	212	213	Other/Unknown
	249	250	Other/Unknown

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 07864	1	2	4	12	20S	15W	186239	3609782*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date: 07/25/1995 **Drill Finish Date:** 07/27/1995 **Plug Date:**

Log File Date: 08/15/1995 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 6.00 **Depth Well:** 345 feet **Depth Water:** 265 feet

Water Bearing Stratifications:	Top	Bottom	Description
	270	275	Other/Unknown

Casing Perforations:	Top	Bottom
	305	345

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	M 07889	4	1	2	12	20S	15W	186065	3610395*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date:	09/06/1995	**Drill Finish Date:**	09/08/1995	**Plug Date:**	
Log File Date:	10/02/1995	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	6.00	**Depth Well:**	225 feet	**Depth Water:**	155 feet

Water Bearing Stratifications:	Top	Bottom	Description
	191	192	Other/Unknown

Casing Perforations:	Top	Bottom
	165	225

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	M 07947	4	4	3	36	19S	15W	185726	3612410*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date: 10/27/1995 **Drill Finish Date:** 10/29/1995 **Plug Date:**

Log File Date: 12/13/1995 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 4.50 **Depth Well:** 200 feet **Depth Water:** 20 feet

Water Bearing Stratifications:	Top	Bottom	Description
	20	25	Other/Unknown
	141	142	Other/Unknown

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 07988	4	2	2	12	20S	15W	186466	3610386*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date:	03/20/1996	**Drill Finish Date:**	03/25/1996	**Plug Date:**	
Log File Date:	03/31/1996	**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	6.00	**Depth Well:**	725 feet	**Depth Water:**	

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 08023	2	1	2	01	20S	15W	186116	3612203*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date:	09/25/1995	**Drill Finish Date:**	09/27/1995	**Plug Date:**	
Log File Date:	10/02/1995	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	6.63	**Depth Well:**	475 feet	**Depth Water:**	450 feet

Water Bearing Stratifications:	Top	Bottom	Description
	440	445	Shallow Alluvium/Basin Fill
	465	467	Shallow Alluvium/Basin Fill

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	M 08106	3	1	2	12	20S	15W	185865	3610395*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date:	12/29/1995	**Drill Finish Date:**	12/30/1995	**Plug Date:**	
Log File Date:	01/18/1996	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	6.00	**Depth Well:**	200 feet	**Depth Water:**	120 feet

Water Bearing Stratifications:	Top	Bottom	Description
	199	200	Other/Unknown

Casing Perforations:	Top	Bottom
	180	200

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 08118	3	2	3	01	20S	15W	185489	3611211*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 4.50 **Depth Well:** 500 feet **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
NA	M 08137	1	2	2	12	20S	15W	186283	3610646

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date: 03/07/1996 **Drill Finish Date:** 03/10/1996 **Plug Date:**

Log File Date: 03/15/1996 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 2.00 **Depth Well:** 442 feet **Depth Water:** 400 feet

Water Bearing Stratifications:	Top	Bottom	Description
	407	410	Other/Unknown

Casing Perforations:	Top	Bottom
	402	442

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 08146	3	1	3	01	20S	15W	185087	3611222*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name: SMITH, RICHARD H.

Drill Start Date: 12/10/1996 **Drill Finish Date:** 12/13/1996 **Plug Date:**

Log File Date: 01/30/1997 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 4.50 **Depth Well:** 240 feet **Depth Water:** 46 feet

Water Bearing Stratifications:	Top	Bottom	Description
	142	144	Other/Unknown

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 08212	3	3	2	12	20S	15W	185851	3609993*

Driller License: 1190 **Driller Company:** BADGER WESTERN EXPLORATION INC

Driller Name: DALTON, B. CORY

Drill Start Date:	05/01/1996	**Drill Finish Date:**	06/11/1996	**Plug Date:**	
Log File Date:	06/24/1996	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	4.50	**Depth Well:**	300 feet	**Depth Water:**	110 feet

Water Bearing Stratifications:	Top	Bottom	Description
	145	165	Other/Unknown

Casing Perforations:	Top	Bottom
	140	280

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	M 08415	1	1	2	12	20S	15W	185865	3610595*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date:	02/03/1998	**Drill Finish Date:**	02/05/1998	**Plug Date:**	
Log File Date:	02/13/1998	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	1 GPM
Casing Size:	4.00	**Depth Well:**	565 feet	**Depth Water:**	180 feet

Water Bearing Stratifications:	Top	Bottom	Description
	325	326	Shallow Alluvium/Basin Fill
	520	521	Shallow Alluvium/Basin Fill
	558	559	Shallow Alluvium/Basin Fill

Casing Perforations:	Top	Bottom
	525	565

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 08476	2	1	4	12	20S	15W	186038	3609791*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date: 02/11/1998 **Drill Finish Date:** 02/13/1998 **Plug Date:**

Log File Date: 02/18/1998 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:** 1 GPM

Casing Size: 6.25 **Depth Well:** 505 feet **Depth Water:**

Water Bearing Stratifications:	Top	Bottom	Description
	325	326	Shallow Alluvium/Basin Fill

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 08561	3	1	4	01	20S	15W	185891	3611200*

Driller License: **Driller Company:**

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 08753	2	4	2	12	20S	15W	186453	3610184*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 4.50 **Depth Well:** 1000 feet **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 08862	3	4	2	12	20S	15W	186253	3609984*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date:	02/10/1999	**Drill Finish Date:**	02/13/1999	**Plug Date:**	
Log File Date:	03/09/1999	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	2 GPM
Casing Size:	6.25	**Depth Well:**	600 feet	**Depth Water:**	410 feet

Water Bearing Stratifications:	Top	Bottom	Description
	440	444	Shallow Alluvium/Basin Fill

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	M 08920	3	1	2	12	20S	15W	185865	3610395*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date:	03/20/1999	**Drill Finish Date:**	03/24/1999	**Plug Date:**	
Log File Date:	04/12/1999	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	2 GPM
Casing Size:	4.00	**Depth Well:**	460 feet	**Depth Water:**	200 feet

Water Bearing Stratifications:	Top	Bottom	Description
	240	245	Shallow Alluvium/Basin Fill
	420	423	Shallow Alluvium/Basin Fill

Casing Perforations:	Top	Bottom
	400	460

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 08925	3	1	1	06	20S	14W	186720	3611981*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date:	02/01/1999	**Drill Finish Date:**	02/03/1999	**Plug Date:**	
Log File Date:	02/11/1999	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	20 GPM
Casing Size:	6.25	**Depth Well:**	390 feet	**Depth Water:**	300 feet

Water Bearing Stratifications:	Top	Bottom	Description
	375	379	Shallow Alluvium/Basin Fill

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 08941	3	1	1	06	20S	14W	186720	3611981*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 6.25 **Depth Well:** 390 feet **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	M 08966	4	2	2	12	20S	15W	186466	3610386*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date:	04/06/1999	**Drill Finish Date:**	04/08/1999	**Plug Date:**	
Log File Date:	04/19/1999	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	3 GPM
Casing Size:	4.00	**Depth Well:**	325 feet	**Depth Water:**	160 feet

Water Bearing Stratifications:	Top	Bottom	Description
	200	202	Shallow Alluvium/Basin Fill
	247	250	Shallow Alluvium/Basin Fill
	288	290	Shallow Alluvium/Basin Fill

Casing Perforations:	Top	Bottom
	285	325

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 08994	1	1	1	07	20S	14W	186668	3610576*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 6.00 **Depth Well:** 450 feet **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 09003	2	1	1	06	20S	14W	186920	3612181*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 6.00 **Depth Well:** 450 feet **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 09177	1	1	4	12	20S	15W	185838	3609791*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date:	09/12/2000	**Drill Finish Date:**	09/14/2000	**Plug Date:**	
Log File Date:	09/25/2000	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	12 GPM
Casing Size:	4.00	**Depth Well:**	340 feet	**Depth Water:**	200 feet

Water Bearing Stratifications:	Top	Bottom	Description
	265	268	Shallow Alluvium/Basin Fill

Casing Perforations:	Top	Bottom
	300	340

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	M 09178	3	4	3	36	19S	15W	185526	3612410*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date:	08/28/2000	**Drill Finish Date:**	08/30/2000	**Plug Date:**	
Log File Date:	09/12/2000	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	4 GPM
Casing Size:	6.25	**Depth Well:**	345 feet	**Depth Water:**	200 feet

Water Bearing Stratifications:	Top	Bottom	Description
	278	280	Shallow Alluvium/Basin Fill

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 09255	1	2	3	12	20S	15W	185436	3609800*

Driller License: 1486 **Driller Company:** KUESTER WELL DRILLING

Driller Name:

Drill Start Date: 03/21/2000 **Drill Finish Date:** 03/23/2000 **Plug Date:**

Log File Date: 03/30/2000 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:** 50 GPM

Casing Size: 4.50 **Depth Well:** 205 feet **Depth Water:**

Water Bearing Stratifications:	Top	Bottom	Description
	170	172	Shallow Alluvium/Basin Fill

Casing Perforations:	Top	Bottom
	165	205

***UTM location was derived from PLSS - see Help**

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well LES BEAM Owner's Well No. M-9454
Street or Post Office Address 9521 E RAND PL
City and State TUCSON AZ 85715

Well was drilled under Permit No. M-9454 and is located in the:

a. ¼ SW ¼ SW ¼ NE ¼ of Section 12 Township 20S Range 15W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Smith Drilling Co License No. WD-752
Address P.O. Box 1668 Silver City New Mex

Drilling Began 2-25-02 Completed 2-27-02 Type tools Rotary Size of hole 6 ¼ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 365 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 160 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
186	188	2	fracture in Ore Monzonite	2-3
311	312	1	" " "	7-10

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6 ¼	Sch 40	PVC	+1.0	8.0	7.0	Cemented surface Casing		
4"	"	"	+1.5	365.0	366.5	Cap on Bottom	325	365

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

2002 MAR 14 PM 2:28
RECEIVED STATE ENGINEER

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____ State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received March 14, 2002

Quad _____ FWL _____ FSL _____

File No. M-9454 Domestic 20 15.12 233

Depth in Feet		Thickness in Feet	Color and Type of Material Encountered
From	To		
0	2	2	Clay -
2	3650	363	Gr. Monzonite grey hard.

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO
STATE ENGINEER OFFICE
DEMING

THOMAS C. TURNEY
State Engineer

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
FAX: (505) 546-2290

March 19, 2002

FILE: M-9454

Les Beach
P.O. Box 548
Tyrone, New Mexico 88065-0548

Greetings:

Enclosed is your copy of well record for well M-9454, which has been accepted for filing.

This is the final filing under Permit for Domestic Well M-9454.

Sincerely,

R. Q. Rogers
Professional Engineer
District 3 Supervisor

By: Moses R. Montellano
Moses R. Montellano
Assistant Mimbres Basin Supervisor

MRM:dh
Encl: Well Record
cc: State Engineer
034

Revised June 1972

Trn # 276838

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Charley L. Williams Owner's Well No. M-9478
Street or Post Office Address P.O. Box 1087
City and State Tyrone N.M. 88065

Well was drilled under Permit No. M09478 and is located in the:

a. ____ ¼ NW ¼ NW ¼ NW ¼ of Section 6 Township 20S Range 14W N.M.P.M.

b. Tract No. ____ of Map No. ____ of the ____

c. Lot No. ____ of Block No. ____ of the ____
Subdivision, recorded in ____ County.

d. X= ____ feet, Y= ____ feet, N.M. Coordinate System ____ Zone in the ____ Grant.

(B) Drilling Contractor Smith Drilling Co. License No. WD-792

Address Box 1668 Silver City, N.M. 88062

Drilling Began 1-24-02 Completed 1-27-02 Type tools Rotary Size of hole 6 ¼ in.

Elevation of land surface or ____ at well is ____ ft. Total depth of well 780 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 250 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
351	353	2	Fault, in Qtz. monzanite	6-10
731	735	4	" " " "	1-7

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6 ⅝	Sch 40	PVC	+1.0	23.0	24.0	cemented surface casing		

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor ____
Address ____
Plugging Method ____
Date Well Plugged ____
Plugging approved by:

State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received July 14, 2003

Quad ____ FWL ____ FSL ____

File No. M-9478 Use Dom./Stock Location No. 20.14.6.111

(AMENDED WELL LOG)

Depth in Feet From	To	Thickness in Feet	Color and Type of Material Encountered
0	14	14	overburden & clay
14	65	51	Brown granite soft
65	400	335	Qtz Monzanite. Grey Soft
400	780	380	" " " Very Hard

Section 7. REMARKS AND ADDITIONAL INFORMATION

This is an amended report,
Thank you,

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Kirk Smith
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well i or W is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

DEMING

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

July 15, 2003

FILE: M-9478

Charley L. Williams
P.O. Box 1087
Tyrone, New Mexico 88065

Greetings:

Enclosed is your copy of amended well record for Permit for Domestic and Stock Well M-9478 which has been accepted for filing.

This is the final filing under Permit for Domestic and Stock Well M-9478.

Sincerely,

R. Q. Rogers
Professional Engineer
District 3 Manager

By: Moses R. Montellano
Moses R. Montellano
Assistant Mimbres Basin Supervisor

MRM:jg
Encl: Well Record
cc: State Engineer
034

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 09488	2	2	2	12	20S	15W	186466	3610586*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date:	09/26/2001	**Drill Finish Date:**	09/30/2001	**Plug Date:**	
Log File Date:	10/23/2001	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	3 GPM
Casing Size:	6.25	**Depth Well:**	905 feet	**Depth Water:**	550 feet

Water Bearing Stratifications:	Top	Bottom	Description
	610	612	Shallow Alluvium/Basin Fill
	880	885	Shallow Alluvium/Basin Fill

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 09511	3	1	2	12	20S	15W	185865	3610395*

Driller License: 1486 **Driller Company:** KUESTER WELL DRILLING

Driller Name:

Drill Start Date:	08/05/2001	**Drill Finish Date:**	08/08/2001	**Plug Date:**	
Log File Date:	08/17/2001	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	7 GPM
Casing Size:	4.50	**Depth Well:**	385 feet	**Depth Water:**	175 feet

Water Bearing Stratifications:	Top	Bottom	Description
	320	321	Shallow Alluvium/Basin Fill

Casing Perforations:	Top	Bottom
	345	385

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 09660	2	2	2	12	20S	15W	186466	3610586*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 6.25 **Depth Well:** 905 feet **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	M 09786	3	3	2	12	20S	15W	185851	3609993*

Driller License: 1486 **Driller Company:** KUESTER WELL DRILLING

Driller Name: KUESTER, DEREK

Drill Start Date: 10/30/2002 **Drill Finish Date:** 11/02/2002 **Plug Date:**

Log File Date: 11/14/2002 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 6.63 **Depth Well:** 300 feet **Depth Water:** 160 feet

Water Bearing Stratifications:	Top	Bottom	Description
	260	261	Sandstone/Gravel/Conglomerate
	279	280	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	260	300

***UTM location was derived from PLSS - see Help**

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

OFFICE OF THE STATE ENGINEER
DEMING, NM

2009 SEP 30 PM 1:50

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER): M-9786-POD2 Supplemental	OSE FILE NUMBER(S): M-9786
WELL OWNER NAME(S): The Harry Edwin Deant Elsie Irene Dean Revocable Trust	PHONE (OPTIONAL): 388-5001
WELL OWNER MAILING ADDRESS: 41 Marguerite Ln.	CITY: Silver City STATE: NM ZIP: 88061

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	34	58.71	N
LONGITUDE	108	20	45.40	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS: Elev. 6035 Grant County

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
¼	SW ¼	SW ¼	NE ¼	12	20 ☐ NORTH ☒ SOUTH	15 ☐ EAST ☒ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT
Loma Blanca	233		

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1486	Derek Kuester	Kuester Well Drilling Co.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
9-14-09	9-16-09	358	358	235

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☒ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 220

DRILLING FLUID: ☒ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☒ ROTARY ☒ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
+12"	11	8¾	PVC Surface Casing	Cemented	6¼	Schd 1.40	None
+18"	358	6¼	PVC	eagle lock	4 (Slotted 258-358)	Schd 1.40	.032

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
235	240	5	Decomposed Granite	½
270	283	13	Decomposed Granite	2
305	315	10	Decomposed Granite	3
335	345	10	Decomposed Granite	1

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: Air-lift + Timed recovery volume

TOTAL ESTIMATED WELL YIELD (GPM): 6½

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
M-9786	2	
LOCATION 20.15.12		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☒ NO PUMP – WELL NOT EQUIPPED
☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	235	235	Granite	☐ YES ☒ NO
235	358	123	Decomposed Granite	☒ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☒ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Derek Kuester — SIGNATURE OF DRILLER

9-29-2009 — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

STATE OF NEW MEXICO

OFFICE OF THE STATE ENGINEER

DEMING

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

October 27, 2009

FILE: M-9786

The Harry Edwin Dean & Elsie Irene
Dean Revocable Trust
41 Marguerite Ln
Silver City, New Mexico 88061

Greetings:

Enclosed is your copy of well record for Supplemental Well Permit M-9786-POD2, which has been accepted for filing.

Your attention is called to the permit to Specific Conditions of Approval 5b, 10, 10A, which state as follows:

5b. A totalizing meter shall be installed before the first branch of the discharge line from the well and the installation shall be acceptable to the State Engineer; the Engineer shall be advised of the make model, serial number, date of installation and initial reading of the meter prior to appropriation of water; and pumping records shall be submitted to the District Supervisor on or before the 10th day of January, April, July and October of each year for the three preceding calendar months.

10A. This permit authorizes the drilling and use of a supplemental well. The total combined diversion from the primary well and the supplemental well shall not exceed the maximum diversion amount authorized under this permit.

10. The total diversion from all wells under this permit shall not exceed 3.0 acre-feet per annum.

Please return the enclosed meter installation forms within 30 days.

Sincerely,

Charles L. Jackson, MPA
District 3 Manager

By: Donna Morton
Donna Morton
Domestic Well Technician
Mimbres Basin

DM:dm
Encl: Well Record
Meter Installation and Inspection Forms
cc: State Engineer
034c

Revised June 1972

Trn#248128

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(a) Owner of well Ronald Johnston Owner's Well No. _____
Street or Post Office Address 106 E 21st St
City and State Silver City NM 88061

Well was drilled under Permit No. M-9799 and is located in the:

a. _____ ¼ NW ¼ SE ¼ NE ¼ of Section 12 Township 20S Range 15W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Smith Drilling Co License No. WD-792
Address P.O. Box 1668 Silver City NM 88062

Drilling Began 5-19-03 Completed 5-20-03 Type tools Rotary Size of hole 6¼ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 239 ft.

Completed well is ☑ shallow ☐ artesian. Depth to water upon completion of well _____ ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
230	240	10	open fault in granite	25-30

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6¼	Sch 40	PVC	+1.5	6.0	6.5	Cemented Surface Casing		
4"	"	"	+1.0	239.0	240.0	Cap on Bottom	199	239

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received June 10, 2003

Quad _____ FWL _____ FSL _____

File No. M-9799 Use DOMESTIC Location No. 20.15.12.241

Depth in Feet From	To	Thickness in Feet	Color and Type of Material Encountered
0	2	2	Clay
2	239	237	Blue Grey Granite hard

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Luck Smith
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

DEMING

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

June 11, 2003

FILE: M-9799

Ronald Johnston
106 E. 21st Street
Silver City, New Mexico 88061

Greetings:

Enclosed is your copy of Well Record for Domestic Well M-9799, which has been approved.

This is the final filing under Domestic Well Permit M-9799.

Sincerely,

R. Q. Rogers
Professional Engineer
District 3 Manager

By: Moses R. Montellano
Moses R. Montellano
Assistant Mimbres Basin Supervisor

MRM:mr
Encl: Well Record
cc: State Engineer
034

2015 MAY 27 PM 1:46

OFFICE OF THE STATE ENGINEER
DEMING, NM

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER
www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER): M-9799 PoD2	OSE FILE NUMBER(S): M-9799
WELL OWNER NAME(S): Federal National Mortgage Association	PHONE (OPTIONAL):
WELL OWNER MAILING ADDRESS: 14221 Dallas Parkway Suite 1000	CITY: Dallas STATE: TX ZIP: 75254-2916

WELL LOCATION (FROM GPS): LATITUDE 32 DEGREES 35 MINUTES 07.4 SECONDS N; LONGITUDE 108 DEGREES 20 MINUTES 33.4 SECONDS W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE: Loma Blanca Subd. Grant County
NW¼SE¼NE¼ Sec. 12, T20S, R15W, Lot 217, Tract 2

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1486	Derek Kuester	Kuester Well Drilling

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)	STATIC WATER LEVEL IN COMPLETED WELL (FT)
5-12-15	5-15-15	360	400	260	223

COMPLETED WELL IS: ( ) ARTESIAN ( ) DRY HOLE (X) SHALLOW (UNCONFINED)

DRILLING FLUID: (X) AIR ( ) MUD ADDITIVES – SPECIFY:

DRILLING METHOD: (X) ROTARY (X) HAMMER ( ) CABLE TOOL ( ) OTHER – SPECIFY:

DEPTH (feet bgl) FROM	TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
+10"	25	8¾	PVC Surface Casing	Cemented	6¼	Schd 1.40	None
+18"	360	6¼	PVC	Certa-lok	4	Schd 1.40	.032
					Slotted	260-360	

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER M-9799	POD NUMBER 2	TRN NUMBER 567862
LOCATION 20.15.12.241	Replacement/Dom	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	22	22	Unconsolidated sand rocks	○ Y ⊗ N	
22	260	238	Semi-solidified granite (pinks)	○ Y ⊗ N	
238	285	47	Decomposed granite	⊗ Y ○ N	5
285	325	40	Volcanic (Black)	○ Y ⊗ N	
325	360	35	Decomposed granite (browns)	⊗ Y ○ N	15
360	400	40	Unconsolidated rocks + sand (Caoy ground)	⊗ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ○ PUMP ⊗ AIR LIFT ○ BAILER ○ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): 20

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Derek Kuester Derek Kuester — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

5-16-15 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	M-9799	POD NUMBER	2	TRN NUMBER	567862
LOCATION	20.15.12.241	Replacement/Dom			PAGE 2 OF 2

JG

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
District 3 Office, Deming, NM

Tom Blaine, P.E.,
State Engineer

P.O. Box 844
321 W. Spruce Street
Deming, New Mexico 88031
PHONE: (575) 546-2851
FAX: (575) 546-2290

June 12, 2015

FILE: M-9799

Federal National Mortgage Association
14221 Dallas Parkway Suite 1000
Dallas, Texas 75254-2916

Greetings:

Enclosed is your copy of well record for Permit Domestic Replacement Well M-9799-POD2 which has been accepted for filing.

Your attention is called to Specific Conditions of Approval on Permit M-9799-POD2, which states as follows:

6C. Upon completion of the new well, the replaced well shall be plugged. A plugging plan shall be filed with and approved by the Office of the State Engineer prior to plugging and a plugging record from a licensed driller shall be filed with the State Engineer's Office within 20 days of completion of plugging of the well.

Sincerely,

Lloyd R. Valentine III
District 3 Manager

By:
Ben Young
Domestic Well Technician
Mimbres Basin

BY:by
Encl: Well Record
cc: State Engineer
034

MC

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Frank J. Westley Owner's Well No. _____

Street or Post Office Address P.O. Box 2176

City and State Silver City, NM 88062

Well was drilled under Permit No. M-9836 and is located in the:

a. _____ ¼ SE ¼ NW ¼ NW ¼ of Section 1 Township 20S Range 15W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. 5 of Block No. _____ of the Apache Mound Subdivision, recorded in Grant County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Kuester Well Drilling, Co. License No. WD1486

Address 1930 Hilltop Rd. Silver City, NM 88061

Drilling Began 10-23-03 Completed 10-25-03 Type tools Air-Rotary Size of hole 6 in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 1260 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 860 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
1077	1082	5	Contact from Hard Black Granite	1/8
			to Gray med. hard Granite	

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor Kuester Well Drilling Co.

Address 1930 Hilltop Rd. Silver City, NM 88061

Plugging Method Plug top 5' of hole with cement

Date Well Plugged 10-28-03

Plugging approved by:

_____

State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1	0	5	4
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received October 30, 2003

Quad _____ FWL _____ FSL _____

MBM M-9836 DEEPEN WELL (DRY HOLE) Location No. 20.15.1.114

Depth in Feet From	To	Thickness in Feet	Color and Type of Material Encountered
1000	1077	77	Black Granite (Very hard)
1077	1082	5	Soft white ground
1082	1260	178	Gray Granite (Med. Hard)

Section 7. REMARKS AND ADDITIONAL INFORMATION

Well deepened under permit No. M-9836 was plugged with cement as there was not enough water to run a household.

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Derek Kuester
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

DEMING

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

November 18, 2003

FILE: M-9836

Frank J. Westley
P.O. Box 2176
Silver City, New Mexico 88062

Greetings:

Enclosed is your copy of well record for (Dry Hole) under Deepen Domestic Well M-9836, which has been accepted for filing.

This is the final filing for (Dry Hole) under Deepen Domestic Well M-9836.

Sincerely,

R. Q. Rogers
Professional Engineer
District 3 Manager

By: Moses R. Montellano
Moses R. Montellano
Assistant Mimbres Basin Supervisor

MRM:mr
Encl: Well Record
cc: State Engineer
034f

Revised June 1972

Trn #273034

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Timothy J. & Donna L. Rader Owner's Well No. _____

Street or Post Office Address P.O. Box 1992

City and State Silver City, NM 88062

Well was drilled under Permit No. M-9889 and is located in the:

a. _____ ¼ SW ¼ NW ¼ SW ¼ of Section 1 Township 20S Range 15W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in Grant County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Kuester Well Drilling Co. License No. WD 1486

Address 1930 Hilltop Rd. Silver City, NM 88061

Drilling Began 6-20-03 Completed 6-23-03 Type tools Air-Rotary Size of hole 6¼ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 260 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 82 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
200	203	3	Black Shale	3
220	225	5	Black Shale	7

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6¾" OD	Schdl 40 PVC		0	3	3	Surface Casing Cemented		
4" ID	Schdl 40 PVC		0	260	260	Glue Joints	220	260

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____

Address _____

Plugging Method _____

Date Well Plugged _____

Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received June 3, 2003

File No. M-9889 Quad _____ FWL _____ FSL _____

Use TEST WELL Location No. 20.15.1.313

Depth in Feet From	To	Thickness in Feet	Color and Type of Material Encountered
0	200	200	Decomposed Granite (Tan)
200	203	3	Black Shale
203	220	17	Decomposed Granite (Tan)
220	225	5	Black Shale
225	250	25	Decomposed Granite (Tan)
250	260	10	Black Granite

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Derek Kuester
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

DEMING

July 7, 2003

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

FILE: M-9889

Timothy J. & Donna L. Rader
P.O. Box 1992
Silver City, New Mexico 88062

Greetings:

Enclosed is your copy of well record for test well M-9889, which has been accepted for filing.

Beneficial use of water shall not occur from well M-9889 unless and until a permit for a specific use has been issued by the State Engineer.

Sincerely,

R. Q. Rogers
Professional Engineer
District 3 Manager

By: Moses R. Montellano
Moses R. Montellano
Assistant Mimbres Basin Supervisor

MRM:mr
Encl: Well Record
cc: State Engineer
034b

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	M 09902	3	1	3	01	20S	15W	185087	3611222*

Driller License: 1486 **Driller Company:** KUESTER WELL DRILLING

Driller Name: DEREK KUESTER

Drill Start Date:	06/20/2003	**Drill Finish Date:**	06/23/2003	**Plug Date:**	
Log File Date:	06/03/2003	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	10 GPM
Casing Size:	6.75	**Depth Well:**	260 feet	**Depth Water:**	82 feet

Water Bearing Stratifications:	Top	Bottom	Description
	200	203	Shale/Mudstone/Siltstone
	220	225	Shale/Mudstone/Siltstone

Casing Perforations:	Top	Bottom
	220	260

***UTM location was derived from PLSS - see Help**

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

trn: 288351

Section 1. GENERAL INFORMATION

(A) Owner of well Frank J. Westley Owner's Well No. ____

Street or Post Office Address P.O. Box 2176

City and State Silver City, NM 88062

Well was drilled under Permit No. M-9975 and is located in the:

a. ____ ¼ SW ¼ NE ¼ NW ¼ of Section 1 Township 20S Range 15W N.M.P.M.

b. Tract No. ____ of Map No. ____ of the ____

c. Lot No. 3 of Block No. ____ of the Apache Mound Subdivision, recorded in Grant County.

d. X= ____ feet, Y= ____ feet, N.M. Coordinate System ____ Zone in the ____ Grant.

(B) Drilling Contractor Kuester Well Drilling Co. License No. WD 1486

Address 1930 Hilltop Rd. Silver City NM 88062

Drilling Began 12-1-03 Completed 12-8-03 Type tools Air-Rotary Size of hole 6¼ in.

Elevation of land surface or ____ at well is ____ ft. Total depth of well 580 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 356 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
538	540	2	Gray Volcanic Intrusive	10

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6 3/4" OD	Schdl. 40 PVC		0	8	8	Surface Casing Cemented		
4" ID	Schdl. 40 PVC		0	580	580	Certa-lock	540	580

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor ____

Address ____

Plugging Method ____

Date Well Plugged ____

Plugging approved by:

State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received December 18, 2003

Quad ____ FWL ____ FSL ____

MRM M-9975 Use TEST WELL Location No. 20.15.1.123

Depth in Feet From	To	Thickness in Feet	Color and Type of Material Encountered
0	200	200	Brown Granite
200	520	320	Black Granite (Hard)
520	540	20	Gray Volcanic (Soft fine Grained)
540	580	40	Black Granite (Hard)

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Derek Kuester
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO

OFFICE OF THE STATE ENGINEER

DEMING

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

December 22, 2003

FILE: M-9975

Frank J. Westley
P.O. Box 2176
Silver City, New Mexico 88062

Greetings:

Enclosed is your copy of well record for Test Well M-9975, which has been accepted for filing.

Beneficial use of water shall not occur from well M-9975 unless and until a permit for a specific use has been issued by the State Engineer.

Sincerely,

R. Q. Rogers
Professional Engineer
District 3 Manager

By: Moses R. Montellano
Moses R. Montellano
Assistant Mimbres Basin Supervisor

MRM:mr
Encl: Well Record
cc: State Engineer
034b

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

292521

(A) Owner of well Frank J. Westley Owner's Well No.

Street or Post Office Address P.O. Box 3176

City and State Silver City, NM 88062

Well was drilled under Permit No. M-10002 and is located in the:

a. ¼ SW ¼ NE ¼ NW ¼ of Section 1 Township 20S Range 15W N.M.P.M.

b. Tract No. of Map No. of the

c. Lot No. 3 of Block No. of the Apache Mound Subdivision, recorded in Grant County.

d. X= feet, Y= feet, N.M. Coordinate System Zone in the Grant.

(B) Drilling Contractor Kuester Well Drilling Co. License No. WD 1486

Address 1930 Hilltop Rd. Silver City, NM 88061

Drilling Began 3-6-04 Completed 3-12-04 Type tools Hammer Air-Rotary Size of hole 6¼ in.

Elevation of land surface or at well is 6057 ft. Total depth of well 720 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well None ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
60	61	1	Brown Granite	¼

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6¾" OD	Schd 40 PVC		0	8	8	Surface Casing Cemented		

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor Kuester Well Drilling Co.

Address 1930 Hilltop Rd, Silver City, NM 88061

Plugging Method Top 5' of hole plugged with Cement

Date Well Plugged 3-15-04

Plugging approved by:

State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1	0	5	4
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received March 18, 2004

M-10002

Quad FWL FSL

TEST WELL (PLUGGED)

Location No. 20.15.1.123

Depth in Feet From	To	Thickness in Feet	Color and Type of Material Encountered
0	70	70	Brown Granite
70	720	650	Black Granite

Section 7. REMARKS AND ADDITIONAL INFORMATION

Well drilled under permit No. M-10002 was plugged with cement as there was not enough water for household uses,

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Derek Kuester
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

March 22, 2004

FILE: M-10002

Frank J. Westley
P.O. Box 2176
Silver City, New Mexico 88062

Greetings:

Enclosed is your copy of well record for well M-10002, which has been accepted for filing.

This is the final filing under Test Well permit M-10002.

It is unfortunate that the well was unable to be drilled.

Sincerely,

R. Q. Rogers
Professional Engineer
District 3 Manager

By: Moses R. Montellano
Moses R. Montellano
Assistant Mimbres Basin Supervisor

MRM:ps
Encl: Well Record
cc: State Engineer
034h

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well W. Clell & Brenda Kay KiehNE Owner's Well No. _____
Street or Post Office Address PO BOX 5207
City and State Silver City NM 88062

Well was drilled under Permit No. M 10083 and is located in the:

a. _____ ¼ NW ¼ SE ¼ NW ¼ o. Section 01 Township 20S Range 15W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in Grant County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor TL Drilling License No. #WD 1513

Address 2311 Ranch Club Rd PMB 166 Silver City

Drilling Began 03-22-04 Completed 03-25-04 Type tools Rotary Size of hole 6 ¼ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 404 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 60 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
60	65	5	Fracture in granite	3
360	368	8	Fractured granite	5-7

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
8"	PVC		+1.0	20.0	21.0	cemented surface casing		
4"	PVC		+1.5	404.0	405.5	cap on bottom	364	404

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received April 7, 2004

Quad _____ FWL _____ FSL _____

File No. M-10083 Use Dom./STOCK Location No. 20.15.1.141

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	5	5	Top Soil
5	15	10	Decomposed granite
5	60	55	granite
60	65	5	fractured granite
65	404	339	Quartz w/ some granite

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Nson Looney
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO

OFFICE OF THE STATE ENGINEER

DEMING

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

April 8, 2004

FILE: M-10083

W. Clell & Brenda Kay Kiehne
P.O. Box 5207
Silver City, New Mexico 88062

Greetings:

Enclosed is your copy of Well Record for Domestic and Stock Well M-10083, which has been approved.

This is the final filing under Domestic and Stock Well Permit M-10083.

Sincerely,

R. Q. Rogers
Professional Engineer
District 3 Manager

By: Moses R. Montellano
Moses R. Montellano
Assistant Mimbres Basin Supervisor

MRM:mr
Encl: Well Record
cc: State Engineer
034

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

299129

Section 1. GENERAL INFORMATION

(A) Owner of well Frank J. Westley Owner's Well No. _____

Street or Post Office Address P.O. Box 2176

City and State Silver City, NM 88062

Well was drilled under Permit No. M-10094 and is located in the:

a. ___ ¼ NE ¼ NE ¼ NW ¼ of Section 1 Township 20S Range 15W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. 12 of Block No. _____ of the Apache Mound Subdivision, recorded in Grant County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Kuester Well Drilling Co. License No. WD 1486

Address 1930 Hilltop Rd. Silver City, NM 88061

Drilling Began 4-1-04 Completed 4-5-04 Type tools Hammer Air-Rotary Size of hole 6¼ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 460 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 65 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
270	275	5	Decomposed Brown Granite	½
340	345	5	Decomposed Brown Granite	½
395	396	1	Crack in Black Granite	20

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6¾" OD	Schd 40 PVC		0	15	15	Surface Casing Cemented		
4" ID	Schd 40 PVC		0	460	460	Certa-lock	1420	460

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____

Address _____

Plugging Method _____

Date Well Plugged _____

Plugging approved by:

_____ State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received April 8, 2004

Quad _____ FWL _____ FSL _____

File No. M-10094 Use TEST WELL Location No. 20.15.1.122

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	12	12	Decomposed Brown Granite
12	270	258	Black Granite
270	275	5	Decomposed Brown Granite
275	340	65	Black Granite
340	345	5	Decomposed Brown Granite
345	460	115	Black Granite

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Derek Kuester
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO

OFFICE OF THE STATE ENGINEER

DEMING

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

April 9, 2004

FILE: M-10094

Frank J. Westley
P.O. Box 2176
Silver City, New Mexico 88062

Greetings:

Enclosed is your copy of well record for Test Well M-10094, which has been accepted for filing.

Beneficial use of water shall not occur from well M-10094, unless and until a permit for a specific use has been issued by the State Engineer.

Sincerely,

R. Q. Rogers
Professional Engineer
District 3 Manager

By: Moses R. Montellano
Moses R. Montellano
Assistant Mimbres Basin Supervisor

MRM:mr
Encl: Well Record
cc: State Engineer
034b

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Trn# 3224[illegible]

Section 1. GENERAL INFORMATION

(A) Owner of well Corina + Jack Barragan Owner's Well No. _____

Street or Post Office Address P.O. Box 635

City and State Silver City, NM 88062

Well was drilled under Permit No. M-10308 and is located in the:

a. _____ ¼ NE ¼ SE ¼ NE ¼ of Section 12 Township 20S Range 15W N.M.P.M.

b. Tract No. 2 of Map No. _____ of the _____

c. Lot No. 205 of Block No. _____ of the Loma Blanca Subdivision, recorded in Grant County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Kuester Well Drilling Co. License No. WD 1486

Address 1930 Hilltop Rd. Silver City, NM 88061

Drilling Began 2-10-05 Completed 3-4-05 Type tools Hammer Air-Rotary Size of hole 6¼ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 500 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 208 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
465	475	10	(Soft) Decomposed Quartz Monzonite	5

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6¾" OD	Schdl. 40 PVC		0	100	100	Surface Casing cemented		
4" ID	Schdl. 40 PVC		0	500	500	Certa-lock	460	500

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

2005 MAR 16 PM 1:42
OFFICE OF THE STATE ENGINEER DEMING, NM

Section 5. PLUGGING RECORD

Plugging Contractor _____

Address _____

Plugging Method _____

Date Well Plugged _____

Plugging approved by:

_____ State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received March 16, 2005

Quad _____ FWL _____ FSL _____

File No. M-10308 Use DOMESTIC

20.15.12.242

Depth in Feet		Thickness in Feet	Color and Type of Material Encountered
From	To		
0	20	20	Silidified Sand Stone (Brown)
20	100	80	Unconsolidated rocks + sand (loose)
100	500	400	Quartz Monzonite (Brown)

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the abo described hole.

Derek Kuester
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district offi of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well [illegible] Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO

OFFICE OF THE STATE ENGINEER

DEMING

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

March 17, 2005

FILE: M-10308

Corina and Jack Barragan
P.O. Box 635
Silver City, NM 88062

Greetings:

Enclosed is your copy of well record for Domestic Well M-10308, which has been accepted for filing.

This is the final filing for Domestic Well Permit M-10308.

Sincerely,

R. Q. Rogers
Professional Engineer
District 3 Manager

By: Moses R. Montellano
Moses R. Montellano
Assistant Mimbres Basin Supervisor

MRM:ajm
Encl: Well Record
cc: State Engineer
034

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 10313 POD1	3	2	1	01	20S	15W	185514	3612016*

Driller License: 1486 **Driller Company:** KUESTER WELL DRILLING

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 6.75 **Depth Well:** **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 10313	3	2	1	01	20S	15W	185514	3612016*

Driller License: 1486 **Driller Company:** KUESTER WELL DRILLING

Driller Name: KUESTER, DEREK

Drill Start Date:		**Drill Finish Date:**		**Plug Date:**	
Log File Date:		**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	4.00	**Depth Well:**	580 feet	**Depth Water:**	

***UTM location was derived from PLSS - see Help**

Revised June 1971

STATE ENGINEER OFFICE

WELL RECORD

D-4-3-4

Section 1. GENERAL INFORMATION

(A) Owner of well Gerald W Billings Jr. Owner's Well No. _____

Street or Post Office Address 38 Whitewater road

City and State Silver City New mexico 88061

Well was drilled under Permit No. M 10323 and is located in the:

a. _____ ¼ NW¼ NW¼ SW¼ of Section 6 Township 20S Range 14W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Smith Drilling Co License No. WD-772

Address P.O. Box 1668 Silver City New Mex 88061

Drilling Began Aug 1 2005 Completed Aug 10, 2005 Type tools Rotary Size of hole 6¼ in.

Elevation of land surface or _____ at well is 5952 ft. Total depth of well 457 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 275 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
380	381	1	Crack in Ptemonzanite	2-3
446	447	1	" "	10

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per In.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6¼	Sch 40	PVC	+1.0	125.0	126.0	Cemented around Casing		
4"	"	"	+1.5	457	458.5	Cap on Bottom	417	457

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____

Address _____

Plugging Method _____

Date Well Plugged _____

Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received February 24, 2006

Quad _____ FWL _____ FSL _____

File No. M- 23

1

Depth in Feet From	To	Thickness in Feet	Color and Type of Material Encountered
0	125	125	soft decomposed material sand
125	160	35	Monzonite Tan To Brown
160	260	100	Caving material more decomposed sand like Matia
260	TD	197'	Quartz Monzonite hard some faulting

Section 7. REMARKS AND ADDITIONAL INFORMATION

LAT. N 32° 35' 31.5"
LONG W 108° 20' 18.4"

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Rick Smith
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well i ed or W form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO

OFFICE OF THE STATE ENGINEER

DEMING

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

March 3, 2006

FILE: M-10323

Gerald Billings Jr.
78 Whitewater Road
Silver City, New Mexico 88061

Greetings:

Enclosed is your copy of well record for Domestic/Stock Well M-10323, which has been accepted for filing.

This is the final filing for Domestic/Stock Well Permit M-10323.

Sincerely,

Charles L. Jackson, MPA
District Manager

By: Priscilla Sanchez
Priscilla Sanchez
Domestic Well Technician
Mimbres Basin

PS:dm
Encl: Well Record
cc: State Engineer
034

New Mexico Office of the State Engineer
Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	M 10490			1	06	20S	14W	187009	3611881*

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 4.50 **Depth Well:** 450 feet **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 10575 POD1	1	1	4	01	20S	15W	185891	3611400*

Driller License: **Driller Company:**

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

***UTM location was derived from PLSS - see Help**

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Frank J. Westley Owner's Well No. _____

Street or Post Office Address P.O. Box 2176

City and State Silver City NM 88062

Well was drilled under Permit No. M-10592-POD1 and is located in the:

a. _____ ¼ NE ¼ NE ¼ NW ¼ of Section 1 Township 20S Range 15W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. 2 of Block No. _____ of the Apache Mound Subdivision, recorded in Grant County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Kaester Well Drilling Co. License No. WD1486

Address 1930 Hilltop Rd. Silver City, NM 88061

Drilling Began 3-4-06 Completed 3-6-06 Type tools Air-Hammer Rotary Size of hole 6¼ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 133 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 70 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
100	120	20	Fractured Brown Granite	40
			Zone with major Calcites	
			throughout	

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6 3/4" OD	Schdl 40 PVC		0	10	10	Surface Casing cemented		
4" ID	Schdl 40 PVC		0	133	133	certa-lock	113	133

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____

Address _____

Plugging Method _____

Date Well Plugged _____

Plugging approved by: _____

State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

STATE ENGINEER OFFICE 2006 MAR 24 AM 8:13

FOR USE OF STATE ENGINEER ONLY

Date Received March 24, 2006

M-10592-POD1

Quad _____ FWL _____ FSL _____

Use Exploratory Location No. 20S15W1122

Depth in Feet		Thickness in Feet	Color and Type of Material Encountered
From	To		
0	133	133	Granite (Browns)

Section 7. REMARKS AND ADDITIONAL INFORMATION

Lat. 32° 36' 07.0"
Long. 108° 20' 53.0"

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Derek Kreaten
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO

OFFICE OF THE STATE ENGINEER

DEMING

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

January 24, 2007

FILE: M-10592-POD1

Frank J. Westley
P.O. Box 2176
Silver City, New Mexico 88062

Greetings:

Enclosed is your copy of well record for Exploratory Well M-10592-POD1, which has been accepted for filing.

Beneficial use of water shall not occur from well M-10592-POD1 unless and until a permit for a specific use has been issued by the State Engineer.

Sincerely,

Charles L. Jackson, MPA
District 3 Manager

By: Tom M. Whatley
Tom M. Whatley
Mimbres Basin Manager

TMW:ps
Encl: Well Record
cc: State Engineer
002

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 10592 POD2	2	1	1	01	20S	15W	185311	3612229*

Driller License: 1486 **Driller Company:** KUESTER WELL DRILLING

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 6.75 **Depth Well:** 1000 feet **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 10592 POD3	2	1	1	01	20S	15W	185311	3612229*

Driller License: 1486 **Driller Company:** KUESTER WELL DRILLING

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 6.75 **Depth Well:** 1000 feet **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 10592 POD4	1	1	1	01	20S	15W	185111	3612229*

Driller License: 1486 **Driller Company:** KUESTER WELL DRILLING

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 6.75 **Depth Well:** 1000 feet **Depth Water:**

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 10592 POD5	1	1	1	01	20S	15W	185111	3612229*

Driller License: 1486 **Driller Company:** KUESTER WELL DRILLING

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 6.75 **Depth Well:** 1000 feet **Depth Water:**

***UTM location was derived from PLSS - see Help**

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Timothy and Joan Donovan Owner's Well No. _____

Street or Post Office Address P.O. Box 370

City and State Mimbres, NM 88049

Well was drilled under Permit No. M-10785-Expl. 1 and is located in the:

a. ____ ¼ SE ¼ NW ¼ NW ¼ of Section 6 Township 20S Range 14W N.M.P.M.

b. Tract No. B of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ Grant _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Kuester Well Drilling Co. License No. WD 1486

Address P.O. Box 5204, Silver City, NM 88062

Drilling Began 3-8-07 Completed 3-10-07 Type tools Air-Rotary Hammer Size of hole 6¼ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 290 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 167 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
260	290	30	(Very soft) Decomposed Quartz Monzonite	20

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6 3/4" OD	Schdl. 40 PVC		0	25	25	Surface Casing Cemented		
4" ID	Schdl. 40 PVC		0	290	290	Certa-lock	250	290

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

2007 MAR 21 PM OFFICE OF THE STATE ENGINEER DEMING, NM

Section 5. PLUGGING RECORD

Plugging Contractor _____

Address _____

Plugging Method _____

Date Well Plugged _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received March 21, 2007

Quad _____ FWL _____ FSL _____

File No. M-10785-POD1 Use exploratory Location No. 20S.14W.6.114

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	290	290	Quartz Monzonite

Section 7. REMARKS AND ADDITIONAL INFORMATION

Lat. 32° 36' 01.9"

Long. 108° 20' 11.1"

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Derek Kuester

Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO

OFFICE OF THE STATE ENGINEER

DEMING

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

March 23, 2007

FILE: M-10785

Timothy and Joan Donovan
P.O. Box 370
Mimbres, New Mexico 88049

Greetings:

Enclosed is your copy of well record for Exploratory Well M-10785-POD1, which has been accepted for filing.

Beneficial use of water shall not occur from well M-10785-POD1 unless and until a permit for a specific use has been issued by the State Engineer.

Sincerely,

Charles L. Jackson, MPA
District 3 Manager

By: Tom M. Whatley
Tom M. Whatley
Mimbres Basin Manager

TMW:ps
Encl: Well Record
cc: State Engineer
002

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

TRN# 397444

Section 1. GENERAL INFORMATION

(A) Owner of well Randy Jelone + Lisa Acerman Jelone Owner's Well No. _____
Street or Post Office Address 2226 Stage Stop Dr.
City and State Henderson, NV 89052

Well was drilled under Permit No. M-10920 and is located in the:

a. _____ ¼ SE ¼ SW ¼ NW ¼ of Section 6 Township 20S Range 14W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ Grant _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Kuester Well Drilling Co. License No. WD 1486
Address P.O. Box 5204 Silver City, NM 88062

Drilling Began 2-18-08 Completed 2-22-08 Type tools Air-Rotary Size of hole 6¼ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 325 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 285 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet.	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
295	325	30	Unconsolidated Brown dirt, rocks + sand	5

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6 3/4" OD	Schdl. 40 PVC		0	180	180	Surface Casing cemented		
4" ID	Schdl. 40 PVC		0	325	325	Certa-lock	285	325

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

2008 MAR -7 AM 11:48 OFFICE OF THE STATE ENGINEER DEMING, NM

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received March 7, 2008

Quad _____ FWL _____ FSL _____

File: M-10920-POD1 Use: Domestic/Stock Location: 20.14.6.134

Depth in Feet From	To	Thickness in Feet	Color and Type of Material Encountered
0	170	170	Unconsolidated dirt and rocks
170	180	10	Quartz Monzanite (Hard)
180	210	30	Red Volcanics
210	295	85	Quartz Monzanite (Hard)
295	325	30	Loose Brown dirt, rocks & sand

Section 7. REMARKS AND ADDITIONAL INFORMATION

Lat. 32° 35' 53.4"

Long. 108° 20' 06.6"

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Derek Kuester
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO

OFFICE OF THE STATE ENGINEER

DEMING

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

[redacted]
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

March 7, 2008

FILE: M-10920

Randy Jelone and
Lisa Acerman Jelone
2226 Stage Stop Dr
Henderson, Nevada 89052

Greetings:

Enclosed is your copy of well record for Permit for Domestic and Stock Well M-10920-POD1, which has been accepted for filing.

This is the final filing for Domestic and Stock Well Permit M-10920-POD1.

Sincerely,

Charles L. Jackson, MPA
District 3 Manager

By: Priscilla Sanchez
Priscilla Sanchez
Domestic Well Technician
Mimbres Basin

PS:ps
Encl: Well Record
cc: State Engineer
034

2011 AUG 16 PM 1:56

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

OFFICE OF THE STATE ENGINEER
DEMING, NM

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
M-10920 POD2	M-10920
WELL OWNER NAME(S)	PHONE (OPTIONAL)
Randy Jelone & Lisa Acerman Jelone	702-595-6994
WELL OWNER MAILING ADDRESS	CITY / STATE / ZIP
P.O. Box 795	Tyrone NM 88065

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	35	54.0	N
LONGITUDE	108	20	07.1	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

Grant County

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
¼	SE ¼	SW ¼	NW ¼	6	20 ☐ NORTH ☒ SOUTH	14 ☐ EAST ☒ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1486	Derek Kuester	Kuester Well Drilling Co.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
7-13-11	8-1-11	380	380	310

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☒ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 305

DRILLING FLUID: ☒ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☒ ROTARY ☒ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
+1'	380	8½	Steel Casing Advancement	Steel-Slotted	8	¼	100 X 1 (300-380)
+1½	380	8	PVC	Certa-lock (PVC Slotted)	4½	SDR17	.032 (300-380)

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
310	380	70		20

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: Air lift

TOTAL ESTIMATED WELL YIELD (GPM): 20

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	M-10920	POD NUMBER	2	TRN NUMBER	477091
LOCATION	20.14.6.134	Replacement			PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☒ NO PUMP – WELL NOT EQUIPPED
☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	180	180	Unconsolidated Dirt + Rocks	☐ YES ☒ NO
180	240	60	Volcanic (Reds)	☐ YES ☒ NO
240	310	70	Quartz Monzanite	☐ YES ☒ NO
310	380	70	Loose fractured Volcanic Scoria/Rhyolites	☒ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☒ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Derek Kuster — SIGNATURE OF DRILLER

8-4-2011 — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	M-10920	POD NUMBER	2	TRN NUMBER	477091
LOCATION	20.14.6.134	replace			PAGE 2 OF 2

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

John R. D'Antonio, Jr., P.E.
State Engineer

District 3 Office

P.O. Box 844 / 301 S. Tin Street
Deming, New Mexico 88031
(575) 546-2851
FAX: (575) 546-2290

August 26, 2011

FILE: M-10920

Randy Jelone & Lisa Acerman-Jelone
PO BOX 795
Tyrone, New Mexico 88065

Greetings:

Enclosed is your copy of Well Record for Replacement Well M-10920POD2, which has been accepted for filing.

Your attention is called to permit M-10920POD2, to Specific Conditions of Approval, which state as follows:

6B. The well being replaced shall be plugged upon completion of the replacement well. A plugging report shall be filed with the State Engineer within 20 days of the well being plugged.

Plugging Plan of Operations shall be filed and approved PRIOR TO plugging the original well.

Please advise if further discussion would be helpful.

Sincerely,

Charles L. Jackson
District 3 Manager

By: Donna Morton
Donna Morton
Domestic Well Technician
Mimbres Basin

DM:dm
Encl: Well Record
cc: State Engineer
Kuester Drilling

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 10974 POD1	3	1	1	01	20S	15W	185200	3612041

Driller License: 1486 **Driller Company:** KUESTER WELL DRILLING

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 7.00 **Depth Well:** 1200 feet **Depth Water:**

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 10976 POD1	1	1	1	01	20S	15W	185082	3612279

Driller License: **Driller Company:**

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

Revised June 1971

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Gerald W Billings Jr + Rhonda J Billings Owner's Well No. _____
Street or Post Office Address 78 Wholesale Rd.
City and State Silver City New Mexico 88061

Well was drilled under Permit No. M-10985 and is located in the:

a. _____ ¼ SW ¼ SW ¼ SW ¼ of Section 6 Township 20 S Range 14 W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Smith Drilling Company License No. WD-792

Address P.O. Box 1668 - Silver City, New Mexico 88062

Drilling Began July 10 09 Completed July 29 09 Type tools Rotary Size of hole 6 ¼ in.

Elevation of land surface or _____ at well is 5940 ft. Total depth of well 875' ft.

Completed well is ☑ shallow ☐ artesian. Depth to water upon completion of well 430 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
456	457	1	fracture in Quartz Monzanite	1/4 gpm
855	857	2	" " " "	10-12 gpms

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6 4	Sch 40	PVC	+1.0	125.0	126.0	Cemented Reinforc	Casing	
4"	"	"	+1.5	875.0	876.0	Cap on Bottom	835	875

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

2009 JUL 31 PM 4:19
OFFICE OF THE STATE ENGINEER DEMING, NM

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received July 31, 2009

Quad _____ FWL _____ FSL _____

File No. M-10985 Pod1 Use Domestic Location No. 20.14.6.333

Depth in Feet From	To	Thickness in Feet	Color and Type of Material Encountered
0	120	120	Rock fill + gravel
120	875	755	Quartz Monzonite grey

Section 7. REMARKS AND ADDITIONAL INFORMATION

LAT: N 32° 35' 25.4"
LONG: W 108° 20' 12.6"

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Leslie Smith
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE OF NEW MEXICO

OFFICE OF THE STATE ENGINEER

DEMING

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

216 S. Silver
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

August 18, 2009

FILE: M-10985

Gerald & Rhonda Billings
78 Wite Water Rd
Silver City New Mexico 88061

Greetings:

Enclosed is your copy of well record for permit for Domestic Well M-10985-POD1, which has been accepted for filing.

This is the final filing for permit for Domestic Well M-10985-Pod1.

Sincerely,

Charles L. Jackson, MPA
District 3 Manager

By:
Donna M. Morton
Domestic Well Technician
Mimbres Basin

DM:dm

Encl: Well Record
cc: State Engineer
034

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
M-11041-POD1 Domestic	M-11041
WELL OWNER NAME(S)	**PHONE (OPTIONAL)**
Kevin W. Tipton Yvonne Risch	916-961-7172
WELL OWNER MAILING ADDRESS	**CITY / STATE / ZIP**
4956 St. Thomas Dr.	Fair Oaks CA 95628

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	36	08.12	N
LONGITUDE	108	20	42.71	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

Off of entrance to Apache Mound Subdivision Grant County

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
¼	NW ¼	NW ¼	NE ¼	1	20 ☐ NORTH ☒ SOUTH	15 ☐ EAST ☒ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1486	Derek Kuester	Kuester Well Drilling Co.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
3-9-09	3-10-09	375	375	240

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☒ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 200

DRILLING FLUID: ☒ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☒ ROTARY ☒ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
0	7	8 3/4	PVC Cemented	None	6 1/4	Schd 1.40	None
0	375	6 1/4	PVC	Certa-lock	4 (Slotted	Schd 1.40 295-375)	.032

4. WATER-BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
240	300	60	Decomposed Granite	2
300	340	40	Fractured Granite	25

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: Air-lift + Timed recovery Volume

TOTAL ESTIMATED WELL YIELD (GPM): 27

2009 MAR 31 PM 1:07 OFFICE OF THE STATE ENGINEER DENVER, NM

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	M-11041	POD NUMBER	1	TRN NUMBER	424474
LOCATION	20.15.1.211				PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☒ NO PUMP – WELL NOT EQUIPPED
☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	240	240	Volcanics	☐ YES ☒ NO
240	300	60	Decomposed Granite	☒ YES ☐ NO
300	340	40	Fractured Granite	☒ YES ☐ NO
340	325	35	Granite	☐ YES ☒ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST

METHOD: ☐ BAILER ☐ PUMP ☒ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Derek Kuester — SIGNATURE OF DRILLER

3-30-2009 — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

STATE OF NEW MEXICO

OFFICE OF THE STATE ENGINEER

DEMING

JOHN R. D'ANTONIO, JR., P.E.
State Engineer

[redacted]
Post Office Box 844
Deming, New Mexico 88031
(505) 546-2851
(505) 546-7452
Fax: (505) 546-2290

March 31, 2009

FILE: M-11041

Kevin Tipton & Yvonne Risch
4956 St. Thomas Drive
Fair Oaks, California 95628

Greetings:

Enclosed is your copy of well record for Domestic Well Permit M-11041-POD1, which has been accepted for filing.

This is the final filing for permit for Domestic Well M-11041-Pod1.

Sincerely,

Charles L. Jackson, MPA
District 3 Manager

By: Donna Morton
Donna M. Morton
Domestic Well Technician
Mimbres Basin

DM:dm

Encl: Well Record
cc: State Engineer
034

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	M 11083 POD1	4	1	3	01	24S	15W	185343	3611296

Driller License: 792 **Driller Company:** SMITH DRILLING COMPANY

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

2013 DEC 10 PM 1:44

OFFICE OF THE STATE ENGINEER DEMING, NM

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
M-11397 POD1	M-11397
WELL OWNER NAME(S)	**PHONE (OPTIONAL)**
Frank J. Westley, Revocable Trust	388-2349
WELL OWNER MAILING ADDRESS	**CITY / STATE / ZIP**
P.O. Box 2176	Silver City NM 88062

WELL LOCATION (FROM GPS)

	DEGREES	MINUTES	SECONDS	
LATITUDE	32	36	07.2	N
LONGITUDE	108	21	14.7	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

SW¼, NW¼, NW¼, Sec. 1, T5 20S, R15W Lot 6a, Apache Mound Grant County

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1486	Derek Kuester	Kuester Well Drilling Co.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
10-7-13	10-18-13	823	823	720

COMPLETED WELL IS: ( ) ARTESIAN ( ) DRY HOLE (X) SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 640

DRILLING FLUID: (X) AIR ( ) MUD ADDITIVES – SPECIFY:

DRILLING METHOD: (X) ROTARY (X) HAMMER ( ) CABLE TOOL ( ) OTHER – SPECIFY:

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	7	8¾	PVC Surface Casing Cemented		6¼	Sch 1.40	—
0	823	6¼					

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER M-11397	POD NUMBER 1	TRN NUMBER 533127
LOCATION 20.15.1.113		PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	720	720	Granite (Grey)	○ Y ✗ N	
720	730	10	Fractured Granite (Green w/ Calcite)	✗ Y ○ N	3-5
730	823	93	Granite (Grey)	○ Y ✗ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ○ PUMP ✗ AIR LIFT ○ BAILER ○ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): 3-5

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Derek Kuester Derek Kuester

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	M-11397	POD NUMBER	1	TRN NUMBER	533127
LOCATION	20.15.1.113				PAGE 2 OF 2

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
District 3 Office, Deming, NM

Scott A. Verhines, P.E.,
State Engineer

P.O. Box 844
301 S. Tin Street
Deming, New Mexico 88031
PHONE: (575) 546-2851
FAX: (575) 546-2290

December 12, 2013

FILE: M-11397

Frank J. Westley, Revocable Trust
P.O. Box 2176
Silver City, N.M. 88062

Greetings:

Enclosed is your copy of well record for Domestic Well M-11397-POD1, which has been accepted for filing.

This is the final filing for Domestic Well Permit M-11397-POD1.

Sincerely,

Charles L. Jackson, MPA
District 3 Manager

By: Patricia Gonzales
Patricia Gonzales
Domestic Well Technician
Mimbres Basin

PG:pg
Encl: Well Record
cc: State Engineer
034

2015 JUN -2 AM 11:58

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

OFFICE OF THE STATE ENGINEER DEMING, NM

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
M-11466 POD 1	M-11466
WELL OWNER NAME(S)	**PHONE (OPTIONAL)**
Diana S. Edwards	575-574-7100
WELL OWNER MAILING ADDRESS	**CITY / STATE / ZIP**
802 W. 7th	Silver City NM 88061

WELL LOCATION (FROM GPS)

	DEGREES	MINUTES	SECONDS	
LATITUDE	32	36	12.8	N
LONGITUDE	108	20	44.0	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

NW¼ NW¼ NE¼ Sect. 1, T20S, R15W Grant County

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1486	Derck Kuester	Kuester Well Drilling

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4-14-15	4-24-15	705	705	480

COMPLETED WELL IS: ( ) ARTESIAN ( ) DRY HOLE (X) SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 480

DRILLING FLUID: (X) AIR ( ) MUD ADDITIVES – SPECIFY:

DRILLING METHOD: (X) ROTARY (X) HAMMER ( ) CABLE TOOL ( ) OTHER – SPECIFY:

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
+10"	10'	8¾	PVC Surface Casing	Cemented	6¼	Sch. 40	—
0	705	6¼					

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	M-11466	POD NUMBER	1	TRN NUMBER	566908
LOCATION	20.15.1.211	Domestic			PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	480	480	Granite	○ Y X N	
480	490	10	Fractured granite	X Y ○ N	1/30
490	705	215	granite	○ Y X N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ○ PUMP X AIR LIFT ○ BAILER ○ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): 1/30 (50 GPD)

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Derek Kuester Derek Kuester — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

4-30-2015 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	M-11466	POD NUMBER	1	TRN NUMBER	566908
LOCATION	20.15.1.211	Domestic			PAGE 2 OF 2

Locator Tool Report

General Information:

Application ID: 81 Date: 06-11-2015 Time: 08:14:21

WR File Number: M
Purpose: POINT OF DIVERSION

Applicant First Name: DIANA
Applicant Last Name: EDWARDS

GW Basin: MIMBRES
County: GRANT

Critical Management Area Name(s): NONE
Special Condition Area Name(s): NONE
Land Grant Name: NON GRANT

PLSS Description (New Mexico Principal Meridian):

NE 1/4 of NW 1/4 of NW 1/4 of NE 1/4 of Section 01, Township 20S, Range 15W.

Coordinate System Details:

Geographic Coordinates:

Latitude:	32 Degrees	36 Minutes	12.8 Seconds	N
Longitude:	108 Degrees	20 Minutes	44.0 Seconds	W

Universal Transverse Mercator Zone: 13N

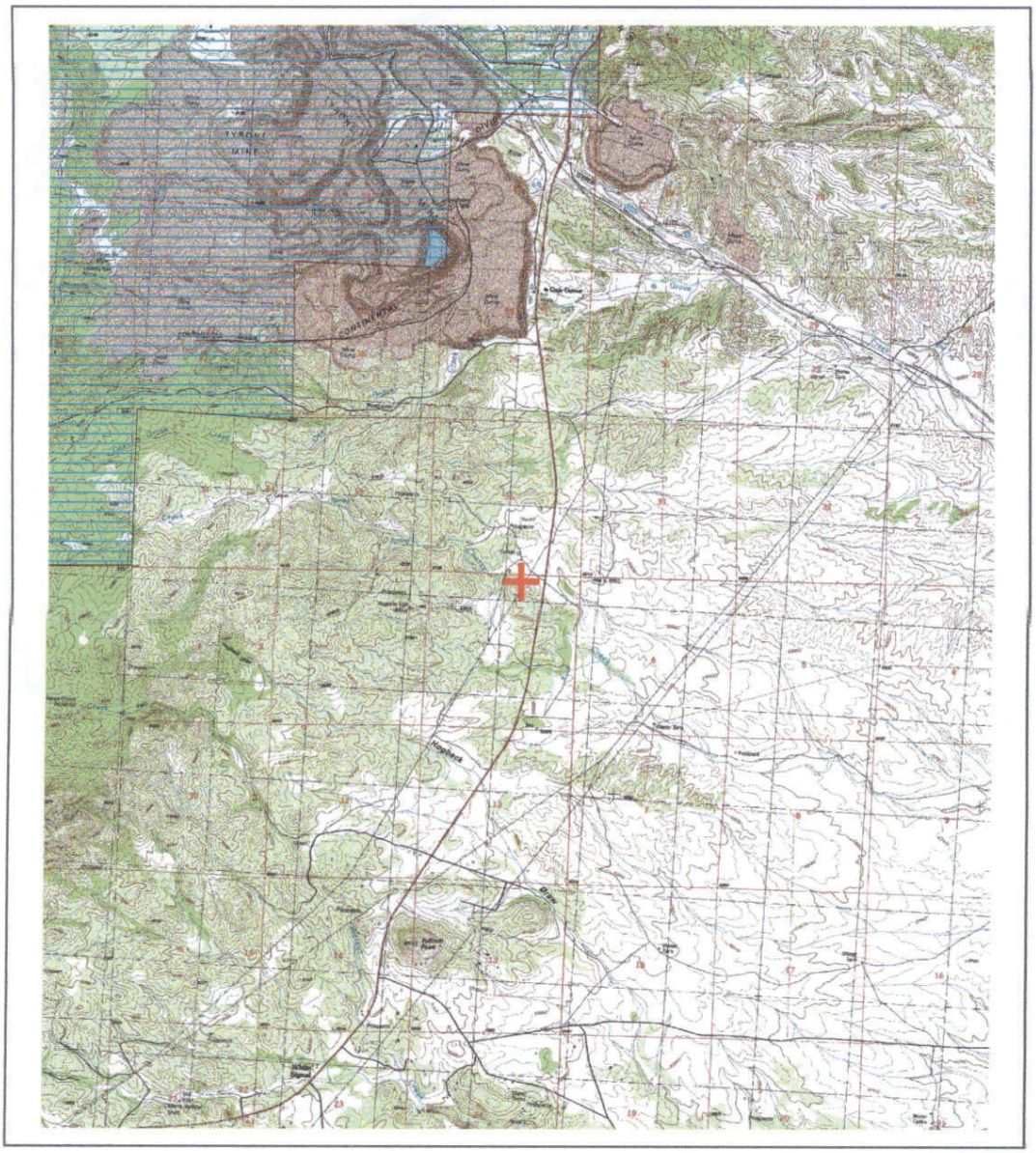
NAD 1983(92) (Meters)	N: 3,612,281	E: 186,007
NAD 1983(92) (Survey Feet)	N: 11,851,293	E: 610,257
NAD 1927 (Meters)	N: 3,612,081	E: 186,056
NAD 1927 (Survey Feet)	N: 11,850,636	E: 610,419

State Plane Coordinate System Zone: New Mexico West

NAD 1983(92) (Meters)	N: 177,909	E: 781,922
NAD 1983(92) (Survey Feet)	N: 583,689	E: 2,565,356
NAD 1927 (Meters)	N: 177,894	E: 104,378
NAD 1927 (Survey Feet)	N: 583,640	E: 342,446

NEW MEXICO OFFICE OF STATE ENGINEER

Locator Tool Report



WR File Number: M Scale: 1:76,536

Northing/Easting: UTM83(92) (Meter): N: 3,612,281 E: 186,007

Northing/Easting: SPCS83(92) (Feet): N: 583,689 E: 2,565,356

GW Basin: Mimbres

Print Date: 06/11/2015

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
District 3 Office, Deming, NM

Tom Blaine, P.E.,
State Engineer

P.O. Box 844
321 W. Spruce Street
Deming, New Mexico 88031
PHONE: (575) 546-2851
FAX: (575) 546-2290

June 11, 2015

FILE: M-11466

Diana S. Edwards
802 W. 7th
Silver City, New Mexico 88061

Greetings:

Enclosed is your copy of well record for Domestic Well M-11466 POD1, which has been accepted for filing.

This is the final filing for Domestic Well Permit M-11466 POD1.

Sincerely,

Lloyd R. Valentine III
District 3 Manager

By:
Ben Young
Domestic Well Technician
Mimbres Basin

BY:by
Encl: Well Record
cc: State Engineer
034

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

STATE ENGINEER'S OFFICE
ROSWELL, NEW MEXICO

2020 JAN -6 AM 11:14

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
M-11706		

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Charlesty & Peggy Drake	575-590-2131

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
33 Michelle Lane	Silver City	NM	88061

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	34	56.317	N
	LONGITUDE	108	20	59.736	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

SE¼ SE¼ NW¼ Sec 12 T. 20S Range 15W Lot 242

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1513	Tyson Looney	TL Drilling

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
11-18-19	12-12-19	204	204	125

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☒ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 112

DRILLING FLUID: ☒ AIR ☐ MUD ADDITIVES – SPECIFY: Quick Foam

DRILLING METHOD: ☒ ROTARY ☒ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
+2.0	21.0	12 3/4	8" PVC	Glue	8"	¼"	None
+2.5	204.0	7 3/4	4" Certalock	Certa-lock	4"	¼	
124	204	7 3/4	4" Well-Screen	Certa-lock	4"	¼	20 Thous

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	21.0	12 3/4	Neat Cement	20	pour-pump

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO. M-11706	POD NO. 1	TRN NO. 662363	
LOCATION 20.15.12.144	Construction for sale	WELL TAG ID NO. 3017C	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	3	3	Top Soil	Y (N)	
3	10	7	Decomposed granite grey-red	Y (N)	
10	25	15	decomposed granite grey	Y (N)	
25	63	38	Volcanics (black)	Y (N)	
63	120	57	Fractured granite grey	Y (N)	
120	165	45	Black & Brown Fractured Volcanic	(Y) N	50 to 60
165	180	15	Fractured granite grey	Y (N)	
180	204	24	granite grey - (hard)	Y (N)	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☒ AIR LIFT ☐ BAILER ☐ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

50 to 60 gpm

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

Lot 242 & Tract #02 Subdivision - Loma Blanca

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

SIGNATURE OF DRILLER / PRINT SIGNEE NAME

12/28/19
DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO. M-11706	POD NO. 1	TRN NO. 662363	
LOCATION 20.15.12.144	Construction for sale	WELL TAG ID NO. 3017C	PAGE 2 OF 2

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
District 3 Office, Deming, NM

John R. D'Antonio Jr., P.E.
State Engineer

321 W. Spruce St.
Deming, New Mexico 88030
PHONE: (575) 546-2851
FAX: (575) 546-2290

January 30, 2020

FILE: M-11706

Charles V. & Peggy Drake
33 Michelle Lane
Silver City, New Mexico 88061

Greetings:

Enclosed is your copy of well record for Permit for Construction for Sale Well M-11706-POD1, which has been accepted for filing.

Your attention is called to Specific Condition 16,16A, which states in part...

Upon sale of the house or dwelling, the permit holder shall provide the new owner notice in writing of the requirement to file a change of ownership with the state engineer for the 72-12-1.1 domestic well permit. No water may be diverted from the 72-12-1.1 domestic well by the new owner until a change of ownership has been recorded at the office of the state engineer and a 72-12-1.1 domestic well permit has been issued in the name of the new owner. (Condition 06-16)

This is the final filing under Permit for Construction for Sale Well M-11706-POD1.

Sincerely,

Lloyd R. Valentine III
District 3 Manager

By:
Ben Young
Domestic Well Technician
Mimbres Basin

BY:by
Encl: Well Record
cc: State Engineer

Appendix G

Emma Project Groundwater Flow Modeling Report

DBS&A
Daniel B. Stephens & Associates, Inc.

Groundwater Flow Modeling
Emma Expansion Project

Prepared for

Freeport-McMoRan Tyrone Inc.
Tyrone, New Mexico

Prepared by

DBS&A
Daniel B. Stephens & Associates, Inc.
a Geo-Logic Company

6020 Academy NE, Suite 100
Albuquerque, New Mexico 87109
www.dbstephens.com
DB19.1392

October 22, 2021

Table of Contents

List of Figures

1. Introduction

On behalf of Freeport-McMoRan Tyrone Inc. (Tyrone), Daniel B. Stephens & Associates, Inc. (DBS&A) conducted numerical groundwater flow modeling to estimate potential drawdown due to dewatering at the proposed open pit at the Emma Expansion Project (Emma), located in Grant County, New Mexico south of the Tyrone Mine. Groundwater is present within the igneous rocks at Emma, with the primary water-bearing rock being Precambrian granite. Depth to water is 200 to 400 feet below the existing land surface, and the current groundwater level is approximately 200 feet above the expected bottom of the Emma open pit. DBS&A conducted pumping tests at monitor wells near Emma (DBS&A, 2021). Results of these tests show that the groundwater system is low yielding, with low transmissivity and hydraulic conductivity values; these results were considered when specifying hydraulic conductivity values in the model. The numerical groundwater flow model simulates a 103-year period consisting of 3 years of active mining followed by 100 years of closure. DBS&A used the numerical groundwater flow model to estimate potential drawdown after 40 years of dewatering in support of Tyrone water rights permitting through the New Mexico Office of the State Engineer (OSE).

DBS&A began the modeling exercise by modifying the previously developed MODFLOW model that was used to simulate conditions at the Little Rock Mine (DBS&A, 2014), as this was the latest version of the model for the Tyrone Mine and surrounding area. The focus of the previous model was to simulate conditions at the Little Rock Mine; it was therefore calibrated to observed conditions at the Little Rock and Tyrone Mines, and additional calibration was necessary to better simulate observed conditions at Emma. Observed groundwater conditions at Emma are based on data collected at two new groundwater monitoring locations installed in 2021 (i.e., 396-2021-01 and 396-2021-02) and existing monitor well MB-44. In addition to the additional model calibration, the model domain was extended to the south to include an area of domestic wells on file with OSE. Once the model domain was extended and additional calibration was performed, DBS&A conducted predictive groundwater flow modeling. The purpose of the predictive simulation was to estimate potential drawdown after 40 years of dewatering.

The following sections describe (1) the model expansion and additional calibration and (2) the predictive simulation and results. DBS&A (2012 and 2014) provide detailed descriptions of the MODFLOW model and its calibration and evolution. The following sections are focused to the modeling that was conducted for Emma.

2. Groundwater Flow Model Expansion and Additional Calibration

DBS&A extended the domain in the southern portion of the MODFLOW model to include more area to the southwest and east. Figure 1 shows the extended model domain relative to the previous model domain of DBS&A (2014). The added area includes the locations of several domestic wells. The extension also moves the southern model boundary farther from where Emma dewatering is simulated, helping to improve model accuracy. The current model consists of 136 rows, 123 columns, and 9 vertical layers—the same number of rows, columns, and layers as the previous model (Figure 1).

Other model modifications included the following:

- DBS&A moved the horizontal flow barrier (HFB) that is used to simulate the Sprouse-Copeland Fault as an impediment to groundwater flow in the MODFLOW model (Figure 2). The HFB was moved slightly to the north to reflect the results of recent geologic mapping. Tyrone conducted a site reconnaissance near Emma in August 2021 to confirm the presence of the Sprouse-Copeland Fault and to map its trace.

  DBS&A (2014) assigned a hydraulic characteristic value of 2.5×10^{-6} day^{-1} to the HFB used to simulate the Sprouse-Copeland Fault in the MODFLOW model. The hydraulic characteristic value is equal to the hydraulic conductivity of the fault divided by its thickness, with lower values being more restrictive to groundwater flow through the HFB. Southeast of the Reclaimed 1C Waste Stockpile and north of Emma, the fault appears to be an effective impediment to groundwater flow based on observed differences in water levels and water quality at monitor wells located on opposite sides of the fault (DBS&A, 2017). However, near Emma, the effectiveness of the fault as an impediment to groundwater flow is less certain, and the hydraulic characteristic value along the southwestern portion of the fault was used as a fitting parameter during model calibration. To improve model calibration, the hydraulic characteristic value along the southwestern portion of the HFB was assigned a value of 2.5×10^{-3} day^{-1}, making it less of an impediment to groundwater flow. North of Emma, the hydraulic characteristic value of the HFB is still 2.5×10^{-6} day^{-1}.

- During model calibration, the hydraulic conductivity value of the MODFLOW zone that includes Emma was reduced from 0.09 feet per day (ft/d) to 0.01 ft/d (Figure 2). This change helped to better match simulated groundwater level elevations to those observed at monitoring locations near Emma (i.e., 396-2021-01, 396-2021-02, and MB-44) (Figures 3

and 4). The reduction in simulated hydraulic conductivity is consistent with the results of recent pumping tests conducted at the three monitoring locations near Emma (DBS&A, 2021). The pumping test results show low hydraulic conductivity values that range from 6.2×10^{-5} to 7.1×10^{-2} ft/d, with a geometric mean of 3.5×10^{-3} ft/d.

- DBS&A modified the extent of the Gila Conglomerate in the area east of Emma. This area is shown as blue in Figure 2, with a hydraulic conductivity value of 1.0 ft/d. In the previous model, the western extent of the Gila Conglomerate in model layers 1 through 4 was the same in all four layers, as depicted in Figure 2. In the current model, however, the western extent gradually increases from layer 4 to layer 1, forming a wedge of Gila Conglomerate that overlies igneous rock. The wedge is more representative of the area geology.

The calibration period for the current MODFLOW model is from 1950 through 2010—the same calibration period as the previous model (DBS&A, 2014). Model calibration was conducted using a standard iterative approach, where model input parameters (e.g., hydraulic conductivity values) were adjusted within reasonable ranges until the simulation results adequately matched observed groundwater elevations at wells. Calibration of the current model focused on improving the simulation of groundwater conditions near Emma. Nonetheless, simulation results in other areas of the model (e.g., near the Little Rock Mine) were also evaluated to ensure that the changes made to the southern portion of the model domain did not negatively impact the performance of the MODFLOW model in the other areas. Extension of the model domain and other changes made to the model not only improved the accuracy of the model near Emma, they improved the overall calibration statistic of the model. The root mean square error (RMSE) decreased from 5.5 percent (DBS&A, 2014) to 4.7 percent. RMSE is a commonly used metric for evaluating the quality of model predictions. A lower percentage indicates a better match between simulated and observed groundwater level elevations.

Figure 3 shows simulated groundwater level elevations at Emma along with a potentiometric surface constructed from water level data collected at monitoring locations 396-2021-01, 396-2021-02, and MB-44. The MODFLOW model matches observed groundwater level elevations near Emma, particularly at the locations of monitor wells 396-2021-02 and MB-44. The model does underpredict the groundwater level elevation at 396-2021-01, which results in a more easterly simulated groundwater flow direction (Figure 3). Figure 4 shows simulated and observed hydrographs for MB-44. The simulated groundwater level elevation is approximately 10 feet higher than the observed. Hydrographs were not prepared for 396-2021-01 and 396-2021-02, as these monitoring locations were only recently installed (i.e., in 2021). Because the current MODFLOW model provides a reasonable approximation of the hydrogeologic

conditions at Emma, it is an appropriate tool to conduct predictive groundwater flow simulations, including those for evaluation of expected drawdown from pit dewatering.

3. Groundwater Flow Model Predictive Simulation and Potential Drawdown Estimate

The MODFLOW model was used to estimate potential drawdown near Emma after 40 years of dewatering.

To determine drawdown from dewatering at the Emma open pit, two predictive simulations were conducted: (1) without dewatering at Emma, and (2) with dewatering at Emma. The predictive simulation with Emma dewatering was then subtracted from the one without Emma dewatering to estimate drawdown due to Emma. Final heads of the calibrated model, which simulates conditions between 1950 and 2010 (Section 2), were used as initial heads for the predictive simulations. The predictive simulations were run for a period of 103 years and drawdown calculated after 40-years of simulated pit dewatering. The 40-year period includes 3 years of active mining followed by 37 years of closure.

The first predictive simulation (without Emma dewatering) was a continuation of the calibrated model, without any further model development, run for a period of 103 years. The second predictive simulation (with Emma dewatering) included the advancement of the Emma open pit. The open pit was represented in the MODFLOW model by the proposed end-of-year (EOY) 2026 pit configuration. The proposed bottom elevation of the EOY 2026 pit configuration is 5,700 feet above mean sea level (feet msl), about 200 feet below the observed pre-mining groundwater level. The open pit was assumed to be in place at the start of the predictive simulation and dewatering was simulated for 103 years. DBS&A simulated Emma dewatering in the MODFLOW model using drain cells placed at the bottom of the open pit (i.e., at an elevation of 5,700 feet msl).

Predicted drawdown after 40 years of dewatering is shown in Figure 5. Estimated drawdown at domestic well locations in the Apache Mound Subdivision is approximately 2 feet. These are the closest domestic wells to Emma. Most of the domestic wells in the Apache Mound Subdivision appear to be completed in Precambrian granite based on surface geologic mapping of Hedlund (1978c) and rock descriptions provided in OSE well records. Drawdown at the Emma open pit is more than 100 feet. Figure 6 is a time-series plot showing predicted inflow to the open pit. The

inflow rate is approximately 16 gallons per minute (gpm) initially and steadily decreases to approximately 10 gpm after 40 years.

Figure 7 shows water column thicknesses at domestic wells near Emma. The domestic wells are located south of Emma, with the nearest domestic well (M-09178) being 4,836 feet from the proposed bottom of the Emma open pit, where dewatering would occur. DBS&A calculated the water column thicknesses from depth to water and total well depth measurements available through OSE. Water column thickness is total well depth minus depth to water. Drillers typically record depth to water and total well depth when they complete a well and document the information on well records submitted to OSE. Most of the domestic wells near Emma, where approximately 2 feet of drawdown is predicted, have water column thicknesses greater than 100 feet.

4. Conclusion

DBS&A conducted numerical groundwater flow modeling to estimate potential drawdown from dewatering at the proposed Emma open pit. We began with the previously developed MODFLOW model that was most recently used to simulate conditions at the Little Rock Mine (DBS&A, 2014), as this was the latest version of the model for the Tyrone Mine and surrounding area. DBS&A extended the domain in the southern portion of the MODFLOW model and performed additional model calibration to better simulate hydrogeologic conditions near Emma. These modifications not only improved the accuracy of the model near Emma, they improved the overall calibration statistic of the model, decreasing the RMSE from 5.5 to 4.7 percent. Once the model domain was extended and additional calibration was performed, DBS&A conducted predictive groundwater flow modeling to estimate potential drawdown after 40 years of dewatering at Emma. Predicted drawdown after 40 years of dewatering is approximately 2 feet in the area south of Emma, near the Apache Mound Subdivision.

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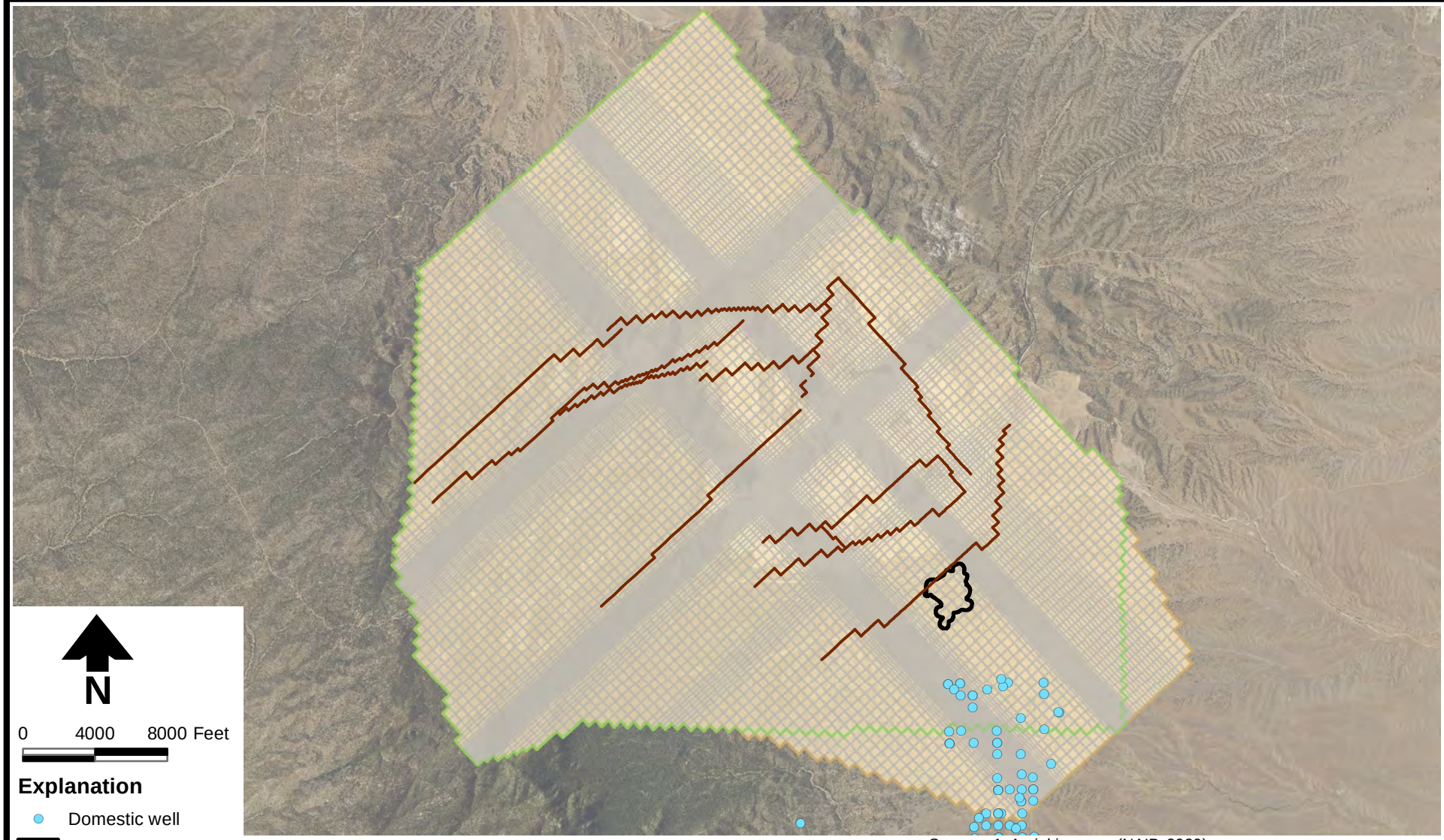
DBS&A. 2021. *Hydrogeologic report for proposed Emma Expansion Project, Tyrone Mine*. Prepared for Freeport-McMoRan Tyrone Inc., Tyrone, New Mexico. October 22, 2021.

Figures

S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA GROUNDWATER MODELING REPORT\FIG01_MODEL DOMAIN.MXD



Source: 1. Aerial imagery (NAIP, 2020)
2. Emma pit topographic extent represents EOY 2026 pit configuration.
3. Domestic Wells (New Mexico Office of State Engineer, 2021)

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Model Domain and Expansion

Figure 1

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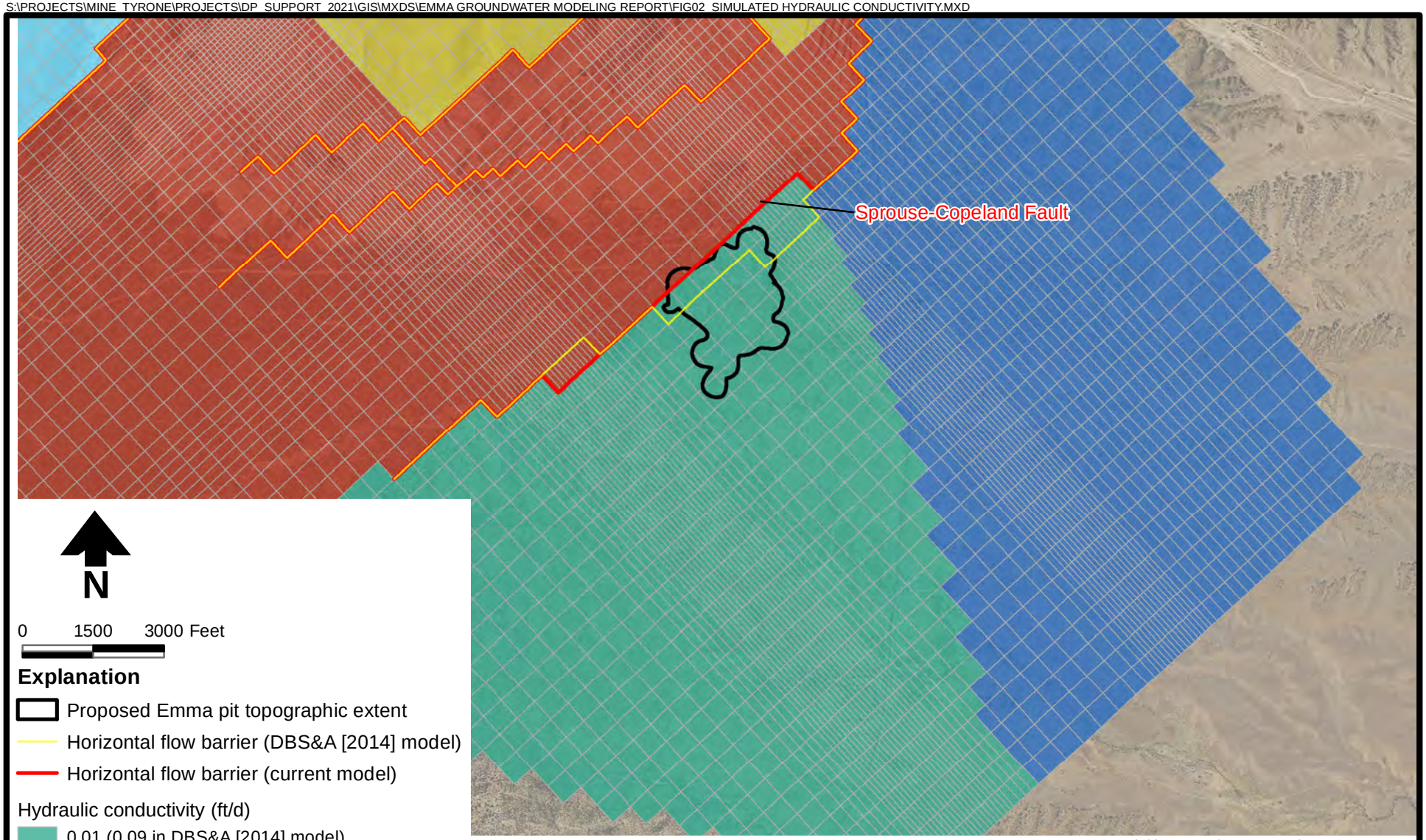
S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA GROUNDWATER MODELING REPORT\FIG02_SIMULATED HYDRAULIC CONDUCTIVITY.MXD



Source: 1. Aerial imagery (NAIP, 2020)
2. Emma pit topographic extent represents EOY 2026 pit configuration.

Figure 2

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Simulated Hydraulic Conductivity in Model Layer 1

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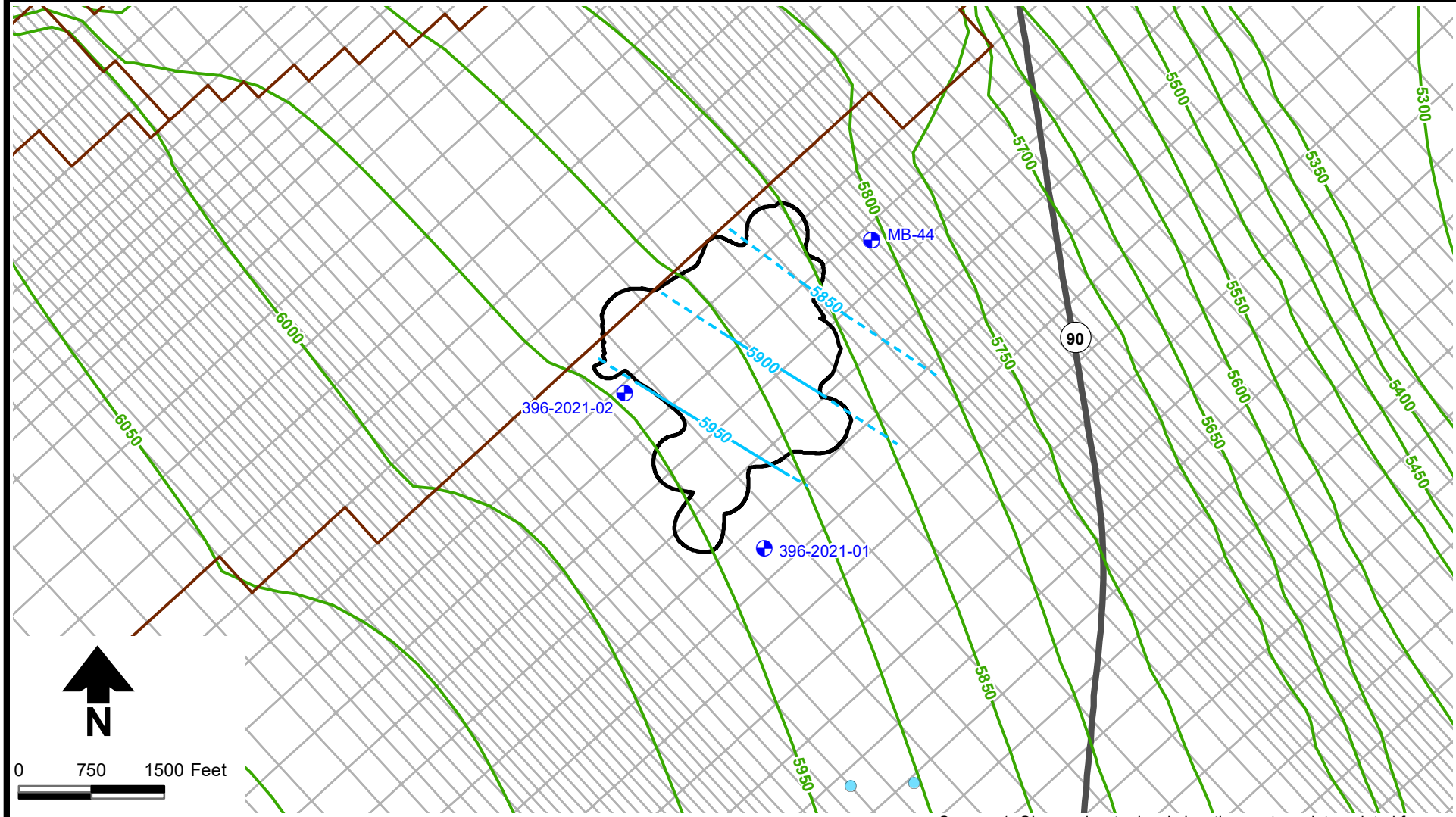

Explanation

- Proposed Emma pit topographic extent
- MODFLOW model grid
- Monitoring location
- Domestic well
- Simulated horizontal flow barrier
- Predicted pre-mining water level elevation contour (ft msl)
- Observed water level elevation contour (ft msl), dashed where inferred (contour interval 50 ft)

Source:
1. Observed water level elevation contours interpolated from May 2021 water level measurements.
2. Emma pit topographic extent represents EOY 2026 pit configuration.
3. Domestic Wells (New Mexico Office of State Engineer, 2021)

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Predicted and Observed Pre-Mining Groundwater Level Elevations

Figure 3

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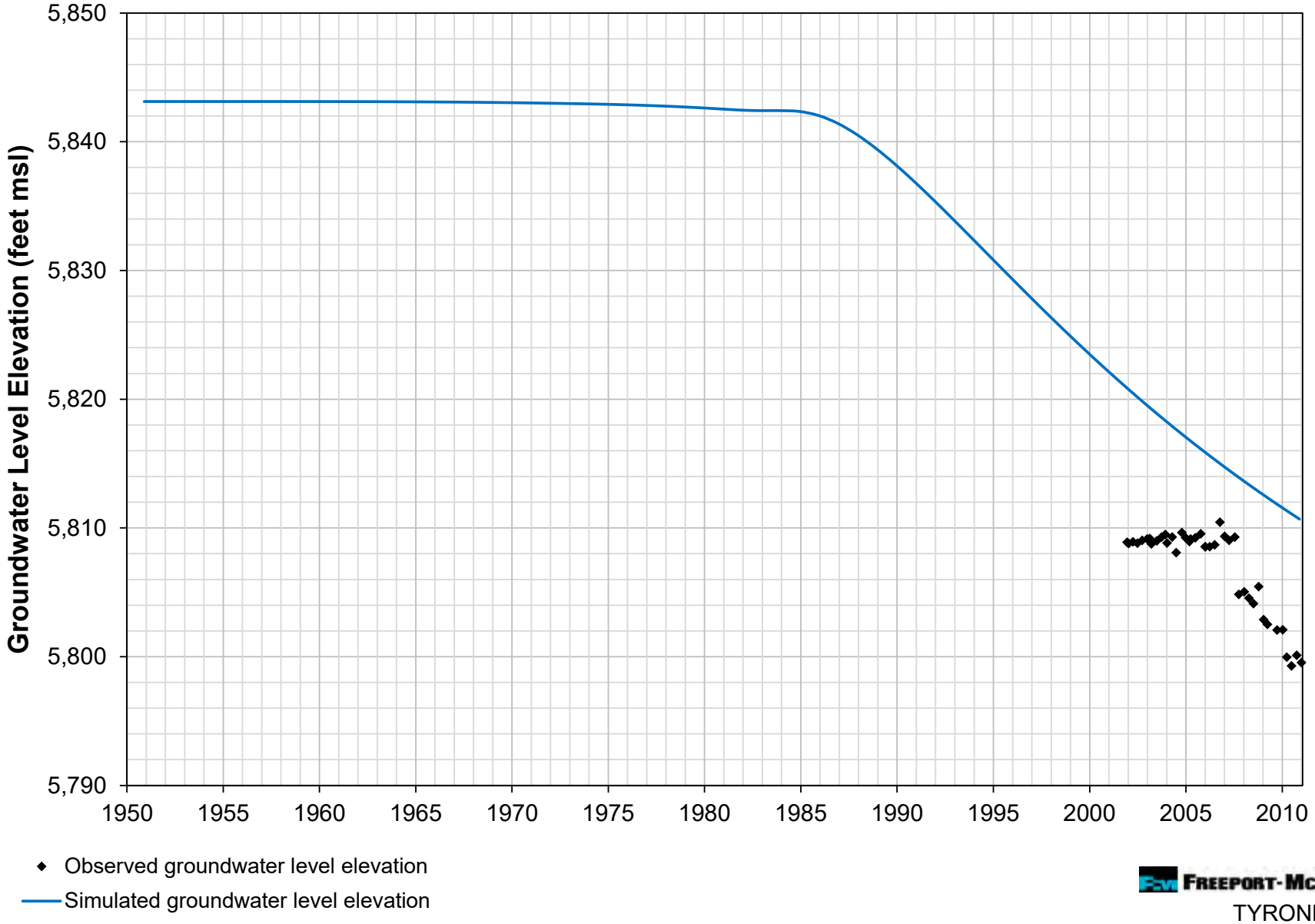

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TYRONE MINE

Simulated and Observed Groundwater Level Elevation, MB-44

Figure 4

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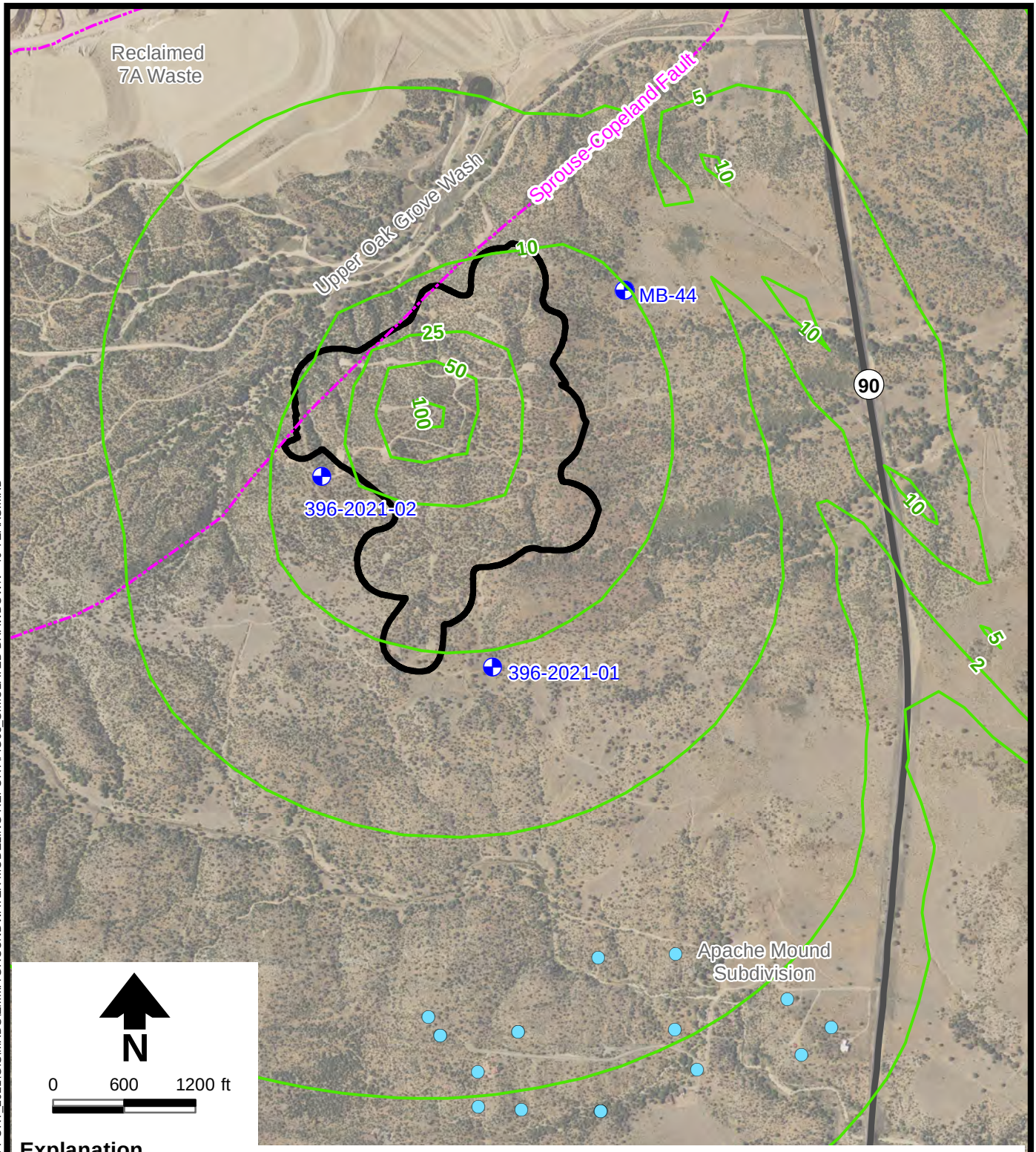

Explanation

- Proposed Emma pit topographic extent
- Fault
- Predicted drawdown (ft)
- Monitoring location
- Domestic well

Source:
1. Aerial imagery (NAIP, 2020)
2. Emma pit topographic extent represents EOY 2026 pit configuration.
3. Domestic Wells (New Mexico Office of State Engineer, 2021)

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TYRONE MINE

Predicted Drawdown at 40 Years from Open Pit Dewatering at Emma

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Figure 5

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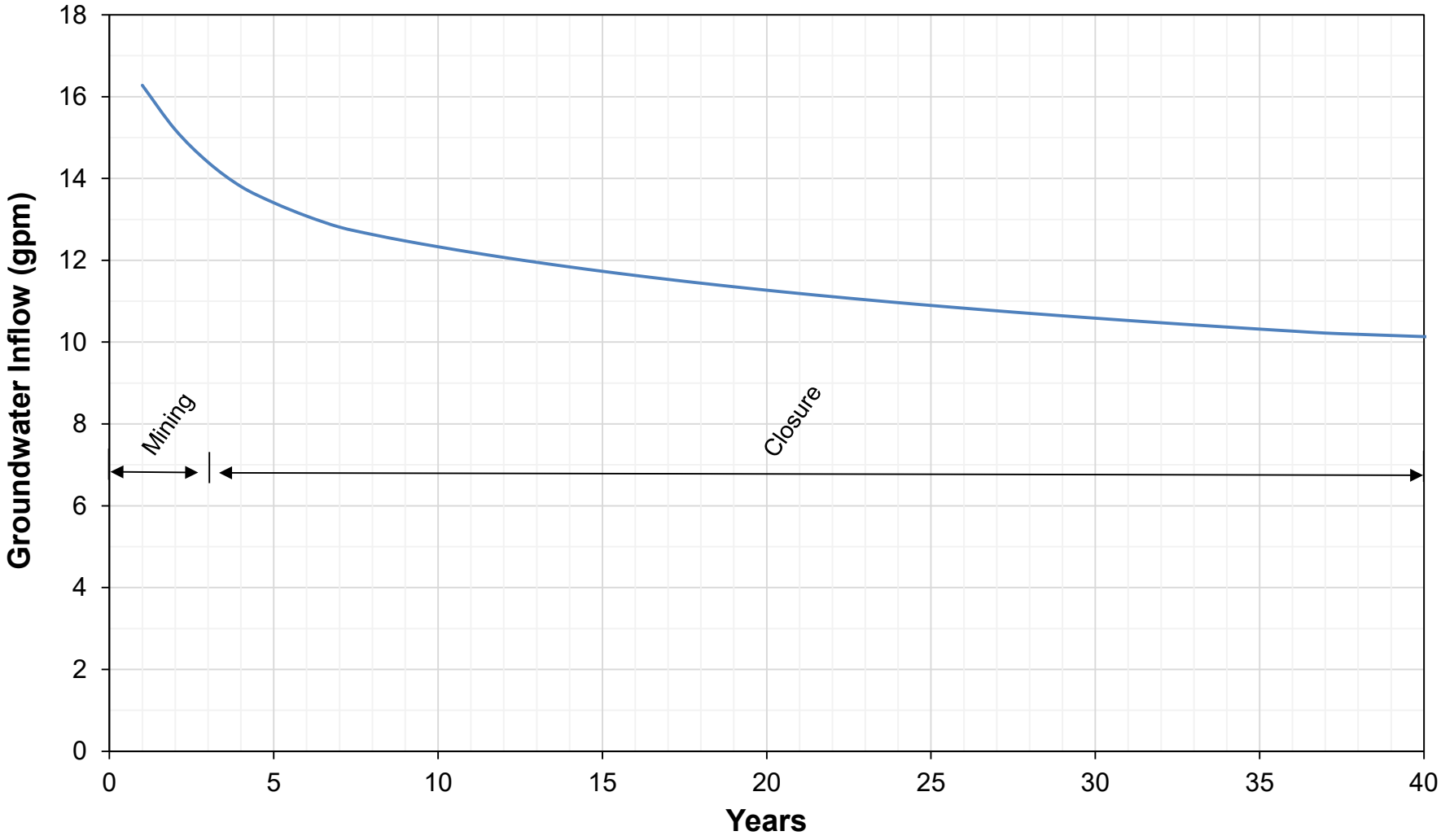

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TYRONE MINE

Predicted Groundwater Inflow Rate at Bottom of the Emma Open Pit

Figure 6

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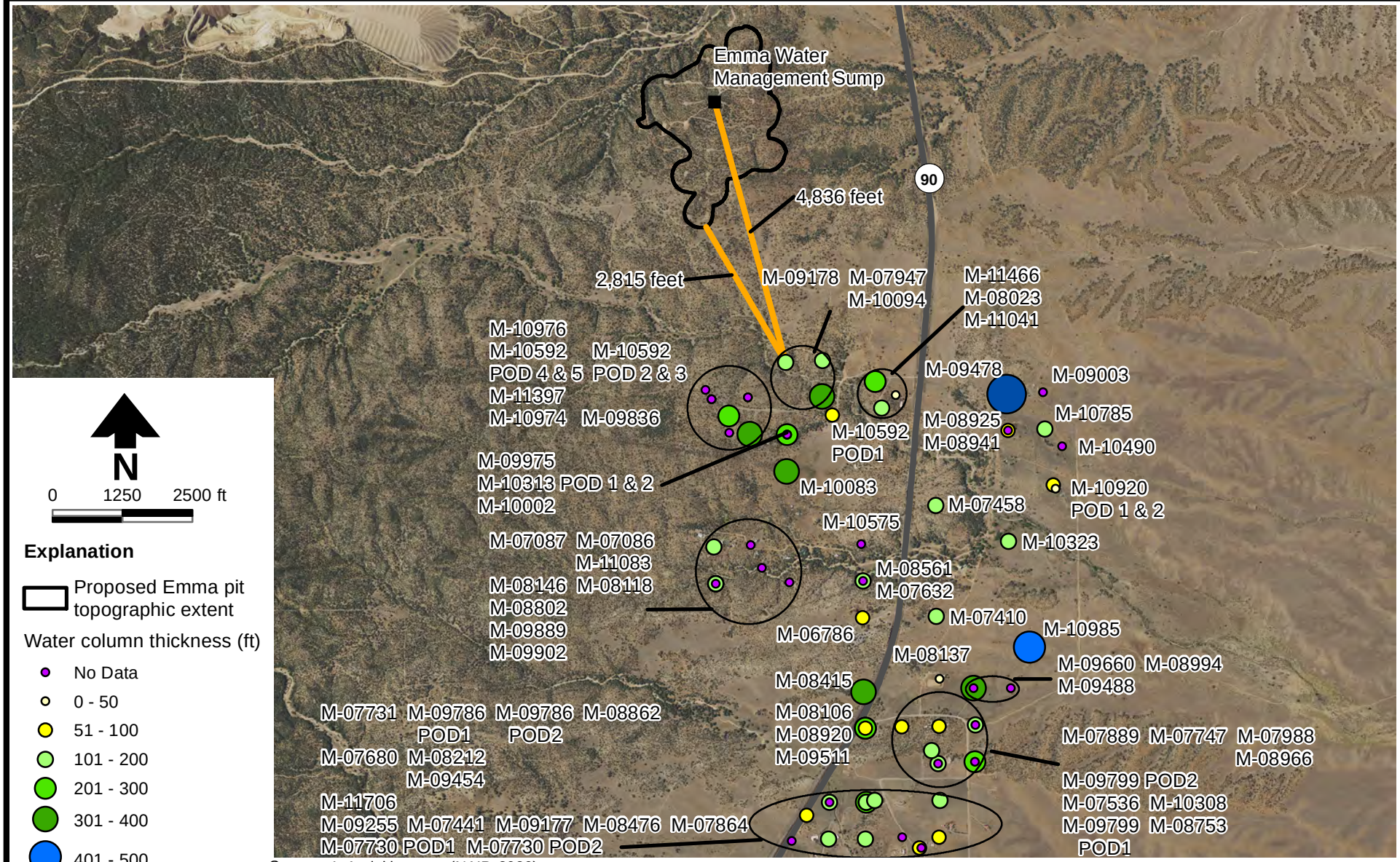
S:\PROJECTS\MINE_TYRONE\PROJECTS\DP_SUPPORT_2021\GIS\MXDS\EMMA GROUNDWATER MODELING REPORT\FIG07_WATER COLUMN THICKNESS.MXD



Explanation

Proposed Emma pit topographic extent

Water column thickness (ft)

- No Data
- 0 - 50
- 51 - 100
- 101 - 200
- 201 - 300
- 301 - 400
- 401 - 500
- 501 - 600

Source:
1. Aerial imagery (NAIP, 2020)
2. Domesitc wells (New Mexico Office of State Engineer, 2021)
3. Emma pit topographic extent represents EOY 2026 pit configuration.

Notes:
1. Well name labels for circled clusters are positioned as the wells are within the clusters.
2. Well locations were obtained via converting PLSS locations (up to Q64) to NAD 1983 coordinates. Therefore, some wells will appear in the same location as other wells.

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Domestic Well Water Column Thicknesses

Figure 7

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