



Sigurd to Red Butte No. 2
345kV Transmission Project

**Geotechnical Investigations
Standard Form 299 Application for
Transportation and Utility Systems and
Facilities on Federal Lands**

SUBMITTED BY:



SUBMITTED TO:



Bureau of Land Management

SEPTEMBER 2009



September 22, 2009

Mr. Lucas Lucero, National Project Manager
U.S. Department of Interior
Bureau of Land Management
4701 North Torrey Pines Drive
Las Vegas, NV 89130

RE: SF-299 application to support geotechnical work for the Sigurd to Red Butte No. 2 345kV
Transmission Project

Dear Mr. Lucero:

Rocky Mountain Power (RMP) is submitting this SF-299 application in order to receive Bureau of Land Management (BLM) approval to conduct geotechnical borings to support RMP's Sigurd to Red Butte No. 2 345kV Transmission Project. The need for this project is based upon RMP's obligations as a publicly regulated electric utility to provide safe, reliable, and cost-effective electric transmission service to its retail customers and other users of the transmission system. In order to meet this need, RMP is obligated per the Federal Energy Regulatory Commission (FERC) requirements (Orders 888 and 889) to expand or upgrade its transmission system pursuant to the Open Access Transmission Tariff to accommodate requests (internal and external) for transmission services. An Environmental Assessment (EA) for this geotechnical work is soon to be underway and will be prepared by the Cedar City and Fillmore field offices to satisfy this project's requirements under the National Environmental Policy Act.

By collecting geotechnical data, RMP will acquire critical information fundamental to the project's design and engineering requirements, which will be incorporated into the engineering calculations for each tower structure, as needed. Furthermore, this information will provide subsurface technical details that are necessary for the most accurate, complete, and cost effective approach for designing and constructing the project.

RMP is committed to minimizing the environmental footprint of all project activities associated with the collection of this data. In performing these activities, RMP will coordinate with the Owner's Engineer to ensure that all surface use stipulations that are identified in the EA, if any, and Best Management Practices are followed.

If you have any questions or concerns, please contact me by telephone at (801) 220-2735.

Yours sincerely,

Brandon Smith
Project Manager

Cc: Rob Wilson, Cedar City Field Office, BLM

**APPLICATION FOR TRANSPORTATION AND
 UTILITY SYSTEMS AND FACILITIES
 ON FEDERAL LANDS**

FORM APPROVED
 OMB NO. 1004-0189
 Expires: April 30, 2012

NOTE: Before completing and filing the application, the applicant should completely review this package and schedule a preapplication meeting with representatives of the agency responsible for processing the application. Each agency may have specific and unique requirements to be met in preparing and processing the application. Many times, with the help of the agency representative, the application can be completed at the preapplication meeting.

FOR AGENCY USE ONLY	
Application Number	
Date filed	

1. Name and address of applicant (include zip code) PacifiCorp (dba Rocky Mountain Power, PacifiCorp Energy, and Pacific Power) 1407 W. North Temple Salt Lake City, Utah 84116	2. Name, title, and address of authorized agent if different from Item 1 (include zip code) Same as 1	3. TELEPHONE (area code) Applicant (801) 220-4386 Authorized Agent Ted Williams, Mgr. ROW Service
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4. As applicant are you? (check one) a. <input type="checkbox"/> Individual b. <input checked="" type="checkbox"/> Corporation* c. <input type="checkbox"/> Partnership/Association* d. <input type="checkbox"/> State Government/State Agency e. <input type="checkbox"/> Local Government f. <input type="checkbox"/> Federal Agency * If checked, complete supplemental page	5. Specify what application is for: (check one) a. <input checked="" type="checkbox"/> New authorization b. <input type="checkbox"/> Renewing existing authorization No. c. <input type="checkbox"/> Amend existing authorization No. d. <input type="checkbox"/> Assign existing authorization No. e. <input type="checkbox"/> Existing use for which no authorization has been received* f. <input type="checkbox"/> Other* *If checked provide details under Item 7
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6. If an individual, or partnership are you a citizen(s) of the United States? Yes No

7. Project description (describe in detail): (a) Type of system or facility, (e.g., canal, pipeline, road); (b) related structures and facilities; (c) physical specifications (length, width, grading, etc.); (d) term of years needed; (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (Attach additional sheets, if additional space is needed.)

This application is to perform geotechnical investigations for the proposed Sigurd to Red Butte No.2 345kV Transmission Project which will extend from the Sigurd Substation in Sigurd, Utah, to the Red Butte Substation near Central, Utah. The project description is provided in Attachment A.

8. Attach a map covering area and show location of project proposal

9. State or local government approval: Attached Applied for Not required

10. Nonreturnable application fee. Attached Not required

11. Does project cross international boundary or affect international waterways? Yes No (If "yes," indicate on map)

12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

Rocky Mountain Power has constructed, operated, and maintained electrical distribution facilities throughout the state of Utah and its six-state service territory for more than 75 years.

13a. Describe other reasonable alternative routes and modes considered

As shown in Attachment B, the proposed geotechnical investigation will consider various alternative routes. The preferred route has not yet been established. The selection of the preferred route will be based in part on the results of the geotechnical investigation described herein.

b. Why were these alternatives not selected?

See 13a.

c. Give explanation as to why it is necessary to cross Federal Lands

As shown on Attachment B, all potential electrical transmission line routes from Sigurd to Central Utah would cross Federal lands.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. (Specify number, date, code, or name)

Sigurd to Red Butte No. 2 345 kV Transmission Project, Preliminary Right-of-way Application, Standard Form SF299 submitted to the Bureau of Land Management and U.S. Forest Service (Dixie National Forest) December 24, 2008.

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

See Attachment A

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles.

See Attachment A

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

See Attachment A

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

See Attachment A

19. State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 9601 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

Hazardous materials will not be used, transported, or stored as part of the proposed geotechnical investigations.

20. Name all the Department(s)/Agency(ies) where this application is being filed.

**U.S. Department of Interior, Bureau of Land Management
U.S. Forest Service (Dixie National Forest)**

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

Signature of Applicant



Date 9-21-09

Title 18, U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 3)

(SF-299, page 2)

APPLICATION FOR TRANSPORTATION AND UTILITY SYSTEMS
AND FACILITIES ON FEDERAL LANDS

GENERAL INFORMATION
ALASKA NATIONAL INTEREST LANDS

This application will be used when applying for a right-of-way, permit, license, lease, or certificate for the use of Federal lands which lie within conservation system units and National Recreation or Conservation Areas as defined in the Alaska National Interest Lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National Forest Monuments.

Transportation and utility systems and facility uses for which the application may be used are:

1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.
2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.
3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.
4. Systems for the transmission and distribution of electric energy.
5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.
6. Improved rights-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.
7. Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application must be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

U.S. Department of Agriculture
FOREST SERVICE (USFS)
Alaska Regional Office (Region 10)
Physical Address:
Federal Office Building
709 West 9th Street
Juneau, Alaska 99801
Mailing Address:
P.O. Box 21628
Juneau, Alaska 99802
Telephone: 907-586-8806

U.S. Department of the Interior
BUREAU OF INDIAN AFFAIRS (BIA)
Alaska Regional Office (Juneau)
Mailing/Physical Address:
P.O. Box 25520
709 West 9th Street
Juneau, Alaska 99802
Telephone: 800-645-8397

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT (BLM)
Alaska State Office
Mailing/Physical Address:
222 West 7th Avenue #13
Anchorage, Alaska 99513
Telephone: 907-271-5960

U.S. Department of the Interior
NATIONAL PARK SERVICE (NPS)
Alaska Regional Office (Anchorage)
Mailing/Physical Address:
240 West 5th Avenue, Room 114
Anchorage, Alaska 99501
Telephone: 907-644-3501

U.S. Department of the Interior
FISH AND WILDLIFE SERVICE
Alaska Regional Office (Region 7)
Mailing/Physical Address:
1011 East Tudor Road
Anchorage, Alaska 99501
Telephone: 907-271-5011

Note: Filings with any Department of the Interior agency may be filed with any office noted above or with the:

U.S. Department of the Interior
OFFICE OF ENVIRONMENTAL POLICY AND COMPLIANCE
Alaska Regional Office (Anchorage)
Regional Environmental Officer
1689 C Street, Room 119
Anchorage, Alaska 99501
Telephone: (907) 271-5011

U.S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
Alaska Regional Office (Anchorage)
222 West 7th Avenue, #14
Anchorage, Alaska 99513
Telephone: 907-271-5269

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

Use of this form is not limited to National Interest Conservation Lands of Alaska.

Individual departments/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.

For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency.

SPECIFIC INSTRUCTIONS

(Items not listed are self-explanatory)

Item

- 7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.
- 8 Generally, the map must show the section(s), township(s), and ranges within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.
- 9, 10, and 12 - The responsible agency will provide additional instructions.
- 13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.
- 14 The responsible agency will provide instructions.
- 15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.
- 16 Providing this information in as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. For example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.
Application must be signed by the applicant or applicant's authorized representative.

If additional space is needed to complete any item, please put the information on a separate sheet of paper and identify it as "Continuation of Item".

SUPPLEMENTAL

NOTE: The responsible agency(ies) will provide additional instructions	CHECK APPROPRIATE BLOCK	
	ATTACHED	FILED*
I - PRIVATE CORPORATIONS		
a. Articles of Incorporation	<input type="checkbox"/>	<input type="checkbox"/>
b. Corporation Bylaws	<input type="checkbox"/>	<input type="checkbox"/>
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State.	<input type="checkbox"/>	<input type="checkbox"/>
d. Copy of resolution authorizing filing	<input type="checkbox"/>	<input type="checkbox"/>
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.	<input type="checkbox"/>	<input type="checkbox"/>
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications	<input type="checkbox"/>	<input type="checkbox"/>
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.	<input type="checkbox"/>	<input type="checkbox"/>
II - PUBLIC CORPORATIONS		
a. Copy of law forming corporation	<input type="checkbox"/>	<input type="checkbox"/>
b. Proof of organization	<input type="checkbox"/>	<input type="checkbox"/>
c. Copy of Bylaws	<input type="checkbox"/>	<input type="checkbox"/>
d. Copy of resolution authorizing filing	<input type="checkbox"/>	<input type="checkbox"/>
e. If application is for an oil or gas pipeline, provide information required by Item "I-f" and "I-g" above.	<input type="checkbox"/>	<input type="checkbox"/>
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY		
a. Articles of association, if any	<input type="checkbox"/>	<input type="checkbox"/>
b. If one partner is authorized to sign, resolution authorizing action is	<input type="checkbox"/>	<input type="checkbox"/>
c. Name and address of each participant, partner, association, or other	<input type="checkbox"/>	<input type="checkbox"/>
d. If application is for an oil or gas pipeline, provide information required by Item "I-f" and "I-g" above.	<input type="checkbox"/>	<input type="checkbox"/>

* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (e.g., number, date, code, name). If not on file or current, attach the requested information.

NOTICES

NOTE: This applies to the Department of the Interior Bureau of Land Management (BLM).

The Privacy Act of 1974 provides that you be furnished with the following information in connection with the information provided by this application for an authorization.

AUTHORITY: 16 U.S.C. 310 and 5 U.S.C. 301.

PRINCIPAL PURPOSE: The primary uses of the records are to facilitate the (1) processing of claims or applications; (2) recordation of adjudicative actions; and (3) indexing of documentation in case files supporting administrative actions.

ROUTINE USES: BLM and the Department of the Interior (DOI) may disclose your information on this form: (1) to appropriate Federal agencies when concurrence or supporting information is required prior to granting or acquiring a right or interest in lands or resources; (2) to members of the public who have a need for the information that is maintained by BLM for public record; (3) to the U.S. Department of Justice, court, or other adjudicative body when DOI determines the information is necessary and relevant to litigation; (4) to appropriate Federal, State, local, or foreign agencies responsible for investigating, prosecuting violation, enforcing, or implementing this statute, regulation, or order; and (5) to a congressional office when you request the assistance of the Member of Congress in writing.

EFFECT OF NOT PROVIDING THE INFORMATION: Disclosing this information is necessary to receive or maintain a benefit. Not disclosing it may result in rejecting the application.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The Federal agencies collect this information from applicants requesting right-of-way, permit, license, lease, or certifications for the use of Federal Lands.

Federal agencies use this information to evaluate your proposal.

No Federal agency may request or sponsor and you are not required to respond to a request for information which does not contain a currently valid OMB Control Number.

BURDEN HOURS STATEMENT: The public burden for this form is estimated at 25 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to: U.S. Department of the Interior, Bureau of Land Management (1004-0189), Bureau Information Collection Clearance Officer (WO-630) 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

A reproducible copy of this form may be obtained from the Bureau of Land Management, Division of Lands, Realty and Cadastral Survey, 1620 L Street, N.W., Rm. 1000 LS, Washington, D.C. 20036.

**SIGURD TO RED BUTTE NO. 2
345kV TRANSMISSION PROJECT**

**Geotechnical Investigations Standard Form 299 Application for
Transportation and Utility Systems and Facilities on Federal Lands**

Attachment A

September 22, 2009

Submitted to:

**United States Department of Interior
Bureau of Land Management**

**United States Department of Agriculture
Forest Service
Dixie National Forest**

Submitted by:

**PacifiCorp
(dba Rocky Mountain Power)**

- 7) **Project description (*describe in detail*): (a) type of system or facility (e.g., canal, pipeline, road); (b) related structures and facilities; (c) physical specifications (*length, width, grading, etc.*); (d) term of years needed; (e) time of year of use or operation; (f) volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction.**

PacifiCorp (d.b.a. Rocky Mountain Power) proposes to permit, construct, and operate a new single-circuit 345 kilovolt (kV) transmission line from the Sigurd Substation in Sevier County, located approximately 6 miles northeast of the town of Richfield, Utah, to the Red Butte Substation, located west of State Route 18 and the town of Central in Washington County, Utah. The preliminary right-of-way application for this project was submitted as a separate SF-299 application on December 24, 2008. The proposed transmission line routes being considered at this time are illustrated in Attachment B and cover over 400 miles of possible routes through Sevier, Millard, Beaver, Iron, Garfield, and Washington counties.

A geotechnical investigation is required to characterize the ground and below-ground construction conditions along the proposed routes prior to distribution of PacifiCorp's Engineering, Procurement, and Construction (EPC) Request for Proposal package. PacifiCorp is therefore applying for a short-term right-of-way grant or temporary use permit through the SF-299 process in order to be granted temporary access to conduct the geotechnical investigations. This application process was confirmed by the U.S. Department of Interior, Bureau of Land Management (BLM) Cedar City Field Office and the United States Department of Agriculture Forest Service (USFS) office staff in a pre-application meeting at the BLM Cedar City Field Office on August 6, 2009.

The Sigurd to Red Butte No. 2 345kV Transmission Project Geotechnical Investigations (the Project) will consist of using portable drilling rigs to drill up to 234 borings and sample/evaluate subsurface soil and rock to a maximum depth of 50 feet below the ground surface. Each borehole will be up to 8 inches in diameter. The boring locations and temporary access to the borings are described below in sub-sections 7(c) and 7(h), respectively.

Geotechnical Exploration Equipment

Borings will be advanced using hollow-stem augers (HSA), mud rotary, continuous coring, air hammer (ODEX), sonic drilling technologies, or by cone penetration testing (CPT) depending on the materials encountered and the type of drilling rigs used. The drilling rigs will be mounted on road-legal trucks, tracked vehicles, oversized-tire all-terrain-vehicles (ATVs) or on platform rigs. Platform rigs will be transported in pieces to the site via helicopter. The majority of the borings will be drilled using truck-mounted drilling rigs; however, other drilling rigs are proposed for areas where the truck mounted drilling rigs cannot be used due to steep terrain and/or difficult access. Photographs and additional information on the types of portable rigs proposed for this project are provided in Attachment D. Other vehicles and equipment that may also be mobilized to each boring location include a water truck or support vehicle, an air compressor, geologist's pickup truck or utility vehicle, and possibly another support pickup truck. In some very limited areas (areas described in Attachment C) a dozer or grading equipment may be required to assist with access to the boring location.

Geotechnical Sampling and Measurement Methods

Soil sampling will be done using split spoon samplers hammered into sandy soil, thin walled tubes pushed into fine-grained soil (clays or silts), or grab samples taken from the drill cuttings.

Four split spoon samples will be driven for the first 10 feet below ground surface, then one every 5 feet or at a change in soil type after that. Once the soil sampler reaches a hard material (rock or rock-like) which cannot be sampled using the above methods, the drilling and sampling equipment will be changed to continuous coring if bedrock is assumed to be encountered. Soft soils may be evaluated using the CPT rig, whereby a 2-inch-diameter cone is pushed into the ground and the penetration resistance is measured or a 4-inch-wide flat-plate dilatometer (DMT) is pushed into the ground to measure soil elasticity. Continuous coring will then be used until the desired completion depth of the boring is reached. If hard, rock-like material is encountered that is assumed to be a boulder (in an alluvial fan), ODEX will be used to drill through the rock until soft material is encountered, then split spoon samplers will be used to continue the hole to total depth. For locations drilled with an ATV-mounted drill rig, split spoon samplers will be used in sandy soils as described above. If hard, rock-like material is encountered the boring will be advanced using sonic coring methods.

Groundwater Evaluation

If no groundwater is encountered during drilling, the boreholes will be backfilled with drill cuttings upon completion and stockpiled topsoil replaced. If groundwater is encountered during drilling, an electronic or standpipe piezometer may be installed within the boreholes to measure groundwater levels over time. Upon completion of boreholes within groundwater or piezometer readings, the surface casing of the piezometers will be removed and the boreholes/piezometers will be backfilled with bentonite following State of Utah R655-4 UAC (September 2008) requirements. Once the boreholes have been backfilled to the surface, the drill rig and support equipment will leave the site on the same access route, being careful to minimize disturbance of the site and surrounding areas. A registered or licensed geologist or geotechnical engineering will also take photographs of each boring location before and after completion of drilling.

Geophysical Surveys

In addition to the geotechnical borings, limited geophysical surveys may be performed at the substation locations and in remote areas where access is not possible for drill rigs. The geophysical surveys will consist of refraction micro-tremor (Remi) which will be transported to the site on foot or by helicopter. The Remi equipment consists of portable sensor equipment connected via wire to an array of geophones which are pushed into the earth a nominal depth of 2 to 3 inches. Energy sources for the refraction waves will include ambient background movement around the array and may include a hammer and plate. No explosives are used in the Remi method. Upon completion of the geophysical survey, the portable equipment will be packed up leaving little evidence beyond foot prints left at the site.

Access and Disturbance

Each drill site will be visited two to five times, once for staking, a second time for utility clearance (as applicable), a third time for temporary access construction (as needed) for the drilling itself, and finally with earthwork equipment to restore or mitigate damage done by the vehicles and to remove temporary roads (as applicable). Boring locations which have piezometers installed may need to be visited as much as twice a month for up to one year, after which the piezometers will be decommissioned per State of Utah requirements. Expected impacts of the Project on the surrounding environments are detailed in item 17 below. Best Management Practices (BMPs) that will be used to minimize the impact of the Project on the surrounding environment are detailed in item 7(h) below.

(a) Type of system or facility

The project consists of temporary exploration (as described above) and will not involve installation of a permanent system or facility.

(b) Related structures and facilities

None

(c) Physical specifications (length, width, grading)

The Project will consist of 234 boring locations and eight contractor staging areas as shown in detail in Attachment B. A minimum of one boring will be drilled for each proposed angle point and dead-end structure, and where the geotechnical engineer has deemed additional borings are necessary (to verify lithology changes and/or geologic hazards). Note on the Attachment B index map, each section of the proposed transmission line routes have been labeled with a unique number or "link". The Project boring location identifications have a letter prefix followed by a number. The letter prefix of "A-" designates a boring at a proposed angle point in the transmission line, a "D-" prefix designates a boring at a proposed dead-end structure, a "T-" prefix designates a tangent boring or point on or in close proximity to the centerline of the proposed transmission line, and the "C-" prefix designates a boring within the two-mile wide corridor but not on the centerline of the proposed structure. The letter prefix is followed by the three-digit link number, and then by the approximate distance in miles the boring is from the GIS origin point of the link. For example: T-380-10.8 is a tangent boring located on Link 380, approximately 10.8 miles from the origin end of the link. The tabulation of the boring identification, locations, access disturbance and distance, type of rig, and type of drilling methods anticipated are provided in Attachment C.

Ground disturbance around each proposed boring location may occur within a roughly square area as much as 100 feet by 100 feet centered over the boring location. The platform rig drill pad may have a ground disturbance area as much as 50 feet by 50 feet around the boring location. This area is required for maneuvering the drilling rig and support equipment. Ground disturbance within the above areas is expected to include driving over vegetation, and minimizing clearing of vegetation to gain access to the boring location. The top 6 to 8 inches of topsoil at the boring locations (approximately 4 feet by 4 feet) will be stripped and set aside. At completion of the boring, the borehole will be backfilled and compacted at the surface and the previously stripped topsoil will be placed over the backfilled boring. Each boring (not the area around the boring) will be staked with 48-inch-high, labeled wooden lathes and flagged using orange survey tape.

Access routes to each of the boring locations are also shown in Attachment B. Access routes will consist of a single 12-foot-wide route from an existing road or trail. The centerline of the access route will be staked with 18-inch-high wooden lathes and flagged using blue survey tape.

Approximate 1-acre areas have also been identified in Attachment B to serve as temporary staging areas where contractors can temporarily store equipment, pressure wash the undercarriage of the equipment to remove invasive weeds, have a central office with portable sanitary facilities, park a fuel truck, and/or have a location to airlift

equipment. The temporary staging areas will be removed upon completion of drilling in the area.

(d) Term of years needed

While drilling is anticipated to require three months, some borings may need to occur at other times to accommodate unforeseen conditions or sensitive resource seasonal restrictions, if any. For this reason, a Project window of approximately one year, from July 15, 2010 through July 31, 2011, is requested.

(e) Time of year of use or operation

The schedule will be optimized to allow sufficient time to perform seasonal resource surveys (e.g. avian and botanical species) and to minimize activities during wildlife seasonal restrictions. Drilling activities will also be scheduled during drier and/or cold weather so rutting of soft wet ground is minimized. Considering these issues, the Project is proposed to start after July 15, 2010, and be completed by December 1, 2010, if not sooner.

(f) Volume or amount of product to be transported

No product transportation is proposed as a part of this Project.

(g) Duration and timing of construction

No construction is proposed as a part of this Project.

(h) Temporary work areas needed for construction

As noted in the "Access Description" column of Attachment C, some boring locations will require temporary work to access the boring locations. For this Project, temporary work is defined as the degree of ground disturbance preparation required for a drilling rig to access the boring location. Drilling may be temporarily postponed after significant rains or snow melt to allow the ground to dry and thus minimize rutting by vehicles. From least ground disturbance to most ground disturbance, temporary work may include:

- Open Range – the drilling rig and support equipment will drive overland within the staked access corridor and the 100-foot by 100-foot area will be centered around the staked borehole (drilling pad). The landscape will not be altered other than compaction of soil under the vehicle tires/tracks and the vegetation may be crushed but not cleared or uprooted. Upon completion, ruts deeper than 4 to 6 inches will be repaired and reseeded.
- Clearing – vegetation will be cropped within the access route and drilling pad. The clearing will be done carefully so the root ball of the plants remains intact. Upon completion, ruts deeper than 4 to 6 inches will be repaired and reseeded.
- Temporary Road Building – road building may be used in areas of soft ground or to create an even grade for the Project vehicles. This would include bringing in temporary mats, grates, plates, or engineered fill over the cleared landscape within the route and/or drilling pad, with no cutting of the landscape. If engineered fill is used, the area may be underlain with a separation geotextile and/or geogrid prior to

placement of engineered fill. Upon completion of drilling activities, the temporary road materials will be removed and the area will be scarified and reseeded with native grasses as applicable.

- Road Cuts – roads may be constructed by earthwork equipment to cut through the landscape for an even grade required for access or to level the drilling pad. Cut/fill balance by manual labor may also be required in areas only accessible by the helicopter mobilized platform rig in order to create a level drilling pad. As indicated in Attachment C, proposed excavation cuts will be minimized for this Project. Upon completion of drilling, cut areas will be graded to round shoulders and cut edges, and the surface will be seeded with native grasses as applicable.

In addition to the possible ground disturbance above, earthwork equipment may be required to repair existing roads to make them passable for drilling equipment.

As part of the Project, PacifiCorp has defined operational BMPs for mitigating the impacts of the Project on the environment. These operational BMPs are provided in Table 1 and also listed in item 17, as applicable.

1.	All requirements of those entities having jurisdiction over air quality matters will be adhered to. Any necessary dust control plans will be developed, and permits for geotechnical testing activities will be obtained. Open burning of trash will not be allowed unless permitted by appropriate authorities.
2.	Hazardous material shall not be drained onto the ground or into streams or drainage areas. Totally enclosed containment shall be provided for all trash. All construction waste including trash and litter, garbage, solid waste, petroleum products, and other potentially hazardous materials shall be removed to a disposal facility authorized to accept such materials.
3.	The spatial limits of drilling activities will be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents will be applied to rocks, vegetation, structures, fences, etc., to indicate survey or drilling activity limits.
4.	Vehicle refueling and servicing activities will be performed in designated zones located more than 100 feet from wetlands and streams. Spill preventative and containment measures or practices will be incorporated as needed.
5.	Prior to geotechnical testing activities, all personnel will be instructed on the protection of cultural, ecological, and other natural resources. To assist in this effort, the Construction Contractor will address: (a) federal and state laws regarding antiquities and plants and wildlife, including collection and removal; (b) the importance of these resources; and (c) the purpose and necessity of protecting them.
6.	In consultation with appropriate land managing agencies and state historic preservation officers, specific mitigation measures for cultural resources will be developed and implemented to avoid adverse impacts, monitoring of geotechnical testing activities, and data recovery studies.
7.	To eliminate the spread of noxious/invasive weeds, equipment and vehicles, including the undercarriage, will be cleaned at a local car wash or with a portable pressure washer at the temporary staging areas prior to entering another Project area with different vegetation.
8.	In work areas where re-contouring is not required, vegetation will be left in place wherever possible and original contours would be maintained to avoid excessive root damage and allow for re-sprouting.

Table 1 – Operational BMPs

9.	In areas where ground disturbance is significant or where re-contouring is required, surface restoration will normally consist of, but is not limited to, returning disturbed areas back to rounded contours, reseeding, installing cross drains for erosion control, placing water bars in the road, and filling ditches. All areas on BLM and USFS lands that are disturbed by geotechnical testing activities will be drill seeded with a seed mixture appropriate for those areas. BLM or USFS will prescribe a seed mixture that fits each range site. Drill seeding will be done in September or October to maximize the chance of success.
10.	In cultivated agricultural areas, soil compacted by geotechnical testing activities will be de-compacted. Geotechnical testing activities will occur so as to minimize impacts to agricultural operations.
11.	All vehicle movement will be restricted to pre-designated access, contractor acquired access, or public roads.
12.	Boreholes will be backfilled with drill cuttings and on-site soils. For areas where groundwater is encountered, the boreholes will be sealed with bentonite chips.
13.	Special status species or other species of particular concern will be considered in accordance with management policies set forth by appropriate land management agencies (e.g., U.S. Fish and Wildlife). This may entail conducting surveys for plant and wildlife species of concern along access routes and geotechnical testing sites. In cases where such species are identified, appropriate actions will be taken to avoid adverse impacts on the species and its habitat.
14.	Fences, gates, and walls will be replaced or repaired to their original condition as required by the landowner or the land managing agency if they are removed, damaged, or destroyed by drilling activities. Temporary gates or enclosures will be installed only with the permission of the landowner or the land managing agency and will be removed/restored following the geotechnical testing.

Table 1 – Operational BMPs

15.	<p>PacifiCorp or its contractors will notify the BLM and USFS of any fires and comply with all rules and regulations administered by the BLM and USFS concerning the use, prevention, and suppression of fires on federal lands, including any fire prevention orders that may be in effect at the time of the permitted activity. PacifiCorp or its contractors may be held liable for the cost of fire suppression, stabilization, and rehabilitation. In the event of a fire, personal safety will be the first priority of PacifiCorp or its contractors. The holder or its contractors will:</p> <ol style="list-style-type: none">1. Operate all internal and external combustion engines on federally managed lands per 36 CFR 261.52, which requires all such engines to be equipped with a qualified spark arrester that is maintained and not modified.2. Carry shovels, water, and fire extinguishers that are rated at a minimum as ABC – 10 pounds on all equipment and vehicles. If a fire spreads beyond the suppression capability of workers with these tools, all will cease fire suppression action and leave the area immediately via pre-identified escape routes.3. Initiate fire suppression actions in the work area to prevent fire spread to or on federally administered lands. If fire ignitions cannot be prevented or contained immediately, or it may be foreseeable to exceed the immediate capability of workers, the operation must be modified or discontinued. No risk of ignition or re-ignition will exist upon leaving the operation area.4. Notify the appropriate Interagency Fire Center (IFC) immediately of the location and status of any escaped fire:<ol style="list-style-type: none">a. For fires in Sevier and Millard Counties, contact Cedar City IFC at (435) 772-2356b. For fires in Beaver, Iron, Garfield, and Washington Counties, contact Color Country IFC at (435) 865-46005. Prior to any operation involving potential sources of fire ignition from vehicles, equipment, or other means, weather forecasts and potential fire danger will be reviewed. Prevention measures to be taken each workday will be included in the specific job briefing. Consideration for additional mitigation or discontinuing the operation must be given in periods of extreme wind and dryness.6. Operate all vehicles on designated roads or park in areas free of vegetation. Vehicles, including the undercarriages, will be thoroughly washed prior to entering the site.7. Conduct welding, grinding, or cutting activities in areas cleared of vegetation within range of the sparks for that particular action. A spotter is required to watch for ignitions.
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9) State or local government approval

Applicable state and local jurisdiction approvals will be obtained for the Project based on final approval and Notice to Proceed by the BLM and the USFS.

15) Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

PacifiCorp requests temporary use of BLM and USFS lands in order to conduct geotechnical borings and non-invasive (geophysical and geologic mapping) investigation in support of the Sigurd to Red Butte No. 2 Transmission Project foundation design. The boring and geophysical logs will provide critical information regarding subsurface conditions which will be incorporated into the engineering design for the transmission towers and substations. This information is critical in the development of the EPC documents by providing the expected subsurface conditions for foundation design and construction. In performing these activities, PacifiCorp will coordinate with Pike Energy Solutions, Inc., the selected contractor and Owner’s Engineer for the Project, to ensure all surface use stipulations, if any, and Best Management Practices are followed.

16) Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles

The Project activities are short-term and temporary and are not expected to have a measurable effect on the population, including the social and economic aspects, or rural lifestyles.

17) Describe likely environmental effects that the proposed project would have on: (a) air quality; (b) visual impact; (c) surface and groundwater quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

(a) Air quality

Effects on air quality would be short in duration (anticipated a half day to one day at each borehole location) and localized to the general area of activity. During drilling, sources of air emissions would include particulates (fugitive dust) caused by moving vehicles and exhaust emissions from the vehicles. No long-term effects on air quality are anticipated.

BMPs which will be followed to maintain air quality include:

- (1) All requirements of those entities having jurisdiction over air quality matters will be adhered to.
- (2) Any necessary dust control plans will be developed, and permits for geotechnical testing activities will be obtained.
- (3) Open burning of trash will not be allowed unless permitted by appropriate authorities.

(b) Visual Impact

Drilling activities may result in temporary and minor visual impacts due to the ground disturbance associated with vehicle tracks and work areas. BMPs which will be followed to minimize visual impacts include:

- (1) The spatial limits of drilling activities will be predetermined, with activity restricted to and confined within those limits. All vehicle movement will be restricted to pre-designated access, contractor acquired access, or public roads.
- (2) No paint or permanent discoloring agents will be applied to rocks, vegetation, structures, fences, etc., to indicate survey or drilling activity limits.
- (3) Drill holes would be backfilled with auger cuttings and on-site soils and surplus drill cuttings will be spread thinly over the ground surface.

(c) Surface and groundwater quality and quantity

Effects on surface and groundwater quality would be minimal as there is limited exploration proposed near water resources and drilling depths are not expected to be deep enough to encounter water-bearing zones. Borings that encounter groundwater will be backfilled with bentonite or may have electronic or standpipe piezometers

installed to measure groundwater levels over time. Upon completion of groundwater measurements, the surface casing of the piezometers will be removed and sealed with bentonite chips to seal the borehole from surface water or intrusion or movement of groundwater.

(d) The control or structural change on any stream or other body of water

The Project will not result in the control or structural change of any stream or body of water.

(e) Existing noise levels

The project will result in the temporary (anticipated a half day to one day) increase in the noise level in the vicinity of each boring. The majority of the borings are in remote areas where few, if any, people will be affected by the Project noise levels. The range of expected noise levels during drilling operations is provided in Table 2.

Table 2 – Drilling Rig Noise Levels (dB)¹ by Drilling Method				
Distance from Rig (feet)	HSA Auger	Mud rotary/Core (includes Platform Rig)	ODEX with Air compressor	Sonic
10	87-96	80-97	89-99	84-96
25	81-88	75-91	76-90	81-88
50	<75	<75	<75	<75

¹ Information provided by Boart Longyear (2008) based on actual sound measurements of various rig types in the field. Sound level measured in decibels (dB).

(f) The surface of the land, including vegetation, permafrost, soil, and soil stability

As detailed in item 7(h) above, land disturbance for the Project, from least to most ground disturbance, will range from driving over the open range to selective clearing of vegetation, to building temporary roads and finally cutting roads to gain access and/or establish a temporary drilling pad. The BMPs which will be followed to minimize disturbance of the land contours, soils, and vegetation include:

- (1) Drilling access routes and drill pad locations will be selected to minimize travel over open range and minimize clearing, construction of temporary roads, and/or re-contouring.
- (2) In work areas where re-contouring is not required, vegetation will be left in place wherever possible and original contours would be maintained to avoid excessive root damage and allow for re-sprouting.
- (3) In areas where ground disturbance is significant or where re-contouring is required, surface restoration will normally consist of, but is not limited to, returning disturbed areas back to rounded contours, reseeding, installing cross drains for erosion control, placing water bars in the road, and filling ditches. All areas on BLM and USFS lands that are disturbed by geotechnical testing activities will be drill seeded with a seed mixture appropriate for those areas. BLM or USFS will prescribe a seed mixture that fits each range site. Drill seeding will be done in September or October to maximize the chance of success.

- (4) In cultivated agricultural areas, soil compacted by geotechnical testing activities will be de-compacted. Geotechnical testing activities will occur so as to minimize impacts to agricultural operations.

The expected areas of ground disturbance are shown in Table 3.

Table 3 - Temporary Ground Disturbance* by Land Ownership Type (acres)						
Type of Disturbance	Federal		State	Private	Tribal	Total
	BLM	USFS				
Staging Areas (assumes 1 acre per area)	4	2	0	1	0	7
Drilling Pads (assumes 0.2 acres per pad)	18	14	3	12	0	47
Overland Access Routes (assumes 12-foot-wide access route)						
Open Range Route	31	18	3	31	1	84
Clear Route	2	9	0	2	0	13
Overland Access Route Subtotal	33	26	3	33	1	97
Total Disturbance	55	43	6	47	1	151

* All estimates shown are in acres and represent the maximum disturbance areas anticipated if all borings are completed.

18) Describe the probable effects that the proposed project would have on: (a) populations of fish, plant life, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

- (a) Effects on wildlife would be associated with temporarily increased noise and human activity, as well as ground disturbance of the Project activities. These activities could result in behavioral disturbance and/or temporary displacement of wildlife. An Environmental Assessment for the Sigurd to Red Butte No. 2 345kV Transmission Project Geotechnical Investigations will be prepared prior to geotechnical testing. For this evaluation, wildlife field surveys will be completed and the results will be incorporated in the environmental record for this project, including recommendations to mitigate any probable effects to said wildlife, including threatened and endangered species, if identified.

- (b) Not Applicable for this application.

SIGURD TO RED BUTTE NO. 2 345kV TRANSMISSION PROJECT

**Geotechnical Investigations Standard Form 299 Application for
Transportation and Utility Systems and Facilities on Federal Lands**

Attachment B Site Plans

SIGURD TO RED BUTTE NO. 2 345kV TRANSMISSION PROJECT

**Geotechnical Investigations Standard Form 299 Application for
Transportation and Utility Systems and Facilities on Federal Lands**

Attachment C Summary of Geographic and Access Data for Soil Borings

Attachment C - Summary of Geographic and Access Data for Soil Borings

Borehole ID#	X UTM; NAD83; 12N	Y UTM; NAD83; 12N	Township/ Range/Section	Quad Name	Ownership	Access Description (Existing access or maximum estimated number of feet of overland travel. All overland travel lengths indicated are approximate)	Access Disturbance (Overland)	Rig Type (Truck, ATV, Track, CPT, Platform)	Drilling Method
Link 025									
D-025-0	413745.10	4300165.21	T22S R2W 35	SIGURD	Private	550' open range - northwest corner of Sigurd substation	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
Link 026									
D-026-1.5	413408.15	4301465.89	T22S R2W 27	SIGURD	Private	800' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-026-2.2	413408.15	4300165.21	T22S R2W 34	SIGURD	Private	Existing Access (N Stake Farm Road)	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
Link 028									
A-028-0.2	406728.00	4294533.54	T23S R3W 13	RICHFIELD	BLM	250' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-028-0.4	406970.88	4294788.81	T23S R2W 18	RICHFIELD	Private	Existing access	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-028-0.8	407465.23	4295282.07	T23S R2W 18	RICHFIELD	Private	Existing access	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-028-1.3	407996.11	4295718.06	T23S R2W 18	RICHFIELD	Private	100' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-028-1.7	408517.85	4296129.83	T23S R2W 7	RICHFIELD	SITLA	370' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-028-3.7	410617.34	4298587.28	T23S R2W 4	RICHFIELD	SITLA	300' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-028-4.4	411465.31	4299453.78	T22S R2W 34	RICHFIELD	Private	Existing access	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-028-4.6	411657.76	4299608.57	T22S R2W 34	RICHFIELD	Private	100' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-028-4.7	411856.97	4299680.27	T22S R2W 33	RICHFIELD	Private	200' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-028-5.2	412432.19	4300178.83	T22S R2W 34	RICHFIELD	Private	150' open range; use existing trail	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
Link 030									
D-030-0	390975.14	4273610.87	T25S R4W 21	MARYSVALE CANYON	USFS	1,800' open range; use existing trails; access gate from exit ramp	Compaction-crushed	ATV/Track - ATV preferred	HSA/ODEX/Core/Sonic
D-030-0.4	391317.37	4274143.63	T25S R4W 21	ANTELOPE RANGE	USFS	600' open range; use existing maintenance access; tribal land	Compaction-crushed	ATV/Track - ATV preferred	Sonic
D-030-2.6	392053.10	4277568.87	T25S R4W 9	ELSINORE	USFS	3,100' open range; may require road cuts; tribal land	Compaction-crushed; may need road cuts	ATV/Track - ATV preferred	Sonic
D-030-3.5	393570.33	4277683.64	T25S R4W 10	ELSINORE	USFS	1,700' open range; access through tribal land	Compaction-crushed	ATV/Track - ATV preferred	Sonic
D-030-4.6	394472.56	4279101.72	T25S R4W 2	ELSINORE	Private	6,000' open range; access through tribal land	Compaction-crushed	ATV/Track - ATV preferred	Sonic
A-030-6.6	397489.24	4280659.95	T24S R3W 31	ELSINORE	USFS	400' open range-access from existing maintenance road	Some road cuts required	ATV/Track/Platform - ATV preferred	Sonic/Core
A-030-7.1	397995.44	4281022.88	T24S R3W 31	ELSINORE	USFS	550' open range-access from existing maintenance road	Some road cuts required	ATV/Track/Platform - ATV preferred	Sonic/Core
A-030-8.4	399393.33	4282621.76	T24S R3W 29	ELSINORE	Private	150' open range-access from existing maintenance road	Some road cuts required	ATV/Track/Platform - ATV preferred	Sonic/Core
A-030-9.5	400344.29	4284162.06	T24S R3W 20	ELSINORE	USFS	400' open range-access from existing maintenance road	Some road cuts required	ATV/Track/Platform - ATV preferred	Sonic/Core
T-030-10.3	400935.20	4285373.93	T24S R3W 16	ELSINORE	USFS	330' open range	Compaction-crushed	ATV/Track - ATV preferred	Sonic
D-030-11.7	401896.62	4287345.68	T24S R3W 9	ELSINORE	USFS	Construct temporary bridge crossing over canal; 720' open range	Compaction-crushed	Track/ATV - Track preferred	Sonic
A-030-12.4	402753.00	4288120.00	T24S R3W 3	ANNABELLA	USFS	Reinforce existing bridge crossing over canal (private); 2300' open range	Compaction-crushed	Track/ATV - Track preferred	Sonic
D-030-13.4	403431.44	4289613.26	T24S R3W 3	ANNABELLA	USFS	1,450' open range- access from existing maintenance road	Some road cuts required	ATV/Track/Platform - ATV preferred	Sonic/Core
A-030-13.9	403533.27	4290324.54	T23S R3W 34	RICHFIELD	USFS	Existing access	None	ATV/Track - ATV preferred	Sonic
A-030-14.3	403562.96	4290932.83	T23S R3W 26	RICHFIELD	Private	Existing access	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-030-14.5	403778.79	4291333.57	T23S R3W 26	RICHFIELD	Private	750' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-030-15.4	404571.89	4292560.68	T23S R3W 26	RICHFIELD	Private	Existing access (existing maintenance road needs review)	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-030-15.7	404731.52	4293055.47	T23S R3W 23	RICHFIELD	Private	200' open range; use existing maintenance access	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
Link 033									
A-033-0.2	404948.22	4293375.22	T23S R3W 23	RICHFIELD	Private	450' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-033-0.9	405575.84	4294168.71	T23S R3W 24	RICHFIELD	Private	50' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-033-1.5	406424.98	4294730.01	T23S R3W 13	RICHFIELD	BLM	1,800' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-033-3.1	408206.12	4296520.18	T23S R2W 7	RICHFIELD	SITLA	135' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
T-033-4.3	409523.12	4298031.84	T23S R2W 5	RICHFIELD	BLM	300' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-033-6.1	411411.87	4300199.78	T22S R2W 33	RICHFIELD	BLM	1,850' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
Link 045									
D-045-0	389390.04	4272743.31	T25S R4W 29	MARYSVALE CANYON	USFS	800' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
Link 060									
D-060-0	381641.57	4268947.09	T26S R4.5W 9	MARYSVALE CANYON	USFS	550' open range	Some road cuts required	ATV/Track/Platform - ATV preferred	Sonic/Core
A-060-2.2	384757.03	4270662.10	T25S R4.5W 35	MARYSVALE CANYON	USP	1,570' open range; may need road cuts around highway right-of-way	Compaction-crushed; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core

Attachment C - Summary of Geographic and Access Data for Soil Borings

Borehole ID#	X UTM; NAD83; 12N	Y UTM; NAD83; 12N	Township/ Range/Section	Quad Name	Ownership	Access Description (Existing access or maximum estimated number of feet of overland travel. All overland travel lengths indicated are approximate)	Access Disturbance (Overland)	Rig Type (Truck, ATV, Track, CPT, Platform)	Drilling Method
D-060-3.8	387213.44	4271221.16	T25S R4.5W 36	MARYSVALE CANYON	USP	2,200' open range	Some road cuts required	ATV/Track/Platform - ATV preferred	Sonic/Core
A-060-4.3	387846.47	4271783.94	T25S R4W 31	MARYSVALE CANYON	USFS	140' open range; follow existing ATV trail (Dozer may be needed, washouts & steep inclines)	Some road cuts may be required	ATV/Track/Platform - ATV preferred	Sonic/Core
Link 064									
A-064-0.5	382484.41	4268849.01	T26S R4.5W 9	MARYSVALE CANYON	USFS	100' clear path	Clear trees	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-064-1.9	384720.90	4268962.25	T26S R4.5W 11	MARYSVALE CANYON	USFS	Follow existing ATV trail; 4,300' open range; 1,000' clear path; may need road cuts for washouts and steep slopes	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
A-064-2.7	385966.53	4269169.86	T26S R4.5W 11	MARYSVALE CANYON	USFS	Follow existing ATV trail; 400' clear path; may need road cuts for washouts and steep slopes	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
A-064-3.2	386775.77	4269373.58	T26S R4.5W 12	MARYSVALE CANYON	USFS	Follow existing ATV trail; 550' clear path; may need road cuts for washouts and steep slopes	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
D-064-4.5	388505.48	4270383.30	T25S R4W 31	MARYSVALE CANYON	USFS	Follow existing ATV trail; 450' open range, may need to clear trees; may need road cuts for steep slopes	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
D-064-5.2	389074.84	4271504.68	T25S R4W 31	MARYSVALE CANYON	Private	100' open range; Hwy 70 crossing	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-064-5.5	389082.29	4271958.95	T25S R4W 30	MARYSVALE CANYON	USFS	150' open range; Hwy 70 crossing	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
Link 066									
D-066-0	363530.47	4272210.58	T25S R6W 31	COVE FORT	USFS	175' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-066-1.5	365715.69	4273258.44	T25S R6W 33	COVE FORT	USFS	70' clear path	Clear trees	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
T-066-2.6	367376.73	4272634.69	T25S R6W 34	COVE FORT	USFS	Existing access	None	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-066-3.9	369361.58	4271889.33	T25S R5W 30	TRAIL MOUNTAIN	USFS	Existing access	None	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-066-6.8	373498.06	4269799.01	T26S R5W 10	TRAIL MOUNTAIN	USFS	150' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-066-9.1	376970.77	4268405.41	T26S R5W 13	TRAIL MOUNTAIN	USFS	225' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-066-11.2	380302.26	4268854.66	T26S R4.5W 8	MARYSVALE CANYON	USFS	Follow existing road cut to existing tower and to top of ridge; existing road cut requires regrading to use	Some road cuts required	ATV/Track/Platform - ATV preferred	Sonic/Core
Link 068									
D-068-0	361671.08	4269567.93	T26S R7W 22	COVE FORT	BLM	200' clear path	Clear trees	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
Link 075									
D-075-0	336820.50	4258932.37	T27S R9W 16	BEARSKIN MOUNTAIN	SITLA	200' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-075-2.1	339062.11	4261467.24	T27S R9W 3	BEARSKIN MOUNTAIN	BLM	250' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-075-3.3	340884.31	4262254.67	T27S R9W 1	BEARSKIN MOUNTAIN	BLM	550' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-075-5.7	344706.13	4262274.49	T27S R8W 5	BEARSKIN MOUNTAIN	Private	800' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
T-075-8.4	348611.45	4264076.99	T26S R8W 34	CINDER CRATER	BLM	600' open range and 600' clear path	Clear trees	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-075-11.1	352589.86	4265913.24	T26S R7W 19	CINDER CRATER	BLM	300' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-075-14.4	357871.16	4266243.70	T26S R7W 22	CINDER CRATER	BLM	740' open range and 230' clear path	Clear trees	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
Link 080									
D-080-0	322697.97	4248641.00	T28S R11W 13	MILFORD FLAT	Private	350' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
A-080-0.3	323121.15	4248931.78	T28S R10W 18	MILFORD FLAT	Private	550' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-080-0.9	323683.26	4249740.57	T28S R10W 18	MILFORD	Private	800' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-080-3.5	327848.85	4249686.38	T28S R10W 15	RANCH CANYON	BLM	420' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-080-4.9	327848.85	4251895.24	T28S R10W 3	RANCH CANYON	BLM	240' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-080-7.2	330799.94	4254210.14	T27S R10W 35	RANCH CANYON	Private	Existing access	None	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-080-9.5	333690.35	4256477.44	T27S R9W 19	RANCH CANYON	BLM	Existing access	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
Link 085									
D-085-1.9	319700.11	4248719.21	T28S R11W 14	MILFORD FLAT	Private	540' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
Link 155									
A-155-0	310219.75	4232023.16	T30S R12W 11	THERMO	Private	450' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-155-2.3	311438.75	4235369.78	T29S R12W 36	THERMO	SITLA	300' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT

Attachment C - Summary of Geographic and Access Data for Soil Borings

Borehole ID#	X UTM; NAD83; 12N	Y UTM; NAD83; 12N	Township/ Range/Section	Quad Name	Ownership	Access Description (Existing access or maximum estimated number of feet of overland travel. All overland travel lengths indicated are approximate)	Access Disturbance (Overland)	Rig Type (Truck, ATV, Track, CPT, Platform)	Drilling Method
A-155-4.5	312691.08	4238807.89	T29S R12W 24	PICACHO PEAK	BLM	1,165' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-155-7.5	315764.80	4242493.96	T29S R11W 5	MILFORD FLAT	BLM	100' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-155-10.4	318759.40	4246085.15	T28S R11W 27	MILFORD FLAT	Private	600' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
Link 160									
D-160-1	302906.37	4204259.59	T33S R12W 6	ENOCH NW	Private	2,700' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-160-1.8	303865.46	4205088.10	T32S R12W 32	ENOCH NW	SITLA	Existing access	None	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-160-4.8	303986.40	4209819.84	T32S R12W 20	BADGER PEAK	BLM	Existing access	None	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-160-7.3	304090.02	4213874.07	T32S R12W 5	BADGER PEAK	BLM	Existing access	None	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-160-10	304201.91	4218251.66	T31S R12W 20	BADGER PEAK	Private	2,100' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-160-12.9	304321.17	4222917.60	T31S R12W 5	THERMO	Private	2,700' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-160-15.1	304410.47	4226411.26	T30S R12W 29	THERMO	SITLA	175' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-160-17.6	307276.12	4229177.40	T30S R12W 21	THERMO	BLM	Existing access	None	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
Link 165									
A-165-00	286549.92	4186234.27	T34S R14W 33	ANTELOPE PEAK	Private	1,200' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-165-2.8	289779.85	4189340.89	T34S R14W 23	ANTELOPE PEAK	Private	2,900' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-165-5.8	293282.16	4192709.50	T34S R13W 7	AVON SE	Private	2,150' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-165-8.6	296543.79	4195846.62	T33S R13W 33	AVON	Private	5,00' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-165-11.5	299884.58	4199059.86	T33S R13W 23	AVON	BLM	Existing access	None	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
Link 220									
D-220-0	278094.76	4173090.44	T36S R15W 10	NEWCASTLE	BLM	800' open range, right-of-way fence-lay down to access	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-220-1.4	279694.23	4174643.10	T36S R15W 2	SILVER PEAK	SITLA	120' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-220-2.5	279983.04	4176372.52	T35S R15W 35	SILVER PEAK	BLM	3,000' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
T-220-4.2	280671.80	4179132.36	T35S R15W 25	SILVER PEAK	BLM	3,200' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-220-6	281370.00	4181930.00	T35S R15W 13	ANTELOPE PEAK	Private	770' open range	Compaction-crushed	ATV/Truck/CPT ATV preferred	HSA/ODEX/Core/Sonic/CPT
T-220-7.6	283219.23	4183724.10	T35S R14W 7	ANTELOPE PEAK	Private	2,200' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-220-9.2	285060.00	4185510.00	T35S R14W 5	ANTELOPE PEAK	Private	1,300' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
Link 240									
D-240-0	278767.09	4169688.94	T36S R15W 26	NEWCASTLE	BLM	300' open range; steep slope	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-240-1.1	278620.57	4171503.72	T36S R15W 14	NEWCASTLE	BLM	900' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
Link 245									
D-245-0.2	278399.51	4168433.80	T36S R15W 26	NEWCASTLE	BLM	150' open range; follow trail along west side of creek bottom	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
Link 250									
A-250-0	272309.44	4166656.22	T36S R15W 31	PINTO	USFS	Platform	Some disturbance in area of platform	Platform	Sonic/Core
D-250-1.2	273399.00	4168251.88	T36S R15W 26	NEWCASTLE	BLM	2,200' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-250-2.3	275273.12	4168243.83	T36S R15W 29	NEWCASTLE	BLM	2,800' open range and 100' clear path	Some tree clearing	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-250-4.1	278064.15	4168294.59	T36S R15W 27	NEWCASTLE	Private	150' open range; follow trail along west side of creek bottom	Compaction-crushed	ATV/Truck/CPT ATV preferred	HSA/ODEX/Core/Sonic/CPT
Link 260									
D-260-00	265847.59	4143891.42	T39S R16W 9	CENTRAL WEST	USFS	Existing access; Red Butte Substation	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-260-1.6	267250.05	4141698.59	T39S R16W 15	CENTRAL WEST	Private	1,400' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-260-2.8	269185.67	4141698.59	T39S R16W 14	CENTRAL EAST	USFS	2,400' clear path; track with dozer (grading) to cross draw and up steep slopes or use Platform Rig	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core

Attachment C - Summary of Geographic and Access Data for Soil Borings

Borehole ID#	X UTM; NAD83; 12N	Y UTM; NAD83; 12N	Township/ Range/Section	Quad Name	Ownership	Access Description (Existing access or maximum estimated number of feet of overland travel. All overland travel lengths indicated are approximate)	Access Disturbance (Overland)	Rig Type (Truck, ATV, Track, CPT, Platform)	Drilling Method
D-260-4.1	271101.55	4142370.14	T39S R15W 18	CENTRAL EAST	USFS	Platform	Clear trees in area of platform	Platform	Sonic/Core
D-260-6.1	273323.57	4144750.17	T39S R15W 5	CENTRAL EAST	USFS	990' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-260-7.5	275461.26	4145241.22	T39S R15W 4	CENTRAL EAST	USFS	900' open range & 200' clear path	some tree clearing	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-260-8.4	276653.48	4146261.82	T38S R15W 34	CENTRAL EAST	USFS	2,800' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
T-260-10.7	278110.60	4149719.22	T38S R15W 23	CENTRAL EAST	USFS	Existing access	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-260-13.1	279574.17	4153191.89	T38S R15W 12	GRASS VALLEY	USFS	900' clear path and road cuts required	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
D-260-14.4	278331.83	4154822.38	T38S R15W 2	PINTO	Private	2,200' clear path and road cuts	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
D-260-14.8	278168.57	4155479.36	T38S R15W 2	PINTO	USFS	700' clear path and road cut	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
D-260-14.9	278218.60	4155723.93	T38S R15W 2	PINTO	USFS	1,900' clear path and road cut	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
D-260-16.1	279041.94	4157315.07	T36S R15W 35	PINTO	USFS	3,500' open range	Compaction-crushed	ATV/Truck/CPT ATV preferred	HSA/ODEX/Core/Sonic/CPT
D-260-17.4	277259.38	4158590.00	T37S R15W 27	PINTO	USFS	250' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-260-18.5	276790.74	4160260.10	T37S R15W 22	PINTO	USFS	4,200' cleared path/grading; may need road cuts for washouts and steep slopes	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
D-260-19.1	276355.02	4161049.45	T37S R15W 21	PINTO	USFS	4,500' cleared path/grading; may need road cuts for washouts and steep slopes	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
D-260-20.3	276596.82	4162948.43	T37S R15W 15	PINTO	USFS	400' clear path; point along top of ridge; steep terrain >20%; 5' high berm along creek	Clear trees; may need road cuts	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-260-21.8	277984.22	4164914.33	T37S R15W 3	PINTO	USFS	400' clear path	Clear trees	ATV/Truck/CPT ATV preferred	HSA/ODEX/Core/Sonic/CPT
D-260-22.4	277661.91	4165877.64	T37S R15W 3	PINTO	USFS	170' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-260-23.2	277807.70	4167293.49	T36S R15W 34	NEWCASTLE	BLM	300' open range; follow existing trail along west side of creek bottom	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
Link 270									
D-270-0.3	265920.73	4144393.31	T39S R16W 4	CENTRAL WEST	USFS	Existing access	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-270-0.8	266331.59	4145099.62	T39S R16W 3	CENTRAL WEST	Private	Existing access	None	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-270-1.1	266440.12	4145612.76	T39S R16W 3	CENTRAL WEST	USFS	650' open range and 680' cleared path	Clear trees	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-270-1.5	266904.90	4145852.93	T39S R16W 3	CENTRAL WEST	USFS	1,500' clear path	Clear trees	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-270-2.6	267211.60	4147626.76	T38S R16W 27	CENTRAL WEST	USFS	1,500' open range	Compaction-crushed	Track/ATV	Sonic
D-270-3.6	268362.76	4148882.39	T38S R16W 26	CENTRAL EAST	USFS	200' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
T-270-6.1	269605.47	4152591.81	T38S R16W 12	CENTRAL EAST	USFS	180' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-270-8.4	270814.62	4156201.07	T37S R16W 36	PINTO	USFS	2,500' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-270-10.2	270850.79	4158984.55	T37S R16W 24	PINTO	USFS	Platform	Some disturbance & tree cut in area of platform	Platform	Sonic/Core
D-270-12.3	270396.86	4162317.40	T37S R16W 12	PINTO	USFS	Platform	Some disturbance & tree cut in area of platform	Platform	Sonic/Core
D-270-14.1	271202.26	4165189.29	T36S R16W 36	PINTO	Private	1,800' clear path and some road cuts	Clear trees; may need road cuts	ATV/Track or platform	Sonic or Core
Link 280									
T-280-2.0	264874.44	4161767.77	T37S R16W 17	ENTERPRISE	USFS	1,400' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
T-280-4.9	268637.19	4164241.75	T37S R16W 2	PINTO	Private	550' open range and 500' clear path	Clear trees	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
Link 285									
D-285-0.5	261384.17	4142008.25	T39S R16W 7	CENTRAL WEST	USFS	300' open range; follow existing ATV trail	Compaction-crushed; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
A-285-1.5	261314.46	4143542.17	T39S R16W 18	CENTRAL WEST	USFS	Platform	Some disturbance in area of platform	Platform	Sonic/Core
D-285-2.9	260778.81	4145749.98	T39S R17W 1	CENTRAL WEST	USFS	Platform	Some disturbance in area of platform	Platform	Sonic/Core
D-285-3.7	260981.12	4146956.66	T38S R17W 36	CENTRAL WEST	USFS	Platform	Some disturbance in area of platform	Platform	Sonic/Core
D-285-4.1	260854.92	4147629.12	T38S R17W 36	CENTRAL WEST	USFS	Platform	Some disturbance in area of platform	Platform	Sonic/Core
A-285-5.7	259350.03	4149670.64	T38S R17W 23	CENTRAL WEST	USFS	Existing access; follow forest access road	None	ATV/Track-ATV preferred	Sonic/Core
A-285-6.6	258775.61	4150977.61	T38S R17W 23	CENTRAL WEST	USFS	600' open range along ridge line may trees cut; steep	May need some trees cleared	ATV/Track/Platform - ATV preferred	Sonic/Core
D-285-7.5	258653.93	4152497.50	T38S R17W 14	CENTRAL WEST	USFS	2,000' open range; may need trees cut; steep	May need some trees cleared	ATV/Track/Platform - ATV preferred	Sonic/Core
A-285-10	260179.14	4156231.17	T37S R17W 36	ENTERPRISE	USFS	300' open range and 1,100' clear path; steep-may require dozer to clear path	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
D-285-12	261143.63	4159314.80	T37S R17W 24	ENTERPRISE	USFS	650' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic

Attachment C - Summary of Geographic and Access Data for Soil Borings

Borehole ID#	X UTM; NAD83; 12N	Y UTM; NAD83; 12N	Township/ Range/Section	Quad Name	Ownership	Access Description (Existing access or maximum estimated number of feet of overland travel. All overland travel lengths indicated are approximate)	Access Disturbance (Overland)	Rig Type (Truck, ATV, Track, CPT, Platform)	Drilling Method
Link 290									
D-290-0	262302.17	4141883.42	T39S R16W 18	CENTRAL WEST	USFS	1,000' clear path and may need road cut; need dozer for steep slopes	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic
A-290-2.0	265170.00	4143460.00	T39S R16W 9	CENTRAL WEST	USFS	1,000' clear path	Clear trees; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
Link 300									
A-300-0	358598.13	4273553.38	T25S R7W 34	COVE FORT	BLM	4,400' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-300-0.8	359896.54	4273199.59	T25S R7W 35	COVE FORT	BLM	620' open range; West side of I-15 right-of-way	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-300-0.9	360021.50	4273221.96	T25S R7W 35	COVE FORT	BLM	800' open range; East side of I-15 right-of-way	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-300-2.6	362674.68	4272648.04	T25S R6W 31	COVE FORT	SITLA	3,250' open range and 840' clear path; north side of I-70 right-of-way	Clear trees	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-300-2.7	362754.21	4272529.95	T25S R6W 31	COVE FORT	USFS	3,000' open range; south side of I-70 right-of-way	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
Link 320									
T-320-2.4	354791.14	4274562.64	T25S R7W 29	CINDER CRATER	BLM	750' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
A-320-5.4	350106.66	4275804.52	T25S R7W 23	CINDER CRATER	BLM	Existing access	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
Link 345									
D-345-1.2	338831.84	4278037.31	T25S R9W 15	ANTELOPE SPRING	BLM	200' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
A-345-3.8	338820.00	4273780.00	T26S R9W 34	PINNACLE PASS	BLM	430' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
A-345-5.8	338360.00	4270680.00	T26S R9W 10	PINNACLE PASS	BLM	350' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-345-7.8	338390.80	4267481.70	T26S R9W 22	PINNACLE PASS	BLM	1,100' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
Link 348									
A-348-1.1	337121.85	4260727.81	T27S R9W 9	BEARSKIN MOUNTAIN	BLM	550' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-348-3.4	338422.87	4264151.71	T26S R9W 34	PINNACLE PASS	BLM	260' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
Link 350									
D-350-1.8	343417.99	4278751.53	T25S R8W 18	ANTELOPE SPRING	Private	Existing access; (Black Rock Road)	None	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
A-350-4.1	346802.70	4277372.34	T25S R8W 16	ANTELOPE SPRING	SITLA	Existing access	None	ATV/Track - ATV preferred	Sonic
A-350-5.0	348073.11	4276584.69	T25S R8W 22	CINDER CRATER	BLM	Existing access	None	ATV/Track - ATV preferred	Sonic
Link 360									
T-360-3	327455.38	4278663.08	T25S R10W 16	BLACK ROCK	Private	8,300' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-360-5.9	332280.13	4278663.08	T25S R10W 13	BLACK ROCK	Private	950' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-360-8.9	337042.40	4278663.07	T25S R9W 16	ANTELOPE SPRING	Private	Existing access	None	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
Link 380									
A-380-1.6	320667.63	4251011.51	T28S R11W 11	MILFORD	BLM	500' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-380-2.8	320718.81	4253129.13	T28S R11W 2	MILFORD	Private	450' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-380-4.7	322234.15	4255759.58	T27S R11W 25	MILFORD	BLM	350' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-380-7.7	322334.69	4260607.14	T27S R11W 12	MILFORD	BLM	400' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-380-10.7	322435.81	4265482.26	T26S R11W 25	LIME MOUNTAIN	Private	2950' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-380-13.7	322538.41	4270428.88	T26S R11W 12	LIME MOUNTAIN	BLM	450' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-380-16.3	322647.68	4274616.43	T25S R11W 25	LIME MOUNTAIN	BLM	850' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-380-18.8	322709.19	4278663.09	T25S R11W 13	RED ROCK KNOLL	BLM	2,900' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
Link 390									
C-390-1.8	322339.77	4227521.34	T30S R10W 30	NINEMILE KNOLL	BLM	Existing access	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic

Attachment C - Summary of Geographic and Access Data for Soil Borings

Borehole ID#	X UTM; NAD83; 12N	Y UTM; NAD83; 12N	Township/ Range/Section	Quad Name	Ownership	Access Description (Existing access or maximum estimated number of feet of overland travel. All overland travel lengths indicated are approximate)	Access Disturbance (Overland)	Rig Type (Truck, ATV, Track, CPT, Platform)	Drilling Method
D-390-3.9	323046.37	4230914.30	T30S R10W 7	NINEMILE KNOLL	Private	1,400' open range, access off existing pipeline	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-390-6.5	326688.11	4233071.77	T30S R10W 4	MINERSVILLE	BLM	1,070' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-390-9.1	330192.37	4235147.79	T29S R10W 35	MINERSVILLE	BLM	900' open range; east of SR-21	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
T-390-11	329180.04	4238151.83	T29S R10W 23	CAVE CANYON	BLM	1,200' open range; east of SR-21	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-390-12.9	328200.00	4241060.00	T29S R10W 10	CAVE CANYON	BLM	1,600' open range; east of SR-21	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-390-15	329713.15	4244130.41	T28S R10W 35	CAVE CANYON	BLM	200' open range; 1,500' east of existing Pipeline	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-390-15.9	329992.01	4245410.48	T28S R10W 26	CAVE CANYON	BLM	870' open range; 1,500' east of existing Pipeline	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-390-17.9	331706.41	4248113.16	T28S R10W 24	CAVE CANYON	BLM	220' open range; 1,500' east of existing Pipeline	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-390-18.7	332286.27	4249274.19	T28S R10W 13	RANCH CANYON	BLM	280' open range; 1,500' east of existing Pipeline	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-390-19.8	333351.35	4250748.09	T28S R9W 7	RANCH CANYON	BLM	630' open range; 1,500' east of existing Pipeline	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-390-20.2	333895.56	4250997.52	T28S R9W 7	RANCH CANYON	BLM	Existing access; 1,500' east of existing Pipeline	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-390-21.6	334878.78	4253034.82	T28S R9W 5	RANCH CANYON	BLM	Existing access; 1,500' east of existing Pipeline	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-390-23.4	335946.62	4255768.67	T27S R9W 29	RANCH CANYON	BLM	820' open range; 1,500' east of existing Pipeline	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-390-24.7	336627.37	4257808.38	T27S R9W 21	BEARSKIN MOUNTAIN	BLM	700' open range; 1,500' east of existing Pipeline	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
Link 395									
T-395-2.2	319757.11	4221779.44	T31S R11W 11	NINEMILE KNOLL	BLM	1,250' clear path; 1,500' east of existing Pipeline	Clear trees	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-395-4.5	319219.32	4218142.51	T31S R11W 23	BABOON PEAK	Private	1,000' open range; 1,500' southeast of existing Pipeline	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-395-7	316193.11	4215260.98	T31S R11W 33	BABOON PEAK	BLM	Existing access; 1,500' southeast of existing Pipeline	None	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-395-10.2	312593.45	4211833.42	T32S R11W 7	BADGER PEAK	BLM	Existing access; 1,500' southeast of existing Pipeline	None	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-395-12.9	309463.47	4208853.09	T32S R12W 23	BADGER PEAK	BLM	1,100' open range; 1,500' southeast of existing Pipeline	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-395-15.7	306141.71	4205690.14	T32S R12W 33	ENOCH NW	Private	1,200' open range; 1,500' southeast of existing Pipeline	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-395-18.5	302852.79	4202558.45	T33S R12W 7	ENOCH NW	Private	1,450' open range; 1,500' southeast of existing Pipeline	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
Link 420									
D-420-00	359945.08	4230169.66	T30S R7W 12	KANE CANYON	BLM	450' clear path	Clear trees	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
C-420-0.9	360935.18	4231215.86	T30S R7W 12	KANE CANYON	BLM	1,320' clear path; steep	Clear trees	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-420-1.7	361540.19	4232319.49	T30S R6W 6	KANE CANYON	BLM	1,050' clear path	Clear trees	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-420-3.1	361539.53	4234615.40	T29S R6W 31	KANE CANYON	BLM	620' clear path	Clear trees	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-420-4.1	362440.08	4235926.50	T29S R6W 30	BLACK RIDGE	BLM	Platform	Clear some trees for platform	Platform	Sonic/Core
D-420-6.3	362270.40	4239430.22	T29S R6W 18	BLACK RIDGE	BLM	1,600' open range; may need trees cut; steep	Compaction-crushed; clear trees	ATV/Track/Platform - ATV preferred	Sonic/Core
A-420-7.8	361277.99	4241678.23	T29S R7W 1	BLACK RIDGE	BLM	340' open range; east of existing T-line	Compaction-crushed	ATV/Truck - ATV preferred	Sonic
T-420-10.8	360876.48	4246578.32	T28S R7W 24	BLACK RIDGE	Private	Existing access; east of existing T-line	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
T-420-13.6	360514.51	4250995.92	T28S R7W 1	POLE MOUNTAIN	BLM	Existing access; east of existing T-line	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
T-420-16.2	360169.44	4255207.30	T27S R7W 26	POLE MOUNTAIN	BLM	200' clear path; east of existing T-line	Clear trees	ATV/Truck - ATV preferred	HSA/Odex
A-420-18.9	359810.09	4259592.94	T27S R7W 11	POLE MOUNTAIN	BLM	425' clear path; west of existing T-line	Clear trees	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
T-420-21.4	360551.59	4263567.38	T26S R7W 36	COVE FORT	Private	120' clear path; west of existing T-line	Clear trees	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
T-420-24	361320.61	4267689.40	T26S R7W 13	COVE FORT	BLM	Existing access; west of existing T-line	None	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
Link 425									
D-425-0	320274.26	4225276.66	T30S R11W 35	NINEMILE KNOLL	BLM	1,500' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/Odex
T-425-4.6	327100.12	4228343.71	T30S R10W 21	MINERSVILLE	BLM	300' open range; access off existing power line maintenance road, over diversion dam	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-425-7.5	331229.40	4230199.10	T30S R10W 13	MINERSVILLE	BLM	200' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
T-425-10.5	336067.86	4230194.14	T30S R9W 16	MINERSVILLE RESERVOIR	SITLA	11,800' open range; may need road cuts	Compaction-crushed; may need road cuts	ATV/Track/Platform - ATV preferred	Sonic/Core
T-425-13.5	340903.60	4230188.90	T30S R9W 13	MINERSVILLE RESERVOIR	BLM	550' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
T-425-16.6	345881.03	4230184.08	T30S R8W 9	MINERSVILLE RESERVOIR	BLM	4,400' open range	Compaction-crushed	ATV/Truck - ATV preferred	Sonic
T-425-19.6	350722.51	4230179.12	T30S R8W 12	GREENVILLE BENCH	BLM	Existing access	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
T-425-22.6	355566.53	4230174.15	T30S R7W 9	GREENVILLE BENCH	BLM	Existing access	None	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT

Attachment C - Summary of Geographic and Access Data for Soil Borings

Borehole ID#	X UTM; NAD83; 12N	Y UTM; NAD83; 12N	Township/ Range/Section	Quad Name	Ownership	Access Description (Existing access or maximum estimated number of feet of overland travel. All overland travel lengths indicated are approximate)	Access Disturbance (Overland)	Rig Type (Truck, ATV, Track, CPT, Platform)	Drilling Method
Link 430									
T-430-1.4	301580.66	4187462.30	T34S R13W 25	AVON SE	BLM	3,300' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-430-4.0	301684.74	4191646.73	T34S R12W 18	AVON SE	BLM	6,500' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
T-430-6.7	301792.46	4195977.66	T33S R13W 36	AVON	Private	1,500' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-430-9.4	301903.24	4200431.55	T33S R13W 13	AVON	Private	2,700' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
D-430-10.5	302831.88	4201894.65	T33S R12W 7	ENOCH NW	Private	2,200' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
Link 435									
T-435-2.6	301477.29	4183306.19	T35S R12W 7	AVON SE	Private	100' open range	Compaction-crushed	Truck/ATV/CPT - Truck preferred	HSA/ODEX/Core/Sonic/CPT
Link 438									
A-438-1.2	280613.92	4169825.06	T36S R15W 24	SILVER PEAK	BLM	350' open range (along Desert Mound Road)	Compaction-crushed	Truck/ATV	HSA/ODEX/Core/Sonic
D-438-3.6	284319.62	4171010.10	T36S R14W 20	SILVER PEAK	BLM	Existing access	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-438-4.8	285718.71	4172450.77	T36S R14W 16	SILVER PEAK	SITLA	150' clear path	Clear trees	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-438-6.4	288120.01	4173100.89	T36S R14W 99	SILVER PEAK	BLM	600' clear path	Clear trees	ATV/Truck - ATV preferred	Sonic
D-438-7.5	289840.14	4172532.38	T36S R14W 99	SILVER PEAK	BLM	300' clear path	Clear trees	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
T-438-9.1	292454.15	4173065.74	T36S R13W 7	DESERT MOUND	Private	Existing access	None	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
D-438-11.2	295656.38	4173719.12	T36S R13W 9	DESERT MOUND	Private	150' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic
A-438-14.1	298796.58	4177288.82	T35S R13W 35	DESERT MOUND	Private	380' open range	Compaction-crushed	ATV/Truck - ATV preferred	HSA/ODEX/Core/Sonic
D-438-16.1	301373.24	4179123.15	T35S R13W 24	DESERT MOUND	BLM	230' open range	Compaction-crushed	Truck/ATV - Truck preferred	HSA/ODEX/Core/Sonic

SIGURD TO RED BUTTE NO. 2 345kV TRANSMISSION PROJECT

**Geotechnical Investigations Standard Form 299 Application for
Transportation and Utility Systems and Facilities on Federal Lands**

Attachment D Geotechnical Drilling Rig Information



Typical Truck-Mounted Drilling Rig (Mobile Drill Model B-80 pictured)

- Drilling rig proposed for the majority of the borings
- Access to relatively flat areas (5 percent grade or less)
- Typically 30 feet long, 8.5 feet wide, 12 feet high with mast down, 34 feet high with mast up
- Approximately 30,000 lbs with 30 to 50 psi ground pressure
- Advance using Hollow Stem Augers (HSA), air hammer (ODEX), split-spoon sampler, and mud rotary/coring
- Will travel on existing roadways and two-track trails as close as possible to boring locations, then overland on firm ground



Typical Track-Mounted Drilling Rig (Delta Base model 320 pictured)

- Alternative drill rigs for borings where truck-mounted rigs cannot access
- Access to areas up to 20 percent grade
- 22 feet long, 6 feet wide, 22 feet high with mast up
- Approximately 8,000 lbs with rubber tracks and 10 psi ground pressure (lower ground disturbance for softer ground)
- Advance using Sonic technology (pictured above), conventional augers, or mud-rotary/core
- Travel on low-boy trailers on existing roadways and two-track trails as close as possible, then overland, to boring location



Typical Track-Mounted Cone Penetration Test (CPT) Rig

- Alternative exploration rig in soft soils with high groundwater conditions
- Access to areas up to 20 percent grade
- 27 feet long, 10 feet wide, 12.5 feet high
- Approximately 25 tons with rubber tracks and 4 to 5 psi ground pressure (lower ground disturbance for softer ground)
- Advance cone on rod using hydraulic rams and electronically measure the resistance at the tip or use a flat plate dilatometer (DMT) to measure lateral pressures.
- Travel on low-boy trailers on existing roadways and two-track trails as close as possible, then overland, to boring location



Typical All-Terrain Vehicle (ATV) Rig

- Alternative drill rigs for borings locations where tracked and truck rigs cannot access because of ground preparation and clearing required or longer overland travel
- Access to areas up to 20 percent grade (proposed for borings)
- Typically 25 feet long, 8.5 feet wide, 15 feet high with mast down, 25 feet with high mast up
- Rubber balloon tires with only low ground pressure; lower ground disturbance
- Advance using Sonic technology (pictured above) or conventional augers or mud-rotary/core
- Travel on low-boy trailers on existing roadways and two-track trails as close as possible, then overland, to boring location



Typical Platform Rig (LF 70 pictured)

- Helicopter delivery in eight to ten pieces; access to areas where mobile drilling rigs cannot access
- Up to 32 feet high with mast up with base dimensions of 8.5 feet by 6 feet and 5-foot long stabilizer legs extending out from all sides of the base
- 6,500 lbs (assembled)
- Advance using mud/rotary and coring technology
- Requires a staging area near an existing roadway to transfer equipment on/off helicopter