POWER RESOURCES, INC.
NORTH BUTTE SATELLITE PROJECT
LICENSE SUA-1548
REQUEST FOR ADDITIONAL INFORMATION

PROPOSED ACTIVITIES

Comment No. 1. Sections 1.4 and 3.1.4.1 discuss ore deposits. Please provide an estimate of the U_3O_8 content of the ore body associated with the North Butte Satellite Project.

Basis: NUREG-1569 (page 1-2) acceptance criteria states that the application summary of proposed activities should contain an estimate of the ore-body U_3O_8 content

SITE CHARACTERIZATION

Comment No. 2. Please address the following issues:

- For Figure D-9.2, please provide a legend that defines the meaning of the green features and boundaries
- The North Butte Satellite Project's exclusion area does not appear to be designated/identified in any of the submitted maps/figures.
- Figure 2.4 (Volume II) is labeled as Figure 2.2
- The visual/reproduced quality of Figure 10.6 is poor
- The location of all nuclear fuel cycle facilities located or proposed within a 50-mile radius is not provided.

Basis: NUREG-1569 (page 2-2) acceptance criteria states that the application should contain maps that provide the location of exclusion area boundaries and fences. NUREG-1569 acceptance criteria also states (page 2-5) that the location of any other nuclear fuel cycle facilities located or proposed within 50-mile radius should be presented.

Comment No. 3. Please provide the following population related information:

- Population/demographic information on minority and low-income populations.
- A map of suitable scale showing the populations centers within a 50-mile radius of the North Butte Satellite Project.
- Projections of population, visitor, and food production over the life of the North Butte Satellite Project.

Basis: NUREG-1569 (page 2-8) acceptance criteria states that the license application

should contain demographic information on minority and low-income populations; a suitably scaled concentric circle map as described above; and projections of population, visitor, and food production for the life of the in situ leach facility.

Comment No. 4. With respect to meteorological information contained in Volume I-A, Section 2.5, please provide the following information:

- Joint-frequency distribution stability class and height of data.
- Average inversion height.
- Minimum of one full year of joint frequency data
- Description of local severe weather and its potential impact.
- Meteorological data used for assessing impacts are substantiate as being representative of expected long-term conditions
- Figure 2-2 (Volume I-A) does not contain a reference/source (e.g., agency, technical report, etc.)

Basis: NUREG-1569 (page 2-14) acceptance criteria addresses the characterization of site meteorology. This information should include joint-frequency distribution stability class, height of data, average inversion height, weather station location(s) and height, and a description of local severe weather and its potential impact.

Comment No. 5. Please address the following issues related to the uranium ore body and its stratigraphic location:

- In Volume I, Section 9, page 9-7, "Section 15.2 Ore Body Description" is identified; however, it is not contained in Section 15 and does not appear to have been provided in the submitted material.
- In Volume II, Figures 15.2 through 15.11 are provided, but do not appear to be discussed in Volume 1-A or Volume I, Section 15.
- On Figures 15.2 through 15.10 please define/label the type of wireline geophysical methods represented in the figures.
- An inventory of economically significant mineral and energy-related deposits (e.g. coal-bed methane), in addition to uranium, at the proposed site has not been provided.
- The estimated U_3O_8 grade of the mineralized zone(s) has not been provided.

Basis: NUREG-1569 (page 2-18) acceptance criteria states that in local stratigraphic sections, all mineralized horizons, confining units, and other important units such as drinking water aquifers and deep well injection zones should be clearly shown. In addition, a geologic and geochemical description of the mineralized zone and the

geologic units immediately surrounding the mineralized zone should be provided. If present, an inventory of economically significant mineral and energy-related deposits, in addition to uranium, should be provided. Finally, NUREG-1569 (page 3-3) acceptance criteria states that the estimated U_3O_8 grade of the mineralized zone(s) should be specified.

Comment No. 6. Please provide an assessment of seasonal and historical variability for potentiometric heads and hydraulic gradients in the ore-zone and in the aquifers above and below this zone.

Basis: NUREG-1569 (page 2-26) acceptance criteria states that the applicant should provide an assessment of seasonal and the historical variability for potentiometric heads and hydraulic gradients in the aquifers. This assessment should include water levels or water potential measurements over at least 1 year and collected periodically to represent any seasonal variability.

DESCRIPTION OF PROPOSED FACILITY

Comment No. 7. With respect to safety equipment, please provide the availability requirements for safety equipment and identify the measures for ensuring availability and reliability of the equipment.

Basis: NUREG-1569 (page 3-9) acceptance criteria states that the availability requirements for safety equipment should be adequately stated, and that measures for ensuring availability and reliability for the equipment are clearly identified.

Comment No. 8. Please list the applicable federal, state, and local regulations that you intend to use to ensure that process chemicals having the potential to impact radiological safety are safely handled.

Basis: NUREG-1569 (page 3-9) acceptance criteria states that the licensee should provide a list of applicable federal, state, and local regulations that it intends to use to ensure that process chemicals having the potential to impact radiological safety are safely handled.

Comment No. 9. Volume 1-A, Section 3.3, page 3-10 indicates that "operator control of key components will be maintained ..." Please specify the "key components" discussed in the section.

Basis: NUREG-1569 (page 3-11) acceptance criteria states that instrumentation has been described for various components of the processing facility, including well fields, well field houses, trunk lines, production circuit, surface impoundments, and deep injection disposal wells

EFFLUENT CONTROL SYSTEMS

Comment No 10. Section 4.1 discusses effluent control systems for gaseous and airborne particulates. Please provide further detail on how these systems will limit exposure during

accident conditions (e.g., a release of uranium-ladened water inside the satellite facility), the health and safety impact of such a failure, and contingencies for such occurrences.

Basis: NUREG-1569 (page 4-4) acceptance criteria state that the application should demonstrate that effluent control systems will limit exposures under both normal and accidental conditions, provide information on the health and safety impacts of system failures, and identify contingencies for such occurrences.

Comment No. 11. Section 4.2 (page 4-2), which discusses liquids effluents, refers to Figures 4.1 and 4.2 showing certain effluent streams; however, it does not appear that these figures actually contain all the information referred to in the discussion. Please provide additional detail to the figures to support your discussion of liquid effluents.

Basis: NUREG-1569 (page 4-4) acceptance criteria states that the proper control of the common liquid effluents generated from the process bleed, process solutions, wash-down water, well development water, pumping test water, and restoration waters should be demonstrated.

Comment No. 12. Volume I, Section 15 contains "Engineering Design Report for Evaporation Ponds 1 and 2 at the Pathfinder Mines Corporation North Butte ISL Project" dated January 2, 1992, which was originally submitted to the NRC in April 1992. In response to a January 27, 1995 NRC request for additional information, Pathfinder submitted additional evaporation pond related information, including important Quality Assurance/Quality Control procedures, on April 10, 1995. The April 10, 1995 responses resulted in NRC staff concluding that the pond design was acceptable. Consequently, please supplement Volume I, Section 15 with Pathfinder's April 10, 1995 correspondence.

PRE-OPERATIONAL ASSESSMENT OF WELLFIELDS AND ENVIRONMENTAL MONITORING

Comment No. 13. Section 5.1 (pages 5-1 through 5-6) discusses the pre-operational assessment of wellfields. Please revise the section to include the following:

- The relationship between well field operating pressures (projected down-hole injection pressures), the hydrostatic pressure of the fluid column, sustainable well casing pressures, and formation rupture pressures.

- An impact analysis that includes:
  - The ability to control the migration of lixiviant from the production zones to surrounding environs.
  - Ground- and surface-water pathways that might transport extraction solutions off-site in the event of an uncontrolled excursion, surface piping leak, or incomplete restoration.
  - The impact of in situ leach operations on ground-water flow patterns and aquifer levels.
  - The expected post-extraction impact on geochemical properties and water quality.

Basis: NUREG-1569 (pages 3-5 and 3-6) acceptance criteria states that injection pressures

with hydrostatic pressure of the fluid column should be demonstrated to be maintained below casing failure pressures and formation fracture pressures, to avoid hydrofracturing the aquifer and promoting leakage into the overlying units. In addition, an analysis of the effects that in situ leach operations are likely to have on surrounding water users should be provided.

Comment No. 14. Section 5.1.5.2, page 5-4 refers to Tables 4-1 and 5-1; however, these tables do not appear in the submitted material.

Comment No. 15. Please provide a technical basis for the statement that "No operational soil sampling is planned at the North Butte project, with the exception of sampling of areas that have been potentially contaminated by radiological material from unanticipated wellfield spills, pipeline leaks, etc" (Section 5.3.6.1, page 5-11).

Basis: NUREG 1569 (page 5-35) acceptance criteria states that environmental monitoring program should sample radon, air particulates, surface soils, subsurface soils, vegetation, direst radiation, and sediment in accordance with Regulatory Guide 4.14, Section 3.

Comment No. 16. Section 5.3.11 (page 5-15) discusses Spill Reporting Requirements. Please provide detail concerning appropriate plant and corporate personnel to be notified in the event of a liquid release.

Basis: NUREG-1569 (page 4-8) states that identification of appropriate plant and corporate personnel to be notified in the event of a liquid release due to system failure should be provided.

RECLAMATION PLAN

Comment No. 17. Section 6.2.7 (Financial Assurance) does not identify the mechanism(s) for funding the financial surety (i.e., Letters of Credit, surety bond, etc.).

Basis: 10 CFR Part 40, Appendix A, Criterion 9 identifies the appropriate mechanisms for funding the financial surety.

Comment No. 18. As was requested in NRC's August 7 and September 26, 2006 correspondences with John McCarthy, please re-baseline the North Butte ISL Satellite surety estimate (Volume I, Section 17) using current costs.

ENVIRONMENTAL EFFECTS

Comment No. 19. Section 7.2.3, page 7-4 indicates that the most significant ground water impact is the withdrawal of 2000 acre-feet (about 655 million gallons) of ground water over the life of the operation. Please specify the approximate amount of this volumetric total that will not be returned to the withdrawal zone (i.e., ore body) and the impact (e.g., water level declines, reduced water consumption, etc.), if any, this withdrawal will have on downgradient areas.

Basis: NUREG-1569 (page 6-11) acceptance criteria states that the impacts of water

consumption on local wells and water users should be evaluated.

Comment No. 20. Volume IA, Section 7.3 and Volume I, Section 19 discuss the MILDOS modeling results for in-situ leach (ISL) operations at the North Butte site. These modeling results were submitted in 1988 and are based on the original Uranerz North Butte facility design of a complete ISL operation (i.e., injection/recovery, ion exchange process, elution, precipitation, drying, and yellow cake packing) and a 3,000 gpm average production flow rate. The current North Butte Satellite Project is only a portion of the original design: injection/recovery and ion exchange. Elution, precipitation, drying, and yellow cake packing to be performed at PRI's licensed Smith Ranch-Highland Uranium Project (SR-HUP) Central Processing Plant. As a result, please provide the following information:

- Verify that the MILDOS receptor assumptions used in 1988 are valid in 2006.
- Evaluate the impact of increasing the production flow rate from 3,000 gpm to 4,500 gpm on the air pathway exposure findings in the MILDOS results.

Basis: 10 CFR 20.1301 requires compliance with public dose limits established in the regulation. In addition, Source Materials License SUA-1548, License Condition 10.2.1 requires that before engaging in any commercial in situ leach activity not previously assessed by the NRC, the licensee shall prepare an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not previously assessed or that is greater than that previously assessed, the licensee shall provide a written evaluation of such activities and obtain prior approval of the NRC in the form of a license amendment.

Comment No. 21. Section 7.5.7 provides a general discussion of transportation accidents associated with materials shipments of uranium-loaded resin from satellite facilities to the SR-HUP Central Processing Plant. Please provide the following additional information:

- The route and road distance (round trip) of the shipments from the North Butte Satellite Project to the SR-HUP Central Processing Plant.
- The estimated number of round-trip shipments (e.g., weekly, monthly, or yearly) expected on the route described above.
- The percent increase in traffic load from said shipments on the route described above.
- An evaluation indicating whether said shipments result in a significant adverse environmental impact.

Basis: Source Materials License SUA-1548, License Condition 10.2.1 requires that before engaging in any commercial in situ leach activity not previously assessed by the NRC, the licensee shall prepare an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not previously assessed or that is greater than that previously assessed, the licensee shall provide a written evaluation of such activities

and obtain prior approval of the NRC in the form of a license amendment.

MANAGEMENT ORGANIZATION AND ADMINISTRATIVE PROCEDURES

Comment No. 22. Sections 9.5.4 (page 9-12) and 9.16 (page 9-20) contain the proposed record keeping and retention procedures for North Butte Satellite. Please provide record keeping and retention procedures and the current or planned locations of these records for the following items important to decommissioning and reclamation:

- As built drawings or photographs of structures, equipment, restricted areas, well fields, and modifications showing the locations of these structures and system through time.

- Drawings of areas of possible inaccessible contamination, including features such as pipes or pipelines.

Basis: NUREG-1569 (page 5-6) acceptance criteria states that records containing information important to decommissioning and reclamation should be permanently maintained and retained until license termination.

Comment No. 23. Section 9.6 identifies employee training with respect to the basic principles of radiation safety, health hazards of exposure to uranium, personal hygiene practices for uranium facilities, radiation safety procedures, and responses to emergencies or accidents involving radioactive materials. Please provide more detail concerning how the present radiation safety training program is consistent (or applicable) with Regulatory Guide 8.31, Section 2.5 (Radiation Safety Training), Regulatory Guide 8.13 (Instructions Concerning Prenatal Radiation Exposure, Revision 3), and Regulatory Guide 8.29 (Instructions Concerning Risks for Occupational Radiation Exposure, Revision 1)

Basis: NUREG-1569 (page 5-13) criteria states that a radiation training program is acceptable if it is consistent with Regulatory Guides 8.31 (Section 2.5), 8.13, and 8.29.

Comment No. 24. Section 9.8 (page 9-14) discusses quarterly gamma surveys. In addition, Section 9.10.1 (pages 9-14 and 9-15) discusses Radon Daughter Monitoring. Figure 3.3 (North Butte Satellite layout) identifies locations for both gamma monitoring and radon testing. Please verify that the monitoring discussed in these sections correlates to the locations identified in Figure 3.3. In addition, please provide more detail on the type of monitoring devices to be used at these locations and that the monitoring equipment has a lower limit of detection that allows measurement of 10 percent of the applicable limits.

Basis: NUREG-1569 (page 4-1) states that monitors used to assess worker exposures should be placed in locations where maximum concentrations are anticipated and that monitoring systems should be appropriate to the types of effluents generated. NUREG-1548 also states that all monitoring equipment should have a lower limit of detection that allows measurement of 10 percent of the applicable limits (see Regulatory Guide 8.30 - Health Physics Surveys in Uranium Mills, Section 1)

Comment No. 25. Please provide a basis for why routine exposures to radon daughters are only determined for Central Plant Operators (Section 9.10.1, pages 9-14).

Basis: NUREG-1569 (page 5-26) acceptance criteria states that exposure calculations should be presented for routine operations, non-routine operations, maintenance, and clean-up activities and are consistent with Regulatory Guide 8.30 and 8.34 - Monitoring Criteria and Methods to Calculate Occupational Radiation Doses.

Comment No. 26. Section 9.11 (page 9-15 through 9-17) discusses airborne uranium, radon daughter, and total effective dose equivalent exposure calculations. Please provide calculations and guidance for prenatal and fetal radiation exposure or explain why they have not been included in the application.

Basis: NUREG-1569 (page 5-25) acceptance criteria states that calculations and guidance for prenatal and fetal radiation exposure should be consistent with Regulatory Guide 8.36 "Radiation Dose to the Embryo/Fetus" and Regulatory Guide 8.13 "Instruction Concerning Prenatal Radiation Exposure."

Comment No. 27. Section 9.13.4 (page 9-19) discusses surveys for release of potentially contaminated materials and equipment. Please verify that these surveys include the interior surfaces of pipes, drain lines, or duct work.

Basis: NUREG-1569 (page 5-31) acceptance criteria states that the radioactivity of the interior surfaces of pipes, drain lines, or duct work will be determined by making measurements at all traps and other appropriate access points, provided that the contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or duct work.

Comment No 28. Section 9.18, pages 9-20 through 9-23 details the Quality Assurance (QA) Program for the North Butte Satellite Project. Please describe how the QA program will be utilized in site decommissioning activities.

Basis: NUREG-1569 (page 6-17) acceptance criteria states that QA/Quality Control programs should addresses all aspects of decommissioning (e.g., management will ensure that approved procedures are followed).