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LIST OF ACRONYMS

Acronym	Definition
ACM	Asbestos Containing Material
AFB	Air Force Base
ANSI	American National Standard Institute
ASME	American Society of Mechanical Engineers
ATV	Acoustic Televiewer
BA	Building Authority
BGS	Below Ground Surface
BOI	Beneficial Occupancy Inspection
CAP	Contractor Acquired Property
CFR	Code of Federal Regulations
cm	Centimeter
CM	Construction Manager
CSM	Certified Safety Manager
°	Degree
DOE	Department of Energy
EJTA	Electronic Job Task Analysis
EPA	Environmental Protection Agency
EPEAT	Electronic Product Environmental Assessment Tool
EPP	Environmentally Preferable Products
ES&H	Environmental Safety and Health
FCR	Field Change Request
FEMP	Federal Energy Management Program
ft	Foot/Feet
FWS	Field Work Supervisor
GFE	Government Furnished Equipment
GFP	Government Furnished Property
gpm	Gallons Per Minute
IAT	Integrated Acquisition Team
IBC	International Building Code

Acronym	Definition
ID	Inside Diameter
IPT	Integrated Project Team
ISSM	Integrated Safeguards & Security Management
JHA	Job Hazard Analyses
K	Potassium
kV	Kilovolt
LAS	Log ASCII Standard
M&O	Maintenance and Operation
M&TE	Measuring & Test Equipment
m	Meter
mg/l	Milligram/Liter
MSTS	Mission Support and Test Services, LLC
LAO	Los Alamos Operations
LO	Livermore Operations
NDEP	Nevada Division of Environmental Protection
NDWR	Nevada Division of Water Resources
NAFB	Nellis Air Force Base
NFO	Nevada Field Office
NLV	North Las Vegas Facility
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
NSF	National Sanitation Foundation
NTP	Notice to Proceed
NTU	Nephelometric Turbidity Unit
OCC	Operations Command Center
OSHA	Occupational Safety and Health Administration
PAAA	Price Anderson Amendments Act
PDF	Portable Document Format
PDS	Product Data Sheets
%	Percent
PMP	Project Management Plan

Acronym	Definition
PO	Purchase Order
PPE	Personal Protective Equipment
ppm	Parts Per Million
QA	Quality Assurance
QAP	Quality Assurance Plan
QC	Quality Control
RCM	Radiological Control Manual
RCP	Radiological Control Plan
RCS	Respirable Crystalline Silica
RFI	Request For Information
RFP	Request for Proposal
RGD	Radiation-Generating Devices
RPP	Radiation Protection Program
RSL-A	Remote Sensing Laboratory - Andrews
RSL-N	Remote Sensing Laboratory - Nellis
RWP	Radiological Work Permit
SDS	Safety Data Sheets
SME	Subject Matter Expert
SOW	Statement of Work
SSSP	Site-Specific Safety Plan
STL	Special Technologies Laboratory
STR	Subcontract Technical Representative
SUP	Superintendent
TBD	To Be Determined
Th	Thorium
TIFF	Tagged Image File Format
TW	Test Well
U	Uranium
USGS	United States Geological Survey
WBT	Web-based Training

B-1 INTRODUCTION/BACKGROUND

1.1 Introduction

The Nevada National Security Site (NNSS) is a U.S. Department of Energy, National Nuclear Security Administration (NNSA) installation, operated by Mission Support and Test Services, LLC (MSTS or CONTRACTOR), comprising approximately 3,561 square kilometers (1,375 square miles) of federally owned land located in southeastern Nye County, Nevada. Located approximately 105 kilometers (65 miles) northwest of Las Vegas, Nevada, the NNSS is accessed from U.S. Highway 95, which roughly forms the southern boundary of the site.

The MSTS also operates the North Las Vegas Facility (NLV); the Remote Sensing Lab at Nellis AFB, North Las Vegas, NV (RSLN); the Remote Sensing Lab at Andrews AFB, Maryland (RSLA); Special Technologies Lab at Santa Barbara, CA (STL); Livermore Operations at Livermore, CA (LO); and Los Alamos Operations at Los Alamos, NM (LAO).

1.2 Background

The NNSS has active water supply wells that were installed from 1951 to 1990. Historically, the NNSS has asserted federal water rights, and no known record exists indicating a limit to withdrawals across the site; however, water permitting in the state of Nevada has been previously limited based on the annual perennial yield of a hydrographic basin as defined by the Nevada Division of Water Resources (NDWR). The NNSS currently draws most of its groundwater from the Ash Medows Flow System in the eastern half of the site. A long-term goal of the NNSS water system is to balance groundwater water withdrawal across the site by reducing pumping from the eastern basin and increasing withdrawal from the Fortymile Canyon System in the western basin. The test wells to be installed under this project are located in the western basin.

B-2 OBJECTIVE

MSTS requires the services of an experienced SUBCONTRACTOR to provide groundwater exploration well drilling and pumping test services to provide geologic, hydrologic, and water quality data from two test well locations. The test wells will be drilled sequentially, with an anticipated demobilization and remobilization phase between wells. Each well will be included in a separate task order under the subcontract agreement. The MSTS Geosciences Group, United States Geological Survey (USGS), and other MSTS subcontractors will use the results of the first test well to complete groundwater resource evaluations and determine the best location for the second well. If the first well site is favorable for groundwater development, the second test well may not be installed.

B-3 DESCRIPTION OF WORK

The SUBCONTRACTOR shall provide technically qualified resources that work as a part of a team under the direct oversight of MSTS. SUBCONTRACTOR shall be responsible for independent planning, organizing, and performing the scope of work identified herein to complete specific activities and deliverables.

Activities and deliverables include, but are not limited to:

- Obtain and provide qualified and approved personnel as required within this Statement of Work (SOW)
- Obtain and provide certified Professional personnel as required within this SOW
- Obtain and provide equipment, materials, and labor to operate primary and secondary tasks required for both operations and operational support of the scope of work as stated below
- Provide needed support personnel, as required, to successfully perform the scope of work as stated below
- Obtain and use all licensed software required to complete scheduling, quality assurance/quality control,

inspections, reporting, etc. requirements
- Obtain and use all licensed software to successfully provide required drawings and other documents required for testing, as-built, and turnover requirements as stated within the scope of work below
- Perform all logistics required to adequately transport employees to and from site during badging, mobilization, execution, testing, and demobilization
- Provide all PPE and other safety equipment/material (i.e.. potable drinking water, cooling areas, and rest areas) required for safe execution of the test well(s)

The goals/objective of this scope of work include, but are not limited to:

- Successful completion of test well development and completion of testing within 2.5 months of Notice to Proceed (NTP) for mobilization to site
- Successful achievement of no safety incidents during mobilization, drilling, testing, and demobilization from the NNSS
  - Objective is no safety incidents including wildlife, heat, workplace injury, near misses, etc.
  - Safety is both an individual and team responsibility
- Proactive, collaborative engagement with all team members, as a cohesive team throughout project including during pre-mobilization
- Successfully completing all training, medical requirements, badging, and pre-mobilization deliverables prior to the required start of mobilization
  - Pre-mobilization submittals are required to be submitted by the SUBCONTRACTOR within ten (10) days of Contract Award
- Successful completion and timely turnover of all project deliverables upon project completion
- Successful deconfliction of logistics and operations with adjacent Site Operations

The SUBCONTRACTOR shall furnish all necessary labor, technical and professional services, supervision, materials, tools, equipment, consumables, and payment of any applicable taxes to perform all operations necessary and required to perform the scope as directed by MSTS.

Unless otherwise approved, the SUBCONTRACTOR shall work in accordance with MSTS subcontract requirements, operating policies and procedures and shall be responsible for execution of the work in accordance with the quality standards and requirements specified for the assigned project and facility.

Required resources (labor, equipment, and material) to accomplish this scope of work include (but are not limited to):

- All personnel, equipment, materials, supplies, fuel, drilling fluids, and other services required to drill up to two (2) 10-inch [25.4-centimeter (cm)] inside diameter (ID) test wells. The maximum depth of the wells below ground surface (bgs), screened intervals, and static water levels are summarized in Table 1 (below).

  NOTE: The information contained in Table 1 is derived from preliminary geologic and hydrologic models completed by the CONTRACTOR. Final depths drilled at each test well location will be determined by the CONTRACTOR based on the geology encountered and the potential groundwater yield.

*Table 1 Modeled Test Well Data**

Test Well (TW)	Hydrographic Area	Maximum Well Depth (ft bgs)	Screened Interval (ft bgs)	Static Water Level (ft bgs)
01	227B Fortymile Canyon Buckboard Mesa	4,425	3,925 – 4,425	647

Test Well (TW)	Hydrographic Area	Maximum Well Depth (ft bgs)	Screened Interval (ft bgs)	Static Water Level (ft bgs)
02	227A Fortymile Canyon Jackass Flats	3,225	2,725 – 3,225	1,619

*Data source: Table 1.1, *Task 2: Regional Water-Level Analysis, based on Pumping from Proposed Wells at the Nevada National Security Site (NNSS)*, Universal Engineering Sciences™, *September 19, 2024*

- General stratigraphic cross sections and hydrostratigraphic model slices can be found in the Regional Water-Level Analysis report cited above. This report will be made available upon request. The subsurface geologic maps shown in the report are based on limited available data. The actual geology encountered during drilling may vary significantly from the cross sections and model slices. The hydrostratigraphic units depicted at TW-01 include interbedded volcanic aquifer and confining units from ground surface to approximately 2,790 feet bgs, and carbonate aquifer deposits to the total depth of the boring at 4,425 feet bgs. The hydrostratigraphic units at TW-02 are depicted as volcanic aquifer and confining units and clastic confining deposits from ground surface to 1310 ft bgs and carbonate aquifer deposits to the total depth of the boring at 3,225 feet bgs. It is the SUBCONTRACTOR's responsibility to be aware of the site-specific geology and drilling conditions when planning and executing all proposed drilling methods and processes.
- A source of water for drilling and well construction will be available to the SUBCONTRACTOR from an active supply well on NNSS. The SUBCONTRACTOR shall provide a clean water truck and all other required means of water conveyance from the supply well to the drilling site. The SUBCONTRACTOR shall furnish and maintain adequate bulk water storage tanks at the drill site for their use. These bulk water storage tanks shall be certified for potable water use. A local connection to a public drinking water system will not be available near the drill site.
- For the purposes of this SOW, the bidder shall assume, the test wells are to be completed similar to the configuration shown in the Test Well Construction Schematic drawings TW01 and TW02, Appendix B. All downhole drilling products, materials, and tooling shall be American National Standard Institute/National Sanitation Foundation 61 (ANSI/NSF 61) certified unless otherwise instructed by the CONTRACTOR.
- The SUBCONTRACTOR shall submit a general drill pad layout drawing with their proposal, including pad dimensions, excavated pits, location of drilling equipment, site trailers, and storage containers. Due to physical or administrative limitations, the overall drill pad dimension at TW01 is restricted to 200 ft x 400 ft and TW02 pad is restricted to 400 ft x 450 ft. Maps of the test well location and drill pad locations are included in Appendix C.
- The SUBCONTRACTOR shall develop and provide a summary level Project Management Plan (PMP) with their proposal. The PMP shall describe the approach regarding management and allocation of resources to support the test drilling and pumping test work to be executed under this subcontract. The PMP shall include sections on project management, scheduling, financial management, personnel management, safety management, quality management, the process to respond to Requests for Information (RFI), the process for providing support for urgent issue resolution, the process for preparing field change requests (FCR), the process for providing calculations and schematic drawings, process for performing field inspections, process for completing geophysical logging, and all other activities as required for timely completion of the test drilling and pumping test services.
- The SUBCONTRACTOR shall include a Staffing Plan within the summary level PMP, with representative resumes for Key Personnel as identified in Section B-4.2 below. The SUBCONTRACTOR Staffing Plan shall include shift rotation plans. The inclusion of a Project Approach

that shows a clear understanding of the Scope of Work and required personnel to support the Scope of Work may receive higher consideration during proposal evaluation.

- The evaluation of proposals will focus on whether the proposal demonstrates that the SUBCONTRACTOR has the capability to provide fully qualified personnel throughout the life of the project. Exhibit A, Form H, Project Organization Description shall be used for providing this information.
- All field change requests and/or requests for deviation from the agreed work plan, design, or processes shall be submitted to the CONTRACTOR's appointed STR. The SUBCONTRACTOR shall follow the direction of the STR, providing the field change does not impact scope or funding. Changes involving scope or funding shall be forwarded to the Subcontract Administrator for disposition. The SUBCONTRACTOR shall not proceed with scope or funding changes unless authorized by the Subcontract Administrator.
- **Pre-Execution Submittals:** The SUBCONTRACTOR shall submit a Work Plan, Quality Assurance (QA)/Quality Control (QC) Plan, Site Specific Safety and Health Plan (SSSP) and other submittal documentation to the CONTRACTOR as listed in Section B-12 Deliverables. Descriptions of the Work Plan, QA/QC Plan and SSSP are included below. Additional descriptions of the SSSP requirements are included in Exhibit E.
    - Pre-Execution Submittals must be submitted no later than ten (10) days after Contract Award
- **Work Plan:** A Work Plan shall be developed and submitted by the SUBCONTRACTOR, which shall include/provide:
    - Drawings, specifications, calculations, and all necessary technical details to describe the test drilling and geologic sampling approach
    - Detailed wellbore plan and diagram to include borehole diameter and casing sizes
    - Verification of all dimensions, measurements, regulatory criteria, and equipment listed in the Work Plan
    - Detailed list of equipment, materials, and the key personnel proposed to execute the test drilling work
    - Key personnel include the SUBCONTRACTOR's Project Managers, Drilling Superintendents/Foremen, Drill Rig Operator, and Safety Managers
    - Provide references to drilling industry standards as applicable
    - Describe the proposed methods for drilling, casing installation, geologic sample collection, plumbness measurement, sample retrieval, casing installation, quality control inspections, and waste management
    - Target schedule, including mobilization, set-up, drilling, pumping tests, demobilization, and closeout.
    - The project schedule shall provide sufficient detail to identify the major identifiable elements of the project that may constitute a reasonable basis for progress reporting and/or payment. The SUBCONTRACTOR's completion schedule must be consistent with the site access restriction schedule described in section 3.1.
    - Summary of proposed measures taken to prevent, contain and dispose of fluids that could cause environmental release of a hazardous substance
    - All generators and fuel tanks shall be protected by undamaged spill protection pad
    - Equipment information, including make, model, serial number, size of day tank, fuel tank information, and license plate (if applicable) (including photos of name plates). NOTE: Generators utilized for longer than 12 months will require air emission permitting.
    - Procedures for decommissioning dry wells in the event adequate groundwater is not encountered or for converting non-productive wells to NDWR compliant monitoring wells
- **QA/QC Plan:** SUBCONTRACTOR shall submit a QA/QC Plan which includes/provides the following:
    - Description of work to be executed in compliance with the standards referenced in the Work

Plan

- Specify appropriate verification methods for quality control of drilling operations, measurements, equipment operation, and material accounting
- Section for personnel certifications, such as for Welders, Drillers, and Safety Professionals
- Will be approved by the CONTRACTOR prior to mobilization to site

- **SSSP:** The SSSP is an over-arching document defining how work will be performed**.** The SSSP will include/provide the following:
  - Job Hazard Analyses (JHA) for all relevant activities to take place on site and Product Data Sheets (PDS) and Safety Data Sheets (SDS) for all products and chemical hazards on site
  - The SSSP shall be approved by the CONTRACTOR prior to mobilization to site and shall be kept as hard copy on site during execution
  - The Exhibit E (SSSP) Checklist includes all the sections that the CONTRACTOR has identified as applicable for this subcontract
    - The SUBCONTRACTOR may add other sections that they determine to be necessary
    - Exhibit E defines specific requirements that differ from, or are in addition to, other federal, state, and local regulations that must be adhered to when working on sites governed by 10 CFR Part 851 and OSHA 3886-01R 2012, “Recommended Practices for Safety & Health Programs in Construction”
- **Site Utilization Plan (SUP):** SUBCONTRACTOR shall submit a Site Utilization Plan which includes/provides the following:
  - Placement of all equipment, storage, and temporary construction facilities.
  - Graphically depictions of all SUBCONTRACTOR owned/rented and operated equipment inclusive (but not limited to) drill rigs, drilling equipment, drilling supplies, pumps, generators, storage areas, fuel tanks, fuel spill containment, water storage tanks, office facilities, site lighting, vehicular traffic areas, parking areas, and office facilities
  - Will be clearly and correctly labeled, specifying equipment, material, storage, office areas, etc. (as stated above)
  - SUBCONTRACTOR’s requirements for drill pad surface preparation, including the location and size of mud pit (or above-ground mud circulation equipment) and cuttings pit
  - May be included as a subsection of the Work Plan
- **Sub-Tier Subcontractors:** SUBCONTRACTOR shall be responsible for all sub-tier subcontractors and all sub-tier subcontractor submittals. Sub-tier subcontractors include any vendor, subcontractor, or service provider that is working under a subcontract to the SUBCONTRACTOR.
  - CONTRACTOR will not be responsible for standby time resulting from actions or delays caused by a sub-tier contractor
- **Safety Program and Submittals:** (refer to Exhibit E)
- **Closeout Documentation:** SUBCONTRACTOR shall provide closeout documentation in accordance with Section 3.3, Task 11
- SUBCONTRACTOR shall submit all required information and documentation for any temporary construction trailers, utilizing the MSTS Building Authority trailer permit application form or as directed by MSTS

    - Required information includes but is not limited to the purpose for the trailer(s), dimensions, electrical system connections, electrical grounding, supports (such as wheeled, jack stands, placed directly on the ground), duration of planned use
- The CONTRACTOR will be responsible for preparing the drill pad area by clearing and grading the area before SUBCONTRACTOR mobilization
    - Prior to SUBCONTRACTOR mobilization, the SUBCONTRACTOR shall provide a written statement to the CONTRACTOR's Subcontractor Technical Representative (STR) to indicate the cleared area is acceptable
- The SUBCONTRACTOR shall provide an Operational Fire, Life, and Safety plan (refer to Exhibit E)
- The SUBCONTRACTOR shall provide an Environmental Management Plan (refer to Exhibit E)
- The SUBCONTRACTOR's planning documents shall be subject to approval by the CONTRACTOR prior to commencement of work
- The project planning documents shall be updated by the SUBCONTRACTOR as necessary during project execution

3.1 Site Access Schedule Restrictions

- Site access for mobilization, well construction, pumping tests, and demobilization will be unrestricted, except for pre-schedule periods that will be imposed by the NNSS Operations Control Center (OCC). Table 2 and 3 include the site access restriction dates for TW01 and TW02 respectively. During the restriction periods, subcontractor and MSTS personnel will not be allowed access. The SUBCONTRACTOR's Work Plan shall account for these restrictive dates, and the SUBCONTRACTOR shall plan accordingly.

Table 2 Test Well 01 Site Access Restrictions

TW	Access Restriction Start	Access Restriction End	From Buckboard Mesa Rd West	From Buckboard Mesa Rd East
01	February 15, 2027	May 16, 2027	No Access	No Access
01	August 17, 2027	November 20, 2027	No Access	No Access

Table 3 Test Well 02 Site Access Restrictions

Test Well	Access Restriction Start	Access Restriction End	From Saddle Mountain Rd South	From Saddle Mountain Rd North
02	August 17, 2026	November 20, 2026	No access	No Access
02	February 15, 2027	May 16, 2027	No access	No access

3.2 Test Well Construction and Testing – Period of Performance

- Test well 02 (TW02) will be installed and pump tested first. Considering the access restriction periods presented in Table 3 above, the CONTRACTOR will initiate construction of the TW02 drill pad on or before July 15, 2026, with anticipated completion prior to August 17, 2026. The SUBCONTRACTOR shall be prepared to mobilize their equipment and personnel by November 23, 2026. Completion of drilling, testing, and demobilization shall be on or before February 15, 2027.

- Test Well 01 (TW01) construction will be contingent upon completion of testing for TW02. It is not intended for TW01 to be constructed in 2026. The Period of Performance for TW01 is planned between May 16, 2027, and August 16, 2027.

3.3 Test Well Construction and Testing

Task 1 Mobilization to NNSS

- The SUBCONTRACTOR shall provide mobilization services for all SUBCONTRACTOR owned or controlled equipment and personnel to support the test drilling project. Equipment shall include, but not be limited to drill rigs, generators, air compressors, pumps, light plants, vehicles, water trucks, water storage tanks, and fire suppression equipment (i.e., fire extinguishers for all internal combustion engines and for fuel and oil storage areas and refueling stations). SUBCONTRACTOR's project planning documents shall include year, make, model, horsepower rating, and serial number for all motorized equipment brought to site. Photos of equipment nameplates shall be provided to the STR upon request. The drill rig shall have the capability to produce a retraction force (pullback) equal to at least the total weight of the drill string at the target total borehole depth, plus a 50% safety factor.
- Prior to mobilization, the SUBCONTRACTOR shall clean and high-pressure wash all equipment to be used for drilling, pumping, and downhole measurements to avoid potential cross contamination from other drill sites. An email, to include a formal letter (on SUBCONTRACTOR letterhead) and accompanied by formal transmittal sheet, shall be provided to the CONTRACTOR's STR attesting that the equipment was thoroughly cleaned using phosphate-free soap. If any equipment appears to need further cleaning upon arrival at the NNSS, additional cleaning shall be completed at the SUBCONTRACTOR'S expense.

Task 2 Test Well Drilling

- The test well shall be drilled at an inclination of 0° (vertical) and remain as straight as possible to terminal depth. Acceptable vertical deviation is 1:200, meaning the maximum horizontal drift shall be less than 1 ft per 200 ft vertical depth.

- A conductor borehole shall be drilled with a minimum diameter of 36-inch (91.4 cm) to a depth of 50 ft bgs (15.2m) for placement of Nevada Division of Water Resources (NDWR) required concrete seal around the conductor casing

- A 30-inch (76.2 cm) diameter conductor casing shall be installed within the conductor borehole. The conductor's casing shall be compliant with all NDWR requirements.

- The test well drilling method shall facilitate collection of continuous geologic formation samples. The SUBCONTRACTOR shall assist the CONTRACTOR personnel with sample collection at 10-ft (3m) intervals, at notable changes in geology, and/or as otherwise directed by the CONTRACTOR. Samples collection containers will be provided by the CONTRACTOR. Drilling and sampling shall be continued to the total depth of the borehole.

- At their discretion, the SUBCONTRACTOR may elect to install a pilot borehole and subsequently ream the pilot hole to a sufficient diameter complete the test well construction

- The borehole shall be properly sized at the surface to complete installation of a 10-inch (25.4 cm) ID well casing with a 3-inch (7.62 cm) annular space around the casing to allow the options for installation of

filter pack and bentonite seals. For planning purposes, see Conceptual Test Well Schematic Drawings, section B-3.

- Based on the drilling conditions encountered, an intermediate casing may be required. The SUBCONTRACTOR shall provide all materials and equipment necessary to install intermediate casing(s) as necessary to complete the 10-inch diameter test well. A Conceptual Test Well Schematic drawing in included in Section B-14, Appendix B. The conceptual schematic drawing is included as a guidance document only is not intended to represent the final well installation as proposed by the SUBCONTRACTOR.
- Conduct zone testing of selected depth horizons within the borehole. The target depth for zone tests shall be determined by the SUBCONTRACTOR with input by the CONTRACTOR. The zone test interval shall be determined based on drilling results, geologic logs, and geophysical logging. The SUBCONTRACTOR shall provide a means to isolate selected depths within the borehole, such as with the use of inflatable packers or temporary placement of perforated casing, to facilitate measurements of water quantity and, to the extent possible, water quality from the isolated zone. Zone testing results will be used in the determination of the final test well design and will support the SUBCONTRACTOR's Well Installation Plan.
- Upon completion of drilling, the SUBCONTRACTOR shall submit a Well Installation Plan to the CONTRACTOR for approval. The plan shall include all details of well construction, such as the depth, diameter, slot size, filter pack size, length of slotted casing, bentonite seals above the filter pack, and other details of the completed test well.
- The casing and screen shall be fabricated with the structural integrity required to support the depth, diameter, and test pumping requirements. The SUBCONTRACTOR shall provide the casing and screen design specifications within the Well Installation Plan. The screened portion of the casing shall be constructed of the same diameter as the well casing. The CONTRACTOR will review and approve the SUBCONTRACTOR's Well Installation Plan prior to casing/screen placement and final construction. The SUBCONTRACTOR shall anticipate a pause in well construction during the well design, approval, and material ordering/receiving period. Well construction shall resume immediately after the SUBCONTRACTOR acquires the well screen, filter pack, and other materials.

Task 3 Well Deviation Survey

- Well deviation surveys shall be made at regular intervals during drilling using a gyroscopic method such as Reflex Gyro™, Gyro Path®, or similar instrument/method proposed by the SUBCONTRACTOR that uses inertial navigation to determine the horizontal variation of the borehole path. The SUBCONTRACTOR shall make all necessary adjustments during drilling, such as rig mast alignment, rotational speed, weight on bit, downward pressure, and replacement of worn bits, to reduce borehole drift and achieve maximum vertical plumbness. The deviation survey tool shall be configured to use a surface reference azimuth to calculate its position throughout the section of the borehole being measured. The frequency of deviation surveys shall be at every other rod change (approximately 40 to 80 ft). Results of the deviation survey shall be provided in the SUBCONTRACTOR's Daily Drilling Report.

Task 4 Geophysical Logging

- Geophysical logging services of cased and uncased sections of the borehole shall be performed by the SUBCONTRACTOR at two intervals as directed by the CONTRACTOR. Each interval is referred to as a callout. The estimated depth intervals of the callouts are 0 to 1500 ft (457.2 m) and 1500 ft (457.2 m) to the bottom of the well. The intervals may be adjusted depending on the results of drilling. If necessary, a third callout may be required as separately authorized by the CONTRACTOR. CONTRACTOR approved rig and crew time during callouts will be applied at the pre-established rate included in Exhibit A Consideration Schedule. SUBCONTRACTOR shall include provisions for geophysical logging within their Work Plan, Schedule, and Schedule of Values.
- Prior to geophysical logging, the SUBCONTRACTOR shall condition the bore hole in preparation for

inserting the geophysical logging tool. Borehole conditioning implies properly flushing/thinning drilling mud as appropriate and clearing the bottom of the borehole of cuttings settlement. To the extent possible, depth to any perched water zones and the water table and shall be recorded by the SUBCONTRACTOR during logging. Records of water depth measurements shall be maintained in the SUBCONTRACTOR's Daily Drilling Report. SUBCONTRACTOR shall submit, via formal transmittal, a Geophysical Logging Plan that describes Standard Operating Procedures and geophysical data to be collected. The plan shall include contingency for tight/adverse hole conditions, details on geophysical tool specs, tool diagrams, anticipated logging durations, estimated mobilization time and route to the NNSS, order of operations once equipment and personnel arrive on location, methodology for depth control, and cable stretch correction of the logging string.

- SUBCONTRACTOR shall provide geophysical logging tools, experienced logging technicians, operators, and all related equipment to successfully complete each callout. Redundant logging tools shall be provided at the time of the callout in the event of lost or damaged equipment. CONTRACTOR will not be responsible for lost or damaged equipment or for schedule delays or increased time to complete the logging due to incidents caused by the SUBCONTRACTOR. The time and date of the callout shall be coordinated with the CONTRACTOR's STR. The geophysical crew shall arrive on location within 24 hours of callout notification.
- The geophysical data to be collected in each callout shall include:
  - Multi-Arm (4+ Arm) Oriented Caliper
  - Spectral (U, K, Th, Total) gamma ray
  - Spontaneous potential
  - Induction resistivity/conductivity
  - Sonic
  - Formation micro imager
  - Acoustic Televiewer (ATV) survey
  - Temperature
  - Borehole deviation survey
- SUBCONTRACTOR shall submit draft copies of geophysical logging results within 24 hours of data collection and final copies within 72 hours. The logs shall be submitted via email in LAS, PDF, and TIFF formats. All submittals shall be provided to the CONTRACTOR using a formal process, including a transmittal cover sheet.

Task 5 Test Well Installation

- The SUBCONTRACTOR shall install a 10-inch (25.4 cm) ID well casing and well screen within the drilled borehole. The well casing and screen shall have sufficient structural integrity (wall thickness) to retain external pressures from the formation and allow water to pass from the aquifer into the well. The well screen opening shall be designed to retain least 90% of the filter pack. The well casing and screen shall provide stability from potential borehole collapse. The well screen shall be designed by the SUBCONTRACTOR with approval by the CONTRACTOR. The end fittings of the screen section shall be made of the same material as the screen body to reduce galvanic corrosion.
- The screen slot size and opening configuration of the screen shall be determined by the SUBCONTRACTOR and summarized in the SUBCONTRACTOR's Well Installation Plan. The screen shall be designed to produce the maximum flow in gallons per minute (gpm) while maintaining laminar flow to achieve acceptable well efficiency.
- The bottom of the screen shall be closed to reduce the possibility of native formation material from entering the well. The closed bottom materials shall be designed to resist corrosion and deterioration.
- The diameter of the filter pack shall be approximately 6-inches (15.2 cm) larger than the diameter of the production well casing, with 3 inches (7.6 cm) of space or annulus on each side of the well casing. Filter pack particle size shall be determined by the SUBCONTRACTOR through sieve analysis and/or

evaluation of the native formation. The uniformity coefficient of the filter pack shall be 2.5 or smaller. Above the filter pack, the annular space between the casing and the borehole shall be filled with a 10 ft (3 m) bentonite seal and neat cement as approved by the CONTRACTOR.

- The volume of filter pack material shall be calculated by the SUBCONTRACTOR based on the results of drilling and the CONTRACTOR-approved Well Installation Plan. The filter pack depth shall be sounded at least every 40 feet. The filter pack installation method shall be by the pump-down tremie method, or another method recommended by the SUBCONTRACTOR and approved by the STR. Any deviations, such as bridging or plugging of the filter pack shall be corrected by the SUBCONTRACTOR.
- The filter pack shall extend to a minimum of 40 feet (12.2 m) above the top of the screened interval(s)
- The annular space above the filter pack up shall be sealed with at least 10 ft (3 m) of time-release coated bentonite pellets to allow the bentonite to be poured through standing water in the annular space without sticking or forming voids during placement
- A neat cement grout seal shall be placed from the top of the bentonite pellets. The grout seal shall be placed to the ground surface. The neat cement grout shall be placed in one continuous pour and shall be impermeable.

Task 6 Well Development

- Upon completion of well construction, the SUBCONTRACTOR shall develop the well to repair damage to the formation caused during the drilling process and to increase the porosity and hydraulic conductivity of the formation around the well screen. The development equipment shall be of sufficient capacity to remove all drilling fluids, sand, rock cuttings or any other foreign matter. The well shall be thoroughly cleaned during development. Well development methods shall be planned and implemented by the SUBCONTRACTOR to optimize well production and minimize turbidity in the well. Over-pumping as a development method is not permitted. The well development methods shall involve surging, pumping, and removal of sediment from the casing/screen. Mechanical surging, air-surging, high velocity jetting and air-lift pumping may be used to develop the well. Development shall continue until turbidity of the water is at or below 5 Nephelometric Turbidity Unit (NTU) and the water returns clear and sediment free. The SUBCONTRACTOR shall use a turbidity meter to determine NTU and measure discharge flow rate at any time during well development. Water level measurements shall be collected using a SUBCONTRACTOR furnished water level monitor or transducer. Discharge water from development shall be released downgradient and greater than 200 ft (61 m) from the well collar.
- The fully developed well shall be disinfected to remove bacteriological contamination introduced during construction. The disinfection solution shall be chlorine based. The volume and strength of chlorine shall create a concentration of at least 50 milligram/Liter (mg/L) of available chlorine for the entire submerged depth of the well. The solution shall remain in the well for a period of at least 12 hours. The SUBCONTRACTOR shall neutralize chlorine solution in the discharge water at the surface and analyze the wastewater for chlorine residual prior to discharge. Chlorine levels in the discharge shall be less than 10 parts per million (ppm). Disposal of wastewater at the surface shall be downgradient and at least 200 feet (61 m) from the wellhead.

Task 7 Pumping Tests

- Pumping tests shall be conducted on the fully developed well by the SUBCONTRACTOR. The detailed plans for the pumping tests shall be included in the SUBCONTRACTOR's Work Plan, or subsequent amendments to the Work Plan after the drilling and well development phases are complete. Pumping test data will be used by the CONTRACTOR to determine well capacity, aquifer hydraulic properties, and well efficiency. All equipment used for conducting the pumping tests (i.e., pumps, generator, flow meters, water level meters) shall be provided and maintained by the SUBCONTRACTOR and be in safe, functional condition. Flow equipment shall be calibrated as required for accuracy.
- The well pump shall be a submersible, centrifugal pump. The pump shall be installed inside the well

casing, slightly above the highest screen interval. The electric control of the pump shall be by means of a Hand-Off-Auto switch or other controlled starter mechanism.

- A backflow prevention device and water control valve (downstream of the backflow device) must be placed on the discharge piping to prevent water from flowing back down the well when the pump is turned off
- The SUBCONTRACTOR shall assist USGS with the installation of an automated water level recording device in the test well for use during the pumping tests. The USGS will provide the water level measuring device and data logger.
- Water level recording devices will also be installed and monitored by USGS in other existing wells
- The CONTRACTOR, in consultation with the SUBCONTRACTOR, shall select the flow rate to be maintained during the constant rate pumping test. The test pump shall have the capacity to produce up to 350 gpm with the required discharge pressure to pump water to the discharge location. The pumping equipment shall be provided, operated, and maintained by the SUBCONTRACTOR. During the pumping tests, the pump shall be operated without interruption to maintain flow within plus or minus five (±5) percent of the designated flow rate.
- Water level measurements shall be collected and recorded by the SUBCONTRACTOR and be relevant to the same datum as currently maintained by USGS. Water levels shall be measured to the nearest 0.01 foot (0.3 cm). Pumping tests shall be initiated after CONTRACTOR confirmation of static water-level conditions in the test well and all observation wells.
- In addition to the automatic water level indicator operated by USGS, water-level measurements in the pumping well shall be manually recorded by the SUBCONTRACTOR during all pumping tests
- Step-rate Test. A step-rate test shall include at least four (4) steps at pumping rates between twenty-five (25) percent to one-hundred ten (110) percent of the pre-selected pumping rate for the constant rate test. The first step shall be continued for 100 minutes. The duration of each subsequent step shall be equal to the duration of the first step. Following the step test, recovery water level shall be monitored for 24 hours or to within 0.05 ft of the static water level before the test, whichever occurs first.
- Constant-Rate Test. The constant-rate pumping test shall be conducted at discharge rate up to 350 gpm. The pumping test shall be operated continuously for a minimum of seventy-two (72) hours. Additional pumping test time may be required as determined by the CONTRACTOR's hydrogeologist. Unplanned interruptions in the constant rate test may be cause for test abandonment and restart.
- Recovery Test. Water levels shall be recorded in the pumping well and all monitoring wells after pump shut down for a period equal to the pumping time or until water levels return within 0.05 foot of the pre-test static level, whichever occurs first.
- Discharge water from all pumping tests shall be conveyed away from the test well and the monitoring wells to avoid recirculation back to the test well during the test. The SUBCONTRACTOR shall furnish, install, and later remove the discharge hose used during the tests. The approximate length of the discharge hose shall be 1,500 ft (457 m).

Task 8 Water Quality Sampling

- SUBCONTRACTOR shall install an in-line sampling port at the well discharge head
- Water quality sampling will be conducted and analyzed by the CONTRACTOR

Task 9 Reports

- The SUBCONTRACTOR shall submit a Daily Drilling Report during all phases of the work. The Daily Drilling Report shall be prepared using a form proposed by the SUBCONTRACTOR and accepted by the CONTRACTOR. The general remarks section of this report shall contain an accurate account of

borehole conditions, work performed, measurements taken, borehole deviation, weight on bit, water usage, quantities of drilling mud/additives used, water added to the borehole, and time required for all work. Time records shall be logged to the nearest quarter hour. The Daily Drilling Report shall be submitted to the CONTRACTOR by 9:00 am each day for the prior day's activities.

- SUBCONTRACTOR shall submit a daily subcontract activity report detailing the progress of all field activities. The SUBCONTRATOR shall submit a copy of the report format to the STR for approval prior to field activities. The report shall include rig activity records, cost sheets, consumable charges, sub-tier subcontractor quantities, and other information pertaining to invoice amounts.
- The daily report will be subject to revision by the CONTRACTOR's STR to correct errors and omissions and ensure invoicing is prepared in accordance with the Consideration Schedule
- SUBCONTRACTOR shall submit a daily safety report to the STR/MSTS Safety Representative on site. The SUBCONTRACTOR shall maintain daily bit records and post them in the SUBCONTRACTOR's field office or near the rig. The bit record shall also be furnished to the STR in electronic form, showing bit types, serial numbers, footage drilled, depths in and out, and condition. The drill bit records shall be submitted with the SUBCONTRACTOR's Daily Drilling Report.
- SUBCONTRACTOR shall maintain accurate and complete logs of pipe used (tubular tallies). This record shall always be available for quality control inspection and verification. Copies of steel line measurements of drill pipe and any other tubing or casing used shall be submitted as directed by the STR. The SUBCONTRACTOR shall keep an accurate record of the total number of joints of all drill pipe, tubing, and casing used. The record of tubular tallies shall be submitted with SUBCONTRACTOR's Daily Drilling Report.
- Upon completion of well construction and the pumping tests, the SUBCONTRACTOR shall submit a Summary Report recording the drilling, sampling, driller's description of geology and drilling conditions, geophysical logging, well construction, well development, and all pumping/recovery tests. The report shall include quantities of all well-construction products and drilling fluids used.

Task 10 Demobilization

- The SUBCONTRACTOR shall provide demobilization services for all materials, supplies, and equipment used on the project, excluding materials that are permanently left in place and accepted by the STR at completion

Task 11 Closeout

- During project planning, SUBCONTRACTOR shall submit a written Closeout Plan for approval. As applicable, the Closeout Plan shall include provisions for as-built drawings, field logs, driller notes, daily reports, Quality and Safety reports, and other records.
- Closeout files shall include all final versions of project deliverables identified in section B-12 Deliverables, Appendix A Submittals, and other deliverables identified during the course of work. The files shall be submitted electronically, including all native design drawing files as applicable.

3.4 Sequencing

- In general, the tasks described above shall be performed in the order they are presented in this SOW; completion of the previous task is necessary to initiate the next task. The drilling, geophysical surveys, well installation, and pumping tests shall be completed at the TW02 site first, followed by TW01 as separately authorized. A remobilization between sites may be required.

3.5 Acceptance Criteria

- Work products and services provided shall meet all applicable MSTS procedures for control and review of

work products and pertinent regulatory requirements, as required by this subcontract and incorporated provisions

- Further specific Acceptance Criteria applicable to this scope includes Demonstrated experience and capabilities to construct test wells with similar diameter and depth as shown on the Conceptual Test Well Schematics, B-3 Drawings
- Attestation that equipment will be cleaned prior to mobilization to avoid cross contamination onto NNSS
- Demonstration of well plumbness and alignment testing experience and the ability to correct borehole straightness while drilling
- Evidence that the drilling method proposed satisfies the drilling and sampling requirements described in this SOW
- Description of geophysical logging methods and equipment, including experience statement and (if subcontracted) name and experience statement of geophysical logging subcontractor
- Capability to design the test well, filter pack, and well screen to produce maximum yield while maintaining laminar flow
- Ability to perform well development and on-site turbidity tests to meet 5 NTU turbidity requirement
- Installation and operation of test pumping equipment, including pump, motor, generator, discharge hose, water level meter, automatic water level recording device, and water meter

3.6 Site Conditions and Known Hazards (Facility-specific)

Site facility specific conditions/requirements and known hazards are incorporated in this SOW.

3.4.1. Asbestos	
☒	It is **NOT** expected.
☐	It **IS** expected that asbestos-bearing materials will be encountered during the performance of this work. a. The SUBCONTRACTOR shall submit an Asbestos Abatement Plan for STR approval prior to start of work, which meets all the criteria of OSHA 29 CFR 1926.1101, “Asbestos.” The Asbestos Abatement Plan shall identify the procedures that will be used to remove and dispose of all asbestos-containing materials that may be encountered during work performed under this Subcontract. These items include, but are not limited to, piping insulation, floor tiles, ceiling tiles, and boilers. b. Supervision of the asbestos abatement work shall be performed by a federal, state, or local accredited/licensed competent person (as defined by OSHA 29 CFR 1926.1101) employed by the SUBCONTRACTOR and who will be at the worksite(s) at all times. c. Installation of asbestos containing material (ACM) in newly constructed facilities is prohibited. For all new facilities, certify that no ACM was used for building construction.

3.4.2. Silica	
☐	It is **NOT** expected.
☒	It **IS** expected that silica-bearing materials will be encountered during the performance of this work

	and all activities that may potentially generate respirable silica. a. A SUBCONTRACTOR with employees potentially exposed to respirable crystalline silica (RCS) above 25 micrograms per cubic meter of air (25 ug/m3) as an 8-hour time-weighted average under any foreseeable conditions shall comply with the 29 CF 1910.1053, "Respirable Crystalline Silica," and/or 29 CFR 1926.1153, "Respirable Crystalline Silica." b. The SUBCONTRACTOR shall submit a Written Silica Exposure Control Plan (if applicable) to the CONTRACTOR for review and approval as part of the SSSP. *NOTE: The CONTRACTOR's RCS Occupational Exposure Limit is 25 ug/m^3 as opposed to OSHA PEL of 50 ug/m^3.*

3.4.3. Toxic Metals (Lead, Cadmium, Mercury)	
☒	It is **NOT** expected. However, since painted surfaces typically contain lead chromates, and many metals contain hexavalent chromium, the SUBCONTRACTOR is required to notify the STR prior to cutting, burning, welding or polishing of metal or painted surfaces.
☐	It **IS** expected. a. A SUBCONTRACTOR with employees working in toxic metals contaminated areas shall submit a Written Toxic Metals Exposure Control Plan in accordance to the appropriate section of 29 CFR 1910 to the STR for review and approval as part of the SSSP. b. All SUBCONTRACTOR employees working under the accepted Written Toxic Metals Exposure Control Plan shall have been trained in accordance with the plan. Training records shall be submitted to the STR prior to the start of work.

3.4.4. Hoisting and Rigging	
☐	It is **NOT** anticipated that Hoisting and Rigging will occur during performance of the work. However, if the SUBCONTRACTOR's chosen means and methods include hoisting and rigging activities then all applicable requirements shall apply.
☒	It **IS** anticipated that Hoisting and Rigging will occur during performance of this work. a. The SUBCONTRACTOR shall provide the resources necessary for inspection, certification, and maintenance of rigging and lifting equipment as well as monitor all lifts to ensure that regulatory lifting practices are followed by the MSTS Lifting SME. b. The SUBCONTRACTOR shall submit its 29 CFR 1926.1400, Subpart CC, "Cranes and Derricks in Construction" compliant program as part of the Environmental, Safety & Health (ES&H) program. c. The SUBCONTRACTOR shall designate a qualified supervisor to determine the methods and develop plans for rigging operations to ensure safe lifts. d. The SUBCONTRACTOR shall ensure all crane operations maintain minimum safe distances from all high voltage lines, as determined by the CONTRACTOR. Twenty feet is required for voltages up to 350 kV. At voltages greater than 350 kV, the distance shall increase as required. e. Cranes (Mobile) - The SUBCONTRACTOR shall provide the resources necessary for inspection, certification, and maintenance of rigging and lifting equipment and shall monitor all

	lifts to ensure that acceptable lifting practices are followed. f. Lift Plan requirements i. Lift plans are required to be submitted to the CONTRACTOR for concurrence. The SUBCONTRACTOR shall submit a detailed rigging plan with all applicable supporting calculations to the CONTRACTOR for review and acceptance prior to the lift. A Formal Lift Plan will be required for the following activities: • Excess of 5 tons • Lift classified as critical (exceeding 75% of crane capacity chart) • Any two-crane lift or any lift over operating or occupied facilities, process pipe racks or near power lines) • High value or long lead time item ii. The SUBCONTRACTOR shall designate a qualified supervisor to determine the methods and develop plans for rigging operations to ensure safe lifts. iii. The SUBCONTRACTOR is required to meet DOE Standard DOE-STD-1090-2020, “Hoisting and Rigging” for lift classification and lift plan requirements.

3.4.5. Radiological Contamination	
☒	It is **NOT** expected.
☐	It **IS** anticipated that work may be performed in radiological areas. a. The SUBCONTRACTOR shall abide by the requirements of the current version of the NNSS Radiation Protection Program (NNSS RPP) as implemented with the NNSS Radiological Control Manual (NNSS RCM). • The NNSS RPP can be downloaded from the following web address: https://www.osti.gov/servlets/purl/1435448 • The NNSS RCM can be downloaded from the following: https://www.osti.gov/servlets/purl/1895616 b. The SUBCONTRACTOR shall abide by the CONTRACTOR’S radiological postings. c. The SUBCONTRACTOR shall make arrangements with the CONTRACTOR’S Radiological Control Division to develop adequate controls, prescribe protective measures, and generate required Radiological Work Permit (RWP) necessary to demonstrate compliance with the NNSS RPP. d. The SUBCONTRACTOR shall comply with all RWPs approved by the CONTRACTOR controlling the work performed by the SUBCONTRACTOR. e. The SUBCONTRACTOR shall submit a list of all equipment and materials expected to be utilized in areas controlled for radiological purposes and shall additionally disclose all heavy equipment to be brought on NNSA/NFO-managed property to the CONTRACTOR’S STR (to be provided to the Radiological Control Division), prior to arrival on NNSA/NFO property. f. All SUBCONTRACTOR-owned/rented/leased equipment and vehicles brought onto

NNSA/NFO property are subject to radiological survey at any time during the contract period.

- All SUBCONTRACTOR-owned/rented/leased heavy equipment utilized for soil disturbing or building demolition activities are required to undergo baseline and re-entry radiological surveys upon arrival at NNSA/NFO property or prior to use at the work site, as directed by the CONTRACTOR'S Radiological Control Division
- All SUBCONTRACTOR-owned/rented/leased equipment and vehicles are required to undergo radiological evaluation prior to removal from the work site and/or NNSA/NFO property
- All SUBCONTRACTOR-owned/rented/leased equipment and vehicles brought onto NNSA/NFO property that cannot meet established radiological release requirements shall not be removed from NNSA/NFO property

g. SUBCONTRACTOR shall require dosimeters, if used at the worksite, are exchanged by CONTRACTOR, as required, by the CONTRACTOR's Radiological Control Division.

h. Upon completion of work, the SUBCONTRACTOR shall return the dosimeters to the CONTRACTOR.

i. When required, the SUBCONTRACTOR shall ensure radiobioassay samples from their employees are submitted to the CONTRACTOR'S Radiological Control Division and/or RWP.

j. If the SUBCONTRACTOR is expecting to bring radioactive material/radioactive sources (including those contained within equipment) or radiation-generating devices (RGDs) onto NNSA/NFO property:

i. The SUBCONTRACTOR shall maintain radioactive material/radioactive sources per the CONTRACTOR'S direction

ii. The SUBCONTRACTOR shall submit a planned schedule of moves or advise the CONTRACTOR'S STR (to be provided to the Radiological Control Division), in writing, prior to moving any radioactive source to, around, or away from CONTRACTOR-managed property. Prior approval to move such radioactive sources onto or from CONTRACTOR-managed property must be received from the CONTRACTOR'S Radiological Control Division.

(1) The SUBCONTRACTOR shall notify the CONTRACTOR'S Radiological Control Division immediately after they bring radioactive material/radioactive sources onto CONTRACTOR-managed property so a pre-use radiological survey can be performed by the CONTRACTOR

(2) The SUBCONTRACTOR shall notify the CONTRACTOR'S STR prior to removing radioactive material/radioactive sources from CONTRACTOR-managed property so a post-use radiological survey can be performed by the CONTRACTOR

iii. The SUBCONTRACTOR shall submit a copy of the current applicable radioactive material license (Nuclear Regulatory Commission or applicable state reciprocity) or other approval to the CONTRACTOR'S STR (to be provided to the NNSS Radiological Control Division). The license shall indicate the SUBCONTRACTOR'S authority to possess and operate the radioactive source/radioactive material or RGD (copy of current License for Industrial Radiography per 10 CFR 34, "Licenses for Industrial Radiography and Radiation Safety Requirements for Industrial Radiographic Operations" and include the procedures for operating the device.

(1) The SUBCONTRACTOR shall have adequate controls, protective measures, and work control documents/procedures/permits as required under their approved radioactive material license (Nuclear Regulatory Commission or applicable state

	reciprocity) or other approval for all operations associated with SUBCONTRACTOR-owned radioactive material/radioactive sources or RGDs. (2) The SUBCONTRACTOR shall submit current leak test results, training records for RGD Operations, and source certificate/nominal activity sheets to the CONTRACTOR'S STR (to be provided to the Radiological Control Division) prior to the radioactive source arriving on NNSA/NFO-managed property. (3) The SUBCONTRACTOR shall submit special form certificates, Department of Transportation shipping papers, and radioactive source container certifications, to the CONTRACTOR'S STR (to be provided to the Radiological Control Division) upon entry to NNSA/NFO-managed property. (4) The SUBCONTRACTOR shall provide or make arrangements for transportation of radioactive source/radioactive materials in compliance with Department of Transportation regulations. (5) The SUBCONTRACTOR shall have a worker radiation safety plan as specified in 10 CFR 39, "Licenses and Radiation Safety Requirements for Well Logging," including Operating and Emergency procedures and Incident Reporting procedures.

3.6.1. SUBCONTRACTOR Requirements

The SUBCONTRACTOR shall provide the following:

- Temporary construction support facilities (e.g., job trailer, storage containers)
- When a SUBCONTRACTOR performs physical work which has risk potential (employees, equipment, environment, or plant) outside of daylight hours, they are responsible for providing adequate lighting to perform the project work scope. A Lighting Plan shall be provided by the SUBCONTRACTOR and approved by the CONTRACTOR. The Lighting Plan shall be included in the Site Utilization Plan.
- Generators for construction power. The SUBCONTRACTOR is required to ground all SUBCONTRACTOR-provided generators in accordance with NEC/National Electrical Safety Code (NESC) requirements and notify the STR and Construction Manager (CM) for compliance inspection prior to use. No modifications shall be made to portable generators on MSTS managed property without written permission from STR/CM.
- Cell phones for supervisory personnel
- Ice and drinking water
- Internet service

NOTE: The SUBCONTRACTOR shall restore areas disturbed during construction (including laydown areas) to pre-existing conditions.

3.6.2. Outage Requests

The SUBCONTRACTOR shall provide twelve (12) working days advance notice for systems requiring an outage or lockout/tagout for the control of hazardous energy. CONTRACTOR will fulfill the role of Controlling Organization for SUBCONTRACTOR lockout/tagout operations.

3.6.3. Building Occupancy Inspection Requirements

Construction trailers and other facilities are required to meet the relocatable structure requirements of International Building Code (IBC-2024) and will be subject to a MSTS Beneficial Occupancy Inspection

(BOI) performed by MSTS Building Authority (BA) prior to issuance of a Certificate of Occupancy. Documentation for the structures shall be included in the SUBCONTRACTOR's Site Utilization Plan. The Utilization Plan shall include details on structural anchorage/supports as required by BA. The plan must be reviewed by BA and other MSTS Subject Matter Experts before a BOI can be requested.

The term Facilities in this context include manufactured structures, mobile homes, trailers, semi-trailers, modular-type structures, factory-assembled structures, cargo containers, hazardous materials or flammable liquid storage containers, air supported/inflated structures, tent/membrane, and cloth/rib structures. This term does not apply to trailers and cargo containers that are being used in the transportation mode for conveying materials while on site, or to prefabricated buildings that are permanently located, such as "Butler" or "Strand Steel" buildings.

3.7 Delivery, Storage and Handling

The SUBCONTRACTOR shall:

- Provide appropriate and necessary equipment and labor required for unloading, transporting, and handling delivered products/materials
- Ensure that loads entering/exiting the NNSS are properly secured
- Follow manufacturer's recommendations/instructions regarding the handling and storage of all materials
- Store packaged products in original unbroken packages and containers
- Leave manufacturer's seals and labels intact during storage
- Arrange for immediate disposal and replacement of products found to be defective, damaged beyond repair, or in otherwise unacceptable condition

3.8 Site Coordination Requirements

3.9 Construction Facilities

- A drill pad for test drilling activities will be provided for the SUBCONTRACTOR's use. The drill pad will be cleared, grubbed, and graded by the CONTRACTOR in accordance with the SUBCONTRACTOR'S approved Site Utilization Plan. The CONTRACTOR will excavate all pits for drilling fluids and cement mixing. All drill pad areas will be shared by the CONTRACTOR, NNSS and MSTS personnel, SUBCONTRACTOR, and lower tier subcontractors.
    - Laydown Areas:
        - Parking for SUBCONTRACTOR's company vehicles will be provided at the jobsite

B-4 PERSONNEL REQUIREMENTS

4.1. Training and Qualification

The SUBCONTRACTOR and its personnel shall attend the following site-specific training in the course of this work scope. NOTE site access may be delayed until training is completed or renewed. The SUBCONTRACTOR shall contact the STR to coordinate scheduling of training. See Section B-6, 6.4 *Badging*.

B-6: Special Requirements - Section 2. MSTS Provided Training						
NO.	TRAINING	DURATION	FREQUENCY	TYPE	Reference	CONDITION / COMMENTS
1E00W752	CONTRACTORS Excavation Penetration Process (Briefing 1E00W752)	0.5 Hours	One-time	Briefing	Exhibit E	Only required for personnel performing or supervising excavation and penetration work activities
1E00W102	NNSS Site Access Safety Orientation (1E00W102)	0.5 Hours	One-time	Video	Exhibit E	For all subcontractors that will go onsite at the NNSS
1REMPAW1	Protective actions (WBT 1REMPAW1)	0.5 Hours	Every 365 days	WBT	Exhibit E	All subcontract personnel
1REM050000	Work Location Emergency Response Plan, Including Evacuation Alarms and Accountability (1REM050000)	3.0 Hours	One-time	TBD	Exhibit E	All subcontract personnel
1S00W115	Safeguards and Security Program Overview of Controlled Unclassified Information (1S00W115) If required.	1.0 Hours	Every 730 Days	Video	Exhibit E	All personnel if working beyond 30 calendar days from start of work (not cumulative – starts from first day)
~~1S000110~~	~~Initial Security Briefing. DOE O 470.4B, "Safeguards and Security Program" (1S000110) as well as DOE O 470.4B Chg. 3 (Ltd.Chg.)~~	~~1 Hours~~	~~One-time~~	~~TBD~~	~~Exhibit E~~	~~All subcontract personnel~~
1E00W585	General Employee Radiological Training (GERT) (1E00W585)	0.5 Hours	One-time	WBT	Exhibit E	All subcontract personnel

The SUBCONTRACTOR shall maintain training records for their personnel and ensure all required training is completed prior to work. Additionally, as soon as practical after award, the SUBCONTRACTOR shall

submit a badge request for personnel required under the various releases for scheduling training and medical evaluation prior to crews being eligible for work on site.

4.2. Key Personnel Qualifications

The SUBCONTRACTOR shall submit a resume along with any documented applicable qualifications/certifications for approval prior to the SUBCONTRACTOR being authorized to proceed with work. The SUBCONTRACTOR shall submit any changes to the Key Personnel assignments to the CONTRACTOR's STR for approval. The SUBCONTRACTOR Key Personnel positions include the Project Manager, Quality Assurance/Quality Control Professional, On-site Safety Representative, Safety Manager, Site Superintendent, and Drilling Operator. The responsibilities and minimum qualifications for each position are described below.

4.2.1. Project Manager

The Project Manager shall oversee all services and on-site construction operations, ensuring projects are completed on time, within budget, and adhere to safety regulations. The Project Manager shall manage lower-tier subcontractors, coordinate schedules, and enforce quality and safety standards.

<u>Responsibilities</u>

- Lead crews
- Ensure compliance with codes
- Communicate project status, schedule, and plans

<u>Qualifications</u>

- Bachelor's degree in construction-related field, such as construction management, engineering, environmental science, or geology
- Specialized certifications like Occupational Safety and Health Administration (OSHA) or Project Management Professional (PMP) can enhance the CONTRACTOR's qualification review and acceptance
- Experience in a supervisory role on similar test drilling and well construction sites
- Minimum of five (5) years' experience managing well construction and testing projects

4.2.2. Quality Assurance/Quality Control (QA/QC) Professional

Ensure that products or services meet established quality standards. The QA/QC Professional plays a crucial role in preventing and correcting errors. The QA/QC Professional inspects, tests, and ensures that products and services meet established quality standards and specifications. The QA/QC Professional shall work to identify defects, deviations from specifications, and other quality issues throughout the project, aiming to maintain consistency and adherence to quality assurance protocols.

<u>Responsibilities</u>

- Act as Point of Contact and represents the SUBCONTRACTOR in quality related matters
- Ensures SUBCONTRACTOR's Quality Assurance Plan (QAP) implementation
- Develops and maintains quality documents that are generated by the SUBCONTRACTOR and their lower-tier SUBCONTRACTORs (e.g., Inspection Reports, Test Plans, Test Procedures, Test Data Sheets, Measuring & Test Equipment (M&TE) Records, Geophysical logs, etc.)
- Perform regular independent oversight and ensure required testing and inspections are completed. The SUBCONTRACTOR's QA/QC representative (or MSTS approved designee) shall be present to verify that all required testing and inspection activities are performed in accordance with subcontract requirements, applicable codes, and industry standards.
- Ensure that deficiencies are documented in accordance with SUBCONTRACTOR's corrective action and nonconformance program
- Attend kick-off meetings, and as necessary, attend job walk-downs, progress meetings and safety

meetings
- Work alongside the Field Work Supervisor (FWS) to ensure that the work is being accomplished in accordance with the subcontract requirements
- Identify and report errors
- Provide feedback to improve the final product or service

Qualifications

- High school diploma is the minimum requirement for entry-level positions. Preference is a post-secondary certificate, associate degree, or bachelor's degree in quality control or a related field. Further education, specialized training and QA/QC certification is also preferred.
- Minimum of five (5) years well construction experience with roles that involve QA/QC, testing, and inspections

4.2.3. On-site Safety Representative

The SUBCONTRACTOR shall have a qualified Environmental Safety and Health (ES&H) professional representative that is acceptable to the CONTRACTOR and present at the worksite whenever SUBCONTRACTOR personnel are performing activity level work. The Safety Representative shall ensure a safe and healthy work environment by representing employee concerns, identifying hazards, and promoting safety protocols. The Safety Representative shall engage with site support staff and management to address workplace safety issues, conduct inspections, educate employees on safety practices, and ensure that all site and regulatory requirements are met.

Responsibilities

- On-site presence during all work activities, including 24 hours/day (if applicable), high risk, and critical activities
- With job planner assistance, develop and maintain the Job Hazard Analyses (JHA) throughout the project
- Develop separate JHAs when construction is phased or has dissimilar hazards
- Develop and maintain permits/plans that are generated by the SUBCONTRACTOR and their lower- tier SUBCONTRACTOR(s)
- Perform daily inspections with the FWS (it is expected that the ES&H Representative will perform this at the job site)
- Ensure that the FWS is documenting the daily inspections, including both positive observations and deficiencies along with corrective action(s)
- Attend pre-job meetings at least once/week
- Work alongside FWS to ensure that equipment used onsite is properly maintained
- Work alongside FWS to ensure that each employee's (and lower-tier employee's) training records and Electronic Job Task Analysis (EJTA) are approved prior to performing work and maintained current throughout the project
- Work alongside FWS to ensure that products/chemicals (provided by the SUBCONTRACTOR and lower-tier SUBCONTRACTORS) are submitted and approved prior to use
- Attend kick-off meetings and progress meetings
- Attend job walk-down after award of subcontract with FWS, Construction Manager (CM) and MSTS Safety Professional
- Participate in inspections with FWS, CM, and MSTS Safety Professional

- Available in case of an event and perform event investigations
- Participate in MSTS investigations and fact-finding meetings
- Work alongside FWS to ensure that the work is being accomplished following MSTS Safety and Health procedures
- Work alongside FWS to help resolve employee concerns

NOTE: The safety professional's oversight frequency shall increase if the SUBCONTRACTOR or MSTS determines that more rigorous oversight is required.

Qualifications

Degree in Occupational Safety, or hold the designation of a Certified Safety Professional, or hold the designation of an Associate Safety Professional with a minimum of 1-year documented safety experience, or Occupational Health and Safety Technician, or Construction Safety and Health Technician certification in addition to 3 years of experience in the field providing safety duties, or documented 5 years full time safety experience (100% safety work). List of projects and description of duties where person was a full-time safety professional.

If accepted by the CONTRACTOR, the SUBCONTRACTOR's assigned Safety Representative may have other duties as long as they will not interfere with or prevent the employee from performing the responsibilities stated above.

4.2.4. Safety Manager

Responsible for developing, implementing, and maintaining safety programs to ensure a safe, healthy, and compliant work environment for all employees. This includes identifying hazards, conducting safety audits, investigating incidents, and providing recommendations for improvement. The goal is to create a workplace that meets legal and contractual expectations and actively supports occupational health and safety.

Qualifications

- Same qualifications as the Safety Representative with an additional 3 years of Safety Management experience or certifications, such as the Certified Safety Manager (CSM) through the National Association of Safety Professionals

4.2.5 Site Superintendent

The SUBCONTRACTOR shall provide a qualified Site Superintendent(s) on site whenever drilling work is being performed. The Site Superintendent(s) shall have a minimum of 10 years of drilling supervision experience and have experience on projects drilling and constructing municipal test wells in fractured rock formations of a similar scope as described in the SOW. The Site Superintendent shall possess an active Nevada Drillers License as required under Nevada Administration Code 534. The Site Superintendent shall directly manage all drilling and test well construction operations on site. The SUBCONTRACTOR shall provide the resumes of at least two Site Superintendents to satisfy the anticipated 24/7 rig operation schedule on this project. A higher score may be given to a SUBCONTRACTOR that exceeds these acceptance requirements.

4.2.6 Drilling Operator

The SUBCONTRACTOR shall provide a qualified Drilling Operator(s) on site whenever drilling work is being performed. The Drilling Operator must possess an active Nevada Drillers License and has at least 5 years of experience with drilling deep fractured rock test wells, with at least one project over the last 5 years that required test well drilling to a similar depth and diameter as described in the SOW. The SUBCONTRACTOR shall provide the resumes of at least two Drilling Operators to satisfy the anticipated 24/7 rig operation

schedule on this project. A higher score may be given to a SUBCONTRACTOR that exceeds these acceptable requirements.

B-5 TECHNICAL SPECIFICATIONS AND DRAWINGS

The SUBCONTRACTOR shall perform work in accordance with the national codes, specifications, drawings, exhibits, and other documents, which by reference are made a part of the SOW.

Inspection of the work required by governmental agencies shall be arranged by the STR. The SUBCONTRACTOR shall request inspections through the STR, after the work is ready for inspection. In-process oversite of the SUBCONTRACTOR'S in-process work shall be performed by the STR's construction project support personnel as appropriate.

5.1. Specifications

SPEC NUMBER	TITLE	REV	PAGES
NA	NA	*NA*	NA

5.2. Drawings

DRAWING NUMBER	TITLE	REV	PAGES
NA	*NA*	*NA*	*NA*

B-6 PLACE OF PERFORMANCE

6.1. Delivery Location

Delivery location will be N/A

6.2. Work Location

Work will be performed at Nevada National Security Site - Area 30 (TW-01) and Area 25 (TW-02) Mercury, NV 89023. For any work performed on the NNTS site or in an MSTS controlled facility, the provision of the On-Site services shall apply to this subcontract.

6.3. Site Access and Work Hours

MSTS personnel at the NNSS work a standard 4/10 schedule. The standard work week consists of ten (10) hours of work between 7:00 a.m. and 5:30 p.m., Monday through Thursday with one-half hour designated as an unpaid period for lunch. This specific scope of work includes operational periods (drilling execution and testing) which require 24/7 operations.

STR personnel must be on site at all times while subcontractor personnel are present, including during 24/7 operations, mobilization, demobilization, and testing.

Onsite work performed outside normal operating hours shall be coordinated and/or approved through the STR and/or the Procurement Specialist prior to performing the work.

- During drilling operations when drilling circulation must be maintained, the SUBCONTRACTOR has the option to work on a 24-hour/day, 7 day/week schedule. The SUBCONTRACTOR shall notify the CONTRACTOR at least 2 weeks in advance of the need to operate outside the general NNSS work week hours. The CONTRACTOR will support the SUBCONTRACTOR'S work at all times, including during periods of 24/7 operations. Onsite work required to be performed outside normal operating hours shall be coordinated and/or approved through the STR and/or the Procurement Specialist prior to performing work.
- It is expected that drilling operations will be conducted on a 24/7 operational basis, requiring the above-

referenced coordination through STR personnel.

6.4. Badging

Any on-site work will be coordinated with the STR in accordance with the SOW and site-specific training requirements. The SUBCONTRACTOR shall wear a MSTS issued security badge identifying themselves. A minimum of ten (10) working days advance notice is needed for site badging. SUBCONTRACTOR employees shall be required to submit to vehicle searches and not personally carry or transport certain prohibited articles.

B-7 CLEARANCE REQUIREMENTS

The following access authorization or clearance requirements are required.

1) Check all that apply:

☒ No security clearance; unclassified work

☐ DOE L

☐ DOE Q

☐ HSPD-12 PIV Credential

2) If applicable, add any or all parts of the following statement security qualifications:

☐ The SUBCONTRACTOR shall have the ability to obtain a U.S. Department of Energy (DOE) facility security clearance and have personnel capable of obtaining a Q-type or L-type security clearance.

☐ Q- or L-type security clearance is required for all SUBCONTRACTOR personnel having access to classified information or special nuclear material when performing such work.

☐ A corresponding level of security clearance from another federal agency may be applicable if approved by the MSTS and DOE.

☒ N/A

B-8 SPECIAL REQUIREMENTS

8.1. Personal Protective Equipment

SUBCONTRACTOR shall be responsible for providing Personal Protective Equipment (PPE) for all SUBCONTRACTOR and lower tier subcontractor personnel. PPE shall be suitable for the working environment of the project.

Minimum PPE is defined as:

- Steel-Toed boots (safety shoes)
- Ear Protection
- Hard hat
- Safety glasses
- Hi Vis Vest
- Flashlights or cap lights

8.2. Qualifications, Licensing, Certifications

To determine whether the SUBCONTRACTOR is qualified to perform the scope of work as outlined, the SUBCONTRACTOR shall demonstrate the following qualifications in their proposal:

1. Experience - SUBCONTRACTOR shall have the following job experience

1.1. SUBCONTRACTOR shall have minimum 10 years of experience in drilling and developing high yield municipal water supply wells and conducting pumping tests in deep fractured rock formations.

1.2. SUBCONTRACTOR shall have experience with design and construction of gravel packed water supply wells in deep fractured rock formations.

1.3. SUBCONTRACTOR shall clearly demonstrate an understanding of water supply test well drilling, geophysical surveys, and pumping tests and have the capability to self-perform or subcontract all scope described in this SOW.

1.4. SUBCONTRACTOR shall have demonstrated experience at a government facility, working with multiple regulators and clients in an operational environment.

1.5. SUBCONTRACTOR shall have experience in preparing evaluations and forecasts for well construction services to ensure service delivery.

2. Licenses – SUBCONTRACTOR shall have the following job-specific licenses:

   2.1. Nevada Water Well Driller's License

3. Certifications – SUBCONTRACTOR shall have the following job-specific certifications:

   3.1. Project Management, Quality Control, Safety (see requirements in B-4.2)

In addition to the above, the SUBCONTRACTOR shall provide qualified personnel throughout the period of performance of the Subcontract. SUBCONTRACTOR shall be responsible for ensuring its personnel meet and/or maintain current and valid training requirements, certifications and are fully capable to complete the duties described through the entirety of the Subcontract period of performance.

8.3. Government Assets

8.3.1 Use of Government Vehicles	
☒	There is **NO** anticipated need for any SUBCONTRACTOR employees to use a Government-furnished vehicle in the performance of this SOW. The SUBCONTRACTOR's employees, therefore, are specifically prohibited from driving any Government-furnished vehicles under the performance of this SOW unless this SOW is formally so modified by the parties and the employee(s) will present a valid driver's license to the STR for review.
☐	One or more SUBCONTRACTOR employees will have access to Government-furnished vehicles while performing this SOW.

8.3.2 Government Property	
☒	Government Property **NOT** anticipated to be furnished to or acquired by the SUBCONTRACTOR under this SOW.
☐	Pursuant to FAR 52.245.1 – Government Property, the following Government-owned property will be furnished to the SUBCONTRACTOR. The SUBCONTRACTOR shall be responsible for managing the Government-Furnished Property (GFP) below and/or Contractor-Acquired Property (CAP) as required in accordance with FAR 52.245-1. A list of the property to be furnished to the SUBCONTRACTOR can be found in Appendix Choose an item, along with any special technical and/or handling instructions.

8.4. Permits

Except for permits furnished by MSTS the SUBCONTRACTOR shall, without additional expense to MSTS, be responsible for obtaining all necessary licenses and permits.

The MSTS will, without cost to the SUBCONTRACTOR, furnish the permits listed below. All such MSTS-furnished permits are available for examination at the project office of MSTS during regular business hours.

- N/A

The SUBCONTRACTOR shall also be responsible and liable for all materials delivered and Work performed until completion and acceptance of the entire Work, except for any completed unit of Work which may have been accepted under the SUBCONTRACTOR.

8.5. Quality Assurance (QA)

The work as described has been identified to be.	
☐	**SAFETY CLASS/SAFETY SIGNIFICANT SERVICES AND/OR COMMODITIES (NUCLEAR/RADIOLOGICAL**) This PO is related to items or services used in support of the nuclear and/or radiological mission(s) of the Nevada National Security Site, therefore: The SUBCONTRACTOR shall implement and maintain a Quality Assurance (QA) program in accordance with at least one the following quality assurance criteria and requirements: • ASME NQA-1 (2015) quality assurance requirements for nuclear facility applications • ASME NQA-1 (2008 with 2009 addenda) quality assurance requirements for nuclear facility applications • Equivalent program authorized in writing by the contractor's quality assurance organization In addition, the SUBCONTRACTOR shall be responsible for: Price Anderson Amendments Act (PAAA) The item or service identified in the purchase order agreement is being procured by a contractor to the Department of Energy (DOE)/National Nuclear Security Administration (NNSA). This item or service is intended to be used in the performance of activities that (1) prevent or mitigate radiological or harm to the worker, the public or the environment or (2) provide a healthful and safe workplace for DOE/NNSA contractor personnel. Therefore, the SUBCONTRACTOR is responsible for assuring that the items or services provided under this purchase agreement meet the stated requirements. **SUSPECT/COUNTERFEIT ITEMS** The SUBCONTRACTOR will take positive measures to ensure that only new, unused equipment/material from acceptable sources is provided under this subcontract. Notwithstanding any other provisions of this subcontract, should any suspect/counterfeit items or components be found within or on this equipment during CONTRACTOR receipt inspection, SUBCONTRACTOR shall, at its expense, promptly replace such items or components.
☒	**GENERAL SERVICES AND/OR COMMODITIES** This PO is for items or services that support the mission(s) of the Nevada National Security Site, therefore: **SUSPECT/COUNTERFEIT ITEMS REQUIREMENTS**: The SUBCONTRACTOR will take positive measures to ensure that only new, unused equipment/material from acceptable sources is provided under this subcontract. Notwithstanding any other provisions of this subcontract, should any suspect/counterfeit items or components be found within or on this equipment during CONTRACTOR receipt inspection, SUBCONTRACTOR shall, at its expense, promptly replace such items or components. These requirements shall be flowed down to all levels of SUBCONTRACTORS as it pertains to this

	procurement activity.

8.6. Lower-Tier Subcontracts

The SUBCONTRACTOR shall ensure that LOWER-TIER SUBCONTRACTORS performing elements of the Subcontracted Scope of Work at sites controlled/managed by the CONTRACTOR or NNSA adhere to the SUBCONTRACTOR'S Site-Specific Safety Plan (SSSP). The SUBCONTRACTOR is responsible for ensuring that its LOWER-TIER SUBCONTRACTORS are included in the SUBCONTRACTOR'S SSSP and that they comply with all the requirements of this Subcontract.

If, after award, the SUBCONTRACTOR proposes to use any new LOWER-TIER SUBCONTRACTORS not listed in initial subcontract, the SUBCONTRACTOR shall notify the MSTS's Procurement Specialist at least 10 business days before the proposed start date of the new LOWER-TIER SUBCONTRACTOR. The SUBCONTRACTOR will submit any required LOWER-TIER SUBCONTRACTOR'S, forms and documentation including "Safety and Health History" for CONTRACTOR review and acceptance. LOWER-TIER SUBCONTRACTORS shall not perform any work prior to the CONTRACTOR'S approval in writing provided by the Procurement Specialist.

B-9 ENVIRONMENTALLY PREFERABLE PRODUCTS

MSTS is required by the U.S. Department of Energy to purchase Environmentally Preferable Products (EPP) (also known as green or sustainable purchasing) and are also required to flow those procurement requirements to their SUBCONTRACTOR. When designing materials and/or supplying materials to be used onsite as part of a subcontract SOW, those materials must meet these same requirements.

The following is a list of EPP types that must be used if they are available:

- **Products with Recycled Content.** MSTS supports efforts that reduce or eliminate environmental hazards, conserve environmental resources, minimize life-cycle cost and liabilities. Towards the end, the acquisition cycle is viewed as an important key in understanding what is brought onto the Site as well as identifying what can be reused/recycled. Focus is directed on recycled-content, biobased-content, ozone-depleting substances, and other environmental impacts. Specific additional clauses are included in this solicitation that address potential requirements and preferences based on the nature of the item being considered for purchase.
- **Water Efficient Plumbing Products.** When purchasing commercially available, off-the-shelf water consuming products, products must meet EPA's Water Sense standards (http://www.epa.gov/watersense).
- **Non-Toxic or Less Toxic Alternatives**
- **Green Certified Products.** (e.g., Design for Environment, Green Seal)
- **Bio-Based Products.** MSTS will give preference to acquiring Department of Agriculture designated biobased products. For more information to this program, see www.biopreferred.gov.
- **Energy Efficient Products**
  - EPA Energy Star® When purchasing commercially available, off-the-shelf energy-consuming products, products must be Energy Star rated (www.energystar.gov)
  - Federal Energy Management Program designated products When purchasing commercially available, off-the-shelf energy-consuming products, products must use no more than one watt of standby power as defined and measured by International Electrotechnical Commission (IEC) code

62301 or otherwise met FEMP specifications for low standby power consumption. If FEMP has not specified a standby power level for a product category, the item shall be the lowest standby power consumption available.

- **Energy Efficient Electronics**

  When purchasing the following products, EPEAT ratings will apply:

  - Desktop and Notebook Computers – must meet the EPEAT silver rating or higher
  - Displays, Monitors, Integrated Desktop Computers, Workstation Desktops, Thin Client, Workstation Notebooks, and/or Tablet Notebooks – must meet the EPEAT silver rating or higher
  - Fax Machines, Multifunction Devices, and Printers – must meet the EPEAT bronze rating or higher
  - Copiers and Digital Duplicators – must meet the EPEAT silver rating or higher

- **Reuse of Leased IT Electronic Equipment.** In accordance with DOE Order 436.1, Departmental Sustainability, MSTS is striving to reduce or eliminate environmental hazards, conserve environmental resources, minimize life-cycle cost and maximize operational sustainability through the incorporation of electronics stewardship practices thereby minimizing the economic and environmental impacts of managing toxic by-products and hazardous wastes generated in the conduct of site activities. Therefore, MSTS requires that at the end of the lease period, the equipment is to be reused, refurbished, donated, or recycled using environmentally sound management practices.

B-10 MEETINGS

After subcontract award, a Project Kickoff Meeting will be scheduled. This Kickoff Meeting may be a virtual meeting utilizing telephonic or internet technology (Microsoft Teams) or an in-person conference to be held either at the NNSS or at the NNSS North Las Vegas Campus. The time, date, and agenda for the meeting will be provided to the SUBCONTRACTOR by MSTS.

The SUBCONTRACTOR shall interface with various MSTS (and other) organizations through MSTS' Procurement Specialist (or STR for in-scope work), as required, or at points and frequency determined by the Procurement Specialist.

The CONTRACTOR will issue meeting notices and prepare an agenda and minutes for each meeting addressed in this Section. When applicable, minutes will identify action items, assigned responsibility point of contact, and due dates. The purpose of the meetings is the exchange of work-related information. The SUBCONTRACTOR is required to attend all meetings, with at least one SUBCONTRACTOR delegate having delegated authority to make decisions that commit the SUBCONTRACTOR to the decisions made during the meetings.

SECTION B-10 MEETINGS					
NO.	MEETING (TITLE)	MEETING DESCRIPTION / PURPOSE	FREQUENCY	TYPICAL DURATION	ADDITIONAL INFORMATION
001	Subcontract Kick-off Meeting	After Master Agreement award, a Subcontract Kickoff Meeting will be held. The time, date, and agenda for the meeting will be provided to the	Once	~1-2 hours	After issuance/acceptance of the subcontract, MSTS will conduct a meeting with the SUBCONTRACTOR and major lower-tier SUBCONTRACTORS. The meeting's purpose is to provide the SUBCONTRACTOR with additional information as required

SECTION B-10 MEETINGS					
NO.	MEETING (TITLE)	MEETING DESCRIPTION / PURPOSE	FREQUENCY	TYPICAL DURATION	ADDITIONAL INFORMATION
		SUBCONTRACTOR by MSTS. This typically occurs within 2-4 weeks of contract award.			to accomplish the scope specified in this SOW, and to develop lines of communications, and a working relationship. This meeting will focus on a discussion of the work scope and goals and roles and responsibilities of each participant. Pertinent documents will be reviewed and discussed. Typically in-person with virtual option.
002	Weekly Status (IPT) Meeting	Meeting tor provide status on project deliverables, issues, actions, and communications. May take the form of a tier meeting, project meeting, design meeting, construction meeting, or other regularly scheduled meeting with the focus of status updates.	Weekly	~30-60 Minutes	Project status meetings will be held weekly either by Microsoft Teams or in person to review the progress, to provide weekly schedule status, and exchange work-related information, including but not limited to design and scope changes, progress, coordination with functional utility providers, and scheduling issues.
003	Site Labor Conference	Meeting between MSTS, the appropriate unio(s), and the SUBCONTRACTOR held before the work commences at the NNSS within the applicable labor agreements.	Once	~1-2 hours	Typically in-person with virtual option.
004	Plan-of-the-Day (POD) Meetings	At MSTS discretion, daily plan of the day meetings may be held with Facility Managers to	Daily	<30 minutes	Where a Project is isolated from adjacent teams and projects, this meeting may coincide with either internal MSTS meetings or with the Weekly IPT Status Meetings.

SECTION B-10 MEETINGS					
NO.	MEETING (TITLE)	MEETING DESCRIPTION / PURPOSE	FREQUENCY	TYPICAL DURATION	ADDITIONAL INFORMATION
		coordinate daily tasks between adjacent Projects or teams.			
005	Pre-Job Briefings	Briefing performed at the beginning of fieldwork	Daily	<30 minutes	Performed at job site. Also known as safety briefing or tailgate briefing.
006	Incident Reviews	Meeting performed post incident or accident	Based on occurrence	~1-2 hours	Performed within ~2 weeks of the event, typically as quickly as possible.

B-11 SUBMITTALS

Appendix A, *Submittal Register*, identifies submittals and due date during the execution of this subcontract. The recipient is also listed.

B-12 DELIVERABLES

The following are the major deliverables:

SECTION B-12 DELIVERABLES				
NO.	DELIVERABLE	CONTENT	DELIVERY SCHEDULE	ADDITIONAL INFORMATION
001	Written Statement that drill pad location is acceptable for construction of the drill pad	Confirmation of acceptability of location for drill pad	Prior to construction of drill pad	NA
002	Email that equipment has been cleaned	Verification that equipment has been cleaned	Within 1 day of completion of equipment cleaning	NA
003	Initial Summary of Geophysical Logging Results	See section B-3	Within 1 day of completion of logging for each call-out	NA

SECTION B-12 DELIVERABLES				
NO.	DELIVERABLE	CONTENT	DELIVERY SCHEDULE	ADDITIONAL INFORMATION
004	Final Summary of Geophysical Logging Results	See section B-3	Within 3 days of completion of logging for each call-out	NA
005	Summary Report on well construction, geophysical logging, and pumping test	See section B-3	Within 30 days of completion of field activities	NA
006	Close-out files and documents	See section B-3	Within 60 days of completion of field activities	NA
007	TW01 drilled and constructed	NA	Per project schedule	NA
008	TW02 drilled and constructed	NA	Per project schedule	NA
009	Schedule and Management Reports	• Project Manager's narrative accomplishment highlights, status assessment for activities planned for the next month (i.e., accomplishments and 30 day look ahead) • Issues and concerns (cost, schedule, technical), recommended solutions, and progress made toward resolution • New or outstanding agreements and/or commitments for problem or technical issue resolution • Schedule performances with respect to the Performance Measurement Baseline for current month and contact-to-date • Action Items List showing the cumulative status of action • Monthly Accrual Report	By 5th of each month for the previous month	

All deliverables shall be submitted to the CONTRACTOR using a formal transmittal process, including transmittal cover sheet.

The SUBCONTRACTOR is required to participate in the project turnover process by assisting the STR, Project Manager, and CM in developing and completing the project punch list. The SUBCONTRACTOR shall notify the STR and CM no later than one (1) day after completing the punch list item(s).

B-13 PROJECT CONTROLS, MILESTONES & PERFORMANCE SCHEDULE REQUIREMENTS

A. Performance Schedule

The SUBCONTRACTOR shall submit a project schedule for approval after Notice of Award. The schedule shall cover activities for the duration of the Subcontract and in accordance with the Submittal Register. The resource loaded schedule shall identify logical sequence and relationship of activities for design, submittals, procurement, delivery, installation, subcontracted work, milestones, and testing and inspections of the work covered by the subcontract. There shall be sufficient details that identifies the major identifiable elements of the project that constitute a reasonable basis for progress reporting and/or payment. This shall be at a discrete level to reveal facility and system work sequence as applicable. Activity durations shall be provided in working days. The schedule (other than drilling/testing operations) shall be based on MSTS's 4-10 work schedule (Monday through Thursday) or another schedule approved by the CONTRACTOR. Drilling and testing operations shall utilize a seven (7) day working schedule as required due to the type of work (24/7 operations). The 4-10 working schedule closure days shall be as nonworking days on the SUBCONTRACTOR's schedule, unless otherwise approved or directed by the CONTRACTOR. The SUBCONTRACTOR schedule shall include line-item resource loading as an attachment to the project schedule. The schedule shall identify the dollar amounts for labor and materials separately for each activity shown on the schedule at a level of detail providing an accurate expenditure plan by month or other work breakdown consistent with request for progress requests.

B-14 APPENDIX

APPENDIX NUMBER	*TITLE*	*REV*	*PAGES*
Appendix A	Submittal Register	*NA*	*4*
Appendix B	Test Well Construction Schematics (TW01, TW02)	*NA*	*2*

The SUBCONTRACTOR shall meet the required schedule and provide the documents specified in accordance with the following submittals.

APPENDIX A: SUBMITTAL REGISTER

Section A: Purchase Order / Subcontract Information

Subcontractor Name:	TBD	SOW Title:	**Test Well Drilling and Pumping Test**
Purchase Order & Release Number:	TBD	Requisition #:	REQ-0023422

Section B: Submittal Delivery Requirement

Submittals shall be electronically, unless otherwise noted, to: Procurement Specialist; Julaocj@nv.doe.gov and Subcontract Technical Representative; NagyJJ@nv.doe.gov
Insert any special notes. DO NOT INCLUDE internal distribution notes.

Section C: Submittal Requirements Details

NO.	TITLE	REFERENCE	DUE DATE / FREQUENCY	REVIEWED BY	COMMENTS
001	Subcontract Schedule	Exhibit B	No later than 10 calendar days from date of award, update insert SOW required frequency	Procurement Specialist, STR	Prior to the start of work
002	SF-1413: Statement and Acknowledgement	Exhibit B	No later than 10 calendar days from date of award	Procurement Specialist, STR	
003	Workplace Substance Abuse Program to include Evidence of Compliance with SUBCONTRACTOR's Workplace Substance Abuse Program	Exhibit E	Annually, based on date of CONTRACTOR acceptance	Procurement Specialist	Provide any changes to the Program and evidence for that year's compliance in accordance with Title 10 Code of Federal Regulations Part 707
004	Subcontract Hours, FRM-1253	Exhibit E	On or prior to the 28th of the month	STR	

APPENDIX A: SUBMITTAL REGISTER

Section A: Purchase Order / Subcontract Information

Subcontractor Name:	TBD	SOW Title:	**Test Well Drilling and Pumping Test**
Purchase Order & Release Number:	TBD	Requisition #:	REQ-0023422

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Section C: Submittal Requirements Details

NO.	TITLE	REFERENCE	DUE DATE / FREQUENCY	REVIEWED BY	COMMENTS
005	Monthly Total Recordable Incident Rate (TRIR) and Days Away,	Exhibit E	On or prior to the 28th of the month	STR, Safety Professional	
006	Restricted or Transfer Case Rate (DART)	Exhibit E	Annually, based on date of CONTRACTOR acceptance	Safety Professional	Safety receives this from the sub to incorporate into their reporting requirements
007	Injury/Illness Infraction Report, FRM-0018	Exhibit E	Immediately	STR, Safety Professional	The SUBCONTRACTOR is required to report all job-related injuries and illnesses, regardless of severity,
008	NNSS Construction Office and Equipment Trailer Permit Application	Exhibit B	28 days prior to being on site	STR	
009	Meeting Minutes	Exhibit B	Weekly/Monthly as required by the Task Order Release	Procurement Specialist, STR	None

APPENDIX A: SUBMITTAL REGISTER

Section A: Purchase Order / Subcontract Information

Subcontractor Name:	TBD	SOW Title:	**Test Well Drilling and Pumping Test**
Purchase Order & Release Number:	TBD	Requisition #:	REQ-0023422

Section B: Submittal Delivery Requirement

Submittals shall be electronically, unless otherwise noted, to: Procurement Specialist; Julaocj@nv.doe.gov and Subcontract Technical Representative; NagyJJ@nv.doe.gov
Insert any special notes. DO NOT INCLUDE internal distribution notes.

Section C: Submittal Requirements Details

NO.	TITLE	REFERENCE	DUE DATE / FREQUENCY	REVIEWED BY	COMMENTS
010	NNSS Construction Office and Equipment Trailer Permit Application for Each Trailer over 120sf	Exhibit B	At least 28 days before the trailer is planned to be on site	TBD	MSTS Building AHJ needs to review and approve with the Fire Marshall.
011	Drawings, Calculations and Modeling	Exhibit B	As stated in the Task Order Release	Project Manager, STR, & Design Engineering	None
012	Construction Schedules	Exhibit B	As stated in the Task Order Release	Procurement Specialist, STR	None
013	Subcontractor Site-specific Safety Plan (SSSP)	Exhibit E	30 days prior to the start of fieldwork	Procurement Specialist, STR, Safety Professional, Industrial Hygienist	None

APPENDIX A: SUBMITTAL REGISTER

Section A: Purchase Order / Subcontract Information

Subcontractor Name:	TBD	SOW Title:	**Test Well Drilling and Pumping Test**
Purchase Order & Release Number:	TBD	Requisition #:	REQ-0023422

Section B: Submittal Delivery Requirement

Submittals shall be electronically, unless otherwise noted, to: Procurement Specialist; Julaocj@nv.doe.gov and Subcontract Technical Representative; NagyJJ@nv.doe.gov
Insert any special notes. DO NOT INCLUDE internal distribution notes.

Section C: Submittal Requirements Details

NO.	TITLE	REFERENCE	DUE DATE / FREQUENCY	REVIEWED BY	COMMENTS
014	Safety Data Sheets (SDS)	Exhibit E	NLT 10 calendar days from award or prior to start of work	Procurement Specialist, STR, Safety Professional, Industrial Hygienist	None
015	Safety and Personnel Report	Exhibit E	Monthly, NLT 28th day of the new month	Procurement Specialist, STR, Safety Professional, Industrial Hygienist	None
016	Quality Control / Assurance Program	Exhibit A Exhibit D	NLT 10 calendar days from award or prior to start of work	Procurement Specialist, STR	None

APPENDIX A: SUBMITTAL REGISTER

Section A: Purchase Order / Subcontract Information

Subcontractor Name:	TBD	SOW Title:	**Test Well Drilling and Pumping Test**
Purchase Order & Release Number:	TBD	Requisition #:	REQ-0023422

Section B: Submittal Delivery Requirement

Submittals shall be electronically, unless otherwise noted, to: Procurement Specialist; Julaocj@nv.doe.gov and Subcontract Technical Representative; NagyJJ@nv.doe.gov
Insert any special notes. DO NOT INCLUDE internal distribution notes.

Section C: Submittal Requirements Details

NO.	TITLE	REFERENCE	DUE DATE / FREQUENCY	REVIEWED BY	COMMENTS
017	Environmental, Safety, and Health Plan	Exhibit E	NLT 10 calendar days from award/Prior to start of work	Procurement Specialist, STR, Safety Professional, Industrial Hygienist	None
018	Individual Subcontract Report	Subcontract	Semi-annually	www.esrs.gov	None
019	Summary Subcontract Report	Subcontract	Annually	www.esrs.gov	None
020	Hazard Communication Program	Exhibit E	No later than 10 calendar days from Notice to Proceed prior to start of Work	ADM	None
021	Collective Bargaining Agreement / Letter of Assent	Subcontract	No later than 10 calendar days from award	ADM	None

APPENDIX A: SUBMITTAL REGISTER

Section A: Purchase Order / Subcontract Information

Subcontractor Name:	TBD	SOW Title:	**Test Well Drilling and Pumping Test**
Purchase Order & Release Number:	TBD	Requisition #:	REQ-0023422

Section B: Submittal Delivery Requirement

Submittals shall be electronically, unless otherwise noted, to: Procurement Specialist; Julaocj@nv.doe.gov and Subcontract Technical Representative; NagyJJ@nv.doe.gov
Insert any special notes. DO NOT INCLUDE internal distribution notes.

Section C: Submittal Requirements Details

NO.	TITLE	REFERENCE	DUE DATE / FREQUENCY	REVIEWED BY	COMMENTS
022	Certified Payrolls	Subcontract	Weekly by the Subcontractor and all on-site Lower-Tier Subcontractors	Procurement Specialist, STR	None
023	Schedule of Values (SOV)	Exhibit A	No later than 10 calendar days from date of award	STR / PS/ PCS	None
024	Integrated Safeguards & Security Plan	Subcontract	NLT 10 calendar days from award/Prior to start of work	ADM	None
025	Facility Security Officer Certification	Subcontract	NLT 14 calendar days from award/Prior to start of work	ADM	None
026	Timesheets/Field Tickets Progress Report/Employee Count	Subcontract	Monthly, NLT 5th day of new month	ADM	None

APPENDIX A: SUBMITTAL REGISTER

Section A: Purchase Order / Subcontract Information

Subcontractor Name:	TBD	SOW Title:	**Test Well Drilling and Pumping Test**
Purchase Order & Release Number:	TBD	Requisition #:	REQ-0023422

Section B: Submittal Delivery Requirement

Submittals shall be electronically, unless otherwise noted, to: Procurement Specialist; Julaocj@nv.doe.gov and Subcontract Technical Representative; NagyJJ@nv.doe.gov
Insert any special notes. DO NOT INCLUDE internal distribution notes.

Section C: Submittal Requirements Details

NO.	TITLE	REFERENCE	DUE DATE / FREQUENCY	REVIEWED BY	COMMENTS
027	Organizational Conflict of Interest (OCI) Certification	Subcontract	With proposal and prior to addition of any lower-tier SUBCONTRACTORs	ADM	None
028	Workplace Substance Abuse Program to include Evidence of Compliance with SUBCONTRACTOR's Workplace Substance Abuse Program	Subcontract	With Proposal and annually, based on date of CONTRACTOR acceptance	ADM	None
029	Subcontract Release Statement – FRM-2206	Exhibit C Subcontract	Following completion of work prior to final payment for each Task Order	ADM	None
030	SUBCONTRACTOR's Authorized Representative	Exhibit C	Prior to the start of work	ADM	None

APPENDIX A: SUBMITTAL REGISTER

Section A: Purchase Order / Subcontract Information

Subcontractor Name:	TBD	SOW Title:	**Test Well Drilling and Pumping Test**
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Insert any special notes. DO NOT INCLUDE internal distribution notes.

Section C: Submittal Requirements Details

NO.	TITLE	REFERENCE	DUE DATE / FREQUENCY	REVIEWED BY	COMMENTS
031	General Drill Pad Layout (Drawing)	Exhibit B	Part of proposal	PS, STR	Specify size of drill pad, drilling equipment, and excavated pits
032	Project Management Plan (PMP)	Exhibit B	NLT 30 calendar days from date of award	PS, STR	
033	Staffing Plan	Exhibit B	NLT 30 calendar days from date of award	PS, STR	
034	Work Plan	Exhibit B	NLT 30 calendar days from date of award	PS, STR	
035	Quality Assurance/Control Plan (QAP)	Exhibit B	NLT 10 calendar days from date of award	PS, STR	
036	Site Utilization Plan (SUP)	Exhibit B	NLT 30 calendar days from date of award	PS, STR	
037	Operational Fire, Life, and Safety Plan	Exhibit E	NLT 10 calendar days from date of award	PS, STR	

APPENDIX A: SUBMITTAL REGISTER

Section A: Purchase Order / Subcontract Information

Subcontractor Name:	TBD	SOW Title:	**Test Well Drilling and Pumping Test**
Purchase Order & Release Number:	TBD	Requisition #:	REQ-0023422

Section B: Submittal Delivery Requirement

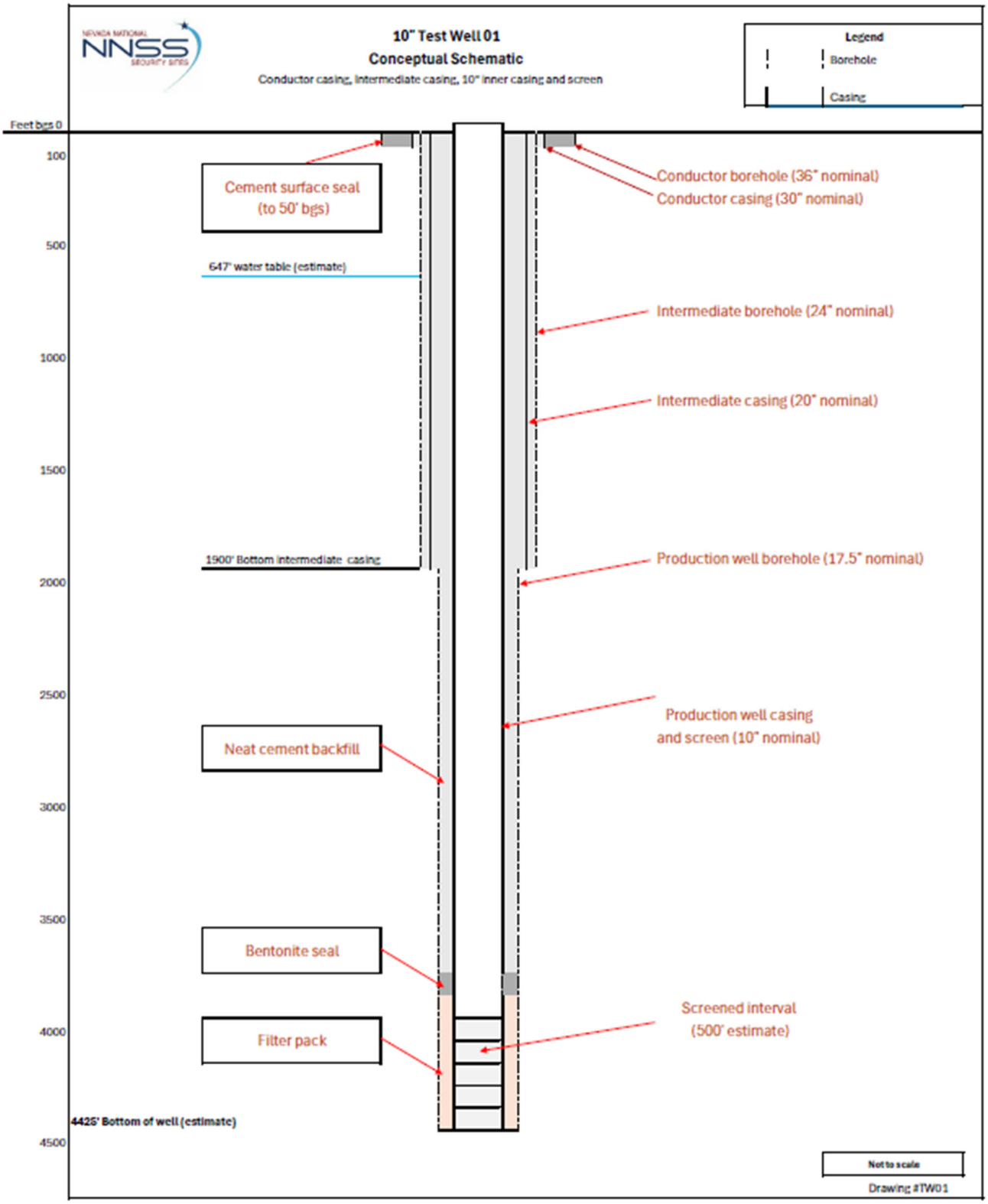
Submittals shall be electronically, unless otherwise noted, to: Procurement Specialist; Julaocj@nv.doe.gov and Subcontract Technical Representative; NagyJJ@nv.doe.gov
Insert any special notes. DO NOT INCLUDE internal distribution notes.

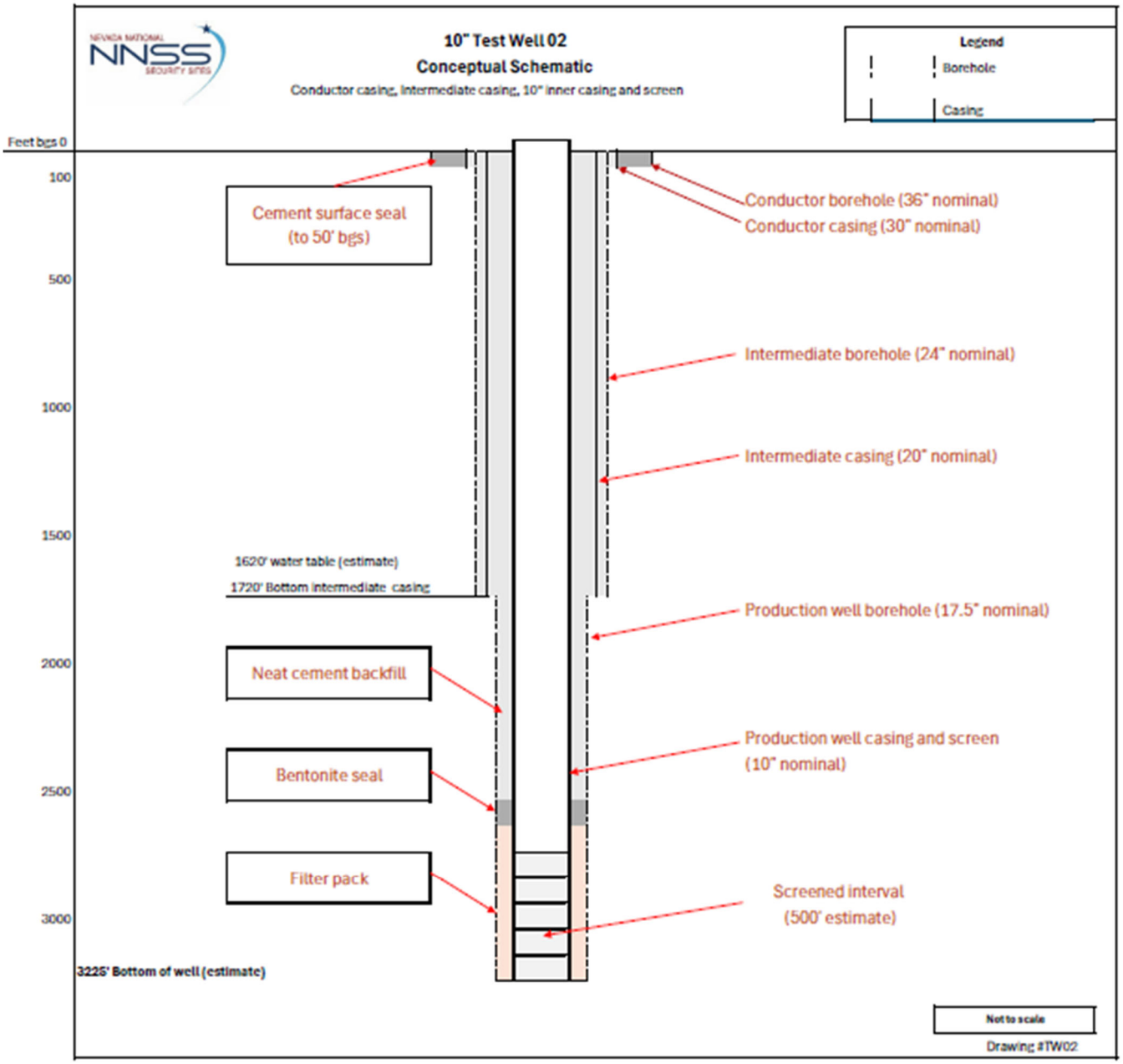
Section C: Submittal Requirements Details

NO.	TITLE	REFERENCE	DUE DATE / FREQUENCY	REVIEWED BY	COMMENTS
038	Environmental Management Plan	Exhibit E	NLT 10 calendar days from date of award	PS, STR	
039	Well Installation Plan	Exhibit B	Within 2 days after completion of drilling to total depth	PS, STR	
040	Nevada Water Driller's License	Exhibit B	NLT 10 calendar days from date of award	PS, STR	
041	Geophysical Logging Plan	Exhibit B	Within 2 days after completion of drilling to total depth	PS, STR	

Appendix B

Test Well Conceptual Schematics


NNSS
10" Test Well 01
Conceptual Schematic
Conductor casing, intermediate casing, 10" inner casing and screen
Legend
Borehole
Casing
Feet bgs 0
100
500
1000
1500
2000
2500
3000
3500
4000
4500
Cement surface seal (to 50' bgs)
647' water table (estimate)
1900' Bottom intermediate casing
Neat cement backfill
Bentonite seal
Filter pack
4425' Bottom of well (estimate)
Conductor borehole (36" nominal)
Conductor casing (30" nominal)
Intermediate borehole (24" nominal)
Intermediate casing (20" nominal)
Production well borehole (17.5" nominal)
Production well casing and screen (10" nominal)
Screened interval (500' estimate)
Not to scale
Drawing #TW01


10" Test Well 02
Conceptual Schematic
Conductor casing, intermediate casing, 10" inner casing and screen
Legend
Borehole
Casing
Feet bgs 0
100
500
1000
1500
2000
2500
3000
Cement surface seal (to 50' bgs)
Conductor borehole (36" nominal)
Conductor casing (30" nominal)
Intermediate borehole (24" nominal)
Intermediate casing (20" nominal)
1620' water table (estimate)
1720' Bottom intermediate casing
Production well borehole (17.5" nominal)
Neat cement backfill
Production well casing and screen (10" nominal)
Bentonite seal
Filter pack
Screened interval (500' estimate)
3225' Bottom of well (estimate)
Not to scale
Drawing #TW02