PROPOSAL TO CONDUCT A BENCH SCALE ISR RESTORATION DEMONSTRATION USING CORE MATERIAL FROM THE CHURCHROCK SECTION 8 LOCATION

NuFuels, Inc.

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OBJECTIVES

The objective of the proposed laboratory-scale program is to demonstrate the capacity to restore groundwater geochemical conditions to levels that existed prior to uranium recovery through the application of ISR methods. NuFuels, Inc. (NuFuels) proposes to conduct a bench level demonstration, through an independent laboratory, of ISR, post ISR restoration and post restoration stability characteristics using core samples collected from multiple representative locations within the Churchrock Section 8 deposit. The objectives for this program are as follows:

- Replicate the in-situ uranium chemistry and recovery characteristics at the laboratory scale;
- Determine ISR mining reaction kinetics data specific to the Churchrock Section 8 deposit;
- Duplicate expected reverse osmosis (RO) restoration chemistry characteristics and evaluate the results;
- Examine uranium and other trace element concentrations after simulated reverse osmosis treatment and sulfide treatment;
- Record pH and clay mineralogy of the (laboratory) leached samples.
- Examine uranium and other potential trace metals concentrations for rebound during a post restoration stability period.

INDUSTRY BACKGROUND

Globally, the utilization of nuclear power is projected to grow over the coming decades. Uranium is the fuel that is required for this power supply. Ore deposits hosted in sandstones such as the Churchrock Section 8 deposit[1] will likely play an increasingly important role in providing the necessary future uranium resources.

In situ recovery (ISR) of uranium from amenable sandstone deposits is becoming increasingly prevalent across the globe. It is generally more cost-effective and less environmentally disruptive than conventional mining and processing. Historically, the majority of U.S. uranium production and *all* commercial production in the Four Corners region resulted from either open pit or underground mines. The ISR process is dramatically different from these conventional mining techniques. The ISR technique avoids the movement and milling of significant quantities of rock and ore as well as mill tailing wastes associated with more traditional mining methods.

The ISR process was initially developed for production in the mid-1960's, and was first utilized at commercial-scale project in South Texas in 1975. It became a routinely utilized recovery method

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[1] See Attachment 1 for Section 8 location.

in the South Texas uranium district by the late 1970's, where it was employed in about twenty commercial projects. Today there are commercial ISR projects in Texas, Wyoming and Nebraska.

THE ISR PROCESS

In the ISR process, groundwater fortified with oxygen and carbon dioxide is pumped into a permeable sandstone ore body within a wellfield, causing the uranium minerals, which coat the sand grains in the sandstone, to dissolve. A wellfield consists of a series of injection wells, production (extraction) wells and monitoring wells which are drilled in specified patterns. Wellfield patterns and designs are crucial to managing the flow of fluids within the uranium deposit, minimizing costs, maximizing efficiencies of production and assuring proper environmental controls. The resulting groundwater from the wellfields is pumped to the surface, where the uranium-bearing water is circulated through an ion exchange column, and uranium is extracted from the water onto resin beads. The uranium-depleted water is then re-injected into the subsurface uranium deposit and the cycle repeats.

When the ion exchange column's resin beads are fully loaded with uranium they are removed from service and replaced with fresh resin beads. The loaded resin beads are transported to a process facility where they are flushed with a salt-water solution, which liberates the uranium from the beads. This process results in uranium residing in slurry, which is then dried and packaged for shipment as uranium concentrate which ultimately will be converted to fuel.

TECHNICAL STATEMENT OF THE ISSUE

A bench scale ISR demonstration project is proposed that will examine the degree that uranium will be restored with the introduction of a reducing reagent which is intended to return the redox setting to pre-ISR conditions.

The geological, mineralogical and hydrologic conditions that are present at the Churchrock Section 8 deposit were formed in a natural setting that is similar in all respects to other parts of west-central New Mexico, and other areas of the western United States. In such cases uranium is a naturally occurring and mobile element in groundwater systems, including areas in and around ore deposits. It must be demonstrated that after the geochemical conditions of the uranium-bearing ground waters are modified by the ISR process, the groundwater can be restored to its pre-mining conditions once aquifer restoration has been completed. Thus, for the environmentally sustainable extraction of uranium from the Churchrock Section 8 sandstone-hosted uranium deposit, a well-based technical understanding of the pre- and post-restoration geochemical conditions and uranium mobility in the Churchrock aquifer is required.

The mobility of uranium in sandstone aquifers is fundamentally driven by solubility changes in groundwater that results from naturally-occurring reduction and oxidation (redox) processes. It is the fundamental understanding of this process that ISR technology is based upon. Uranium occurs predominantly in the tetravalent (U_4) reduced and hexavalent (U_6) oxidation states. The tetravalent form is common in uranium minerals such as uraninite and coffinite, which are common "ore" minerals in sandstone-hosted uranium deposits. In the tetravalent state uranium is insoluble and over time results in the accumulation of an ore deposit. The oxidized form of uranium (U_6) occurs principally as the uranyl ion (UO_2), which is highly soluble. In other words, uranium mineralization accumulates in the reduced form and uranium is highly soluble in oxidizing fluids.

The relationship between the oxidation-reduction (redox) reaction and uranium mobility is utilized in the ISR process. ISR involves the underground dissolution and removal of uranium from the sand grains in sandstone type deposits by introducing oxygen and then complexing fluids according to the following chemical formulas:

$$2UO_2 + O_2 \rightarrow 2UO_3$$
$$UO_3 + 2NaHCO_3 \rightarrow NA_2UO_2(CO_3)_2 + H_2O$$

Within sandstone-hosted uranium deposits, these redox induced changes in uranium solubility result in the classical redistributed uranium deposits, which are formed when uranium-rich waters move across a transition from oxidizing to reducing conditions, causing deposition of uranium at the redox interface.

It is important to insure that ISR operations result in uranium levels that are consistent with background levels once groundwater restoration has been completed. Groundwater restoration generally involves reverse osmosis treatments and recirculation of ground waters. A challenge that often arises at ISR sites is that natural uranium concentrations in the ground water in and around ore bodies is not only high, but also and spatially and temporally variable and that restoration to background may have not been well understood. The degree to which uranium can be restored compared to background conditions after ISR activity presents an issue of concern to stakeholders because of the potential change of the redox setting, even after restoration.

PROPOSED WORK PLAN

1.0 Overview

The bench scale restoration demonstration project or demonstration project described herein will include a field component where actual uranium-bearing sandstone and groundwater will be obtained from specific locations at the Section 8 property and a laboratory component where ISR operations and restoration will be simulated in a bench scale column test setting. The goal of the project will be to simulate and characterize both the ISR process and demonstrate the ground water quality restoration process following the conclusion of the ISR process.

The field component of the demonstration project will be to obtain core material from the Section 8 uranium deposit adjacent to existing background wells CR4, CR5, CR6 and CR8[2], from the same stratigraphic horizons that the four wells were currently completed in. These wells are spaced evenly across the Section 8 uranium deposit, representing groundwater and mineralogical dataset in a variety of locations across the ore body. Moreover, these wells have been subjected to an extensive one + year sampling campaign, representing a temporally diverse groundwater quality dataset. By core drilling adjacent to these wells in the same zone in which they are completed, the same zone will be subjected to ISR column testing as the water that is representative of the background geochemical characteristics of the deposit.

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[2] See Attachment 2 for the location of CR3, CR5, and CR6 & CR8.

The laboratory study component will be to design and duplicate in situ conditions to the greatest extent possible. Care will be taken through the handling process to preserve the core material (avoid exposure to air and subsequent oxidation) in the field, and in the laboratory. Water used to conduct the study will be collected from the existing wells near location of the core holes. Bench scale column testing methodologies will replicate in situ chemistry and hydrostatic pressure and temperature conditions.

The laboratory testing protocol will include a monitoring phase after the ground water quality restoration activities, during which natural ground water flow is replicated to simulate a post-closure ground water quality monitoring period in order to evaluate the potential for constituent concentrations in ground water to rebound.

As part of the analysis of the laboratory results, the research chemists will address the limitations of comparing results from the laboratory bench simulation phases to expected results from processes that would occur in the natural environment, including but not limited to the use of crushed core material within the laboratory column environment in comparison to mining and restoration activities within undisturbed aquifer. But even with this type of evaluation it should be noted that the removal of the core materials from the site may alter some of the properties of the material, and crushing/compositing these same samples somewhat modifying their natural characteristics. Every precaution will be taken to minimize oxidation of the core, by sealing core material in a nitrogen-filled vessel as soon as it is removed from the ground. Likewise the core for the study will be prepared by crushing under nitrogen and then sealing it again and inserting it into the metallurgical test columns as soon as possible. The bench-scale demonstration will represent the best opportunity to evaluate whether the chemistry of the deposit is amenable to the proposed operation both in the uranium recovery and the restoration phase without, actually conducting ISR in the field.

Although the proposed work plan focuses primarily upon demonstrating the ability to restore ground water uranium concentrations, during the study the researchers will consider whether mitigation of other potential ground water quality parameters that may be associated with the proposed mining/restoration activities also can be simulated and characterized within the proposed laboratory test protocols. Finally, the introduction of a reducing gas during the ground water quality restoration simulation phase, which would enhance the reestablishment of natural anoxic conditions as part of the restoration activity, will be tested.

2.0 Field Work.

The coring drilling program will be conducted in the field and be managed by licensed geoscientists from NuFuels Technical Services Group. Four core holes are planned. The four core holes will be drilled as offsets to the existing background wells CR-3, CR-5, CR-6 and CR-8; all completed in the Westwater Canyon Member of the Morrison Formation. The planned drill hole locations represent the diverse spatial, mineralogical and redox characteristics of the Section 8 uranium deposit that were previously studied and approved by federal and state regulators for preliminary background sampling associated with permitting and licensing. Moreover, extensive temporal water sampling has been conducted from the CR monitor wells, as shown in Table 1:

Table 1. Churchrock Section 8 Sampling History

Well #	# Samples	Initial Sample	Last Sample
CR-3	13	12/15/87	3/28/89
CR-5	12	12/25/87	3/28/89
CR-6	12	12/15/87	3/29/89
CR-8	6	10/11/88	3/29/89

Core drilling operations will utilize a standard 1500 or 2500 class rotary drill rig mounted on a three axle, rubber tired truck. Support equipment will include a drill shack, backhoe, drill pipe trailer, and two pickup trucks for drill crew and geologists. Drilling fluid management will be completed through use of earthen pits, or surface containment units with mechanical sand separation (separated sand disposed of in earthen pit). Total size of each drill pad will be 10,000 square feet (~0.25 acre) or less. All drill pads and access roads would be laid out and prepared as necessary prior to start of drilling operations. When not actively used for drilling, certain drill pads may be used for staging of materials and equipment.

The upper lithologies of each drill hole will be penetrated with standard mud rotary drilling techniques, using bentonite-based drilling fluids, with minimal additives to control swelling and spalling of the Mancos Formation. The standard rotary drill tools would be switched out for PQ core drilling equipment (PQ = 3.345 in. diameter core), or similar, prior to intersecting the target formation(s) for core collection. Drilling fluids will be thinned as practicable to prevent core damage while still maintaining drill hole wall stability. Core may be collected within both the Poison Canyon Sandstone and the Westwater Canyon Member of the Morrison Formation, which are the geologic units that host the uranium mineralization in the Churchrock district of the Grants Mineral Belt. Total vertical section cored in each drill hole will be determined by the on-site geologist, and will be based on well-defined data requirements. All drill depths and core points will be based on drill hole data from the existing background wells and adjacent historical exploration holes, as well as by direct observation by NuFuels geological staff.

Once a core has been brought to the surface, it will be cleaned, measured, preserved in the field from oxidation by sealing the core in airtight plastic sleeves and purging the sleeves with nitrogen and boxed. The core will be taken to NuFuels Crownpoint facility for detailed geological examination and description. After the core has been processed it will be shipped to the research laboratory.

All of the core holes, including those intervals that will be drilled by rotary methods, will be logged (examined and geological and mineralogical characteristics recorded) by the site geologist. Following completion of the core holes, drilling fluids will be circulated to clean and stabilize the hole prior to geophysical logging. Geophysical logging will be completed either with a logging truck owned by an independent geophysical contractor. Down hole geophysical logs that will be run include prompt fission neutron (PFN), natural gamma, spontaneous potential (SP), short-normal resistivity, and a drill hole deviation survey. Additionally, a caliper log may be included.

The logging data shall be used to demonstrate stratigraphic and mineralization correlations with the adjacent monitor wells. Specifically, this logging information will be used when compiling and analyzing available stratigraphic and geochemical data from the four existing Westwater Canyon monitor wells. The logs of the proposed core holes will also be compared with logs from former nearby exploration holes to confirm that the proposed core holes sampled material that is representative of the uranium deposit.

After completion of geophysical logging the drill holes will be plugged and abandoned with a cement mixture, in adherence with the regulations of the New Mexico Office of the State Engineer for uranium exploration drill holes. Plugged and reclaimed drill holes will be marked on the surface with a stake and identifying number. A geodetic survey of each drill hole collar will be completed following abandonment.

Reclamation of surface disturbances will be undertaken once all drilling operations have been completed. Drill pads and access trails will be reclaimed in accordance with the rules and regulations of the Mining and Minerals Division of the New Mexico Energy, Minerals and Natural Resources Department guidelines, including backfilling of earthen pits, chipping of vegetation, surface contouring, soil preparation, and application of a seed mixture. All cuttings will be contained during drilling activities, and buried beneath at least 3 feet of clean fill material.

As stated, each core well will be located within approximately 25 feet of the existing cased wells CR-3, CR-5, CR-6 and CR-8. The final drill hole locations will be determined in the field, based on logistical considerations. Core hole drill hole depths and coring intervals are described in Table 2, below and illustrated on the geophysical logs in the Attachments[3]. Depth and interval metrics correspond to the twin cased wells CR-3, CR-5, CR-6 and CR8. The core hole that offsets well CR-8 will be cased and completed as a new monitoring well; CR8a. It will be screened within mineralized zones that have uranium grades of 0.03% U_3O_8 and higher, as determined from the geophysical logs.

The ISR and restoration simulations will utilize ground water from the project site, as well as similar chemical supplements (e.g., lixiviant and restoration additive constituents) in proportions that would be used at the site during actual mining and ground water quality restoration activities. Therefore, sufficient water shall be obtained from the existing monitor wells CR-3, CR-5, & CR-6 to conduct the full cycle column tests and provide for analysis of the water to compare against and confirm previous water quality sample results. Moreover, sufficient water shall be obtained from well CR-8a to conduct the full cycle column study. Water analysis from CR8 will be compared with water from CR-8a.

Table 2. Churchrock Section 8 Monitor Well Information

Existing Monitor Wells	Total Depth (feet)	Interval (feet)
CR-3 (offset)	914	690-914
CR-5 (offset)	910	691-910
CR-6 (offset)	797	590-797
CR-8a	900	TBD

[3] See Attachment 3 for geophysical logs.

Water for analysis will be containerized separately for each well sampled. Each well shall be pumped until the water is free of mud and foreign material and until conductivity and pH have stabilized. Sample preservation, analysis and analytical quality control shall be as defined in the most recent issue of Methods for Chemical Analysis of Water and Wastes (EPA- Technology Transfer).

Agency staff shall be notified of each step in the field work so that they can attend and participate jointly in the activity as desired.

3.0 Laboratory Work.

Los Alamos National Laboratory (LANL) in New Mexico will perform the column studies. NuFuels plans to send core collected from the four drill holes to LANL, where the samples will be prepared and blended into one or more composites for each hole location for testing purposes.

Essential elements of the column tests will consist of the following procedures, as appropriate:

3.1 Sample Preparation and Characterization

Core will be split into one test portion and one archive portion. The archive portion will be vacuum sealed. The test portion will be stage crushed to 1/2 inch and composited for column testing in the laboratory in an oxygen free setting to assure that the hydrochemical and geochemical conditions that would be simulated in the laboratory activities would approximate as closely as possible those that would be encountered during actual ISR operations. The composite will be split into a mineralogy sample and an assay pulp.

Compositing of core material for the column study will be completed at LANL by NuFuels and LANL scientific staff. Visual observation and description of the core will be coupled with the down hole geophysical logs and radiometric screening of the core in the lab to determine the most appropriate material for inclusion into each individual column. Physical properties such as permeability, grain size, and sorting will be just as important in the selection of material as mineralogy and uranium content. NuFuels and LANL will work together to construct the most representative sample possible for the column study. Once the composite from each core hole has been assembled, mineralogy and assay samples will be split.

A number of analytical tests will be performed on the core material as shown in Table 3. Detailed uranium mineralogical and clay species and estimates of concentration studies will be done on selected samples in each of the holes cored. This study would include optical analyses, microprobe analyses (EMP) and QEMSCAN® (if required) in order to quantify the chemistry of the uranium bearing minerals. The same polished sections used for the QEMSCAN® analyses would be used for EMP analyses to determine low concentrations of uranium in different mineral hosts that may be refractory towards recovery. Moreover, post uranium recovery studies will be conducted to look at the alteration products (mostly clays) that may influence restoration.

Table 3. Analytical and Mineralogical Testing

Constituent
Uranium (Fluorometric method)
Uranium (ICP-MS method)
Total Organic Carbon
Geochemical Profile (ICP-MS 24 elements)
Uranium (Closed can gamma eU)
Bulk Density
Mineralogy
XRD
SEM
QEMSCAN
Clay Mineralogy by XRD/XRF
Total

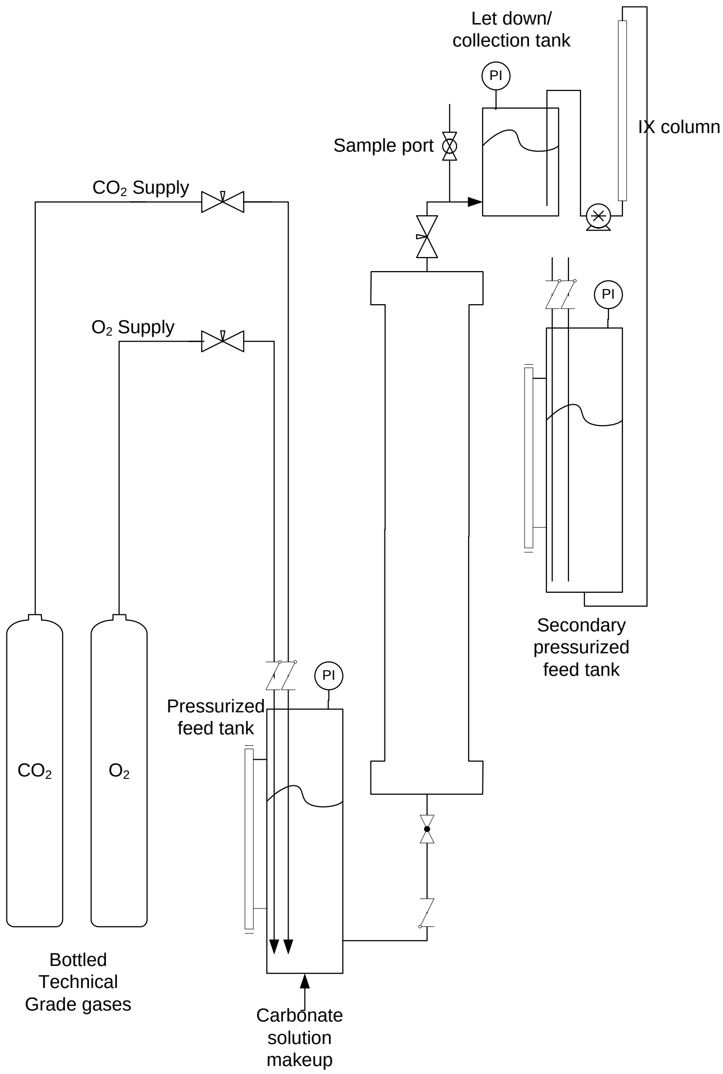
The results of the head assays and mineralogical investigations may drive decisions on the components of the experiments. LANL will work closely with NuFuels to identify the necessary test charges.

3.2 Pressurized Column Experiment

LANL will perform four experiments utilizing a 4 inch diameter by 6 feet steel columns. Because the proposed operating pressure exceeds 150 psi, LANL will fabricate columns specifically for the project. This geometry equates to about 15 Liters (3.8 gal. or 0.52 ft^3) of column volume. Four columns are planned to run concurrently. For sizing purposes it is assumed the pore volume (PV) of the column would be approximately 30% of the column volume, or 0.16 ft^3. The experiments will consist of a uranium recovery phase where fortified water is circulated through the columns and a restoration phase where reverse osmosis water with a reductant is circulated through the columns. An approximate[4] 30 PV (pore volume) program is planned during the uranium recovery phase, followed by approximately five 2 PV restoration cycles, although it is understood that the uranium solution response will dictate the length of both phases of the experiment. As a starting point, fortified water will be added to the column at a rate that will irrigate 10 PV in 84 days, necessitating adding 530 mL to the column each day. For the restoration, each 2 PV simulated reverse osmosis cycle will add wash water at the same rate. All water used in the experiment will be generated utilizing site water in order to closely model the conditions in the field.

A flow diagram of the proposed column experiments is shown in Figure 1. Note that this drawing represents a single column system, which will be one of a set of four identical systems.

[4] % U recovery will dictate the duration of the recovery cycles. NuFuels would use the same uranium recovery factor that is used in its commercial feasibility work; 70%.



Leach system will consist of the following procedures:

1) Each extraction column will have its own feed tank, let down tank, IX column and secondary lixiviant tank.

2) Lixiviant feed tank is filled with site water, sealed, pressurized to operating pressure with gaseous O_2 and CO_2 at a ratio of 99:1. Solution is allowed to age for several days. Head pressure is topped with O_2 each day. pH is adjusted by K_2CO_3 as needed.

3) Irrigation begins utilizing O_2 pressure as the mobilizing force. Flow through the individual columns is controlled by the outlet valve. PLS is collected in the let down tank at ambient pressure.

4) Each calendar day, 530 ml is removed from each column. Flow then stops until the next day.

5) Once sufficient volume has been collected in the let down tank, the PLS is pumped through an IX column containing a strong base anion resin.

6) Effluent from the IX column is collected in a secondary feed tank, which is then conditioned for use in the column in a manner identical to that in step (1). This is done at such a time that the tank can sit for several days prior to the intended use.

7) Once the liquid level of the lixiviant feed tank is low, this tank is swapped out for the secondary pressure tank. The roles of the tanks then swap as well.

Figure 1. Pressurized column setup (one of four proposed systems shown).

Gaseous oxygen and carbon dioxide will be introduced and maintained in groundwater lixiviant supply solution at sufficient concentrations to ensure oxidizing conditions and sufficient carbonate ion concentration, as well as to increase the vessel pressure to supply motive force for flow through the column. Potassium bicarbonate and/or carbonate will be added to the lixiviant make up at a concentration of 1 g/L prior to tank pressurization to adjust pH as necessary. To ensure oxygen saturation at the experimental conditions, the prepared lixiviant will be allowed to sit for several days prior to using in the column experiments to allow the oxygen to reach equilibrium. The pressure will be topped off with oxygen during this period to ensure that the solution remains in equilibrium with the head space.

These conditions will model the subsurface conditions at approximately 450 feet of hydrostatic pressure. The proposed equipment setup will be able to approximate conditions at 625 feet of hydrostatic head pressure, if necessary. It is assumed that all lixiviant will be introduced into the system using oxygen gas pressure in a single pass operation; the entire program is expected to require 100 L of site water, although a program longer than the proposed 30 PV for uranium recovery and 5 x 2 PV restoration cycles will require more site water, and it may be prudent to have a larger volume available so all the site water can be mixed, sampled and tested as one lot.

The column uranium recovery operation will pull uranium rich solution samples 4 times per week from each column for the first 4 weeks of recirculation through the columns, then 2-3 times per week for the next 8 weeks or until it is determined that the uranium recovery is complete for the needs of the project. All samples will be analyzed for uranium, with select samples also analyzed for V, Mo, Se, P, Si, Ca, F, Cl^-, total organic carbon, and other metals as needed for metallurgical purposes. In addition, parameters specified by NuFuels in consultation with stakeholders will be analyzed by an additional third party National Environmental Laboratory Accreditation Program (NELAP) certified laboratory as requested. PH will be recorded on all samples, as will pressure readings across the column.

LANL will set up a laboratory scale reverse osmosis (RO) unit for use in the restoration phase. The first restoration cycle will consist of adding approximately 2 PV using sodium sulfide or another reductant to remove dissolved oxygen and reduce remaining uranium and other species. This will be followed by a 2 week rest period and then 4 subsequent 2 week washing cycles with deaerated site water or lixiviant that has been processed by the RO as requested. This pattern can be repeated as much as needed, perhaps with other reductants, to generate the desired restoration data required by the study objectives.

The restoration operation will be similar to the uranium recovery phase with regard to the frequency of sampling and species analyzed. Any geologic data available about the resource, coupled with the data generated during the experiment, will be used in determining any parameters to examine which are not specified by NuFuels.

REPORTING

A comprehensive report covering all aspects of the demonstration project will be completed after the laboratory testing activity is complete. NuFuels will prepare a complete account of the drilling and coring to include all logging and completion information. LANL will produce a summary report after completing the test work that will include copies of all laboratory data sheets. The report will describe procedures, document all process data generated during the operation, provide our observations and all analytical results, and of its progress through informal e-mail or oral reports. Both the NuFuels field report and LANL summary report will be combined into a consolidated report for distribution to stakeholders and review.

SCHEDULE

The field work required to conduct the study will require about 10 weeks. This will include contracting and scheduling drilling, logging and water sampling equipment, mobilization, drilling, reclamation and demobilization. LANL estimates that the entire laboratory program could be completed approximately 54 weeks from the date that NuFuels and LANL execute a contractual agreement and samples are delivered to LANL. If uranium recovery or restoration behavior dictates, the period of performance will be lengthened or shortened as needed. With that the following schedule for the project is estimated:

Activity	MONTH																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Contract Drilling	■																
Mobilize		■															
Drill Core			■														
Reclamation				■													
Laboratory				■	■	■	■	■	■	■	■	■	■	■	■	■	■
Final Report																	■

CONCLUSION

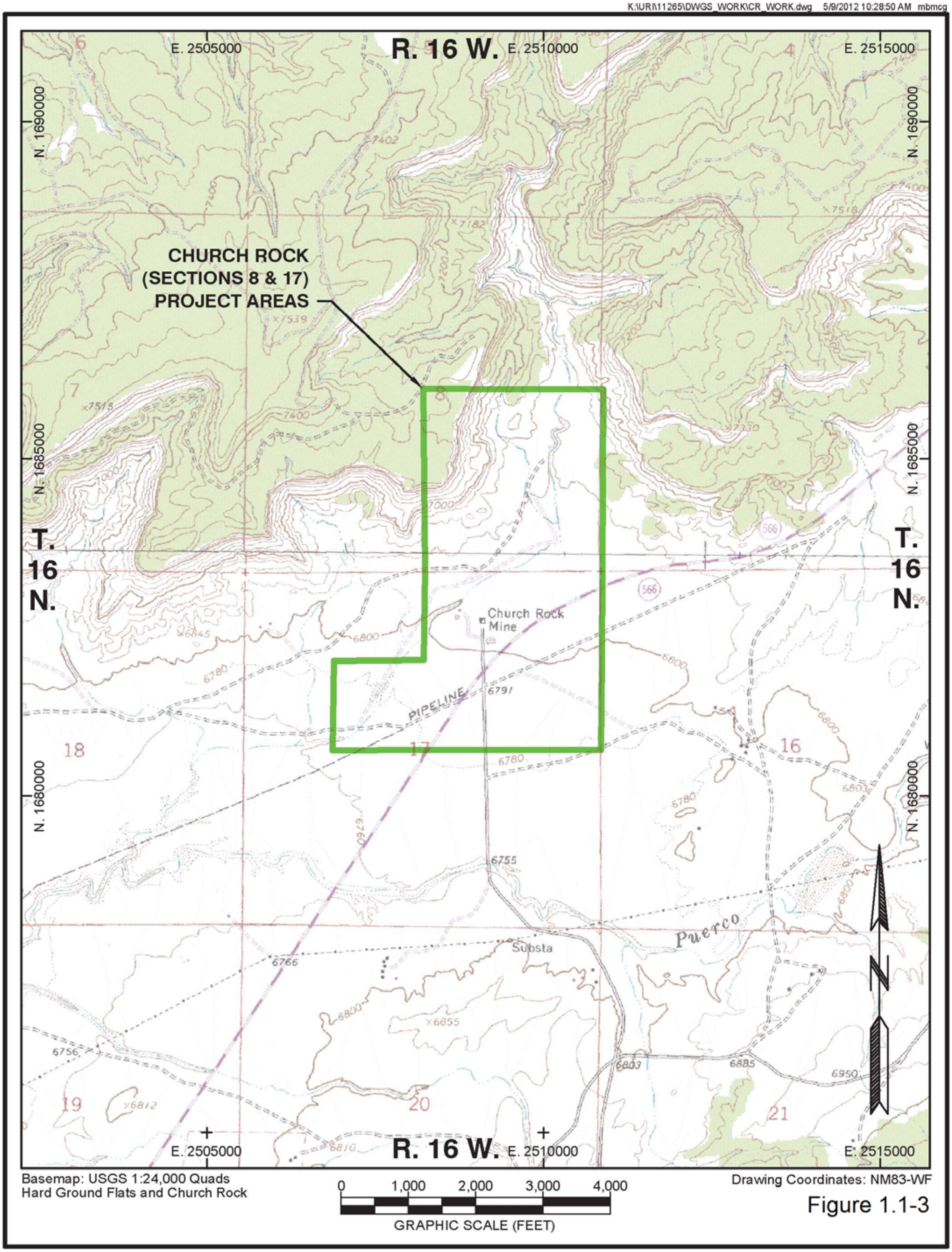
As stated earlier, it is critical to insure that ISR operations result in uranium concentrations in groundwater at the project site that are consistent with pre-extraction background concentrations once groundwater restoration is completed. It is important to recognize that natural uranium concentrations in the ground water in and around uranium deposits, including the Churchrock Section 8 deposit, are not only naturally high, but that they are spatially and temporally variable. ISR results would be expected to be equally variable from place to place. This test will utilize water from various locations within the Section 8 uranium deposit with a range of background uranium concentrations, use this same water in controlled column ISR tests with rock derived from the same interval as the groundwater, and then simulate ground water restoration with the same RO process that is proposed for the Churchrock location on a commercial scale. Additionally, a commercially available reductant will be utilized to examine the effect of this reagent on uranium restoration. Finally the entire system will be allowed to rest to examine the potential for rebound. This test will provide excellent evidence of the expected results that would be encountered during uranium ISR and restoration of the Section 8 deposit on a commercial scale.

Attachment 1
Churchrock Section 8 Location

Attachment 2
Location of CR Wells Relative to Ore Fronts

Attachment 3
Geophysical Logs.

Attachment 1
Churchrock Section 8 Location



Basemap: USGS 1:24,000 Quads
Hard Ground Flats and Church Rock

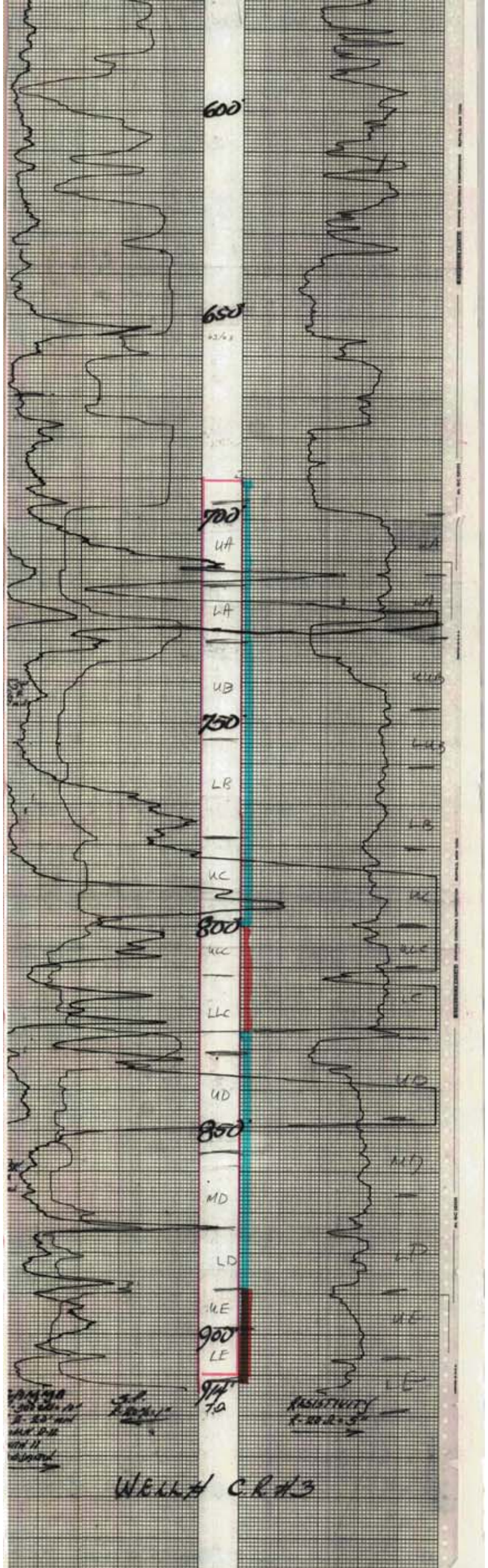
Drawing Coordinates: NM83-WF

Figure 1.1-3

Attachment 2
Location of CR Wells Relative to Ore Fronts


HYDRO RESOURCES
OLD CHURCHROCK MINE
COMPOSITE FRONT MAP

Attachment 3
Geophysical Logs.



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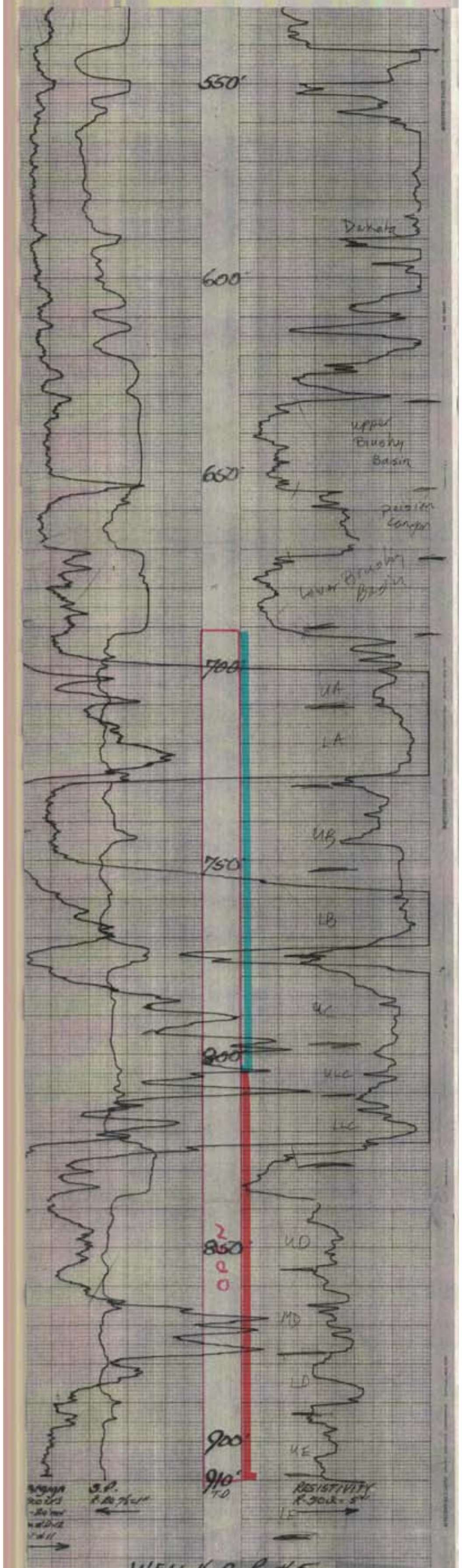
DALTON WELL LOGGING

DATE NOV. 6 1982



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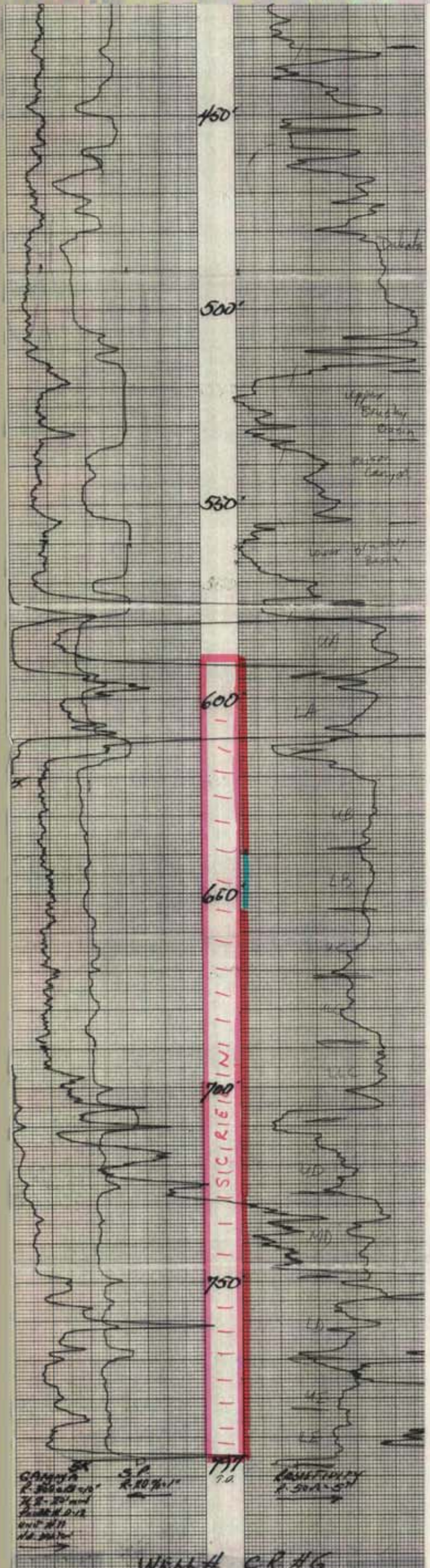

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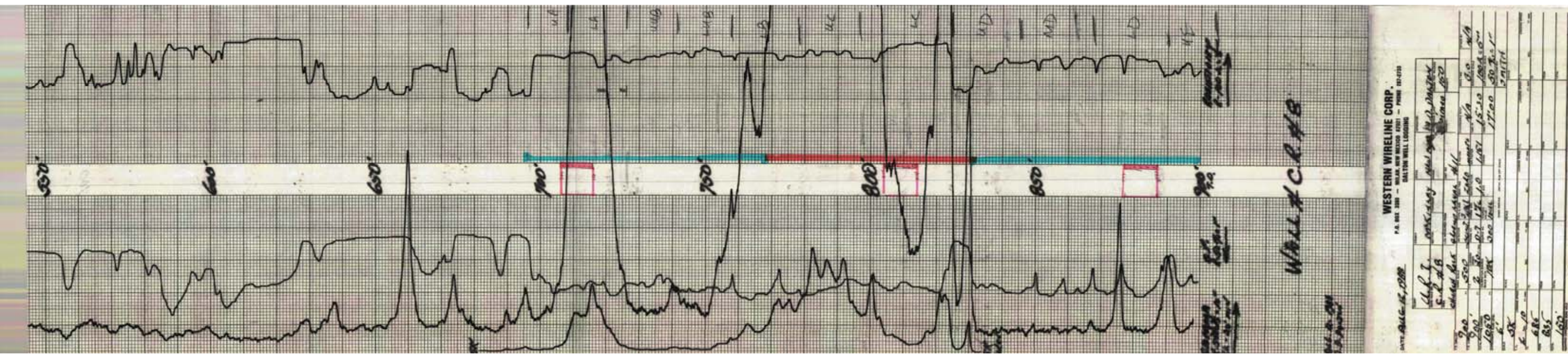
DATE Dec. 1, 1981

URI	McKinley		
CR #6			190
		#11	

797'			3.0
797'			
	7AK	797	18:00
10'			SMITH
5K	5		
797	620		
695	520		
102	50		



500'
550'
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650'
700'
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WELL # C R #8
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