November 23, 2022

SANTA FE COUNTY
IFB 2023-0079-GM/APS
GREATER GLORIETA REGIONAL WELL

ADDENDUM NO. 1

Dear Proponents,

This addendum is issued to reflect the following immediately. It shall be the responsibility of interested Bidders to adhere to any changes or revisions to the IFB as identified in this Addendum No. 1. This documentation shall become permanent and made part of the departmental files.

Attachment A: Pre-Bid Sign-In Sheet

Attachment B: Exhibit 1-X – Contractor/Subcontractor Clearance Form

Attachment C: Addendum No. 2 IFB 2022-0234-GM/APS

Please visit the County's website at https://www.santafecountynm.gov/asd/current_bid_solicitations to view the previous bid which includes additional Addendums.

Question No. 1: Does the project currently have an estimated mobilization date?
Answer No. 1: The County is hoping to have the contract and NTP issued in February.

Question No. 2: Are sounds walls required?
Answer No. 2: Sound walls are not required

Question No. 3: Is there a water meter rental cost?
Answer No. 3: The Association will provide the project water at no cost.

Question No. 4: What is the cost of water?

Answer No. 4: Project water will be provided by the Association at no cost.

Question No. 5: Please verify if equipment needs to be pulled in wells that need to be abandoned? If so, what does the Contractor do with the equipment?

Answer No. 5: In section 3.16B states "pumping equipment shall be removed and disposed of by the contractor." Both wells, UP-1288 and UP-1643, appear to have pumps, cable, and column pipe that need to be removed and disposed of.

Question No. 6: Are there zone samples for the well?

Answer No. 6: As stated in Section 1.1A, 1.1D1, and Bid Sheet Lines 6, 7 and 8, zone testing is part of Phase 1. Within the 7 7/8 inch borehole, a test well shall be installed using perforated pipe on drill stem with a pea gravel filter pack and bentonite seal. The test well will be developed using air lifting technique. A water sample will be collected while air lifting or by bailer for chemical analyses. Chemical analyses will be requested for "rush" turnaround time. Water quality results will be used to determine how the project proceeds. If water quality is acceptable, Phase 2 will occurs including final well design, ordering of supply well materials, and reaming of borehole to final diameter. If water quality is not acceptable the 7 7/8-inch borehole will be abandoned.

Question No. 7: Are cuttings and fluids from drilling to be disposed onsite? If not, where do we dispose of cuttings and fluid?

Answer No. 7: As stated in Section 1.3E and 3.3A and B, there are three types of materials to be properly disposed of during the project: drilling mud, cuttings, and water produced during development and aquifer testing. Drilling mud shall be removed from the site and properly disposed of. Cuttings may be thin spread at the site. As stated in Section 3.3A, water produced during development and testing shall be discharged to the ground such damage will be prevented including erosion.

Question No. 8: Please verify bids are hand or mail delivery? No email?

Answer No. 8: Bids may be hand delivered or mailed. Electronic bids are NOT accepted.

Question No. 9: Is there stand by times during zoning sampling?

Answer No. 9: Stand by time is not anticipated during zone sampling. Time will be spent constructing, developing up to 16 hours, and sampling the well.

Question No. 10: Please verify a driller can have a subcontractor for the piping portion of the bid?

Answer No. 10: Yes, the County has identified the drilling as the main base bid. Contract award will be determined by the lowest responsive base bid. Also, a bid will need to be submitted for the Additive Alternate to be considered responsive however, the bid will be awarded on the basis of the base bid and the Additive Alternative may be included in the overall project if sufficient funding is available.

Question No. 11: Are trees able to be removed for drilling equipment access?

Answer No. 11: Yes, but only remove the minimum amount of trees that is necessary to get the equipment in. Trees can be removed from the site without a permit from the County.

Question No. 12: Please verify with the help of the County the road can be blocked off for drilling operations?

Answer No. 12: If a County road needs to be blocked off, then the contractor will need to submit a TCP for review and a permit issued through the County's Public Works Department. (Please see Attachment C question no. 4). The Contractor shall be responsible for providing Traffic Control in accordance to Santa Fe County for all construction activities.

Question No. 13: Tentative schedule of NOA and NTP 2 months?

Answer No. 13: The County is hoping to have the contract and NTP issued in February.

Question No. 14: Can you please provide contract information for neighbor next to well location for storage of drilling equipment and materials?

Answer No. 14: You can contact the Greater Glorieta Association's President, Trent Botkin at (575) 644-2210.

Question No. 15: Bids are to be delivered to old County building on 102 Grant?

Answer No. 15: Yes, bids are to be delivered to 102 Grant Avenue.

Question No. 16: Where does water from development and testing go? It pumped down the road? Does it have to be pumped into tank and hauled off? Where do we haul it off to?

Answer No. 16: As stated in Section 3.3A, water produced during development and testing shall be discharged to the ground. The Contractor will make all erosion control measures to prevent any ground damage.

Question No. 17: Please verify drilling is the main bid. A driller can only bid on the drilling and testing portion and not the water line?

Answer No. 17: Please see response to from Question No. 10.

Please add this Addendum No 1 to the original proposal documents and refer to proposal documents, hereto as such. This and all subsequent addenda will become part of any resulting contract documents and have effects as if original issued. All other unaffected sections will have their original interpretation and remain in full force and effect. Responders are reminded that any questions or need for clarification must be addressed to Amanda Patterson-Sanchez, Procurement Specialist Senior at apatterson-sanchez@santafecountynmm.gov.

Attachment A

SANTA FE COUNTY

PRE-BID CONFERENCE
IFB 2023-0079-GM/APS
GREATER GLORIETA REGIONAL WELL
NOVEMBER 16, 2022 at 10:30AM

NAME	COMPANY	TELEPHONE	E-MAIL ADDRESS
Amanda Patterson Sanchez	SFC Purchasing	(505) 545-9675	apattersonsanchez@santafecountynm.gov
Mike Romero	SFC Projects	(505) 470-3498	miromero@santafecountynm.gov
Clayton Thayer	KP Ventures	505 240 0833	clayton@kpvent.com
Jaime Cruz	File Construct	(505 414 4383	jaimec@fconst.com
Richard Martinez	Hydro Resources	303-775-9319	rmartinez@hydroresources.com
Chad Gaines	Stewart Brothers	505-290-0370	chad@stewartbrothers.com
Lee Aylmer	Yellow Jacket Drilling	760 927-0416	Laylmer71@icloud.com
Shannon Williams	DBS&A	505-922-9400	swilliams@geo-logic.com
Chris Wolf	DBS&A	505-270-1187	cwolf@dbstephens.com
Maxx PL Hendren	SF County	505-995-2737	mhendren@santafenm.gov
Chris Rodriguez	HDR Engineering Inc	505-830-5400	chris.rodriguez@hdrinc.com
Linda Hassenr	GHMDWCA	505-660-3403	lindahassenr@yahoo.com

Attachment B

EXHIBIT 1-X -
CONTRACTOR/SUBCONTRACTOR CLEARANCE FORM

Clearance must be granted by the Local Government Division (LGD) prior to contract award. Complete one form for each firm/individual's contractual service.

Check appropriate box:

Contracted Grant Administration	☐ **Contractor**	☐ **Subcontractor**
Architectural	☐ **Contractor**	☐ **Subcontractor**
Engineering	☐ **Contractor**	☐ **Subcontractor**
Construction	■ **Contractor**	☐ **Subcontractor**
Other _____	☐ **Contractor**	☐ **Subcontractor**

To receive clearance completed this form and mail to: LGD **Executive Secretary, Geovanna Losito and LGD/CDB Project Manager, Department of Finance and Administration / Local Government Division, Bataan Memorial Building, 407 Galisteo Street, Room 202, Santa Fe, New Mexico 87501; Office # (505) 827-8051.**

or completed this form and email to: **Geovanna.Losito@state.nm.us cc: LGD/CDB Project Manager**

CDBG Project 19-C-NR-I-01-G-17 **Grantee:** Santa Fe County

Contact Person: Maxx PL Hendren **Phone #:** (505) 995-2737

Job Description of Work (Exhibit "1-A" of Grant Agreement):

Santa Fe County will construct a regional well in Glorieta, NM as part of a system-wide capital improvement program to upgrade the Greater Glorieta Mutual Domestic Water Consumer Association's (MDWCA) infrastructure and water quality. The well will be located at the site of the MDWCA's existing well at 80 Avenida Ponderosa, Glorieta, NM 87535 or approximately 35.574079 latitude and -105.76012 longitude. This project will replace the existing well with a deep water supply well (at a depth of 1,200-1,500 ft. into the Madera formation) which will directly benefit the combined Glorieta Village and Estates communities as a long term water source to address the public health risk of elevated radium above drinking water standards, a regional water supply source for both communities in the near term, a potential water source of East Glorieta should that subsystem be physically connected in the future, and a source of system redundancy for emergency purposes. The project will include siting and drilling a hole approximately 14 in. in width and 1,200 ft. in depth into the Madera Formation and constructing a water supply well and appurtenances including a well head, pump, approximately 50 ft. of pipe and fittings to connect to the existing distribution system. The well and connections will be fenced and the area graded for positive drainage following construction of the well. A Preliminary Engineering Report, complete with a geologic formation study, has been completed.

Name of Firm/Individual: _____

Unique Entity ID # _____

Name of Principal/Owner/Partner: _____ **Contract Amount:** _____

Submitted By: _____ **Date:** _____

Send Clearance to:

Name: Maxx PL Hendren **Fax #:** _____ **Phone #:** (505) 995-2737

Address: 100 Catron Street, Santa Fe, NM 87501

To be completed by DFA/Local Government Division:

FEDERAL: Active SAM registration ☐ **Yes** ☐ **No**

STATE: Labor Enforcement Fund ☐ **Yes** ☐ **No** ☐ **N/A**

Registration #: _____ **Registration Date:** _____ **Expiration Date:** _____

Approved by: _____ **Date:** _____

DFA/Local Government Division

September 9, 2022

SANTA FE COUNTY
IFB 2022-0234-GM/APS
GREATER GLORIETA REGIONAL WELL

ADDENDUM NO. 2

Dear Proponents,

This addendum is issued to reflect the following immediately. It shall be the responsibility of interested Bidders to adhere to any changes or revisions to the IFB as identified in this Addendum No. 2. This documentation shall become permanent and made part of the departmental files.

Attachment B: Exploratory Permit
Attachment C: Plugging and Abandonment Plan of Operations for UP-1288
Attachment D: Plugging and Abandonment Plan of Operations for UP-1643
Attachment E: OSE Report on wells at conference center

Question No. 1: What is the engineer's estimate for this project?
Answer No. 1: There is no published cost estimate for the project.

Question No. 2: What is the total value of funds available for this project?
Answer No. 2: County CDBG Grant Agreement, GGMDW Capital Outlay and WTB Fund

Question No. 3: Will you break down the pilot hole and production hole of the well into more detail with regard to bidding line items?
Answer No. 3: See attached revised bid form Attachment A.

Question No. 4: How much area is available for staging?
Answer No. 4: The contractor is responsible for identifying, selecting, and obtaining a staging area. The County and Greater Glorieta Association (Association) will allow the Contractor to use County and Association property. The Contractor shall obtain approval from the County

and the Association for use of their property. Contractor shall notify the County and Association of proposed staging areas.

Question No. 5: What is the total area that the driller has access to for drilling the well? Can the driller remove several of the trees near the wells?
Answer No. 5: Sufficient area will be available in the vicinity of the proposed well for drilling access and operations. Removal of trees and County Road closure to provide additional area may be possible. Contractor to obtain approval from the County and the Association and total area required will be negotiated with the successful Contractor. Sufficient area in the vicinity of the well is available and the removal of trees and possible closure of the dirt road will require coordination with the water system and Santa Fe County.

Question No. 6: How will lost circulation or unstable formation issues be handled? Typically, this would proceed on a time and materials basis (or some variant thereof) in lieu of the footage rate until the hole is completed or circulation is regained.
Answer No. 6: The following shall be added to Specification Section 13310, Part 3.4:
PART 3.4. K: LOST CIRCULATION PLAN FOR GLORIETA REPLACEMENT SUPPLY WELL
During the drilling or reaming of the borehole, if there is no return of circulation drilling fluid for a period of at least two continuous hours due to no fault of the CONTRACTOR, then GLORIETA will compensate the CONTRACTOR for the period of drilling under lost circulation conditions, at the CONTRACTOR'S hourly rate in lieu of footage compensation. If and when lost circulation conditions are encountered due to hydro geologic conditions, the CONTRACTOR shall immediately notify the CONSULTANT so that GLORIETA is informed of the situation and potential costs to be incurred. GLORIETA will provide compensation at a rate of cost plus 10-percent markup to the CONTRACTOR for all drilling fluid materials and additives used during the period of lost circulation. If and when CONTRACTOR is able to control the lost circulation conditions and is able to advance the bore hole, then CONTRACTOR will resume footage rates per bid line item. After an initial lost circulation event has occurred, should circulation be lost again, the conditions of the paragraph will go into effect immediately, and continue until such time as drilling fluid circulation is regained with full or partial returns of drilling fluid at the land surface. GLORIETA shall not incur costs for drilling fluids or additives placed in the borehole during non-lost circulation conditions except as outlined above.

If lost circulation is the result of CONTRACTOR'S operations or activities (e.g., excessive fluid weight), all costs to regain circulation shall be borne by the CONTRACTOR. The conditions of this Section shall apply from the beginning of the time period of lost circulation, with no returns at the land surface, and shall continue only until such time as drilling fluid circulation is regained, with full or partial returns of drilling fluid at the land surface.

Question No. 7: Do you have the logs from the two wells that are to be abandoned? Will you be adding a line item for abandonment? Are you wanting us to perform a 'below grade' abandonment? Is one of these wells in a vault?
Answer No. 7: Well logs are not available from the New Mexico Office of the State Engineer database. The Plugging and Abandonment Plan of Operations (Plans) for the two wells to be abandoned are included with this addendum. The CONTRACTOR shall follow the Plans in the field and complete the associated reporting requirements. A "below grade" abandonment

is not required for UP-1643, but a "below grade" abandonment is required for UP-1288. Neither well is in a vault.

Question No. 8: Section 13310 mention that the driller must have both a well drillers license and must also have the appropriate General Contractor license required by the State. Please confirm that both apply.
Answer No. 8: The prime contractor and all subcontractors shall have the required licenses to complete the scope of work. The drilling contractor may not be required to have a General Contractor license if all of their scope of work is covered by their current New Mexico drillers license.

Question No. 9: Section 13310, Part 1.1 D 1 A states a 20" conductor will be installed. The drawings show an 18" conductor will be installed. I would guess that the 20" is correct but please confirm.
Answer No. 9: A 20" casing is correct as stated in the specifications. Well casing and screen shall be 10.75" high strength low alloy (HSLA) steel.

Question No. 10: Can you please provide any nearby well logs particularly to the depths to which this will is anticipated.
Answer No. 10: A New Mexico Office of the State Engineer Report is attached to this addendum that provides information for the wells located at the Glorieta Conference Center

Question No. 11: How much time is anticipated between Phase 1 of the well drilling and Phase 2 of the well drilling. Will this require demobilization and re-mobilization of the rig or are you expecting hours?
Answer No. 11: The time between Phase 1 and Phase 2 is dependent on water quality results. If the water quality results from the zone sampling are not acceptable with concentrations exceeding NMAC 19.27.2.3103 Standards for Ground Water of 10,000 mg/L TDS or less, Phase 2 will not be completed. Refer to Section 3.9 A.

If the water quality results are acceptable, then Phase 2 shall proceed as follows: the final well design will be provided to the contractor who shall order the well construction materials. The drilling contractor is expected to begin reaming of the pilot hole so well construction may begin when materials are delivered. It is understood that delivery times may impact the schedule. Phase 2 has a line item for mobilization/demobilization.

Question No. 12: Shall both mud and cuttings be disposed of offsite by the driller? Does the Owner have a location that is acceptable for either of these items?
Answer No. 12: An alternate line item is in the bid table for disposal of drilling mud and cuttings. The actual disposal will be negotiated with the contractor during the contracting process.

In accordance with regulatory requirements, drill cuttings may be thin-spread around the drill site as directed by the Engineer. Drilling mud shall be hauled-off and removed from the site. Initial development water that resembles drilling fluid shall also be hauled-off and removed from site as directed by the engineer. Later stages of development water that is clearer and water from aquifer testing may be spread on the ground using a line that is 150 feet from the well in a manner as not to cause excessive erosion.

Question No. 13: The specifications mentioned that the location of the discharge well development is shown on the drawings. I did not see the location shown on the drawings as indicated. Can you please describe the location of the well discharge and if it is a waters of the US? Are any special permits required for this discharge?
Answer No. 13: A notice of intent (NOI) and storm water pollution prevention plan SWPPP are required. Water is expected to be discharged to the ground using 150 feet of hose or pipe in such a manner as not to cause excessive erosion.

Question No. 14: It seemed to me that there was a reference during the pre-bid meeting of depth specific zonal samples being conducted, though I was unable to locate any verbiage related thereto in the specifications. I may have misunderstood. Can you confirm whether depth specific zonal sampling will be conducted on the pilot hole? There is an isolated reference in Section 13310 1.1 D.1.b to collecting water samples in zones, and another reference in Section 13310 1.1 E; but otherwise there is not a description of what procedure the driller should use to affect zonal sampling, how much time to develop each zone, what size grave to use, etc.
Answer No. 14: Modify Specification Section 13310 by adding Part. 3.9.A.3 to include the following:

Phase 1 is drilling a pilot hole and collecting a zonal sample to determine water quality and is intended to guide the final well design. A zonal sample will be collected from a temporary well that is constructed on drill pipe with a 20-foot length of well screen. The zone will have pea gravel and a bentonite seal. The exact depth will be determined in the field but is likely to between 1000 to 1200 feet below ground surface. The zone will be developed by air-lifting for 4 hours and a sample shall be collected for laboratory analyses.

Question No. 15: With regard to development procedures referenced in Section 3.6 Well Development; will necessary connection time to affect the swabbing or airlifting at greater or shallower depths be considered "actual time spent developing" the well. Please advise.
Answer No. 15: The time includes connection times while actively engaged in air-lift development.

Question No. 16: Section 3.6 Well Development references "circulation of fluids" before and after the well is completed. Please explain this section as it is generally unclear what it is referring to.
Answer No. 16: Upon well completion, the circulation of fluids includes thinning the drilling mud before construction and flushing the well with clear water during the initial stages of development.

Question No. 17: Does the County have an or will the County consider a price escalation clause in the event the prices of materials change between the time of bid and the time of order. This is needed due to the highly volatile steel and sand markets currently.
Answer No. 17: The County may consider any cost escalation clause, but the awarded Contractor would be required to provide documented proof of any cost escalations.

Question No. 18: Are there any prohibitions or restrictions on the prime bidder or general contractor performing more or less work than their subcontractors?

Answer No. 18: The Bidders must list all of their subcontractors in their bid documents that will be performing work on the project. If the General Contractor is going to perform some of the work that is typically subcontracted, then they need to specify that work in their bid.

Question No. 19: If the bidder proposes a timeline or completion schedule that is different than that anticipated in the specifications, will the bidder shall be considered responsive?
Answer No. 19: The County will base its award on the most responsive and lowest bid. As such, the most advantageous timeline and completion schedule for the project and the County, would be a factor with regards to "responsive". However, the County cannot make that determination at this time whether or not a bidder would be deemed non-responsive, if the bidder proposes a timeline different than what is anticipated in the specifications.

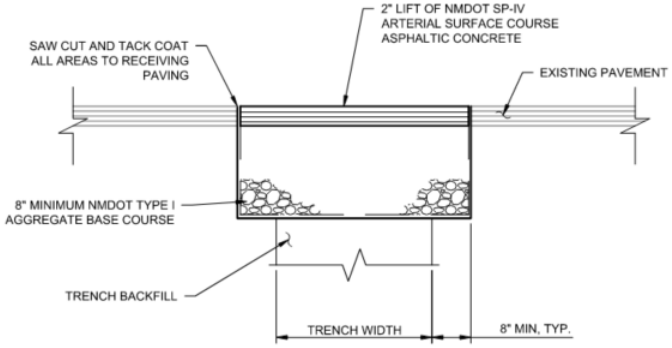
Construction Contract Documents and Technical Specifications:

1. **Bid Form- Replace Bid Sheet Table in its entirety with the Attached.**
2. **Replace Specification Section 01150 with the Attached.**

Contract Drawings:

1. **Sheet G-01:**
   - **Delete G-00 in the INDEX OF SHEETS**
2. **Sheets C-01 through C-03**
   - **Station 71+60.4 to Station 119+20: Change all 8" diameter piping waterline and fittings to 6" PVC to 6" diameter PVC.**
3. **Sheet G-01**
   - **Add the following Note 12 to GENERAL CONSTRUCTION NOTES:**
     GENERAL CONSTRUCTION NOTE 12. CONTRACTOR SHALL INSTALL ALL WATER UTILITY INFRASTRUCTURE IN ACCORDANCE WITH THE MOST CURRENT EDITION OF THE SANTA FE COUNTY WATER UTILITIES WATER AND SEWER CONSTRUCTION STANDARDS AND SPECIFICATIONS. IF THERE IS A CONFLICT BETWEEN ANY CONTRACT PLANS AND SPECIFICATIONS, THE STRICTER REQUIREMENT SHALL APPLY.
4. **Sheet G-02**
   - **Add the following Note 9 to the WATER SYSTEM NOTES:**
     WATER SYSTEM NOTE 9. CONTRACTOR SHALL COMPLETE A FLOW TEST ON ALL FIRE HYDRANTS AND COLOR CODE THE HYDRANTS IN ACCORDANCE WITH SANTA FE COUNTY UTILITY STANDARDS.
5. **Sheet G-06, SERVICE CONNECTION DETAIL B**
   - **Add a CONSTRUCTION NOTE M to read as follows:**
     CONTRACTOR SHALL INSTALL IN-LINE BRASS BALL VALVE WITH LOCKABLE TEE-HEAD STEM AND VALVE CAN DOWNSTREAM OF ALL WATER SERVICE METERS IN ACCORDANCE WITH SANTA FE COUNTY UTILITLY STANDARDS. VALVE SIZE TO MATCH SIZE OF SERVICE LINE. CONTRACTOR TO COORDINATE WITH GLORIETA ASSOCIATION OPERATOR REGARDING FINAL LOCATION OF IN-LINE VALVE AND RELOCATED METERS.

6. **Sheets C-01 through C-03**
    - **Station 71+60.4 to Station 119+20: Change all 8” diameter piping waterline and fittings to 6” PVC to 6” diameter PVC.**
7. **Sheets C-01 through C-05**
    - **Add the following General Notes:**
      GENERAL NOTE 6. CONTRACTOR SHALL INSTALL ALL WATER UTILITY INFRASTRUCTURE IN ACCORDANCE WITH THE MOST CURRENT EDITION OF THE SANTA FE COUNTY WATER UTILITIES WATER AND SEWER CONSTRUCTION STANDARDS AND SPECIFICATIONS. IF THERE IS A CONFLICT BETWEEN ANY CONTRACT PLANS AND SPECIFICATIONS, THE STRICTER REQUIREMENT SHALL APPLY.
    - **GENERAL NOTE 7. CONTRACTOR SHALL PATCH ALL DISTURBED PAVEMENT PER DETAIL PROVIDED BELOW.**
    - **GENERAL NOTE 8. CONTRACTOR TO INSTALL ALL AIR VAC VALVES PER DETAIL 2/SHEET G-05 OR PER SANTA FE COUNTY STANDARDS. THE STRICTER REQUIREMENT SHALL APPLY.**



ASPHALT PAVEMENT PATCH
NTS

8. **Sheet C-01**
    - **Add Keyed Note 4 at Station 80+64.04 to read as follows:**
      CONTRACTOR TO INSTALL WATERLINE UNDER EXISTING CULVERTS AND SUPPORT CULVERTS IN PLACE WITHOUT REMOVING OR DISTURBING THE CULVERTS.
    - **Add the following installation note at intersection of County Road 63/La Joya Road and SUNSHINES PLACE (Near Station 78+00);**
      INSTALL 6”x2” SADDLE TAP AND 1-2” VALVE TO WEST
    - **Add the following installation note at intersection of County Road 63/La Joya Road and Camino Dos Millas (between station 81+50 and 82+00;**
      INSTALL 6”x2” SADDLE TAP AND 1-2” VALVE TO EAST
9. **Sheet C-04**

- **Add following installation note at high point of line (approximate Station 121+25):**
  INSTALL AIR VAC VALVE PER DETAIL 2/SHEET G-05.

Please add this Addendum No. 2 to the original proposal documents and refer to proposal documents, hereto as such. This and all subsequent addenda will become part of any resulting contract documents and have effects as if original issued. All other unaffected sections will have their original interpretation and remain in full force and effect. Responders are reminded that any questions or need for clarification must be addressed to Amanda Patterson-Sanchez, Procurement Specialist Senior at apatterson-sanchez@santafecountynm.gov.

Attachment B

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
District 6 Office, Santa Fe, NM

MIKE A. HAMMAN, P.E.
STATE ENGINEER

PO Box 25102
Santa Fe, New Mexico 87501
(505) 827-6120
FAX: (505) 827-6682

May 5, 2022

Daniel B. Stephens and Associates
Attn: Chris Wolf
6020 Academy Rd. NE Suite 100
Albuquerque, NM 87109

RE: Exploratory Well Permit UP-04924

Greetings:

Enclosed is your original copy of the above numbered permit and Artesian Well Plan of Operations that have both been approved subject to the conditions set forth on the approval page. In accordance with the Conditions of Approval, no water shall be appropriated and beneficially used except for testing purposes. A Well Record and Log (OSE Form wr-20) shall be filed with this office within thirty (30) days after completion of drilling but no later than May 5, 2023.

Per the Conditions of Approval of the approved Permit UP-04924, all test data shall be supplied to the Office of the State Engineer (OSE) within 20 days of completion.

Well tag **#623DA** is assigned to UP4924. Please affix the well tag to the completed well casing with a metal band.

Should plugging become necessary, an OSE approved Well Plugging Plan of Operations is required. Appropriate forms can be downloaded from the OSE website www.ose.state.nm.us or can be mailed upon request.

Please address any questions via- telephone to Chris Thornburg at 505.827.6120 or via e-mail at Christopher.thornburg@state.nm.us

Sincerely,

Christopher M. Thornburg
Upper Pecos Basin Lead
(505) 827-6120

Enclosure
Cc: Santa Fe Office
Cc: Glorieta Estates Water Coop

File No. UP-04924

NEW MEXICO OFFICE OF THE STATE ENGINEER

Office of the State Engineer
Interstate Stream Commission

WR-07 APPLICATION FOR PERMIT TO DRILL
A WELL WITH NO WATER RIGHT

(check applicable box):

For fees, see State Engineer website: http://www.ose.state.nm.us/

Purpose:	☐ Pollution Control And/Or Recovery	☐ Ground Source Heat Pump
☒ Exploratory Well (Pump test)	☐ Construction Site/Public Works Dewatering	☐ Other(Describe):
☐ Monitoring Well	☐ Mine Dewatering	

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

☐ Temporary Request - Requested Start Date: Requested End Date:

Plugging Plan of Operations Submitted? ☐ Yes ☒ No

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1. APPLICANT(S)

Name: Glorieta Estates Water Coop	Name: Chris Wolf, DBS&A
Contact or Agent: check here if Agent ☐ Anna Hamilton	Contact or Agent: check here if Agent ☒
Mailing Address: P.O. Box 521	Mailing Address: 6020 Academy Rd. NE, Suite 100
City: Glorieta	City: Albuquerque
State: NM Zip Code: 87535	State: NM Zip Code: 87109
Phone: 505-690-6647 ☐ Home ☒ Cell Phone (Work):	Phone: 505-822-9400 ☐ Home ☐ Cell Phone (Work):
E-mail (optional):	E-mail (optional): cwolf@geo-logic.com

FOR OSE INTERNAL USE

Application for Permit, Form WR-07, Rev 11/17/16

File No.: UP-4924	Trn. No.:	Receipt No.:
Trans Description (optional):		
Sub-Basin: UP	PCW/LOG Due Date: MAY 5 2023	

2. WELL(S) Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).
District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

☐ NM State Plane (NAD83) (Feet)
☐ NM West Zone
☐ NM East Zone
☐ NM Central Zone

■ UTM (NAD83) (Meters)
☐ Zone 12N
■ Zone 13N

☐ Lat/Long (WGS84) (to the nearest 1/10th of second)

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: **-Public Land Survey System (PLSS) (*Quarters or Halves , Section, Township, Range)* OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name**
Glorieta Estates #2	-105.764159	35.574323	NW SE SE, Section 34, Township 16 North, Range 11 East.
	430760.17	3,937,004.309	

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)
Additional well descriptions are attached: ☐ **Yes** ■ **No** **If yes, how many**_____

Other description relating well to common landmarks, streets, or other:

New well to be drilled within 100 feet of existing well. The above coordinates are GPS coordinates collected in the field.

Well is on land owned by: Glorieta Estates Water Corporation Association

Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. **Attached?** ☐ **Yes** ■ **No**
If yes, how many_____

Approximate depth of well (feet): 1,200 feet below ground surface.	Outside diameter of well casing (inches): 10-inch nominal
Driller Name: Not selected yet.	Driller License Number: NA

3. ADDITIONAL STATEMENTS OR EXPLANATIONS

The Greater Glorieta MDWCA plans to drill an exploratory well to test a deep portion of aquifer, because combined radium isotopes exceed water quality standards in the existing well. A zone test will be completed in the open borehole in the transition zone between the Madera Limestone and Sangre de Cristo Formation to confirm the water quality prior to constructing the new well. Step rate and sustained yield pumping tests will be performed following well completion, and water levels will be monitored (using a transducer and manually) during pumping and recovery.

This exploratory well was permitted in 2017 as UP-01288 POD2, and the previous permit is included as Attachment 1. The well has not been drilled yet. The proposed well diameter has been increased to 10-inches, instead of the 8-inch diameter that was proposed in 2017.

Water will be pumped from the test well for development, and final well for development and testing. The total volume of water to be produced is estimated at 2,331,120 gallons, or 7.2 acre-feet.

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

Exploratory: ☒ Include a description of any proposed pump test, if applicable.	**Pollution Control and/or Recovery:** ☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for the pollution control or recovery operation. ☐ The estimated maximum period of time for completion of the operation. ☐ The annual diversion amount. ☐ The annual consumptive use amount. ☐ The maximum amount of water to be diverted and injected for the duration of the operation. ☐ The method and place of discharge.	**Construction De-Watering:** ☐ Include a description of the proposed dewatering operation, ☐ The estimated duration of the operation, ☐ The maximum amount of water to be diverted, ☐ A description of the need for the dewatering operation, and, ☐ A description of how the diverted water will be disposed of.	**Mine De-Watering:** ☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for mine dewatering. ☐ The estimated maximum period of time for completion of the operation. ☐ The source(s) of the water to be diverted. ☐ The geohydrologic characteristics of the aquifer(s). ☐ The maximum amount of water to be diverted per annum. ☐ The maximum amount of water to be diverted for the duration of the operation. ☐ The quality of the water.
Monitoring: ☐ Include the reason for the monitoring well, and, ☐ The duration of the planned monitoring.	☐ The method of measurement of water produced and discharged. ☐ The source of water to be injected. ☐ The method of measurement of water injected. ☐ The characteristics of the aquifer. ☐ The method of determining the resulting annual consumptive use of water and depletion from any related stream system. ☐ Proof of any permit required from the New Mexico Environment Department. ☐ An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	**Ground Source Heat Pump:** ☐ Include a description of the geothermal heat exchange project, ☐ The number of boreholes for the completed project and required depths. ☐ The time frame for constructing the geothermal heat exchange project, and, ☐ The duration of the project. ☐ Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.	☐ The method of measurement of water diverted. ☐ The recharge of water to the aquifer. ☐ Description of the estimated area of hydrologic effect of the project. ☐ The method and place of discharge. ☐ An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. ☐ A description of the methods employed to estimate effects on surface water rights and underground water rights. ☐ Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.

ACKNOWLEDGEMENT

I, We (name of applicant(s)), Anna Hamilton, President

Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Anna Hamilton — Applicant Signature

1/31/2022 — Applicant Signature

ACTION OF THE STATE ENGINEER

This application is:

☒ approved ☐ partially approved ☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 5TH day of MAY 2022, for the State Engineer,

MIKE A. HAMMAN, P.E., State Engineer

By: [signature] — Signature — TOPHER M. THORNBURG

Title: UPPER PECOS BASIN

Print

STATE ENGINEER SEAL OF THE STATE OF NEW MEXICO

FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.: UP-4924	Trn No.:

ARTESIAN WELL PLAN OF OPERATIONS

(for new well construction and repairs)

An Artesian Well Plan of Operations shall be filed with and approved by the Office of the State Engineer prior to commencing the drilling or repairing of an artesian well.

A detailed diagram of the proposed artesian well shall be attached to this plan.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Office of the State Engineer POD Number (Well Number) for well (if known): UP-01288

Name of well owner: Glorieta Estates Water Coop

Mailing address: P.O. Box 521

City: Glorieta State: NM Zip code: 87535

Phone number: 505-822-9400 E-mail: cwolf@geo-logic.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide drilling services: New Mexico licensed driller (work will be put out to bid)

New Mexico Well Driller License No.: _____ Expiration Date: _____

IV. WELL INFORMATION:

1) Will this well be used for any type of monitoring program? No If yes, please describe in section V; applicant should be familiar with the need for specialty materials or design required for the monitoring program.

2) Will the well tap or penetrate brackish, saline, or otherwise poor quality water? Yes If yes, please provide additional detail in section V.

3) Depth of top of the anticipated artesian aquifer: 800 feet below ground level (bgl).

4) Is a flowing artesian head anticipated? No

5) Will a pitless adapter be installed in the well? Yes

6) GPS Well Location: Latitude: 35 deg, 34 min, 27.56 sec
Longitude: -105 deg, 45 min, 50.97 sec, NAD 83

7) Will permanent surface casing be installed? Yes If yes, provide details below. (Note: surface casing is shallow casing generally set above the confining unit overlying the artesian aquifer and is considered optional).

a) Diameter of borehole to be drilled for the surface casing: 24 inches.

b) Proposed surface casing depth: 50 feet below ground level.

c) Surface casing material, grade: Low carbon steel

d) Inside diameter (ID): 19.25 inches.

e) Outside diameter (OD): 20 inches.

f) Wall thickness: 0.375 inches.

g) Casing joint connection type (**note whether welded, glued, coupled, etc. If coupled, include outside diameter OD and the length in inches, and also the number of threads per inch.**):
Welded

h) Interval of proposed surface casing annular sanitary seal: 0 to 50 feet below ground level.

i) Surface casing sanitary seal material:
Cement grout

8) Artesian casing (Note: artesian casing shall be set adequately into the confining unit overlying the artesian aquifer; in some designs this may also be the production casing; NMOSE inspection requirements apply to installing, grouting and testing the artesian casing):

a) Diameter of borehole to be drilled for the artesian casing: 17.5 inches.

b) Proposed artesian casing depth: 800 feet below ground level.

c) Artesian casing material, grade: High strength low alloy (HSLA) steel

d) Inside diameter (ID): 10.125 inches.

e) Outside diameter (OD): 10.75 inches.

f) Wall thickness: 5/16 (0.3125) inches.

g) Casing joint connection type (**note whether welded, glued, coupled, etc. If coupled, include outside diameter (OD) and the length in inches, and also the number of threads per inch.**)
Welded

h) Type and spacing of artesian casing centralizers:
Spring bow latch-on or welded at 80-foot intervals

i) Manufacturer and model of float shoe: Not applicable

j) Method of annular grout placement: check one Pressure Grout ☐ Tremmie Pipe ☑

k) Interval of proposed annular grout: 0 to 780 feet below ground level.

l) Proposed annular grout mix: ~7.2 gallons of water per 94 pound sack of Portland cement.

m) Cement type proposed: Cement-bentonite grout

n) Theoretical volume of annular grout required: 30.68 cubic yards

o) Will the grout be:
☐ batch-mixed and delivered to the site
☑ mixed on site

p) Grout additives requested, and percent by dry weight relative to cement: (See AWWA Standard A100-06 or Halliburton red book; common additives: calcium chloride, bentonite solution, pozzolan ash):

A maximum of 3% bentonite by weight

q) Additional notes and calculations:

Production casing will serve as artesian casing

Annular volume in surface casing: 2.57 cubic yards
Annular volume around artesian casing: 28.11 cubic yards
Total annular volume: 30.68 cubic yards

9) Production casing (set through the artesian casing and into the artesian aquifer; may not be necessary if the artesian casing is used as the production casing):

a) Will you be using a production casing within the artesian casing? Yes If yes, provide a description of the following in section V:

i. Diameter of borehole to be drilled for production casing; casing joint connection type - note whether coupled, welded, glued, etc.; proposed production casing depth; and inside diameter, outside diameter, wall thickness, casing material, and casing material grade of production casing.

ii. List the proposed screened/ perforated interval(s) if you plan to use well screen or perforated casing.

iii. List the vertical intervals and seal or fill material if the annulus between the production casing and artesian casing/borehole is to be sealed/ filled.

V. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

Greater Glorieta MDWCA is seeking an exploratory permit to replace Glorieta Estates Well (UP-01288) and to drill to 1,200 feet below ground surface (bgs) to evaluate water quality in deeper parts of the aquifer system. The existing well, UP-01288, has water quality standard exceedances and has been taken off line.

In 2011, a water quality sample was collected from UP-01288, and concentrations of 3 constituents exceeded the EPA MCLs (see attached table of water quality): chloride = 260 mg/L, TDS = 855 mg/L, and combined radium isotopes = 7.03 pCi/L. Only chloride at 260 mg/L exceeded values in the 20.6.3103 list of numeric standards for groundwater.

UP-01288 is screened from approximately 237 to the reported total depth of 409 feet bgs. The proposed well completion for the exploratory well isncludes a cement annular seal from ground surface to a depth of 760 feet bgs. Proposed zone testing in the open borehole will include the construction of a temporary well using a bentonite seal between the producing zone of UP-01288 and the test well.

Test well results will be used to select a screen interval in the Sangre de Cristo Formation.

VI. SIGNATURE:

I, Chris Wolf , say that I have carefully read the foregoing Artesian Well Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Artesian Well Plan of Operations and attachments are true to the best of my knowledge and belief.

Christopher Wolf — 3/3/2022

Signature of Applicant — Date

3/3/2022

Signature of Well driller — Date

VII. ACTION OF THE STATE ENGINEER:

This Artesian Well Plan of Operations is:

- [X] Approved subject to the attached conditions.
- [ ] Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this ____ day of MAY, 2022

Mike A. Hamman, P.E., State Engineer

By: ____

Conditions of Approval

Application No.:	UP-01288 (per applicant)
Permit No.:	UP-4924
Permitee:	Glorieta Water Coop and Daniel B. Stephens & Associates
Point of Diversion:	Well UP-4924 is proposed to be located at a point where X=430,760.17 and Y=3,937,004.309 Meters, UTM (NAD83), Zone 13N
Purpose of Use:	Exploratory
Amount of Water:	No consumptive use is permitted.

1) No water shall be appropriated and beneficially used from well UP-4924 except for testing purposes which shall not exceed ten (10) cumulative days and the well shall be plugged on or before 1 year from the date of receipt of issuance of this permit unless a permit to use the water from this well is acquired from the Office of the State Engineer (OSE).

2) The well be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 NMSA 1978. A licensed well driller or drill rig supervisor must be onsite during all drilling and/or plugging activities.

3) The construction attributes and well completion shall adhere to the approved Artesian Well Plan of Operations for UP-4924. Any deviations from the approved Artesian Well Plan of Operations shall only be considered by the OSE Water Rights Division (WRD) with a request for variance submitted by the Permittee.

4) If artesian water is encountered, the well driller shall comply with all rules and regulations pertaining to the drilling and casing of artesian wells.

5) The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.

6) If the Madera Formation is encountered during drilling operations, the District 6 Water Rights Division of the OSE shall be contacted immediately.

7) The Permittee is required to submit all test data, including water quality analysis, geophysical logging, and any other pertinent test data to the OSE within 20 days of completion of said testing. The permittee shall also provide the OSE with a complete lithology report upon completion of the well drilling.
8) Certain portions of the drilling and construction of well UP-4924 require OSE witnessing. Please note OSE representatives will not be available Memorial Day or July 4th holiday weekends. The OSE District 6 Water Rights Division Office shall be notified 48-hours prior

to the commencement of the following well drilling and construction activities which require OSE witnessing:

a) Performing open-hole geophysical well logging.
b) Well casing inspection prior to installation (may be performed by the OSE at the time of geophysical logging if the casing is onsite).
c) Placement of the annular cement-bentonite sealant between ~740-feet bgs and surface.
d) Running the pressure test or cement bond log.

9) The casing string shall be centralized in accordance with §19.27.4.31.E. NMAC.

10) Approved sealants for well construction shall be placed in the annulus in accordance with §19.27.4.31.H. NMAC.
   a) A 20-foot bentonite seal above the filter pack (~740 bgs) utilizing time release bentonite pellets only is approved.
   b) The approved annular sealant above the bentonite seal is Type I Portland cement -bentonite slurry. The cement-bentonite slurry shall be mixed using a maximum of 5.2 gallons of fresh water per 94-pound sack of Portland cement. The bentonite additive must pre-hydrated with a water content not to exceed 0.65 gallons of water per 1% of bentonite powder (no granules are allowed). A maximum of 3% bentonite may be used for this sealant. No additional cement additives may be used for this permit without the consent of an authorized representative of the OSE.
   c) Upon completion of the annular seal placement, the Permitee shall be required to top off any portion of the annulus that shrunk-back over the setting time with the approved sealant prescribed above.

11) A minimum of 48-hours set time is required after placing the annular sealant and prior to commencement of well construction/development, to allow the cement to reach the appropriate compressive strength in accordance with §19.27.4.31.I NMAC.

12) The Permitee shall be required to perform either pressure testing on the well casing in the area above the screened sections up to ground surface utilizing a packer and wellhead or a cement bond log in the same area, to demonstrate the competency of the annular seal and welded casing joints. Specific details required for the pressure testing shall be prescribed by an authorized representative of the OSE at a later date.

13) The well driller must file the well record with the State Engineer and the applicant within thirty (30) days after the well is drilled or driven. Test data shall be filed no later than twenty (20) days after completion of test(s). It is the well owner's responsibility to ensure that the well driller files the well record. The well driller may obtain the well record from the District Office or the State Engineer website.

14) The State Engineer shall supply a well identification tag for the well driller to firmly affix to the well casing or cap with a steel band upon completion in accordance with Subsection M of 19.27.4.29 NMAC. The permit holder is responsible for maintaining the well identification tag.

15) An OSE approved Well Plugging Plan of Operations shall be required prior to the commencement of any well plugging activities associated with UP-4924.

16) The permit is subject to cancellation for non-compliance with the Conditions of Approval or if otherwise not exercised in accordance with the terms of the permit.

17) This well permit shall automatically expire unless the well is completed, and the well record is filed with the State Engineer within one year of the date of issuance of the permit.

18) The highest and best technology available shall be used to ensure conservation of water to the maximum extent practicable.

19) Aggrieval of the permit or any of the conditions of approval suspends the permit. **No water may be diverted** under an aggrieved permit until final resolution of the aggrieval with the OSE. Any water diverted prior to aggrieval or while the aggrieval is pending will have to be repaid.

20) Pursuant to section 72-8-1 NMSA, the permittee shall allow the State Engineer and his representative's entry upon private property for the performance of their respective duties. Failure to allow access accordingly shall subject this permit to forfeiture.

21) The State Engineer shall retain jurisdiction over this permit.

Witness my hand and seal this 5TH day of MAY, 2022

MIKE A. HAMMAN, P.E.
NEW MEXICO STATE ENGINEER

By: _____
Christopher M. Trottier
Upper Pecos Basin Lead
Water Rights Division

Attachment C

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
DISTRICT VI - SANTA FE

MIKE A. HAMMAN, P.E.
State Engineer

BATAAN MEMORIAL BUILDING
POST OFFICE BOX 25102
SANTA FE, NEW MEXICO 87504-5102
(505) 827-6120
FAX: (505) 827-6682

May 23, 2022

Glorieta Estates Water Coop
Attn: Trent Botkin
P.O. Box 521
Glorieta, NM 87535

Re: Well Plugging Plan of Operations for UP-1288

Greetings:

The Office of the Engineer is returning a favorable approval with specific plugging conditions and has accepted the Well Plugging Plan of Operations submitted May 17, 2022.

Please return a completed Well Plugging Report that itemizes the actual abandonment process and materials used within 30 days after completion of well plugging.

Please address any questions via- telephone to Chris Thornburg at 505.827.6120 or via e-mail at Christopher.thornburg@state.nm.us.

Sincerely,

Christopher M. Thornburg
Office of State Engineer
Water Rights Division District VI

Enclosure
Cc: file

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging. This form may be used to plug a single well, or if you are plugging multiple monitoring wells on the same site using the same plugging methodology.

Alert! Your well may be eligible to participate in the Aquifer Mapping Program (AMP)-NM Bureau of Geology geoinfo.nmt.edu/resources/water/cgmn/ if within an area of interest and meets the minimum construction requirements, such as there is still water in your well, and the well construction reflected in a well record and log is not compromised, contact AMP at 575-835-5038 or -6951, or by email nmbg-waterlevels@nmt.edu, prior to completing this prior form. Showing proof to the OSE that your well was accepted in this program, may delay the plugging of your well until a later date.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP: ☐ Check here if proposing one plan for multiple monitoring wells on the same site and attaching WD-08m

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: UP-1288

Name of well owner: Glorieta Estates Water Co-op

Mailing address: P.O. Box 521 County: San Miguel

City: Glorieta State: NM Zip code: 87535

Phone number: 505-795-4922 E-mail: trentbotkin@gmail.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: New Mexico licensed driller (to be put out to bid)

New Mexico Well Driller License No.: _____ Expiration Date: _____

IV. WELL INFORMATION: ☐ **Check here if this plan describes method for plugging multiple monitoring wells on the same site and attach supplemental form WD-08m and skip to #2 in this section.**

Note: A copy of the existing Well Record for the well(s) to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 35 deg, 34 min, 27.563 sec
Longitude: -105 deg, 45 min, 50.973 sec, NAD 83

2) Reason(s) for plugging well(s):

Existing well will be replaced by a deeper well. Casing is damaged and water quality is poor---combined radium isotopes and chloride exceed standards.

3) Was well used for any type of monitoring program? No If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Yes If yes, provide additional detail, including analytical results and/or laboratory report(s): Attached: Combined radium = 5.26 pCi/L; Cl = 260 mg/L

5) Static water level: 98.9 ft bls feet below land surface / feet above land surface (circle one)

6) Depth of the well: 403 feet

7) Inside diameter of innermost casing: 7 7/8 inches.

8) Casing material: low carbon steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): 237 ft bls to unknown

10) What annular interval surrounding the artesian casing of this well is cement-grouted? unknown

11) Was the well built with surface casing? unknown If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? No If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

☐ **If plugging method differs between multiple wells on same site, a separate form must be completed for each method.**

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal. Attach a copy of any signed OSE variance to this plugging plan.

Also, if this planned plugging plan requires a variance to 19.27.4 NMAC, attach a detailed variance request signed by the applicant.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Pumping equipment will be removed and disposed of. The driller will measure the depth to water and total depth. They will place a tremie pipe as deep as possible in the well (obstruction noted during video log in 2011 at 287.4 ft bls). Neat cement will be mixed onsite and pumped via tremie, and tremie will be pulled up as grout fills the well.

2) Will well head be cut-off below land surface after plugging? Yes

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant. Attach a copy of the batch mix recipe from the cement company and/or product description for specialty cement mixes or any sealant that deviates from the list of OSE approved sealants.

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 136 cubic feet (~1,000 gallons)

4) Type of Cement proposed: Type I portland cement

5) Proposed cement grout mix: 6.0 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

None

8) Additional notes and calculations:

Volume of 7 7/8 inch casing (assume diameter from land surface to to total depth of 403 feet):
Diameter = 7 7/8 inches = 7.875 inches; Radius = 0.329 feet
Cross sectional area = 0.3382 square feet
Volume = 403 feet x 0.3382 sq. ft = 136 cubic feet

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

Video log run in 2011 noted some holes in casing at 123.9 ft feet below land surface (bls) but these are not perforations and were cut for casing handling. Torch cut slots begin at 237 ft bls. The camera encountered an obstruction at 287.4 ft bls and could not continue any deeper. This may be a failure of the casing at 287.4 ft bls.

Water quality sample was collected before the pump was pulled and data table is attached.

VIII. SIGNATURE:

I, Chris Wolf, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Chris Wolf — Signature of Applicant

5-12-22 — Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

X Approved subject to the attached conditions.
____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 23rd day of May, 2022

Mike A. Hamman, New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			403
Theoretical volume of grout required per interval (gallons)			136 cubic feet (~1,000 gallons)
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			6.0
Mixed on-site or batch-mixed and delivered?			Mixed onsite
Grout additive 1 requested			None
Additive 1 percent by dry weight relative to cement			NA
Grout additive 2 requested			None
Additive 2 percent by dry weight relative to cement			NA

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			NA
Bottom of proposed sealant of grout placement (ft bgl)			NA
Theoretical volume of sealant required per interval (gallons)			NA
Proposed abandonment sealant (manufacturer and trade name)			NA

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Mike A. Hamman, P.E.
District 6 Office, Santa Fe, NM

Well Plugging Plan of Operations
Conditions of Approval for UP-1288

Glorieta Estates Water Coop (well owners) have identified 1 well that requires plugging. On the Well Plugging Plan of Operations (the application) received May 17, 2022, the well owner states the well is to be plugged because it is to be replaced and the current well has poor water quality combined with radium isotopes and chloride which exceed EPA standards. Static water level is 98.9-feet below ground surface (bgs). The total depth of the well is 403-feet bgs, but a video log run in 2011 shows there may be casing failure at 287.4 bgs which may not allow the tremie to pass this depth. The applicant states in the application this well was not as used as part of any monitoring program. Water Rights Division (WRD) staff confirmed the applicants as the owners of UP-1288.

Office of the State Engineer (OSE) Water Rights Division (WRD) staff performed a field check of the subject verifying the non-use, location, and state of the wellhead on April 18, 2022. It appeared that the well had not been used by the applicant for a number of years. The applicant submitted an OSE application to drill an exploratory well to replace this well in January 2022. The application was approved by WRD in May 2022. During the hydrologic analysis for the application for exploratory well, OSE Hydrology Bureau verified that Type I/II Portland cement would not react or be adversely affected by the known contaminants in Well UP-1288 (subject well) or the annular seal for the exploratory well being drilled within 50-feet of the subject well. As such, the same sealant, as requested by the application, is approved for use as a sealant in the decommissioning of UP-1288.

On the application, the applicant states that the well casing may have a failure which was shown in a well log video run in 2011 at approximately 287-feet bgs. The applicant also states the well casing appears to have holes (casing degradation) at approximately 123.9-feet bgs. Since the well is completed in the Sangre de Cristo Fm. and there is no possibility of comingling aquifers, and there is a high likelihood the casing would completely fail if any repair attempts were made. As such, WRD staff concluded that allowing the decommissioning of well UP-1288, without the benefit of trying to clean out the well and repair the casing, is acceptable.

Location: Glorieta, New Mexico.
Approximate well coordinates: See tabulated data (LAT/LONG WGS84).

Well Name	Inside diameter (inches)	Total depth (feet)	Latitude N	Longitude W
UP-1288	7 7/8-inch steel	50	35°3'4'27.563"	105°45'50.973"

Specific Plugging Conditions of Approval for 1 Well for Glorieta Estates Water Coop in Santa Fe County, New Mexico

1. Water well drilling and well drilling activities, including well plugging, are regulated under 19.27.4 NMAC, which requires any person engaged in the business of well drilling within New Mexico to obtain a Well Driller License issued by the New Mexico Office of the State Engineer (NMOSE). Therefore, the firm of a New Mexico licensed Well Driller shall perform the well plugging.

2. All pumping equipment and appurtenance shall be removed from the well prior to decommissioning.

3. The total depth of each sealing interval shall be tagged by the Driller and recorded on the Plugging Record prior to submittal.

4. Theoretical volume of sealant required for the 7.875-inch diameter well is approximately 2.0 gallons per foot. Total theoretical volume of sealant required to fill the well is tabulated below. All cement mixture will contain no more than 6 gallons of water per 94-pound sack of cement. Total minimum amount of required sealant will be based on the sounding depth.

Well Name	Inside Diameter (Inches)	Total Depth (feet)	Volume (Cubic Feet)	Volume (Gallons)
UP-1288	7.875	403	136.3	1019.7
Total:			136.3	1019.7

5. The neat cement sealant shall be placed in the 7.875-inch casing using a tremie pipe extended to near well bottom (based on sounding depth) and kept below top of the slurry column as the well is plugged from bottom-upwards in a manner that displaces the standing water column.

6. Upon completion of the placement of the sealant in the 7.875-inch well, the well decommissioning activities shall cease for 24-hours to allow the neat cement to set. Any subsidence shall be topped off with neat cement prior to removing the wellhead.

7. The wellhead shall be removed, and the casing severed 3-feet bgs. The remaining hole shall be backfilled to surface with concrete.

8. Should the NMED, or another regulatory agency sharing jurisdiction of the project authorize, or by regulation require a more stringent well plugging procedure than herein acknowledged, the more-stringent procedure should be followed. This, in part,

includes provisions regarding pre-authorization to proceed, contaminant remediation, inspection, pulling/perforating of casing, or prohibition of free discharge of any fluid from the borehole during or related to the plugging process.

9. NMOSE witnessing of the plugging will not be required but shall be facilitated if a NMOSE observer is onsite. NMOSE witnessing may be requested during normal work hours by calling the District 6 NMOSE Office at 505-827-6120, at least 48-hours in advance. NMOSE inspection will occur dependent on personnel availability.

10. A Well Plugging Record (available at: http://www.ose.state.nm.us/STST/Forms/WD-11.pdf) itemizing actual abandonment process and materials used shall be filed with the State Engineer (NMOSE, P.O. Box 25102 - 407 Galisteo Street - Room 102, Santa Fe, NM 87504-5102), within 30 days after completion of well plugging.

The NMOSE Well Plugging Plan of Operation, dated May 17, 2022, is hereby approved with the aforesaid conditions applied, when signed by an authorized designee of the State Engineer:

Witness my hand and seal this 25th day of May, 2022

MIKE A. HAMMAN, P.E.
NEW MEXICO STATE ENGINEER

By: _____

Christopher M. Thornburg
District VI Water Master
Water Resources Division

Table 1. Water Quality for Well UP-01288, Glorieta Estates Supply Well
Page 2 of 2

Parameter	Concentration (mg/L) or Activity (pCi/L) [a]		
	U.S. EPA MCL	New Mexico Groundwater Quality Standard	Glorieta Estates Well 4/25/2011
Metals (cont.)			
Selenium	0.05	0.05	0.0091
Uranium	0.03	0.03	0.018
Radiochemistry			
Gross alpha	15	NS	12.6 ± 2.26
Gross beta	4 mrem/yr [c]	NS	1.21 ± 1.32
Radium-226	5 [d]	30 [d]	**5.63 ± 1.10**
Radium-228	5 [d]	30 [d]	1.40 ± 0.481

Bold indicates that value equals or exceeds U.S. Environmental Protection Agency (EPA) maximum contaminant level (MCL).

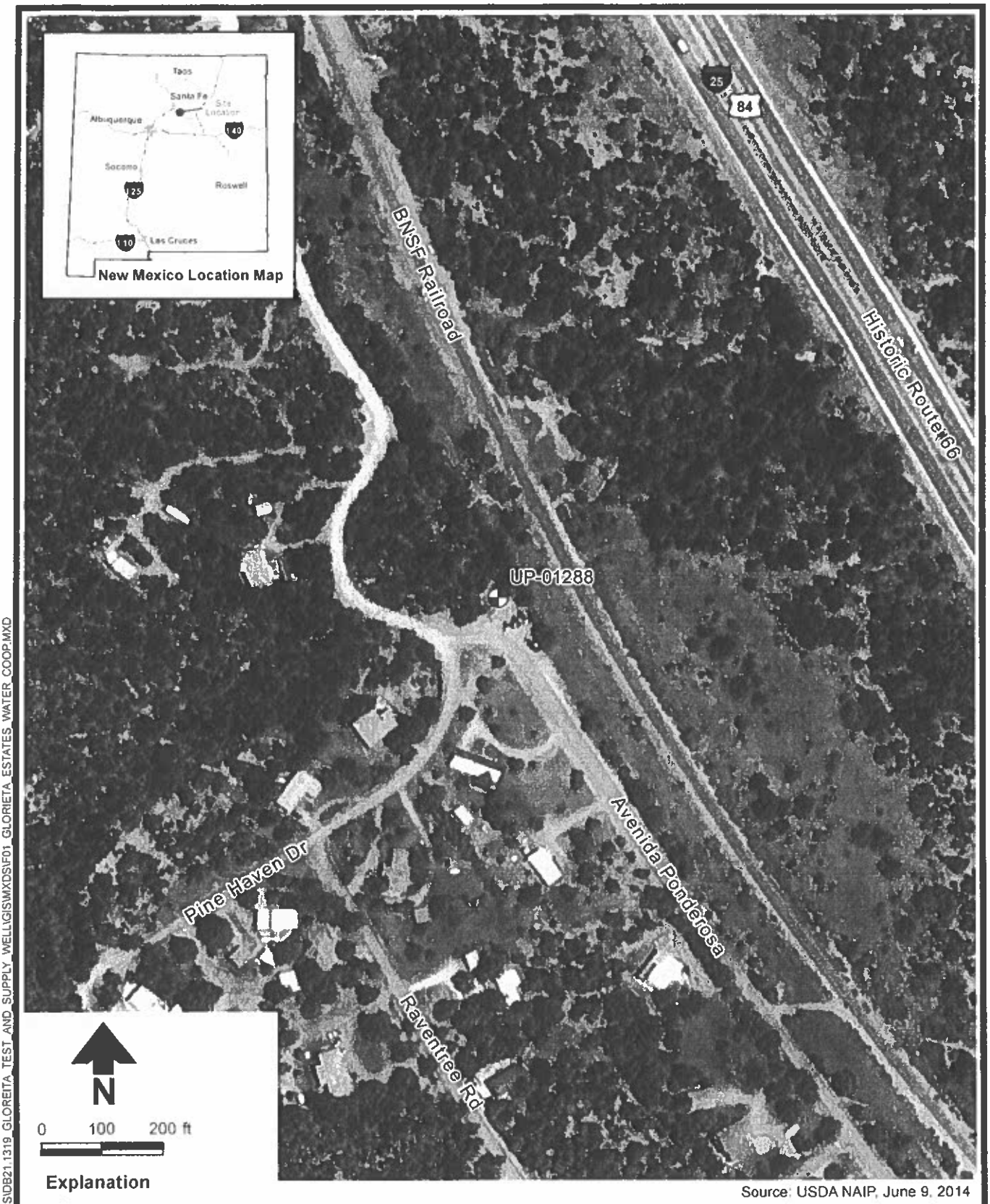
[a] All general chemistry and metals concentrations are provided in milligrams per liter (mg/L) unless otherwise noted. All radiochemistry activities are provided in picocuries per liter (pCi/L) unless otherwise noted.

[b] Standard is a non-enforceable U.S. EPA secondary drinking water standard.

[c] The U.S. EPA considers 4 millirems per year (mrem/yr) to be the MCL, which is approximately equal to gross beta activity of 50 pCi/L. The gross beta results presented on the table are in units of pCi/L.

[d] Combined MCL for radium-226 and radium-228.

mg/L = Milligrams per liter
pCi/L = Picocuries per liter
NS = No standard
s.u. = Standard units
µS/cm = Microsiemens per centimeter
mV = millivolt



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DBS&A
Daniel B. Stephens & Associates, Inc.
1/21/2022 DB21.1319

GLORIETA ESTATES WATER COOP
Well Location

Figure 1

Table 1. Water Quality for Well UP-01288, Glorieta Estates Supply Well
Page 1 of 2

Parameter	Concentration (mg/L) or Activity (pCi/L) [a]		
	U.S. EPA MCL	New Mexico Groundwater Quality Standard	Glorieta Estates Well 4/25/2011
Field Parameters			
Temperature (°C)	NS	NS	12.73
pH (s.u.)	6.50–8.50 [b]	6.00–9.00	6.81
Dissolved oxygen (mg/L)	NS	NS	3.96
Dissolved oxygen (percent saturated)	NS	NS	46.2
Specific conductance (µS/cm)	NS	NS	600.9
Oxidation/reduction potential (mV)	NS	NS	102
Comments	—	—	Clear
Major Ions			
Alkalinity, total (as $CaCO_3$)	NS	NS	320
Barium	2.0	1.0	0.25
Bicarbonate (as $CaCO_3$)	NS	NS	320
Bromide	NS	NS	0.26
Calcium	NS	NS	120
Carbonate (as $CaCO_3$)	NS	NS	<2.0
Chloride	250 [b]	250	**260**
Fluoride	4.0 (2.0 [b])	1.6	0.23
Magnesium	NS	NS	47
Nitrate (as N)	10	10	2.1
Nitrite (as N)	1	NS	<2.0
pH (s.u.)	6.50–8.50 [b]	6.00–9.00	7.64
Phosphorus, orthophosphate (as P)	NS	NS	<0.50
Potassium	NS	NS	4.2
Sodium	NS	NS	140
Specific conductance (µS/cm)	NS	NS	1,500
Sulfate	250 [b]	600	81
Total dissolved solids	500	1,000	**855**
Metals			
Arsenic	0.01	0.1	<0.0010
Iron	0.3 [b]	1.0	0.039

Notes are provided at the end of the table.

Attachment D

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
DISTRICT VI - SANTA FE

MIKE A. HAMMAN, P.E.
State Engineer

BATAAN MEMORIAL BUILDING
POST OFFICE BOX 25102
SANTA FE, NEW MEXICO 87504-5102
(505) 827-6120
FAX: (505) 827-6682

May 23, 2022

Glorieta Water Users Association
P.O. Box 521
Glorieta, NM 87535

Re: Well Plugging Plan of Operations for UP-1643

Greetings:

The Office of the Engineer is returning a favorable approval with specific plugging conditions and has accepted the Well Plugging Plan of Operations submitted May 17, 2022.

***Please note: Information used on this approved Well Plugging plan of Operations for UP-1643 was approximated by the Water Rights Division based on the Permit Application, submitted March 25, 1991. The actual well depth, well diameter and static water level are required to be submitted on the Well Plugging Record upon completion of the well decommissioning.**

Please return a completed Well Plugging Report that itemizes the actual abandonment process and materials used within 30 days after completion of well plugging.

Please address any questions via- telephone to Chris Thornburg at 505.827.6120 or via e-mail at christopher.thornburg@state.nm.us

Sincerely,

Christopher M. Thornburg
Office of State Engineer
Water Rights Division District VI

Enclosure
Cc: file

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging. This form may be used to plug a single well, or if you are plugging multiple monitoring wells on the same site using the same plugging methodology.

Alert! Your well may be eligible to participate in the Aquifer Mapping Program (AMP)-NM Bureau of Geology geoinfo.nmt.edu/resources/water/cgmn/ if within an area of interest and meets the minimum construction requirements, such as there is still water in your well, and the well construction reflected in a well record and log is not compromised, contact AMP at 575-835-5038 or -6951, or by email nmbg-waterlevels@nmt.edu, prior to completing this prior form. Showing proof to the OSE that your well was accepted in this program, may delay the plugging of your well until a later date.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP: ☐ Check here if proposing one plan for multiple monitoring wells on the same site and attaching WD-08m

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: UP-1643

Name of well owner: Glorieta Water Users Association

Mailing address: P.O. Box 521 County: San Miguel

City: Glorieta State: New Mexico Zip code: 87535

Phone number: 505-795-4922 E-mail: trentbotkin@gmail.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: to be selected through bidding process

New Mexico Well Driller License No.: _____ Expiration Date: _____

IV. WELL INFORMATION: ☐ **Check here if this plan describes method for plugging multiple monitoring wells on the same site and attach supplemental form WD-08m and skip to #2 in this section.**

Note: A copy of the existing Well Record for the well(s) to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 35 deg, 34 min, 55.893 sec
Longitude: -105 deg, 46 min, 12.629 sec, NAD 83

2) Reason(s) for plugging well(s):

This well is no longer in use.

3) Was well used for any type of monitoring program? No If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? No If yes, provide additional detail, including analytical results and/or laboratory report(s):

5) Static water level: unknown feet below land surface / feet above land surface (circle one)

6) Depth of the well: unknown feet

7) Inside diameter of innermost casing: unknown inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): unknown

10) What annular interval surrounding the artesian casing of this well is cement-grouted? unknown

11) Was the well built with surface casing? unknown If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? _____ If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? No If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

☐ **If plugging method differs between multiple wells on same site, a separate form must be completed for each method.**

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal. Attach a copy of any signed OSE variance to this plugging plan.

Also, if this planned plugging plan requires a variance to 19.27.4 NMAC, attach a detailed variance request signed by the applicant.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

The driller will measure the depth to water and total well depth. They will place a grouting tremie pipe in the well, mix and pump Portland cement grout, and pull the tremie up during plugging. They will dispose of the debris from the plugging operation.

2) Will well head be cut-off below land surface after plugging? No, its contained in cement block above floor

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant. Attach a copy of the batch mix recipe from the cement company and/or product description for specialty cement mixes or any sealant that deviates from the list of OSE approved sealants.

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: unknown

4) Type of Cement proposed: Type I Portland cement (neat)

5) Proposed cement grout mix: 6 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

None

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

Pump and column pipe are still in well, but appear disconnected from system. No power meter at the well. Driller will remove old equipment and dispose of it.

Pump is supported by cement block and cement will be used to fill to top of block.

Measurements to be taken when pump and column pipe are removed: diameter of casing, depth to water, and total depth of well. These measurements will be used to determine the volume of cement required for the plugging operation.

VIII. SIGNATURE:

I, Chris Wolf, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Chris Wolf — Signature of Applicant

5-12-22 — Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

X Approved subject to the attached conditions.

____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 23rd day of May, 2022

Mike A. Hamman, New Mexico State Engineer

By: _____

STATE OF NEW MEXICO

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			1.5 feet above ground surface
Bottom of proposed interval of grout placement (ft bgl)			unknown-total depth to be measured after pump is removed
Theoretical volume of grout required per interval (gallons)			to be calculated
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			6 gallons water per sack of cement
Mixed on-site or batch-mixed and delivered?			on-site
Grout additive 1 requested			none
Additive 1 percent by dry weight relative to cement			none
Grout additive 2 requested			none
Additive 2 percent by dry weight relative to cement			none

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			na
Bottom of proposed sealant of grout placement (ft bgl)			na
Theoretical volume of sealant required per interval (gallons)			na
Proposed abandonment sealant (manufacturer and trade name)			na

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Mike A. Hamman, P.E.
District 6 Office, Santa Fe, NM

Well Plugging Plan of Operations Conditions of Approval for UP-1643

Glorieta Water Users Association (well owners) have identified 1 well that requires plugging. On the Well Plugging Plan of Operations (the application) received May 17, 2022, the well owner states the well is to be plugged because it is no longer being used. Static water level is unknown. The total depth of the well is unknown. The applicant states in the application this well was not as used as part of any monitoring program and that the licensed Driller will confirm static water level and total depth, prior to commencing plugging activities. All depths will be recorded on the OSE Plugging Record. Water Rights Division (WRD) staff confirmed the applicants as the owners of UP-1643.

Office of the State Engineer (OSE) Water Rights Division (WRD) staff performed a field check of the subject well verifying the non-use, location, and state of the wellhead on April 18, 2022. It appeared that the well had not been used by the applicant for a number of years. The applicant's consultant, Chris Wolf, Daniel B. Stephens and Associates, attended the field visit with WRD staff. Mr. Wolf stated during the field visit that the well was not being used and that the well owners wanted to decommission the well to prevent the possibility of contamination. WRD staff found the well house full of articles belonging to the homeowner (storage) and the wellhead was only partially visible and not accessible to obtain a static water level reading, casing size or thickness and well depth. The pumping appurtenance appeared to still be in the well. Due to the inaccessibility of the wellhead at the time of the field visit, WRD staff and MR. Wolf were not able to gain the information needed to properly execute this application.

According to the March 25, 1991, exploratory application UP-1643, the applicants were proposing to complete the subject well with 8.625-inch casing to a total depth of 900-feet bgs. Although this information may not be accurate for the actual well casing size and depth, WRD will use these dimensions to calculate preliminary volumes to decommission UP-1643. No well drillers log is on file for the subject well.

Location: Glorieta, New Mexico.
Approximate well coordinates: See tabulated data (LAT/LONG WGS84).

Well Name	Inside diameter (inches)	Total depth (feet)	Latitude N	Longitude W
UP-1643	8-inch	~900	35° 34'55.893"	105°46'50.973"

Specific Plugging Conditions of Approval for 1 Well for Glorieta Water Users Association in Santa Fe County, New Mexico

1. Water well drilling and well drilling activities, including well plugging, are regulated under 19.27.4 NMAC, which requires any person engaged in the business of well drilling within New Mexico to obtain a Well Driller License issued by the New Mexico Office of the State Engineer (NMOSE). Therefore, the firm of a New Mexico licensed Well Driller shall perform the well plugging.

2. All pumping equipment and appurtenance shall be removed from the well prior to decommissioning.

3. The total depth of each sealing interval shall be tagged by the Driller and recorded on the Plugging Record prior to submittal. All depths and quantities prescribed herein aare approximate and based on the Permit Application submitted to the OSE WRD on March 25, 1991.

4. The applicant is responsible for measuring the well depth, well diameter (inside and outside), static water level. All pertinent information shall be recorded on the Well Plugging Record.

5. Theoretical volume of sealant required for the 8-inch diameter well is approximately 2.6 gallons per foot. Total theoretical volume of sealant required to fill the well is tabulated below. All cement mixture will contain no more than 6 gallons of water per 94-pound sack of cement. Total minimum amount of required sealant will be based on the sounding depth.

Well Name	Inside Diameter (Inches)	Total Depth (feet)	Volume (Cubic Feet)	Volume (Gallons)
UP-1643 (approximated information)	8	900	314.2	2350.1
Total:			314.2	2350.1

6. The neat cement sealant shall be placed in the 8-inch casing using a tremie pipe extended to near well bottom (based on sounding depth) and kept below top of the slurry column as the well is plugged from bottom-upwards in a manner that displaces the standing water column.

7. Should the NMED, or another regulatory agency sharing jurisdiction of the project authorize, or by regulation require a more stringent well plugging procedure than herein acknowledged, the more-stringent procedure should be followed. This, in part, includes provisions regarding pre-authorization to proceed, contaminant remediation, inspection, pulling/perforating of casing, or prohibition of free discharge of any fluid from the borehole during or related to the plugging process.

8. NMOSE witnessing of the plugging will not be required but shall be facilitated if a NMOSE observer is onsite. NMOSE witnessing may be requested during normal work hours by calling the District 6 NMOSE Office at 505-827-6120, at least 48-hours in advance. NMOSE inspection will occur dependent on personnel availability.

9. A Well Plugging Record (available at: http://www.ose.state.nm.us/STST/Forms/WD-11.pdf) itemizing actual abandonment process and materials used shall be filed with the State Engineer (NMOSE, P.O. Box 25102 - 407 Galisteo Street - Room 102, Santa Fe, NM 87504-5102), within 30 days after completion of well plugging.

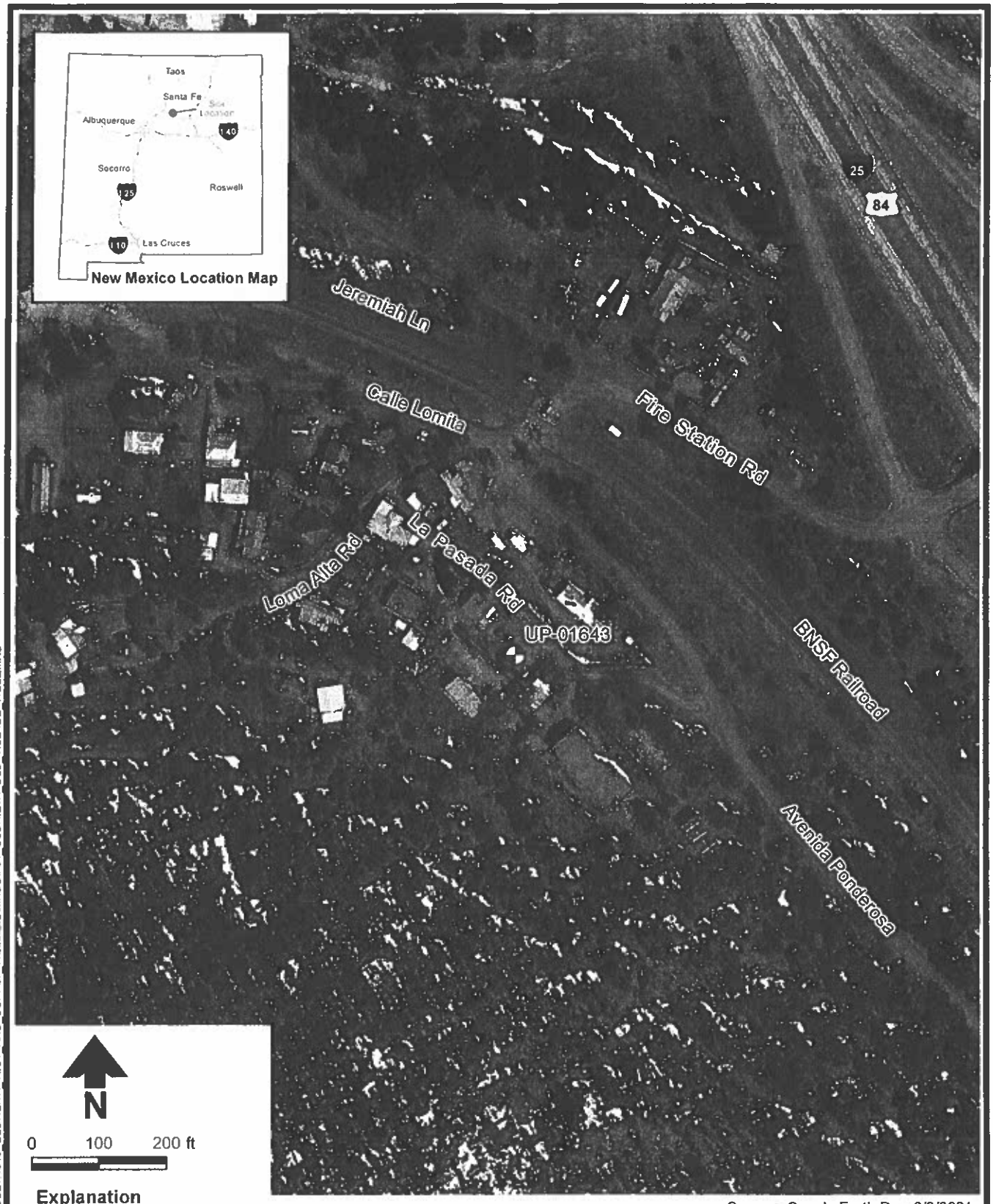
The NMOSE Well Plugging Plan of Operation, dated May 17, 2022, is hereby approved with the aforesaid conditions applied, when signed by an authorized designee of the State Engineer:

Witness my hand and seal this 25th day of May, 2022

MIKE A. HAMMAN, P.E.
NEW MEXICO STATE ENGINEER

By: _____

Christopher C. Thornburg
District VI Water Master
Water Resources Division



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DBS&A
Daniel B. Stephens & Associates, Inc.
1/31/2022
DB21.1319

GLORIETA WATER USERS ASSOCIATION
Well Location

Figure 1

A HYDROGEOLOGIC EVALUATION OF THE UPPER PECOS GROUND WATER BASIN IN THE VICINITY OF THE GLORIETA BAPTIST CONFERENCE CENTER, GLORIETA, NEW MEXICO

by
Barbara E. Mattingly
Water Resource Engineering Specialist

New Mexico State Engineer Office
Technical Division Hydrology Report 90-1

February 1990

A HYDROGEOLOGIC EVALUATION OF THE UPPER PECOS GROUND WATER BASIN IN THE VICINITY OF THE GLORIETA BAPTIST CONFERENCE CENTER, GLORIETA, NEW MEXICO

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CONTENTS

A HYDROGEOLOGIC EVALUATION OF THE UPPER PECOS GROUND WATER BASIN IN THE VICINITY OF THE GLORIETA BAPTIST CONFERENCE CENTER, GLORIETA, NEW MEXICO.

Introduction

It has been found necessary to make a determination as to whether the underground rights claimed by the Glorieta Baptist Conference Center in Glorieta, New Mexico, are hydrologically related to the surface water flow of Glorieta Creek. Drawdown effects to certain nearby wells due to pumping by the Center have also been found necessary to estimate. Limited water level data suggest that the deep water producing zones penetrated by the Conference Center wells are not hydrologically connected to Glorieta Creek in the vicinity of the village of Glorieta. Some of these water producing zones may be hydrologically connected to the Pecos River. The drawdown caused by the pumping of the Center wells may be greater than 500 feet in a 40 year period in a nearby well owned by the Glorieta Mutual Water Users Association.

Water Rights

According to the State Engineer Office water rights file for the Conference Center, the following underground rights are claimed:

file #	location	well depth
UP-373	SE1/4SW1/4SW1/4 S.22 T.16 N.,R.11 E.	800 feet
UP-374	NE1/4SW1/4SW1/4 S.22 " "	385 feet
UP-375	NW1/4NW1/4SE1/4 S.21 " "	934 feet
UP-376	NE1/4NW1/4NW1/4 S.27 " "	313 feet
UP-377	NE1/4NW1/4SW1/4 S.27 " "	877 feet
UP-378	NW1/4NE1/4SE1/4 S.28 " "	250 feet

The total claimed right is for a diversion of 887.5 acre-feet per annum of water, with 869.4 acre-feet declared and 18.1 acre-feet transferred into the wells from a surface water diversion located at the NW1/4 NW1/4 of Section 27, Township 16 N., Range 11 E.

According to Craig Hipple of the Roswell State Engineer Office, the original diversion of water from Glorieta Creek at the Center location, made in 1883 by area homesteaders, was from the NW1/4 SW1/4 of Section 22, T. 16 N., R. 11 E. This is within the present boundary of the Baptist Center, at the location of the intersection of the streambeds of Ruiz and Glorieta Canyons. This is upstream from the Center wells and about 1000 feet from the nearest Center well (see attached map).

An examination of State Engineer Office water rights files and the 1977 Upper Pecos Hydrographic Survey does not indicate that any other water users exist within several miles and within the same ground water basin that have established priorities between 1883 and 1950. Mourant's report (1980) lists a nearby well owned by the Glorieta Mutual Water Users Association which was drilled in 1946. There are no well records on file for the area above the Center within the Glorieta Creek watershed.

Hydrogeology

Glorieta Creek has its headwaters several miles north of the Center on Glorieta Baldy and flows intermittently, until it is within about four miles of its confluence with the Pecos River south of Pecos. At that point, three miles or more downstream from the Center, the 1953 U.S.G.S. topographic map shows the creek as becoming perennial (thus, indicating that the creek was intermittent within the area of the Center in 1953). The creek runs through the Center and is flanked on both sides by the six

Center wells. Four of the wells are located within 1,000 feet of the creekbed (see attached map).

A field inspection made on Glorieta Creek on February 12, 1990, showed a shallow, narrow stream channel for Glorieta Creek where it runs through the Conference Center grounds. In most locations the bed was dry, with only small pools of water where snowmelt was occurring. All tributaries within the Center grounds, including the one from Ruiz Canyon, were dry and also had shallow, narrow stream beds. No springs or surface flow were evident at the 1883 point of diversion. Water was not flowing at any location within the Center property. The pond which the Center maintains on Glorieta Creek at about the center of its grounds was completely dry on this date. About 0.5 mile downstream from the Center there was some flow in Glorieta Creek (less than 1 cfs), but this flow was discontinuous. It appears that, at least at the present time, Glorieta Creek is intermittent from the Conference Center to its confluence with the Pecos River.

Glorieta Creek in its mainstem begins its flow over the Precambrian granite of Glorieta Baldy. The creek bed continues over this formation for two miles or more and then encounters the Permian to Upper Pennsylvanian Sangre de Cristo Formation. According to Budding (1972), this formation consists of mudstones alternating with sandstone and arkosic conglomerate and varies from 435 to more than 2,000 feet thick. A cross-section presented by Budding which ends about 0.5 mile southwest of the Center shows the thickness of the formation at that point to be about 2,000 feet. Glorieta Creek continues its traverse over the Sangre de Cristo Formation until its confluence with the Pecos River.

Underlying the Sangre de Cristo Formation is the Pennsylvanian Magdalena Group, which is at least 800 feet thick (Budding, 1972). This group is predominantly limestone, but also consists of sandstone and shale. The contact with the Magdalena and the Sangre de Cristo Formation is gradational in most places (Griggs and Hendrickson, 1951). Some of the tributaries of Glorieta Creek have their headwaters in outcrop areas of the Magdalena Group.

Griggs and Hendrickson (1951) state that no visible discharge has been noted to occur from the Sangre de Cristo Formation in San Miguel County. Glorieta Creek crosses from Santa Fe County into San Miguel County about three miles below the Center. Geologic maps of the Glorieta area do not indicate the presence of any springs or fault zones within the Baptist Center property or for two miles upstream along Glorieta Creek or its tributaries. If springs were present and were hydrologically connected to the aquifer utilized by the subject wells, then pumping by the Center could influence these springs, which could affect area stream flows. Available information suggests that this is not the case.

At about two miles upstream from the Center the creek crosses the Deer Creek Fault, which separates the Precambrian granite and the Sangre de Cristo Formation. Ruiz and other tributary canyons also intersect this fault and traverse outcroppings of the Magdalena Group at the faulted area. The Magdalena and Sangre de Cristo Formations downdip 10 degrees or more from the fault to the Glorieta syncline (Budding, 1972),thus indicating a possible recharge area rather than a discharge area for these formations. It is possible that some ground water may emerge along the fault from the Precambrian granite, although this formation typically transmits very little water. If water does emerge at the Deer Creek fault

from the granite and flows into Glorieta Creek or its tributaries, it does so only on an intermittent basis and only in small amounts, judging by the size of streambeds entering the Center grounds. Such a small amount of water most likely would not flow a distance of two miles from the fault zone to the Center's property, but would evaporate or seep back into the soil.

Griggs and Hendrickson (1951) state that in San Miguel County nearly all of the normal flow of the Pecos River and its upper tributaries comes from the Magdalena Group, which outcrops in much of the area above the town of Pecos. Since two of the Center wells may be producing water from zones of gradation between the Sangre de Cristo Formation and the Magdalena Group, there may be a hydrologic connection between these wells and the Pecos River. At what point along the river such a connection would exist is uncertain.

Well Data

Well logs exist for the three deepest Center wells. UP-377, with a total depth of 877 feet, a static water level of 100 feet and a pumping capacity of 325 gpm (as claimed on the declaration), is drilled completely within layers of the Sangre de Cristo Formation. The well log classifies 14 percent of the section as water bearing, with water produced at 629 feet and below.

The well log for UP-373 shows layers of gravel, sand, mud and shale with, below 500 feet, layers of limestone. This well may be drilled into an area of gradation between the Sangre de Cristo Formation and the Magdalena Group. It is located immediately adjacent to Glorieta Creek and has a static water level of 225 feet with a pumping capacity of 250 gpm

(as stated on the declaration). Water bearing strata include a limestone layer from 270 to 280 feet, a sand layer at 778 to 780 feet and a sand and limestone layer at 780 to 785 feet.

UP-375 is drilled to 934 feet and has a declared static water level of 160 feet below land surface with a pumping capacity of 35 gpm. The well log shows water first produced from layers of shale and sandstone at about 280 feet below land surface. Water is also produced from sandstone layers between 327 and 344 feet, a sandstone at 508 to 520 feet, limestone and sand layers between 575 and 598 feet, sandstone between 655 and 680 feet, sandstone between 697 and 714 feet and limestone layers between 735 to 742 feet and 838 to 850 feet. The well log shows an increasing frequency of limestone layers below 700 feet, which may indicate that it is drilled into an area of gradation between the Sangre de Cristo Formation and the Magdalena Group.

Static water levels are also available on the declarations for UP-374 and UP-376. These are 120 and 150 feet, respectively. Both of these wells are located immediately adjacent to Glorieta Creek. The declared pumping capacities of UP-374, UP-376 and UP-378 are, respectively, 38 gpm, 35 gpm and 10 gpm.

Examination of 30 well logs for other wells located along or near Glorieta Creek from the Conference Center to its confluence with the Pecos River show first water bearing strata at 20 to 270 feet, with an average of about 84 feet below land surface. Based on available well data, it is apparent that all wells at the Center and below it along of the creek are supplied from one or more water producing layers at depth and that there exists a large unsaturated zone below the bed of Glorieta Creek. Thus, limited information suggests that wells at the Center are not

hydrologically connected to surface water which may occasionally flow in Glorieta Creek.

Impacts of Pumping by the Baptist Center

In order to determine the possible maximum drawdown which might occur on the Glorieta Mutual Water Users Association well due to pumping from the Baptist Center wells, a Theis analysis was conducted for a worst case situation. The Glorieta MWUA well is located about 1200 feet to the southwest of Center well UP-377. In 1968 an aquifer test was performed on UP-377. Analysis of this test by the State Engineer Office provided a transmissivity value for the aquifer of 739 gallons per day per foot (gpd/ft). Using Lohman's (1979) method for estimating storage coefficient for the aquifer, which was assumed to have a thickness of 2,000 feet, a value of 0.002 was derived. A no-flow boundary was assumed to exist at about 1/2 mile to the west of the Center. Assuming a combined total depletion of 887.5 acre-feet per annum from the four nearest wells to the Glorieta MWUA well (at the declared pumping capacities up to the total depletion rate), drawdowns in that well are estimated to be 405 feet in 10 years and 592 feet in 40 years (a computer printout of the results is provided in the appendix). Mourant (1980) indicates that the Glorieta MWUA well is completed to a depth of 275 feet and had a reported depth of water of 161 feet.

Summary

Glorieta Creek, intermittent for all but perhaps the last few miles of its length, may be partially supplied by ground water from the Precambrian granite, the Sangre de Cristo Formation and/or the Magdalena

Group. The Conference Center wells are supplied by deep water-bearing layers in the Sangre de Cristo Formation and possibly upper layers of the Magdalena Group. It appears unlikely that the water supplying the Center wells is hydrologically connected to Glorieta Creek at or near the Conference Center. There may be a hydrologic connection, however, between two of the Center wells and the Pecos River, since both may be supplied, at least in part, by water from the limestone of the Magdalena Group. Drawdowns caused by the full claimed pumpage from these wells could be as much as 400 feet in the 1946 Glorieta Mutual Water Users Association well after 10 years of pumping by the Center.

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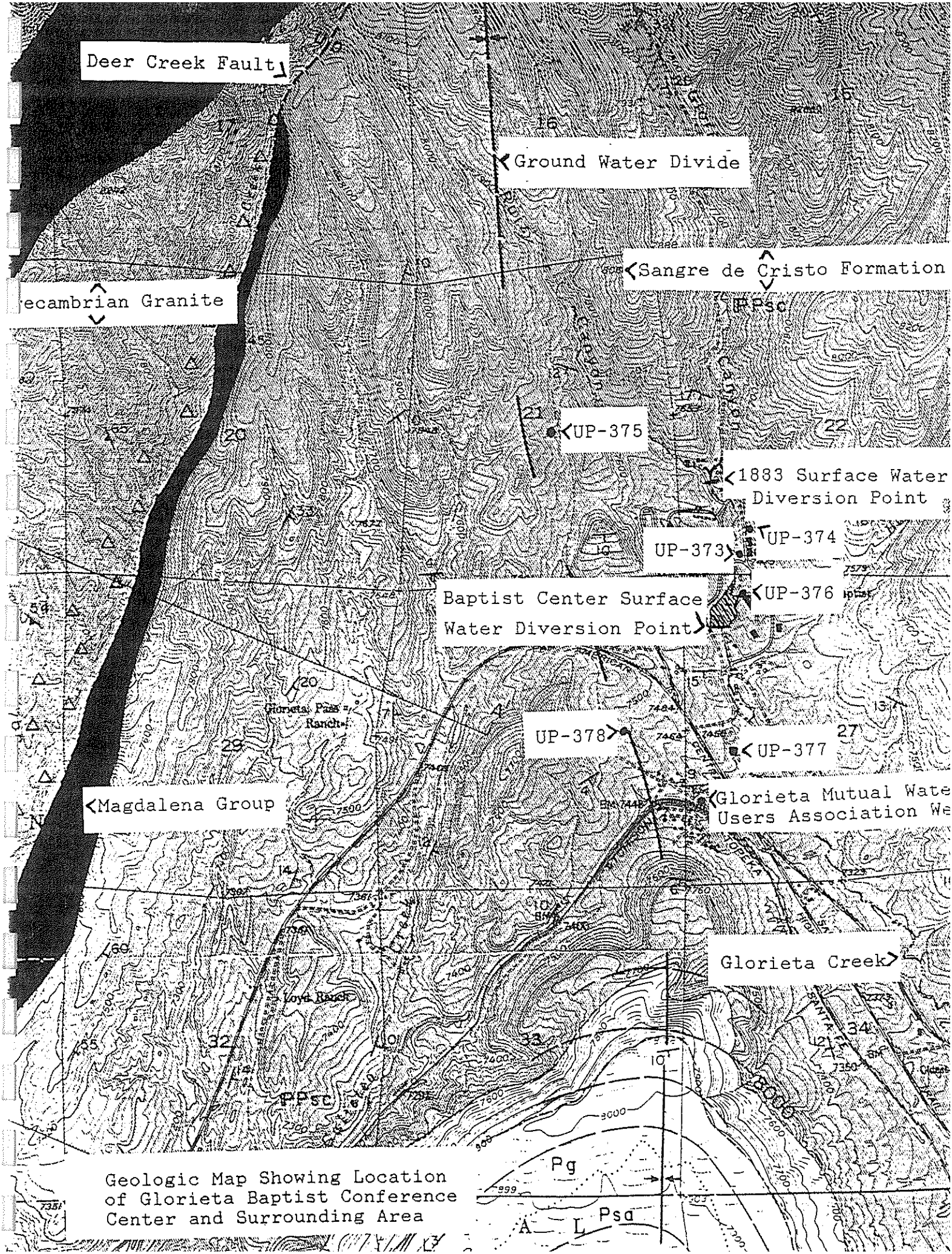

Geologic Map Showing Location of Glorieta Baptist Conference Center and Surrounding Area

APPENDIX

DRAWDOWN AT RANDOM COORDINATES IN AN INFINITE
STRIP. NON - LEAKY AQUIFER WITH A PLANE BOUNDARY
AT Y = 0 AND ANOTHER PLANE BOUNDARY AT
SOME Y, DUE TO PUMPING MULTIPLE WELLS LOCATED
AT RANDOM POINTS. EACH WELL MAY HAVE A DIFFERENT
PUMPING SCHEDULE. ALL COORDINATES IN THE X - Y PLANE.

(Theis equation)

T = 739. gpd/ft S = .002000

Plane boundary at Y = 0 feet and another plane boundary at Y =1000000.0 feet

Number of pumping wells = 4

Coordinates of pumping wells and the no. of pumping rates

X Coordinate	Y Coordinate	No. of Pumping Rates
X(1) = 3120.0 feet	Y(1) = 13150.0 feet	No. rates (1) = 1
X(2) = 1250.0 feet	Y(2) = 13500.0 feet	No. rates (2) = 1
X(3) = 3230.0 feet	Y(3) = 15800.0 feet	No. rates (3) = 1
X(4) = 3280.0 feet	Y(4) = 16450.0 feet	No. rates (4) = 1

PUMPING SCHEDULES FOR THE WELLS

Well Schedule for Pumping Well Number 1

Pumping Rate	Pumping Time
Q(1) = 325.0 gpm	Pumping time(1) = 14610.000 days

Well Schedule for Pumping Well Number 2

Pumping Rate	Pumping Time
Q(1) = 10.0 gpm	Pumping time(1) = 14610.000 days

Well Schedule for Pumping Well Number 3

Pumping Rate	Pumping Time
Q(1) = 35.0 gpm	Pumping time(1) = 14610.000 days

Well Schedule for Pumping Well Number 4

Pumping Rate	Pumping Time
Q(1) = 180.0 gpm	Pumping time(1) = 14610.000 days

Coordinates of Computation Points

(Number of computation points = 1)

X Coordinates	Y Coordinates
X(1) = 1650.0 feet	Y(1) = 13000.0 feet

Image Control = .00000100

time variable (t)

t min = 1826.250 days; t max = 14610.000 days; delta t = 1826.250 days

Time in days	Coordinates of computation points in feet, and drawdown values in feet
	X = 1650.0, Y = 13000.0
1826.250	333.006
3652.500	405.155
5478.750	454.235
7305.000	492.062
9131.250	522.938
10957.500	549.049
12783.750	571.679
14610.000	591.649