40-8964

POWER RESOURCES

**Smith Ranch - Highland Uranium Project**
P. O. Box 1210
Glenrock, Wyoming USA 82637
Casper: 307-235-1628
Douglas: 307-358-6541
Fax: 307-358-4533

Paul Michalak
U.S Nuclear Regulatory Commission
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852-2737

RE: Well casing volumes removed prior to sampling.

Dear Paul,

Attached are a series of letters dating back to late 1993 & early 1994 between PRI the NRC and the Wyoming Department of Environmental Quality discussing the topic of well casing volumes required to be removed when pumping wells prior to sampling. This topic was first brought up by the NRC back in November of 1993 during an NRC site inspection. PRI had indicated to NRC that the requirement to evacuate three well casing volumes (CV) was often not practical (taking multiple hours to meet the three CV requirement) and could demonstrate that pumping one CV would be adequate to recover a sample representative of the target aquifer.

This information was presented to the NRC in correspondence dated 12/21/1993 and 1/12/1994 in the form of a revision to Section 8.3 of Volume Six of the License Application. In the letter from Ramon Hall (NRC) to Bill Kearney (PRI) dated February 14, 1994 the letter states "based on the data provided in the December 21, 1993, and January 12, 1994, submittals, you have shown that, in general, a minimum monitor well purge of 1 casing volume is adequate to recover formation ground water for water quality analyses" Also enclosed is a letter dated February 28, 1994 from Wyoming DEQ granting PRI permission to change our operations plan to reflect the one casing volume procedure. Hopefully this packet of information addresses the issue identified in last years NRC inspection of the SR-HUP facilities.

Per your request, I have attached per your request information on 11 (e) 2 byproduct waste generation at the site and the production of U308 over the past two years that you can use in your project of developing a waste to production ratio between ISL facilities and traditional uranium mining processes.

If you have any questions related to either of these two topics please do not hesitate to contact me at 307-358-6541, ex.62 or via email at jwinter@vcn.com .

Sincerely,

Jon F. Winter
Interim Manager of Health, Safety & Environment

cc: C.F. Foldenauer w/o atta
B. J. Johnson w/o atta
File 4.6.4.1

4.6.4.1

December 21, 1993

POWER RESOURCES

RE: Docket No. 40-8857
SUA-1511
License Amendment Request

Mr. R.E. Hall, Director
Uranium Recovery Field Office
U.S. Nuclear Regulatory Commission
P.O. Box 25325
Denver, Colorado 80225

Dear Mr. Hall,

During the November 2-3, 1993 NRC inspection it was determined that Power Resources, Inc. (PRI) was not removing a minimum of three casing volumes of water prior to sampling excursion monitor wells. Section 8.3 of Volume 6 (Water Quality Sampling and Analysis Procedures) of the approved License Application states that a minimum of three casing volumes of water will be removed prior to sampling. During the inspection the spreadsheet used to calculate the three casing volumes and the corresponding pumping times for monitoring wells was reviewed and it was determined that certain formulas were in error. Due to these errors, the pumping times provided by the spreadsheet equated to about one casing volume.

As discussed with your staff at the November 3, 1993 Inspection Exit Meeting and afterwards, PRI's initial approved License Application did not include a requirement that three casing volumes be pumped from monitoring wells prior to sampling. In 1992 the NRC requested that PRI revise the well sampling protocol. During this time PRI attempted to justify the pumping of less than three casing volumes prior to sampling but the NRC insisted that at least three casing volumes be pumped prior to sampling. Subsequent to the November 1993 NRC inspection, Mr. Ed Hawkins requested that PRI collect additional data and provide additional justification to show that it is not necessary to pump a minimum of three casing volumes prior to sampling.

Therefore, the remainder of this correspondence should be considered a License Amendment Request to revise Section 8.3 (Water Quality Sampling and Analysis Procedures) of the License Application to reflect that a minimum of one casing volume of water will be routinely pumped from monitor wells prior to sampling. The removal of one casing volume prior to sampling at most monitor wells has been determined to be adequate based on the following:

1. Thousands of monitor well excursion analyses collected at approximately 200 excursion monitoring wells over a three to five year period, during which time approximately one casing volume was removed prior to sampling, shows very consistent water quality data at the vast majority of wells. This assists in showing that both the sampling and analytical procedures are adequate.

2. A study was recently completed to determine the effects of pumping zero to approximately three casing volumes, prior to sampling, on both field and

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laboratory analyses. Samples were taken at seven randomly chosen monitoring wells. The results of the study are presented in Attachment A. A review of Attachment A shows that the excursion parameters chloride, bicarbonate and conductivity, as well as the field parameters, stabilize relatively quickly and samples obtained at approximately one casing volume reflect stabilized conditions, and are reflective of true aquifer water quality.

3. The pumps are located just above the screened zone of each monitor well, thereby assuring that water within the screened zone is pumped from the onset of pumping.

4. Because the monitor wells are sampled frequently (usually every two weeks) stagnation effects from well casing storage area unlikely.

5. Similarly, the relatively good permeability of the production sands allow for a good transfer of water between the aquifer and the screened zone within the well during non-pumping periods.

6. Minimizing the amount of water pumped from monitoring wells during sampling is desirable in order that production fluids are not encouraged to move away from the production zone, towards the monitoring wells.

7. Other in situ operations have NRC approved monitoring plans which require the pumping of a minimum of one casing volume prior to sampling. These operations have been conducting their monitoring accordingly for many years without any adverse impact to their water quality data.

There are a small number of low water yielding monitoring wells which require that more than one casing of water be removed in order that field and laboratory measurements stabilize. PRI pumps most of these wells overnight to ensure that representative aquifer water is sampled. In the event that a particular well is not adequately pumped, and representative aquifer water is not sampled, the analytical results are usually such that concentrations of the excursion parameters are greater. This is why PRI goes through the extra effort to pump these "problem" wells a significantly greater period of time, prior to sampling.

Included is an "Index to Change Sheet" and revised Section 8.3 (pages OP-36 and OP-36A). Three copies of all correspondence are included. If you have any questions, please call me at your convenience.

Sincerely,

Bill Kearney

W.F. Kearney
Environmental Director

WFK/ksj
cc: S.P. Morzenti
M.R. Lueders
P.R. Hildenbrand
File 4.6.4.1

# INDEX TO CHANGE SHEET

| Volume | Revisions |
|---|---|
| 6 | Replace pages OP-36 and OP-36A |

detailed geologic and hydrologic assessment (see Section 7).

8.2 Monitoring Frequency and Reporting

Monitoring wells installed in the production zone monitoring well ring and those installed in the overlying and underlying aquifers (where applicable) are monitored for the UCL parameters and water levels every two weeks during production operations. In the event that unforseen conditions (such as snowstorms, flooding, equipment malfunction) occur, the regulatory agencies will be contacted if the well(s) cannot be monitored within 19 days of the last sampling event.

Water level and analytical monitoring data for the UCL parameters are reported to the WDEQ-LQD on a quarterly basis.

8.3 Water Quality Sampling and Analysis Procedures

Water quality samples are obtained by pumping the monitoring wells with permanently installed submersible pumps. To assure that water within the well casing has been adequately displaced and formation water is sampled, wells are pumped a certain amount of time, based on the particular well's performance. A minimum of one (1) casing volume of water will be removed from the well prior to sampling. During the initial monitoring of a particular well the electrical conductivity is measured and recorded at periodic intervals to determine when the water quality has stabilized. After this procedure is done for a minimum of four monitoring events, the optimum pumping time (and the required casing purge) is determined, and utilized for future monitoring. All data for each well is periodically reviewed to ensure that both sampling and analytical procedures are adequate.

Electrical conductivity is recorded in the field during water quality sampling and is corrected to 25°C for reporting purposes. Water quality samples are analyzed for chloride and bicarbonate, usually within 48 hours of sampling, at the on-site Environmental Laboratory. All analyses are done in accordance with accepted methods.

## 8.4 Excursions

An excursion is considered to have occurred at a well if any two of the three UCL parameters chloride, bicarbonate, and conductivity are exceeded. A verification sample is taken within 24 hours of the determination that a sample has exceeded two of the three UCL values. The verification sample is split and analyzed in duplicate to assess analytical error.

Upon verification of an excursion, the WDEQ-LQD and the NRC will be verbally notified within 24 hours and notified in writing within seven days. Corrective actions, such as changes in pumping or injection rates are implemented as soon as possible. Corrective actions continue until the excursion is mitigated. During an excursion all monitoring wells on excursion status are sampled at least every seven days for the UCL parameters and uranium.

ATTACHMENT A

**Well CM–29**
**Date: 12/9/93**
**Pumping Rate: 12 gpm**
**Casing Volume (CV) = 231 gals**

| | | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| Minutes | No. CV's | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.1 | 7.9 | 13 | 647 | 4 | 202 | 753 |
| 5 | 0.3 | 7.8 | 14 | 699 | 4 | 199 | 756 |
| 10 | 0.5 | 7.8 | 14 | 711 | 3 | 199 | 760 |
| 20 | 1.0 | 7.8 | 14 | 711 | 3 | 200 | 761 |
| 30 | 1.6 | 7.8 | 14 | 711 | 3 | 200 | 762 |
| 60 | 3.1 | 7.7 | 14 | 711 | 3 | 201 | 765 |
| 75 | 3.9 | 7.7 | 14 | 711 | 3 | 200 | 763 |

**Well CM–30**
**Date: 12/13/93**
**Pumping Rate: 9 gpm**
**Casing Volume (CV) = 221 gals**

| | | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| Minutes | No. CV's | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.0 | 7.6 | 13 | 500 | 4 | 172 | 709 |
| 5 | 0.2 | 10.1 | 14 | 430 | 16 | 43 | 560 |
| 10 | 0.4 | 9.1 | 14 | 475 | 11 | 88 | 610 |
| 20 | 0.8 | 8.0 | 14 | 525 | 4 | 178 | 709 |
| 30 | 1.2 | 7.8 | 14 | 550 | 3 | 185 | 723 |
| 60 | 2.4 | 7.6 | 14 | 550 | 3 | 190 | 728 |
| 75 | 3.1 | 7.6 | 14 | 550 | 3 | 191 | 730 |

**Well CM–31**
**Date: 12/13/93**
**Pumping Rate: 10 gpm**
**Casing Volume (CV) = 222 gals**

| | | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| Minutes | No. CV's | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.0 | 7.8 | 13 | 679 | 6 | 183 | 701 |
| 5 | 0.2 | 7.6 | 14 | 667 | 5 | 184 | 709 |
| 10 | 0.5 | 7.6 | 14 | 667 | 7 | 180 | 710 |
| 20 | 0.9 | 7.7 | 14 | 667 | 4 | 191 | 721 |
| 30 | 1.4 | 7.6 | 14 | 699 | 4 | 196 | 725 |
| 60 | 2.7 | 7.6 | 14 | 699 | 3 | 198 | 727 |
| 75 | 3.4 | 7.6 | 14 | 699 | 3 | 198 | 728 |

ATTACHMENT A

**Well CM–32**
**Date: 12/13/93**
**Pumping Rate: 9 gpm**
**Casing Volume (CV) = 218 gals**

| Minutes | No. CV's | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| | | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.0 | 7.7 | 13 | 659 | 10 | 172 | 696 |
| 5 | 0.2 | 8.9 | 14 | 667 | 32 | 109 | 673 |
| 10 | 0.4 | 8.4 | 14 | 667 | 24 | 148 | 708 |
| 20 | 0.8 | 8.0 | 14 | 699 | 13 | 180 | 722 |
| 30 | 1.2 | 7.9 | 14 | 699 | 10 | 184 | 718 |
| 60 | 2.5 | 7.8 | 14 | 653 | 7 | 188 | 715 |
| 75 | 3.1 | 7.8 | 14 | 653 | 7 | 187 | 714 |

**Well EM–12**
**Date: 12/13/93**
**Pumping Rate: 8 gpm**
**Casing Volume (CV) = 261 gals**

| Minutes | No. CV's | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| | | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.0 | 7.8 | 12 | 776 | 6 | 195 | 766 |
| 5 | 0.2 | 7.8 | 13 | 763 | 11 | 164 | 734 |
| 10 | 0.3 | 7.8 | 14 | 776 | 7 | 194 | 766 |
| 20 | 0.6 | 7.8 | 14 | 762 | 7 | 196 | 771 |
| 30 | 0.9 | 7.8 | 14 | 762 | 6 | 196 | 770 |
| 60 | 1.8 | 7.6 | 14 | 762 | 4 | 196 | 769 |
| 90 | 2.8 | 7.6 | 14 | 762 | 4 | 197 | 772 |

**Well EM–14**
**Date: 12/13/93**
**Pumping Rate: 10 gpm**
**Casing Volume (CV) = 294 gals**

| Minutes | No. CV's | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| | | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.0 | 7.6 | 13 | 840 | 5 | 196 | 850 |
| 5 | 0.2 | 7.6 | 13 | 879 | 3 | 197 | 849 |
| 10 | 0.3 | 7.7 | 13 | 879 | 5 | 196 | 858 |
| 20 | 0.7 | 7.7 | 13 | 879 | 4 | 197 | 861 |
| 30 | 1.0 | 7.7 | 14 | 864 | 4 | 197 | 863 |
| 60 | 2.0 | 7.6 | 14 | 864 | 3 | 198 | 861 |
| 90 | 3.1 | 7.6 | 14 | 889 | 3 | 198 | 862 |

## ATTACHMENT A

**Well EM–16**
**Date: 12/29/93**
**Pumping Rate: 10 gpm**
**Casing Volume (CV) = 305 gals**

| | | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| Minutes | No. CV's | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.0 | 7.7 | 13 | 802 | 4 | 192 | 814 |
| 5 | 0.2 | 7.7 | 13 | 789 | 5 | 185 | 801 |
| 10 | 0.3 | 7.8 | 14 | 725 | 6 | 185 | 797 |
| 20 | 0.7 | 7.8 | 14 | 838 | 4 | 194 | 822 |
| 30 | 1.0 | 7.7 | 14 | 826 | 4 | 196 | 823 |
| 60 | 2.0 | 7.6 | 14 | 826 | 4 | 197 | 824 |
| 90 | 3.0 | 7.6 | 14 | 826 | 4 | 197 | 825 |

4.6.4.1

POWER RESOURCES

December 22, 1993

RE: Docket No. 40-8857
SUA-1511
Reply to Notice of Violation

Mr. R.E. Hall, Director
Uranium Recovery Field Office
U.S. Nuclear Regulatory Commission
P.O. Box 25325
Denver, Colorado 80225

Dear Mr. Hall,

Power Resources, Inc. (PRI) is in receipt of the NRC Inspection Report 40-8857/93-01 and attached Notice of Violation dated November 30, 1993 which documents the results of the agency's November 2-3, 1993 inspection of the Highland Uranium Project (HUP). The inspection report and attached notice describes two violations. In accordance with the requirements described in the inspection report and notice, PRI herein responds to the two violations.

VIOLATION A

10 CFR 20.103(c)(2) states, in part, that the licensee may make allowance for the use of respiratory protective equipment in estimating exposures of individuals to airborne radioactive material provided that the licensee maintains and implements a respiratory protection program that includes issuance records.

Contrary to this requirement, credit was taken for use of respiratory protective equipment in estimating exposures of individuals to airborne radioactive materials during entries into the yellowcake dryer and packaging areas during the period March 11-22 and April 19-25, 1993, without maintenance of issuance records.

PRI RESPONSE TO VIOLATION A

It is true that credit was taken for use of respiratory protective equipment during the periods March 11-12 and April 19-25, 1993, without maintenance of issuance records. As discussed with the NRC during the inspection, PRI determined that the particular respirator issuance log sheet, which contained the required information was apparently misplaced. PRI has not yet located the missing sheet, and assumes it is permanently lost.

Although the above referenced issuance records are lost, PRI does not believe that employee safety or the calculation of employee exposures were compromised. Any

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entry into the yellowcake dryer or packaging area requires respiratory protection, as both areas are posted "Airborne Radioactivity Areas". PRI management requires strict adherence to the requirement that employees always use respiratory protection in these areas.

Following the inspection, personnel which routinely utilize the particular respiratory protection issuance records which were lost, and the Environmental Department Personnel which are responsible for the safe-keeping of these records, were counciled on the importance of maintaining the integrity of these records. PRI expects that this action is sufficient to minimize the potential for a similar violation in the future. Full compliance with the applicable requirements was achieved within one day following the NRC inspection.

VIOLATION B

License Condition No. 31 of Source Material License SUA-1511 references Volume 6 of the license application. Section 8.3 of Volume 6 states that a minimum of 3 casing volumes of water will be removed from each ground water well prior to sampling.

Contrary to this requirement, on November 3, 1993, the licensee was observed performing ground water well sampling using a procedure that failed to remove a minimum of 3 casing volumes of water prior to sampling. Review of the sampling procedure showed that the methodology used to determine the required purge volumes was incorrect and significantly underestimated the volume of water required to be removed.

PRI RESPONSE TO VIOLATION B

It is true that ground water well sampling was being conducted without the removal of a minimum of three casing volumes of water prior to sampling as required by Section 8.3 of the approved License Application. It is also true that the methodology used to determine the required purge volumes was incorrect, and underestimated the volume of water which would have to be pumped to remove three casing volumes.

As discussed with the NRC staff at the November 3, 1993 Inspection Exit Meeting and subsequently, PRI's initial approved License Application did not include a requirement that a minimum of three casing volumes be pumped from monitoring wells prior to sampling. In 1992 the NRC insisted that PRI revise the sampling protocol to require that a minimum of three casing volumes be pumped from monitoring wells, prior to sampling. Although PRI revised the sampling protocol accordingly, a review of the methodology used during the inspection showed that a calculation error in a computer based spreadsheet, led to an error such that only approximately one casing volume of water was being removed from most monitoring wells, prior to sampling.

To correct this situation PRI has completed a field study to show that it is not necessary to remove a minimum of three casing volumes prior to sampling to ensure

that aquifer water (and not stagnant well casing water) is sampled. The study shows that after one casing volume is removed from most wells at HUP, aquifer water is sampled. PRI has submitted a License Amendment Request dated December 21, 1993 which requests that Section 8.3 of the License Application be revised to require that a minimum of one casing volume of water be removed, prior to sampling. In addition to the "field study" discussed above, the License Amendment Request contains six additional reasons why the removal of one casing volume, prior to sampling, is acceptable.

As discussed with Mr. Ed Hawkins on December 22, 1993, PRI believes that compliance with the intent of the requirement to remove three casing volumes of water prior to sampling was not compromised, as the sampling procedures utilized by PRI have, and continue to ensure that true aquifer water is sampled. Therefore, although PRI will not be in strict compliance with requirements of the License Application until the above referenced License Amendment Request is approved, compliance with the intent of the requirement will continue.

PRI appreciates the opportunity to respond to these violations. Please call should you or your staff have any questions.

Sincerely,

W.F. Kearney
Environmental Director

WFK/ksj

attachment

cc: P.G. Cooper
S.P. Morzenti
M.R. Lueders
P.R. Hildenbrand
W.L. Mayo
USNRC/Washington, DC
File 4.6.4.1

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
URANIUM RECOVERY FIELD OFFICE
BOX 25325
DENVER, COLORADO 80225

File 4.6.4.1
Response in ltr making
WITC 1/6/94

CC PRM

Docket No. 40-8857
License No. SUA-1511

JAN 03 1994

Power Resources, Inc.
ATTN: William F. Kearney
Environmental Director
P.O. Box 1210
Glenrock, Wyoming 82637

SUBJECT: RESPONSE TO NRC INSPECTION REPORT 40-8857/93-01

Thank you for your letter of December 22, 1993, in response to our letter and Notice of Violation (NOV) dated November 30, 1993. This NOV was issued as a consequence of the NRC inspection at the Highland Uranium Project during November 2-3, 1993. With respect to Violation A, we have no further questions and will inspect the effectiveness of your corrective actions during future inspections. As discussed with you by telephone December 31, 1993, we require additional information to supplement your response to Violation B, "Failure to remove a minimum of 3 casing volumes of water prior to sampling." Specifically, we request that you provide your corrective actions to return to compliance, a schedule for completion of these actions, and the date by which you will be in full compliance. Your schedule should be independent of any request to modify your license relative to the requirement that you are currently violating.

Please provide this supplemental information within 20 days of the date of this letter. If an adequate reply is not received within the time specified in this letter, an Order may be issued to show cause why the license should not be modified, suspended, or revoked, or which such other action as may be proper should not be taken. A copy of this letter is being faxed to you as requested.

Sincerely,

Ramon E. Hall
Director

cc:
S. Morzenti, PRI
J. Hough, RCPD, WY
WDEQ

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
URANIUM RECOVERY FIELD OFFICE
BOX 25325
DENVER, COLORADO 80225

cc PRM
SPM
FY 4.6.4.1
Response sent 1/12/94
Ltr dtd 1/14/94

JAN 11 1994

Docket No. 40-8857

JAN 14 1994
HIGHLAND URANIUM PROJECT
RECEIVED

Power Resources, Inc.
ATTN: William F. Kearney
Environmental Director
P.O. Box 1210
Glenrock, Wyoming 82637

Dear Mr. Kearney:

This letter is response to your request submitted by letter dated December 21, 1993, to amend Source Material License SUA-1511. We have completed our review of your request and determined that supplemental information is required to evaluate your proposed license revision which is to modify your ground-water sampling program. Specifically, please provide the data and information necessary to ensure you have considered the multiple stratigraphic horizons/isolated aquifers that mining activities have impacted. It can be expected that hydrogeologic characteristics are unique to each horizon which, through hydrologic pump tests, you have demonstrated are bedded between overlying and underlying aquitards.

In addition, please provide information to identify which monitor wells will require more than the proposed general requirement for well purge volume and the basis for calculating the amount of purge needed.

Sincerely,

Ramon E. Hall
Director

cc:
S. Morzenti, PRI
J. Hough, RCPD, WY
WDEQ

4.6.4.)

POWER RESOURCES

January 12, 1994

RE: Docket No. 40-8857
SUA-1511
Additional Information

Mr. R.E. Hall, Director
Uranium Recovery Field Office
U.S. Nuclear Regulatory Commission
P.O. Box 25325
Denver, Colorado 80225

Dear Mr. Hall,

In correspondence dated December 21, 1993 Power Resources, Inc. (PRI) submitted a License Amendment Request and supporting information to revise Section 8.3 of volume 6 of the approved License Application. Specifically, the License Amendment Request seeks to revise Section 8.3 to reflect that a minimum of one casing volume (instead of three casing volumes) of water will be routinely pumped from monitor wells prior to sampling. On January 7, 1994 Ms. Cynthia Corbett requested that additional information be submitted to support the request. Ms. Corbett requested that information be submitted for wellfields for which information was not submitted with the December 21, 1993 correspondence.

Therefore, herein PRI submits three copies of additional information for wells in the D-Wellfield (wells DM-3, DM-8, DM-12), the A-Wellfield (well M-14) and the B-Wellfield (wells M-33 and M-50). The information for each well includes the results of a field study which took place on January 11, 1994. The field study included the pumping of 0 to approximately 2.4 or 5.9 casing volumes of water from each well, with water quality samples taken at periodic intervals. The results of both the field and laboratory measurements support PRI's request to only pump at least one casing volume, prior to sampling. A review of the data shows that the water quality stabilizes prior to the removal of one casing volume and that the water sampled at one casing volume is representative of true aquifer water quality.

Also included, please find tabular data from PRI's monitor well database for each of the above wells for the period January 1, 1991 to present (January 12, 1994). A review of these data show that the analytical results for chloride, bicarbonate, and conductivity from a substantial number of water quality samples are very consistent over a long period of time. It should be noted that in June 1992 PRI switched from standard manual laboratory techniques to an automated system, which increased the precision of the particular analyses. The fact that the data for each well are very consistent over a relatively long time period and many sampling events, and the data results from sampling after approximately one casing volume was removed, it is

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concluded that true aquifer water is sampled after the removal of approximately one casing volume.

PRI hopes that this additional information, which supports PRI's request to pump at least one casing volume prior to sampling at monitor wells, is adequate to allow you to approve the requested License Amendment. If you need additional information, please call me.

Sincerely,

W.F. Kearney
Environmental Director

WFK/ksj

cc: S.P. Morzenti w/o atta
M.R. Lueders w/o atta
P.R. Hildenbrand w/o atta
File 4.6.4.1

**Well DM−3**
**Date: 1/11/94**
**Pumping Rate: 8 gpm**
**Casing Volume (CV) = 302 gals**
filename: wfk\dm3

| | | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| Minutes | No. CV's | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.0 | 7.6 | 13 | 672 | 4 | 187 | 680 |
| 5 | 0.1 | 8.0 | 14 | 724 | 4 | 186 | 742 |
| 10 | 0.3 | 8.0 | 14 | 724 | 4 | 189 | 761 |
| 20 | 0.5 | 7.9 | 14 | 724 | 3 | 189 | 757 |
| 30 | 0.8 | 7.9 | 14 | 737 | 3 | 189 | 761 |
| 60 | 1.6 | 7.8 | 14 | 716 | 3 | 189 | 760 |
| 90 | 2.4 | 7.7 | 14 | 737 | 3 | 189 | 760 |

**Well DM–8**
**Date: 1/11/94**
**Pumping Rate: 8 gpm**
**Casing Volume (CV) = 303 gals**
filename: wfk\dm8

| | | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| Minutes | No. CV's | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.0 | 10.7 | 16 | 608 | 17 | 81 | 681 |
| 5 | 0.1 | 7.6 | 14 | 648 | 5 | 170 | 723 |
| 10 | 0.3 | 8.4 | 14 | 648 | 5 | 182 | 747 |
| 20 | 0.5 | 7.9 | 14 | 686 | 4 | 185 | 749 |
| 30 | 0.8 | 7.9 | 14 | 686 | 4 | 186 | 750 |
| 60 | 1.6 | 7.6 | 15 | 721 | 4 | 186 | 756 |
| 90 | 2.4 | 7.6 | 15 | 721 | 3 | 187 | 754 |

**Well DM–12**
**Date: 1/11/94**
**Pumping Rate: 8 gpm**
**Casing Volume (CV) = 303 gals**
filename: wfk\dm12

| | | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| Minutes | No. CV's | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.0 | 7.8 | 12 | 684 | 3 | 176 | 766 |
| 5 | 0.1 | 11.3 | 13 | 1552 | 19 | 275 | 1304 |
| 10 | 0.3 | 9.5 | 14 | 635 | 8 | 41 | 604 |
| 20 | 0.5 | 8.4 | 14 | 737 | 4 | 186 | 778 |
| 30 | 0.8 | 7.9 | 14 | 737 | 4 | 189 | 787 |
| 60 | 1.6 | 7.9 | 15 | 746 | 3 | 189 | 792 |
| 90 | 2.4 | 7.9 | 15 | 746 | 3 | 189 | 788 |

**Well M–14**
**Date: 1/11/94**
**Pumping Rate: 10 gpm**
**Casing Volume (CV) = 197 gals**
filename: wfk\m14

| | | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| Minutes | No. CV's | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.1 | 8.0 | 12 | 444 | 5 | 199 | 562 |
| 5 | 0.3 | 8.0 | 13 | 459 | 5 | 203 | 554 |
| 10 | 0.5 | 8.0 | 13 | 459 | 5 | 204 | 552 |
| 20 | 1.0 | 8.0 | 13 | 459 | 5 | 202 | 543 |
| 30 | 1.5 | 8.0 | 13 | 459 | 7 | 196 | 539 |
| 60 | 3.0 | 8.0 | 14 | 466 | 4 | 207 | 553 |
| 90 | 4.6 | 8.0 | 13 | 471 | 4 | 207 | 557 |

**Well M–33**
**Date: 1/11/94**
**Pumping Rate: 10 gpm**
**Casing Volume (CV) = 153 gals**
filename: wfk\m33

| | | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| Minutes | No. CV's | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.1 | 8.0 | 13 | 489 | 4 | 191 | 554 |
| 5 | 0.3 | 8.0 | 13 | 471 | 4 | 191 | 555 |
| 10 | 0.7 | 8.0 | 13 | 471 | 4 | 190 | 559 |
| 20 | 1.3 | 8.0 | 13 | 471 | 4 | 190 | 562 |
| 30 | 2.0 | 8.0 | 13 | 471 | 4 | 190 | 560 |
| 60 | 3.9 | 8.0 | 13 | 471 | 4 | 190 | 560 |
| 90 | 5.9 | 8.0 | 13 | 471 | 4 | 190 | 564 |

**Well M–50**
**Date: 1/11/94**
**Pumping Rate: 10 gpm**
**Casing Volume (CV) = 153 gals**
filename: wfk\m50

| | | Field | | | Lab | | |
|---|---|---|---|---|---|---|---|
| Minutes | No. CV's | pH | Temp | Cond | Cl | $HCO_3$ | Cond |
| 1 | 0.1 | 8.7 | 12 | 382 | 9 | 131 | 473 |
| 5 | 0.3 | 8.0 | 13 | 471 | 4 | 196 | 556 |
| 10 | 0.7 | 8.0 | 13 | 471 | 4 | 196 | 556 |
| 20 | 1.3 | 8.0 | 13 | 483 | 4 | 199 | 561 |
| 30 | 2.0 | 8.0 | 13 | 483 | 4 | 199 | 560 |
| 60 | 3.9 | 8.0 | 13 | 483 | 4 | 200 | 561 |
| 90 | 5.9 | 8.0 | 13 | 483 | 4 | 200 | 560 |

WELL DATA FOR POWER RESOURCES 01/12/94

DATA FOR WELL DM3

| Date | Chloride (mg/l) | Bicarbonate (mg/l) | Conductivity (uMhos/cm) | Water Elevation (ft. MSL) | U308 (mg/l) |
|---|---|---|---|---|---|
| NRC-DEQ UCL | 18.10 | 229 | 962 | | |
| 05/28/91 | 3 | 181 | 734 | 5103.96 | |
| 06/12/91 | 2 | 166 | 732 | 5107.51 | |
| 06/25/91 | 2 | 190 | 747 | 5104.23 | |
| 07/01/91 | 2 | 183 | 756 | 5099.56 | |
| 07/17/91 | 3 | 185 | 761 | 5098.61 | |
| 08/01/91 | 2 | 190 | 755 | 5102.73 | |
| 08/19/91 | 3 | 185 | 753 | 5094.32 | |
| 09/04/91 | 3 | 188 | 753 | 5090.81 | |
| 09/16/91 | 4 | 173 | 754 | 5088.82 | |
| 10/01/91 | 4 | 183 | 762 | 5087.64 | |
| 10/16/91 | 3 | 198 | 768 | 5089.26 | |
| 11/11/91 | 5 | 188 | 774 | 5084.06 | |
| 11/18/91 | 3 | 183 | 774 | 5088.59 | |
| 12/02/91 | 3 | 178 | 761 | 5088.46 | |
| 12/16/91 | 5 | 183 | 784 | 5099.32 | |
| 01/02/92 | 2 | 186 | 794 | 5106.59 | |
| 01/16/92 | 4 | 185 | 785 | 5111.73 | |
| 02/03/92 | 5 | 185 | 769 | 5109.27 | |
| 02/12/92 | 5 | 190 | 770 | 5107.58 | |
| 02/17/92 | 4 | 183 | 780 | 5104.29 | |
| 03/02/92 | 3 | 188 | 776 | 5104.66 | |
| 03/16/92 | 3 | 178 | 773 | 5104.63 | |
| 04/01/92 | 3 | 183 | 772 | 5103.59 | |
| 04/17/92 | 3 | 188 | 772 | 5105.90 | |
| 05/04/92 | 3 | 183 | 766 | 5109.54 | |
| 05/18/92 | 3 | 183 | 759 | 5110.89 | |
| 06/01/92 | 3 | 188 | 767 | 5110.58 | |
| 06/16/92 | 3 | 192 | 759 | 5109.73 | |
| 07/01/92 | 3 | 194 | 741 | 5111.08 | |
| 07/16/92 | 2 | 192 | 746 | 5107.18 | |
| 08/03/92 | 2 | 195 | 737 | 5111.46 | |
| 08/17/92 | 4 | 196 | 734 | 5111.31 | |
| 09/01/92 | 3 | 196 | 739 | 5113.48 | |
| 09/16/92 | 3 | 197 | 743 | 5111.76 | |
| 10/01/92 | 2 | 197 | 752 | 5109.16 | |
| 10/19/92 | 3 | 198 | 738 | 5108.86 | |
| 11/02/92 | 2 | 197 | 741 | 5109.41 | |
| 11/16/92 | 3 | 197 | 733 | 5108.11 | |
| 12/01/92 | 2 | 198 | 749 | 5105.16 | |
| 12/16/92 | 3 | 197 | 744 | 5101.12 | |
| 01/04/93 | 3 | 198 | 745 | 5099.25 | |
| 01/18/93 | 3 | 198 | 748 | 5098.58 | |
| 02/01/93 | 4 | 197 | 740 | 5099.53 | |
| 02/16/93 | 3 | 199 | 744 | 5095.73 | |
| 03/01/93 | 4 | 202 | 745 | 5098.26 | |

WELL DM3 CONTINUED

| | | | | |
|---|---|---|---|---|
| 03/16/93 | 3 | 192 | 764 | 5095.29 |
| 04/01/93 | 3 | 199 | 736 | 5097.94 |
| 04/19/93 | 3 | 199 | 744 | 5097.90 |
| 05/03/93 | 3 | 199 | 747 | 5097.01 |
| 05/17/93 | 3 | 198 | 745 | 5099.05 |
| 06/01/93 | 3 | 199 | 737 | 5098.26 |
| 06/16/93 | 3 | 199 | 749 | 5099.21 |
| 07/01/93 | 3 | 198 | 747 | 5099.30 |
| 07/19/93 | 3 | 199 | 735 | 5095.35 |
| 08/02/93 | 3 | 196 | 746 | 5093.76 |
| 08/16/93 | 3 | 195 | 745 | 5094.16 |
| 09/01/93 | 3 | 198 | 772 | 5093.54 |
| 09/16/93 | 3 | 197 | 732 | 5092.22 |
| 10/04/93 | 3 | 196 | 732 | 5095.73 |
| 10/18/93 | 3 | 196 | 736 | 5093.60 |
| 11/01/93 | 3 | 198 | 731 | 5092.50 |
| 11/16/93 | 3 | 198 | 743 | 5093.34 |
| 12/01/93 | 3 | 198 | 751 | 5092.92 |
| 12/16/93 | 3 | 198 | 732 | 5095.52 |
| 01/03/94 | 3 | 189 | 725 | 5094.76 |

WELL DATA FOR POWER RESOURCES 01/12/94

DATA FOR WELL DM8

| Date | Chloride (mg/l) | Bicarbonate (mg/l) | Conductivity (uMhos/cm) | Water Elevation (ft. MSL) | U308 (mg/l) |
|---|---|---|---|---|---|
| NRC-DEQ UCL | 18.10 | 229 | 962 | | |
| 05/24/91 | 3 | 200 | 726 | 5104.26 | |
| 06/12/91 | 3 | 181 | 715 | 5102.04 | |
| 06/25/91 | 3 | 178 | 701 | 5100.08 | |
| 07/02/91 | 4 | 171 | 698 | 5091.47 | |
| 07/22/91 | 4 | 198 | 732 | 5108.49 | |
| 08/05/91 | 4 | 190 | 728 | 5101.25 | |
| 08/20/91 | 5 | 178 | 695 | 5098.20 | |
| 09/05/91 | 5 | 176 | 698 | 5088.08 | |
| 09/17/91 | 4 | 176 | 694 | 5090.33 | |
| 10/02/91 | 4 | 193 | 711 | 5092.03 | |
| 10/16/91 | 4 | 188 | 722 | 5095.37 | |
| 11/10/91 | 5 | 190 | 723 | 5095.55 | |
| 11/19/91 | 4 | 200 | 727 | 5097.95 | |
| 12/03/91 | 5 | 195 | 723 | 5095.59 | |
| 12/17/91 | 4 | 183 | 724 | 5105.92 | |
| 01/02/92 | 3 | 202 | 736 | 5114.47 | |
| 01/16/92 | 5 | 200 | 727 | 5116.78 | |
| 02/04/92 | 6 | 193 | 718 | 5118.15 | |
| 02/18/92 | 3 | 188 | 727 | 5108.50 | |
| 03/03/92 | 4 | 190 | 729 | 5110.61 | |
| 03/17/92 | 4 | 195 | 730 | 5113.44 | |
| 04/02/92 | 4 | 193 | 730 | 5114.37 | |
| 04/20/92 | 4 | 203 | 734 | 5116.30 | |
| 05/05/92 | 4 | 198 | 731 | 5121.63 | |
| 05/19/92 | 3 | 185 | 730 | 5123.80 | |
| 06/02/92 | 4 | 193 | 728 | 5124.36 | |
| 06/17/92 | 3 | 195 | 749 | 5125.80 | |
| 07/02/92 | 3 | 193 | 740 | 5115.19 | |
| 07/20/92 | 3 | 192 | 734 | 5119.25 | |
| 08/04/92 | 3 | 195 | 737 | 5122.85 | |
| 08/18/92 | 3 | 194 | 740 | 5120.84 | |
| 09/02/92 | 3 | 194 | 740 | 5122.38 | |
| 09/17/92 | 3 | 196 | 766 | 5120.27 | |
| 10/05/92 | 3 | 193 | 725 | 5118.06 | |
| 10/20/92 | 3 | 191 | 747 | 5115.83 | |
| 11/03/92 | 3 | 197 | 741 | 5125.27 | |
| 11/17/92 | 3 | 196 | 738 | 5115.18 | |
| 12/02/92 | 3 | 196 | 749 | 5114.29 | |
| 12/17/92 | 3 | 195 | 744 | 5111.86 | |
| 01/05/93 | 3 | 196 | 741 | 5110.60 | |
| 01/18/93 | 3 | 188 | 733 | 5111.49 | |
| 02/02/93 | 6 | 194 | 756 | 5112.65 | |
| 02/17/93 | 3 | 194 | 743 | 5110.09 | |
| 03/02/93 | 3 | 195 | 741 | 5107.79 | |
| 03/16/93 | 3 | 190 | 751 | 5102.76 | |

WELL DM8 CONTINUED

| | | | | |
|---|---|---|---|---|
| 04/01/93 | 3 | 194 | 734 | 5102.30 |
| 04/19/93 | 3 | 192 | 744 | 5101.60 |
| 05/03/93 | 3 | 193 | 742 | 5102.10 |
| 05/17/93 | 3 | 194 | 745 | 5102.37 |
| 06/01/93 | 3 | 193 | 733 | 5100.14 |
| 06/16/93 | 3 | 195 | 745 | 5100.55 |
| 07/01/93 | 4 | 192 | 743 | 5103.21 |
| 07/19/93 | 3 | 195 | 736 | 5098.52 |
| 08/02/93 | 3 | 190 | 744 | 5096.72 |
| 08/16/93 | 4 | 191 | 743 | 5097.83 |
| 09/01/93 | 4 | 185 | 733 | 5095.15 |
| 09/16/93 | 3 | 189 | 721 | 5094.52 |
| 10/04/93 | 4 | 190 | 730 | 5098.94 |
| 10/18/93 | 4 | 184 | 725 | 5097.58 |
| 11/02/93 | 4 | 186 | 705 | 5098.60 |
| 11/16/93 | 4 | 193 | 741 | 5099.00 |
| 12/01/93 | 4 | 190 | 753 | 5101.58 |
| 12/16/93 | 3 | 192 | 738 | 5102.95 |
| 01/03/94 | 4 | 184 | 732 | 5103.50 |

WELL DATA FOR POWER RESOURCES 01/12/94

DATA FOR WELL DM12

| Date | Chloride (mg/l) | Bicarbonate (mg/l) | Conductivity (uMhos/cm) | Water Elevation (ft. MSL) | U308 (mg/l) |
|---|---|---|---|---|---|
| NRC-DEQ UCL | 18.10 | 229 | 962 | | |
| 06/06/91 | 2 | 198 | 778 | 5118.09 | |
| 06/20/91 | 2 | 198 | 750 | 5094.21 | |
| 07/08/91 | 3 | 205 | 751 | 5115.43 | |
| 07/22/91 | 3 | 195 | 750 | 5106.33 | |
| 08/08/91 | 4 | 190 | 749 | 5081.44 | |
| 08/26/91 | 4 | 210 | 763 | 5093.24 | |
| 09/09/91 | 4 | 200 | 751 | 5092.69 | |
| 09/19/91 | 4 | 195 | 757 | 5097.39 | |
| 10/07/91 | 4 | 203 | 770 | 5094.80 | |
| 10/17/91 | 5 | 203 | 767 | 5104.89 | |
| 11/13/91 | 4 | 207 | 765 | 5105.72 | |
| 11/19/91 | 3 | 200 | 768 | 5101.29 | |
| 12/04/91 | 4 | 198 | 768 | 5106.72 | |
| 12/17/91 | 4 | 203 | 760 | 5115.47 | |
| 01/06/92 | 5 | 198 | 757 | 5126.99 | |
| 01/20/92 | 5 | 200 | 758 | 5112.94 | |
| 02/04/92 | 4 | 198 | 757 | 5112.19 | |
| 02/18/92 | 3 | 207 | 763 | 5107.41 | |
| 03/03/92 | 3 | 207 | 766 | 5113.02 | |
| 03/17/92 | 3 | 207 | 767 | 5113.59 | |
| 04/02/92 | 4 | 200 | 765 | 5117.54 | |
| 04/22/92 | 3 | 203 | 383 | 5112.69 | |
| 05/05/92 | 3 | 205 | 763 | 5118.29 | |
| 05/19/92 | 3 | 203 | 759 | 5123.43 | |
| 06/02/92 | 4 | 198 | 758 | 5125.44 | |
| 06/17/92 | 3 | 198 | 775 | 5126.84 | |
| 07/06/92 | 3 | 199 | 751 | 5124.75 | |
| 07/20/92 | 2 | 195 | 758 | 5129.44 | |
| 08/04/92 | 3 | 197 | 762 | 5132.74 | |
| 08/18/92 | 3 | 199 | 772 | 5132.27 | |
| 09/02/92 | 3 | 199 | 768 | 5117.91 | |
| 09/17/92 | 3 | 196 | 755 | 5128.34 | |
| 10/05/92 | 2 | 197 | 759 | 5099.29 | |
| 10/20/92 | 3 | 199 | 776 | 5124.29 | |
| 11/03/92 | 2 | 201 | 775 | 5121.81 | |
| 11/17/92 | 2 | 198 | 773 | 5124.48 | |
| 12/02/92 | 2 | 198 | 785 | 5127.21 | |
| 12/17/92 | 3 | 200 | 777 | 5123.96 | |
| 01/05/93 | 3 | 200 | 774 | 5121.46 | |
| 01/20/93 | 3 | 198 | 788 | 5124.10 | |
| 02/02/93 | 3 | 199 | 779 | 5113.24 | |
| 02/17/93 | 2 | 200 | 781 | 5129.43 | |
| 03/02/93 | 3 | 199 | 777 | 5125.52 | |
| 03/17/93 | 3 | 199 | 779 | 5120.62 | |
| 04/05/93 | 2 | 199 | 782 | 5114.90 | |

WELL DM12 CONTINUED

| | | | | |
|---|---|---|---|---|
| 04/20/93 | 3 | 199 | 781 | 5113.79 |
| 05/04/93 | 2 | 199 | 777 | 5114.21 |
| 05/18/93 | 3 | 199 | 777 | 5111.67 |
| 06/07/93 | 3 | 200 | 774 | 5113.91 |
| 06/17/93 | 3 | 199 | 777 | 5114.93 |
| 07/06/93 | 3 | 192 | 775 | 5119.06 |
| 07/20/93 | 3 | 198 | 777 | 5111.47 |
| 08/03/93 | 3 | 196 | 776 | 5116.43 |
| 08/17/93 | 3 | 196 | 782 | 5106.02 |
| 09/02/93 | 3 | 198 | 773 | 5105.79 |
| 09/20/93 | 3 | 196 | 772 | 5101.45 |
| 10/05/93 | 3 | 189 | 755 | 5110.65 |
| 10/19/93 | 3 | 196 | 765 | 5105.91 |
| 11/02/93 | 3 | 162 | 698 | 5104.96 |
| 11/17/93 | 3 | 196 | 772 | 5105.82 |
| 12/02/93 | 3 | 196 | 767 | 5109.79 |
| 12/20/93 | 3 | 193 | 749 | 5110.69 |
| 01/04/94 | 3 | 186 | 774 | 5110.24 |

WELL DATA FOR POWER RESOURCES 01/12/94

DATA FOR WELL M14

| Date | Chloride (mg/l) | Bicarbonate (mg/l) | Conductivity (uMhos/cm) | Water Elevation (ft. MSL) | U308 (mg/l) |
|---|---|---|---|---|---|
| NRC-DEQ UCL | 9.00 | 287 | 688 | | |
| 01/02/91 | 5 | 212 | 524 | 5023.30 | |
| 01/16/91 | 4 | 207 | 508 | 5025.75 | |
| 02/05/91 | 5 | 217 | 532 | 5020.30 | |
| 02/19/91 | 4 | 212 | 524 | 5016.26 | |
| 03/04/91 | 5 | 198 | 530 | 5017.14 | |
| 03/19/91 | 5 | 210 | 523 | 5016.44 | |
| 04/02/91 | 6 | 227 | 524 | 5018.75 | |
| 04/16/91 | 5 | 217 | 518 | 5017.26 | |
| 05/01/91 | 5 | 217 | 521 | 5015.30 | |
| 05/20/91 | 5 | 212 | 516 | 5017.75 | |
| 06/03/91 | 4 | 217 | 514 | 5030.10 | |
| 06/17/91 | 5 | 205 | 519 | 5027.75 | |
| 07/01/91 | 3 | 220 | 526 | 5022.96 | |
| 07/23/91 | 5 | 200 | 518 | 5020.75 | |
| 07/31/91 | | | | 5016.14 | |
| 08/20/91 | | | | 5017.26 | |
| 09/10/91 | | | | 5012.44 | |
| 09/19/91 | 8 | 190 | 495 | 5012.75 | |
| 09/24/91 | | | | 5012.75 | |
| 10/08/91 | | | | 5011.93 | |
| 10/21/91 | | | | 5008.75 | |
| 11/05/91 | | | | 5005.28 | |
| 11/18/91 | 4 | 215 | 518 | 5004.20 | |
| 12/03/91 | | | | 5006.30 | |
| 12/09/91 | | | | 5005.10 | |
| 12/17/91 | | | | 5002.46 | |
| 01/07/92 | | | | 5001.14 | |
| 01/15/92 | 4 | 215 | 518 | 5000.56 | |
| 01/21/92 | | | | 4999.84 | |
| 02/12/92 | | | | 4999.68 | |
| 02/25/92 | | | | 5001.59 | |
| 03/11/92 | | | | 5002.77 | |
| 03/16/92 | 4 | 207 | 519 | 5010.75 | |
| 03/24/92 | | | | 5014.18 | |
| 04/07/92 | | | | 5017.30 | |
| 04/21/92 | | | | 5012.70 | |
| 05/05/92 | | | | 5005.95 | |
| 05/18/92 | 3 | 200 | 526 | 5003.92 | |
| 05/19/92 | | | | 5003.75 | |
| 06/02/92 | | | | 5000.75 | |
| 06/12/92 | | | | 4999.91 | |
| 06/30/92 | | | | 4999.63 | |
| 07/14/92 | | | | 4998.36 | |
| 07/15/92 | 4 | 210 | 530 | 4998.34 | |
| 07/28/92 | | | | 4997.57 | |

WELL M14 CONTINUED

| | | | | |
|---|---|---|---|---|
| 08/11/92 | | | | 4997.40 |
| 08/25/92 | | | | 4997.60 |
| 09/15/92 | 5 | 211 | 496 | 4997.53 |
| 09/22/92 | | | | 4997.87 |
| 10/06/92 | | | | 4997.10 |
| 10/20/92 | | | | 4997.61 |
| 11/03/92 | | | | 4998.24 |
| 11/16/92 | 4 | 215 | 538 | 4997.24 |
| 11/17/92 | | | | 4997.20 |
| 11/25/92 | | | | 4998.22 |
| 12/01/92 | | | | 5006.10 |
| 12/15/92 | | | | 5010.81 |
| 12/29/92 | | | | 5012.54 |
| 01/11/93 | | | | 5014.80 |
| 01/15/93 | 5 | 213 | 508 | 5015.24 |
| 01/26/93 | | | | 5016.24 |
| 02/09/93 | | | | 5016.72 |
| 02/23/93 | | | | 5017.54 |
| 03/09/93 | | | | 5017.99 |
| 03/15/93 | 4 | 216 | 554 | 5018.51 |
| 03/23/93 | | | | 5018.46 |
| 04/12/93 | | | | 5018.31 |
| 04/20/93 | | | | 5020.01 |
| 05/04/93 | | | | 5025.84 |
| 05/17/93 | 5 | 210 | 555 | 5025.92 |
| 05/18/93 | | | | 5025.79 |
| 06/01/93 | | | | 5019.23 |
| 06/15/93 | | | | 5015.66 |
| 06/15/93 | | | | 5014.20 |
| 06/29/93 | | | | 5008.34 |
| 07/13/93 | | | | 5008.34 |
| 07/15/93 | 4 | 216 | 545 | 5003.17 |
| 07/27/93 | | | | 5006.70 |
| 08/10/93 | | | | 5006.75 |
| 08/24/93 | | | | 5010.20 |
| 09/08/93 | | | | 5007.50 |
| 09/15/93 | 4 | 214 | 543 | 5007.75 |
| 09/21/93 | | | | 5007.46 |
| 10/05/93 | | | | 5011.44 |
| 10/19/93 | | | | 5015.84 |
| 11/02/93 | | | | 5017.61 |
| 11/15/93 | 5 | 215 | 537 | 5017.35 |
| 12/14/93 | | | | 5019.93 |
| 12/28/93 | | | | 5017.41 |

WELL DATA FOR POWER RESOURCES 01/12/94

DATA FOR WELL M33

| Date | Chloride (mg/l) | Bicarbonate (mg/l) | Conductivity (uMhos/cm) | Water Elevation (ft. MSL) | U308 (mg/l) |
|---|---|---|---|---|---|
| NRC-DEQ UCL | 11.00 | 281 | 735 | | |
| 01/10/91 | 3 | 205 | 535 | 5016.16 | |
| 01/24/91 | 3 | 205 | 540 | 5017.65 | |
| 02/07/91 | 3 | 198 | 553 | 5016.83 | |
| 02/25/91 | 3 | 203 | 535 | 5016.97 | |
| 03/11/91 | 4 | 190 | 540 | 5019.64 | |
| 03/25/91 | 4 | 190 | 535 | 5019.84 | |
| 04/09/91 | 4 | 190 | 533 | 5014.61 | |
| 04/22/91 | 4 | 193 | 528 | 5014.45 | |
| 05/08/91 | 4 | 198 | 531 | 5013.16 | |
| 05/30/91 | 3 | 190 | 534 | 5025.71 | |
| 06/10/91 | 3 | 190 | 537 | 5018.37 | |
| 06/20/91 | 3 | 210 | 524 | 5018.11 | |
| 07/09/91 | 3 | 193 | 529 | 5020.45 | |
| 07/31/91 | | | | 4914.37 | |
| 08/01/91 | 4 | 198 | 531 | 5014.37 | |
| 08/20/91 | | | | 5013.55 | |
| 09/26/91 | 4 | 193 | 539 | 5011.12 | |
| 12/04/91 | 5 | 193 | 533 | 5013.85 | |
| 02/05/92 | 5 | 193 | 515 | 5010.72 | |
| 03/25/92 | 5 | 188 | 527 | 5018.05 | |
| 06/01/92 | 4 | 185 | 539 | 5009.95 | |
| 07/27/92 | 3 | 197 | 520 | 5007.65 | |
| 09/28/92 | 3 | 204 | 549 | 5007.16 | |
| 12/02/92 | 4 | 200 | 523 | 5014.15 | |
| 01/28/93 | 3 | 200 | 509 | 5019.82 | |
| 03/25/93 | 3 | 198 | 556 | 5021.16 | |
| 05/27/93 | 3 | 199 | 506 | 5026.16 | |
| 07/29/93 | 3 | 197 | 513 | 5013.62 | |
| 09/28/93 | 4 | 196 | 552 | 5011.31 | |
| 12/07/93 | 4 | 197 | 560 | 5023.22 | |

WELL DATA FOR POWER RESOURCES 01/12/94

DATA FOR WELL M50

| Date | Chloride (mg/l) | Bicarbonate (mg/l) | Conductivity (uMhos/cm) | Water Elevation (ft. MSL) | U308 (mg/l) |
|---|---|---|---|---|---|
| NRC-DEQ UCL | 11.00 | 281 | 735 | | |
| 01/14/91 | 4 | 207 | 533 | 5012.99 | |
| 01/29/91 | 4 | 205 | 550 | 5010.91 | |
| 02/13/91 | 3 | 229 | 528 | 5006.76 | |
| 02/27/91 | 5 | 200 | 531 | 5011.32 | |
| 03/14/91 | 5 | 215 | 537 | 5014.56 | |
| 03/27/91 | 4 | 200 | 523 | 5015.07 | |
| 04/10/91 | 5 | 215 | 529 | 5015.32 | |
| 04/25/91 | 4 | 220 | 533 | 5014.66 | |
| 05/09/91 | 5 | 224 | 531 | 5015.47 | |
| 05/29/91 | 4 | 198 | 543 | 5022.68 | |
| 06/12/91 | 3 | 195 | 552 | 5021.86 | |
| 06/26/91 | 4 | 200 | 530 | 5020.61 | |
| 07/11/91 | 4 | 200 | 524 | 5014.36 | |
| 08/08/91 | 5 | 207 | 525 | 5009.07 | |
| 09/10/91 | | | | 5009.97 | |
| 09/24/91 | 5 | 198 | 505 | 5007.41 | |
| 10/08/91 | | | | 5007.55 | |
| 10/21/91 | | | | 5007.22 | |
| 11/05/91 | | | | 5006.18 | |
| 11/19/91 | | | | 5001.04 | |
| 12/03/91 | | | | 5005.85 | |
| 12/09/91 | | | | 5004.07 | |
| 12/12/91 | 6 | 195 | 508 | 5002.46 | |
| 12/17/91 | | | | 5001.61 | |
| 01/07/92 | | | | 4999.96 | |
| 01/21/92 | | | | 4998.88 | |
| 02/12/92 | | | | 4999.89 | |
| 02/20/92 | 6 | 201 | 510 | 4996.02 | |
| 02/25/92 | | | | 4994.20 | |
| 03/11/92 | | | | 4995.69 | |
| 03/24/92 | | | | 5014.92 | |
| 04/02/92 | 4 | 195 | 509 | 5017.07 | |
| 04/07/92 | | | | 5018.42 | |
| 04/21/92 | | | | 5107.98 | |
| 05/05/92 | | | | 4998.60 | |
| 05/19/92 | | | | 4997.70 | |
| 06/02/92 | | | | 4995.73 | |
| 06/10/92 | 5 | 185 | 512 | 4995.03 | |
| 06/12/92 | | | | 4995.16 | |
| 06/30/92 | | | | 4994.36 | |
| 07/14/92 | | | | 4994.52 | |
| 07/28/92 | | | | 4993.34 | |
| 08/04/92 | 4 | 200 | 525 | 4993.98 | |
| 08/11/92 | | | | 4993.10 | |
| 08/25/92 | | | | 4994.02 | |

WELL M50 CONTINUED

| | | | | |
|---|---|---|---|---|
| 09/22/92 | | | | 4992.16 |
| 10/05/92 | 4 | 197 | 530 | 4990.93 |
| 10/06/92 | | | | 4990.82 |
| 10/20/92 | | | | 4991.89 |
| 11/03/92 | | | | 4993.50 |
| 11/17/92 | | | | 4993.76 |
| 11/25/92 | | | | 4993.74 |
| 12/01/92 | | | | 4991.01 |
| 12/07/92 | 4 | 204 | 545 | 5012.45 |
| 12/15/92 | | | | 5013.34 |
| 12/29/92 | | | | 5014.31 |
| 01/11/93 | | | | 5015.76 |
| 01/26/93 | | | | 5019.48 |
| 02/03/93 | 4 | 204 | 505 | 5021.03 |
| 02/09/93 | | | | 5019.96 |
| 02/23/93 | | | | 5020.54 |
| 03/09/93 | | | | 5020.83 |
| 03/23/93 | | | | 5021.16 |
| 04/01/93 | 4 | 203 | 538 | 5019.71 |
| 04/12/93 | | | | 5021.02 |
| 04/20/93 | | | | 5022.68 |
| 05/04/93 | | | | 5026.88 |
| 05/18/93 | | | | 5029.68 |
| 06/01/93 | | | | 5006.56 |
| 06/09/93 | 4 | 204 | 547 | 5006.90 |
| 06/15/93 | | | | 5004.79 |
| 06/15/93 | | | | 5001.16 |
| 06/29/93 | | | | 4999.84 |
| 07/13/93 | | | | 4999.84 |
| 07/27/93 | | | | 4998.65 |
| 08/04/93 | 4 | 205 | 566 | 4996.51 |
| 08/10/93 | | | | 4996.44 |
| 08/24/93 | | | | 4996.24 |
| 09/08/93 | | | | 4996.95 |
| 09/21/93 | | | | 4995.42 |
| 10/05/93 | 6 | 207 | 544 | 5008.20 |
| 10/05/93 | | | | 5008.20 |
| 10/19/93 | | | | 5014.33 |
| 11/02/93 | | | | 5016.15 |
| 11/16/93 | | | | 5016.94 |
| 11/30/93 | | | | 5017.76 |
| 12/06/93 | 4 | 207 | 559 | 5016.48 |
| 12/14/93 | | | | 5017.59 |
| 12/28/93 | | | | 5016.47 |

January 14, 1994

POWER RESOURCES

RE: Docket No. 40-885
License No. SUA-1511
Additional Responses to
Notice of Violation

Mr. R.E. Hall, Director
Uranium Recovery Field Office
U.S. Nuclear Regulatory Commission
P.O. Box 25325
Denver, Colorado 80225

Dear Mr. Hall,

Power Resources, Inc. (PRI) is in receipt of your letter dated January 3, 1994 requesting supplemental information to our response to Violation B contained in the Notice of Violation dated November 30, 1993. Specifically, you requested that PRI provide corrective action to return to compliance, a schedule for completion of the actions and the date that full compliance will be achieved.

To return to compliance additional manpower (two to four individuals) is required. PRI estimates that it will take three to four weeks to acquire this additional manpower (including task training).

PRI therefore commits to be in full compliance with the three casing volume requirement by February 15, 1994. Should unforeseen problems arise, your office will be notified by telephone and in writing at the earliest possible date to explain the reasons for the delays and to request an extension of the compliance date, if necessary.

PRI trusts this supplemental information and compliance commitment adequately responds to your request for additional information. Should you or your staff have any questions, please do not hesitate to call me or Paul Hildenbrand, Manager of Environmental and Regulatory Affairs.

Sincerely,

W.F. Kearney
Environmental Director

WFK/ksj
cc: P.R. Hildenbrand
M.R. Lueders
S.P. Morzenti
USNRC/Washington DC
File 4.6.4.1

Highland Uranium Project
Post Office Box 1210
Glenrock, Wyoming 82637

Fax: 307•358•4533
Casper: 307•235•1628
Douglas: 307•358•6541

POWER
RESOURCES

January 31, 1994

RE: Docket No. 40-8857
SUA-1511
Additional Information

Mr. R.E. Hall, Director
Uranium Recovery Field Office
U.S. Nuclear Regulatory Commission
P.O. Box 25325
Denver, Colorado 80225

Dear Mr. Hall,

In correspondence dated December 21, 1993 Power Resources, Inc. (PRI) submitted a License Amendment Request to revise Section 8.3 of Volume 6 (Water Quality Sampling and Analysis Procedures) of the approved License Application to reflect that a minimum of one casing volume of water will be routinely pumped from monitor wells prior to sampling. Additional information, requested by the NRC, was also submitted on January 12, 1994.

During conversations with Ms. Cynthia Corbett of your staff it was determined that Section 8.3 required further revision. Therefore, included with this letter are three copies of revised pages OP-36 and OP-36A for Volume 6. If you have any questions please call me at your earliest convenience.

Sincerely,

W.F. Kearney
Environmental Director

WFK/ksj

attachment

cc: P.R. Hildenbrand
File 4.6.4.1

Highland Uranium Project
Post Office Box 1210
Glenrock, Wyoming 82637

Fax: 307•358•4533
Casper: 307•235•1628
Douglas: 307•358•6541

## INDEX TO CHANGE SHEET

| Volume | Revisions |
|---|---|
| 6 | Replace pages OP-36 and OP-36A |

detailed geologic and hydrologic assessment (see Section 7).

8.2 Monitoring Frequency and Reporting

Monitoring wells installed in the production zone monitoring well ring and those installed in the overlying and underlying aquifers (where applicable) are monitored for the UCL parameters and water levels every two weeks during production operations. In the event that unforseen conditions (such as snowstorms, flooding, equipment malfunction) occur, the regulatory agencies will be contacted if the well(s) cannot be monitored within 19 days of the last sampling event.

Water level and analytical monitoring data for the UCL parameters are reported to the WDEQ-LQD on a quarterly basis.

8.3 Water Quality Sampling and Analysis Procedures

Water quality samples are obtained by pumping the monitoring wells with permanently installed submersible pumps. To assure that water within the well casing has been adequately displaced and formation water is sampled, wells are pumped a certain amount of time, based on the particular well's performance. A minimum of one (1) casing volume of water will be removed from the well prior to sampling. Prior to sampling, the electrical conductivity (corrected to 25°C) and pH are measured at periodic intervals and recorded on field data sheets to demonstrate that water quality conditions have stabilized and ensure that formation water is sampled. All data for each well are periodically reviewed to ensure that both sampling and analytical procedures are adequate.

Water quality samples are analyzed for chloride and bicarbonate, usually within 48 hours of sampling, at the on-site Environmental Laboratory. All analyses are done in accordance with accepted methods.

## 8.4 Excursions

An excursion is considered to have occurred at a well if any two of the three UCL parameters chloride, bicarbonate, and conductivity are exceeded. A verification sample is taken within 24 hours of the determination that a sample has exceeded two of the three UCL values. The verification sample is split and analyzed in duplicate to assess analytical error.

Upon verification of an excursion, the WDEQ-LQD and the NRC will be verbally notified within 24 hours and notified in writing within seven days. Corrective actions, such as changes in pumping or injection rates are implemented as soon as possible. Corrective actions continue until the excursion is mitigated. During an excursion all monitoring wells on excursion status are sampled at least every seven days for the UCL parameters and uranium.

POWER
RESOURCES

February 1, 1994

RE: Permit to Mine No. 603-A2
NSR - Well Casing Volumes

Mr. Bill Hogg, District I Supervisor
Land Quality Division
Wyoming Department of Environmental Quality
Herschler Building
Cheyenne, Wyoming 82002

Dear Mr. Hogg,

In correspondence dated December 21, 1993 Power Resources, Inc. (PRI) submitted an NSR to revise Section 8.3 of volume 6 (Water Quality Sampling and Analysis Procedures). As discussed in the December 21, 1993 submittal, this requested change was required as a result of directives from the NRC. As a result of their review, the NRC has recently requested PRI to make minor additional changes to Section 8.3. Therefore, included with this correspondence please find two copies of revised Section 8.3 and an "Index to Change Sheet."

I believe, at this time, that the NRC will approve the revised language submitted herein, and no further changes will be necessary. A timely approval of this requested NSR would be greatly appreciated. If you have any questions, please call me at your convenience.

Sincerely,

Bill Kearney

W.F. Kearney
Environmental Director

WFK/ksj

enclosure

cc: P.R. Hildenbrand
File 4.3.3.1

Highland Uranium Project
Post Office Box 1210
Glenrock, Wyoming 82637

Fax: 307•358•4533
Casper: 307•235•1628
Douglas: 307•358•6541

# INDEX TO CHANGE SHEET

| Volume | Revisions |
|---|---|
| 6 | Replace pages OP-36 and OP-36A |

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XC: PDR
WFK
MRL
LCM
ORIG FILE 4.6.4.2

PDR 2/11/94

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
URANIUM RECOVERY FIELD OFFICE
BOX 25325
DENVER, COLORADO 80225

FEB 04 1994

FEB - 8 1994

HIGHLAND URANIUM PROJECT
RECEIVED

Docket: 40-8857
License: SUA-1511

Power Resources, Inc.
ATTN: William F. Kearney
P.O. Box 1210
Glenrock, Wyoming 82637

SUBJECT: RESPONSE TO NRC INSPECTION REPORT 40-8857/93-01

Thank you for your letter of January 14, 1994, providing a revised response to Violation B of the Notice of Violation which accompanied our letter dated November 30, 1993. We have reviewed your reply and find it responsive to the concerns raised in the Notice of Violation. We will review the implementation of your corrective actions during a future inspection to determine that full compliance has been achieved and will be maintained.

Sincerely,

Ramon E. Hall
Director

cc:
S. Morzenti, PRI
D. Finley, WY
J. Hough, RCPD, WY
WDEQ

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
URANIUM RECOVERY FIELD OFFICE
BOX 25325
DENVER, COLORADO 80225

ing to va-H
copy H.6.H.1
PRH
WRL WRL 2/17/94

FEB 14 1994

Docket No. 40-8857
SUA-1511, Amendment No. 49

FEB 17 1994

HIGHLAND URANIUM PROJECT
RECEIVED

Power Resources, Inc.
ATTN: William F. Kearney
Environmental Director
P.O. Box 1210
Glenrock, Wyoming 82637

Dear Mr. Kearney:

We have completed our review of your request to amend Source Material License SUA-1511, submitted by letter dated December 21, 1993, and supplemental information submitted by letters dated January 12, and January 31, 1994. In these submittals, you have provided information to justify a change in the monitor well sampling procedures described in Section 8.3 of the license application, and your proposed revision to this section. Based on the data provided in the December 21, 1993, and January 12, 1994, submittals, you have shown that, in general, a minimum monitor well purge of 1 casing volume is adequate to recover formation ground water for water quality analyses. As described in your revision to Section 8.3, your commitment to measure field conductivity until conductivity is stabilized is required as a standard procedure to further ensure collection of formation ground water. This is particularly important with regards to problematic monitor wells which require more than 1 casing volume purge to produce formation ground water.

The proposed revision to Source Material License SUA-1511 is consistent with NRC guidance. Therefore, pursuant to Title 10 of the Code of Federal Regulations, Part 40, and in accordance with your submittal dated January 31, 1994, License Condition No. 9.3 is being revised to read as follows:

9.3 Authorized use is for uranium recovery from pregnant lixiviant in accordance with statements, descriptions, and representations contained in Volume 6 of the licensee's application submitted by cover letter dated March 20, 1991, as revised by page changes submitted on May 26, 1992, July 8, 1992, July 16, 1992, and January 31, 1994. In addition, the licensee shall conduct its activities in accordance with the provisions in the following submittals:

October 20, 1988: Research and Development Pilot
November 16, 1992: Respiratory Protection Program
February 4, 1993: Slurry Toll Processing

Regardless of the above submittals, the following license conditions shall override any conflicting statements contained in the licensee's application and supplements.

[Applicable Amendments: 2, 7, 17, 18, 36, 41, 44, 45, 46, 49]

Source Material License SUA-1511 is being reissued to incorporate the above revision. All other conditions of the license shall remain the same. The effect of this license amendment is to authorize Power Resources, Inc. to reduce the amount of monitor well casing purge to a minimum of 1 casing volume, and to commit to determining field-measured conductivity has stabilized, prior to ground-water sample collection. In accordance with the categorical exclusion contained in paragraph (c)(11) of 10 CFR 51.22, an environmental assessment is not required for this licensing action. Therefore, an environmental report as required by 10 CFR 51.60(b)(2) is not necessary.

This license amendment was discussed between you and Cynthia Miller-Corbett of our staff on January 31, 1994. Please call Ms. Miller-Corbett if you have any questions concerning this licensing action.

Sincerely,

Ramon E. Hall
Director

Enclosure:
Source Material License SUA-1511

cc:
S. Morzenti, PRI
J. Hough, RCPD, WY
D. Finley, DEQ, WY
WDEQ-LQD

# MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

| Licensee | |
|---|---|
| 1. Power Resources Inc.<br>[Applicable Amendments: 18, 19] | 3. License number<br>SUA-1511, Amendment No. 49 |
| 2. P.O. Box 1210<br>Glenrock, Wyoming 82637 | 4. Expiration date<br>July 1, 1993 |
| | 5. Docket or Reference No.<br>40-8857 |

| 6. Byproduct, source, and/or special nuclear material | 7. Chemical and/or physical form | 8. Maximum amount that licensee may possess at any one time under this license |
|---|---|---|
| Uranium | Unspecified | Unlimited |

9.0 Administrative Conditions

9.1 All notices to NRC required under this license shall be addressed to the Director, Uranium Recovery Field Office.

9.2 The authorized place of use shall be the licensee's Highland Uranium Project uranium recovery and processing facilities in Converse County, Wyoming.

9.3 Authorized use is for uranium recovery from pregnant lixiviant in accordance with statements, descriptions, and representations contained in Volume 6 of the licensee's application submitted by cover letter dated March 20, 1991, as revised by page changes submitted on May 26, 1992, July 8, 1992, July 16, 1992, and January 31, 1994. In addition, the licensee shall conduct its activities in accordance with the provisions in the following submittals:

October 20, 1988: Research and Development Pilot
November 16, 1992: Respiratory Protection Program
February 4, 1993: Slurry Toll Processing

Regardless of the above submittals, the following license conditions shall override any conflicting statements contained in the licensee's application and supplements.

[Applicable Amendments: 2, 7, 17, 18, 36, 41, 44, 45, 46, 49]

9.4 Any significant changes to the licensed mining area or the restricted area shown in Plate 1 of the Operations Plan of the approved license application shall require approval by the NRC in the form of a license amendment. [Applicable Amendments: 45]

9.5 The licensee is authorized to dispose of byproduct material from the Highland Uranium Project at a site licensed by the NRC to receive byproduct material. The licensee shall identify the disposal facility to the NRC in writing. The licensee's approved waste disposal agreement must be maintained onsite. In the event the agreement expires or is terminated, the licensee shall notify the NRC, Uranium Recovery Field Office, within 7 working days after the expiration date. A new agreement shall be submitted for NRC approval within 90 days after expiration, or the licensee will be prohibited from further lixiviant injection. [Applicable Amendments: 17, 27, 45]

9.6 Before engaging in any activity not previously assessed by the NRC, the licensee shall administer a cultural resource inventory. All disturbances associated with the proposed development will be completed in compliance with the National Historic Preservation Act (as amended) and its implementing regulations (36 CFR 800), and the Archaeological Resources Protection Act (as amended) and its implementing regulations (43 CFR 7). [Applicable Amendments: 36, 45]

9.7 In order to ensure that no unapproved disturbance of cultural resources occurs, any work resulting in the discovery of previously unknown cultural artifacts shall cease. The artifacts shall be inventoried and evaluated in accordance with 36 CFR Part 800, and no disturbance shall occur until the licensee has received authorization from the NRC to proceed. [Applicable Amendments: 36, 45]

9.8 Release of equipment, materials, or packages from the restricted area shall be in accordance with the attachment to this license entitled, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials," dated September 1984, or suitable alternative procedures approved by the NRC prior to any such release. [Applicable Amendments: 45]

9.9 Standard operating procedures (SOPs) shall be established for all operational activities involving radioactive materials that are handled, processed, stored, or transported by employees. SOPs shall include appropriate radiation safety practices to be followed in accordance with 10 CFR Part 20. The Radiation Safety Program also shall conform to 10 CFR Part 20. Written procedures shall be established for nonoperational activities to include inplant and environmental monitoring, bioassay analysis, and instrument calibration. The licensee shall establish standard operating procedures (SOPs) for the deployment of chemical reducing agents in the processing plant or in well fields for aquifer restoration in accordance with ground-water restoration methods described in the license application. An up-to-date copy of each SOP shall be kept in each area where it is used.

All SOPs shall be reviewed and approved in writing by the Operations Manager and the Safety Director before being implemented and whenever a change in a procedure is proposed. SOPs for activities involving radioactive materials shall also be reviewed and approved by the Corporate Radiation Safety Officer (CRSO) prior to implementation. All existing facility SOPs related to activities involving the handling, processing, storing, or transporting of radioactive materials shall be reviewed by the CRSO on an annual basis.

[Applicable Amendments: 45]

9.10 The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criterion 9, adequate to cover the estimated costs, if accomplished by a third party, for completion of the NRC-approved site closure plan including; above-ground decommissioning and decontamination, the cost of offsite disposal of radioactive solid process or evaporation pond residues, and ground-water restoration, as warranted. Within 3 months of NRC approval of a revised site closure plan, the licensee shall submit for NRC review and approval, a proposed revision to the financial surety arrangement if the estimated costs in the newly approved site closure plan exceed the amount covered in the existing financial surety. A revised surety shall then be in effect within 3 months of written NRC approval.

Annual updates to the surety amount required by 10 CFR 40, Appendix A, Criterion 9, shall be provided to the NRC at least 3 months prior to August 31 of each year. If the NRC has not approved a proposed revision 30 days prior to the expiration date of the existing surety arrangement, the licensee shall extend the existing arrangement, prior to expiration, for 1 year. Along with each proposed revision or annual update of the surety, the licensee shall submit supporting documentation showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation, maintenance of a minimum 15 percent contingency, changes in engineering plans, activities performed, and any other conditions affecting estimated costs for site closure. The licensee shall also provide the NRC with copies of surety-related correspondence submitted to the State, a copy of the State's surety review, and the final approved surety arrangement. The licensee must also ensure that the surety, where authorized to be held by the State, identifies the NRC-related portion of the surety and covers the above-ground decommissioning and decontamination, the cost of offsite disposal, soil and water sample analyses, and ground-water restoration associated with the site. The basis for the cost estimate is the NRC-approved site closure plan or the NRC-approved revisions to the plan. Reclamation/decommissioning plan, cost estimates, and annual updates should follow the outline in the attachment to SUA-1511 entitled, "Recommended Outline for Site Specific Reclamation and Stabilization Cost Estimates."

Power Resources Incorporated's currently approved surety instruments, Irrevocable Letter of Credit No. SFO 870IM issued by National Westminster Bank PLC and confirmed by National Westminster Bank USA Reference

No. S050925, and Irrevocable Letter of Credit No. S-865154 issued by Morgan Guaranty Trust Company, both in favor of the State of Wyoming, shall be continuously maintained in the sum total amount of no less than $6,191,400 for the purpose of complying with 10 CFR 40, Appendix A, Criterion 9, until a replacement is authorized by both the State of Wyoming and the NRC.

[Applicable Amendments: 18, 25, 27, 36, 39, 45, 47]

9.11 The licensee shall assign an RSO to the site on a permanent full-time basis. [Applicable Amendments: 45]

9.12 Any corporate organization changes affecting the assignments or reporting responsibilities of the radiation safety staff as described in Section 9 of the Operations Plan of the approved license application and as shown in the submittal dated November 5, 1992, shall require approval by the NRC in the form of a license amendment. [Applicable Amendments: 18, 27, 29, 36, 37, 40, 45]

9.13 The RSO shall be qualified as specified in Sections 1.2 and 2.4.1 of Regulatory Guide 8.31, "Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Mills will be As Low As Reasonably Achievable," dated May 1983, or equivalent. The RSO shall also receive 40 hours of related health and safety refresher training every 2 years.

Individuals designated as the Radiation Safety Technician (RST) shall report directly to the RSO on matters dealing with radiological safety. In addition, the RSO shall be accessible to the RST at all times. The RST shall have the qualifications specified in Section 2.4.2 of Regulatory Guide 8.31, or equivalent. Any person newly hired as an RST shall have all work reviewed and approved by the Site RSO as part of a comprehensive training program until appropriate course training is completed, and at least for 6 months from the date of appointment.

[Applicable Amendments: 28, 35, 36, 45]

9.14 The licensee shall have a training program for all site employees as described in Section 2.5 of Regulatory Guide 8.31 and as detailed in Section 9 of the Operations Plan of the approved license application. [Applicable Amendments: 45]

9.15 The licensee is exempted from the requirements of Section 20.203(e)(2) of 10 CFR 20 which addresses requirements for areas within the facility in which use or storage of uranium or thorium exceeds a designated level, provided that all entrances to the facility are conspicuously posted in accordance with Section 20.203(e)(2) and with the words, "Any area within this facility may contain radioactive material."

Additionally, the licensee shall maintain the well-field area postings to notify people of the onsite radiological hazards. Well-fields where decommissioning activities or other activities which could potentially result in personnel exposure to radioactive materials and for which no SOP exists shall require restricted area control and RWPs.

[Applicable Amendments: 36, 45]

9.16 The licensee shall implement the Emergency Action Plan for Accidents as detailed in Section 9.13 of the Operations Plan of the approved license application. [Applicable Amendments: 45]

9.17 The licensee shall update the Highland Uranium Project schedule as described in Section 1.4 of the approved license application on an annual basis. [Applicable Amendments: 17, 36, 45]

10. Operations, Controls, Limits, and Restrictions

10.1 The licensee shall conduct aquifer hydrologic tests in accordance with Section 7.3 of the Operations Plan of the approved license application, as revised by the submittal dated October 15, 1992. Any substitution of the Neumann-Witherspoon analytical method shall require prior NRC approval. [Applicable Amendments: 2, 44, 45]

10.2 The licensee shall conduct injection and recovery well installation in conformance with Section 6.3 of the Operations Plan of the approved license application. [Applicable Amendments: 45]

10.3 The licensee shall perform well integrity tests on each injection and production well before the wells are utilized and on wells that have been serviced. Integrity tests shall be performed using techniques approved in the Underground Injection Control program administered by the State of Wyoming and Section 6.6 of the Operations Plan of the approved license application. Any failed well casing that cannot be repaired to pass the integrity test shall be plugged and abandoned. [Applicable Amendments: 45]

10.4 Baseline ground-water quality sampling shall provide representative premining ground-water quality data and restoration criteria as described in Section 7.5 and 7.6 of the Operations Plan of the approved license application. Baseline ground-water quality for all new mining units shall be submitted 2 months prior to lixiviant injection. The data shall, at a minimum, consist of analyses for ground-water constituents as described below and in conjunction with Section 7.5.2, Table 1 (short list), Section 7.5.3, Table 2 (long list), and 7.6.2 (upper control limits) of the approved license application:

- Production pattern (MP) wells: Two long lists and two short lists

| | |
|---|---|
| • Monitor ring(M) and trend (T) wells: | One long list; three UCL suites |
| • Overlying (MO) and underlying (MU) wells: | Two long lists; two UCL suites |

[Applicable Amendments: 4, 6, 9, 12, 16, 17, 22, 30, 36, 43, 45, 48]

10.5 The wells for establishing baseline ground-water quality shall be placed in each mining unit at the following points: (1) all mining unit perimeter monitor wells, (2) at least one upper and lower aquifer monitor well per 3-acre area of production pattern area, and (3) at least one production zone monitor well per 3 acres of production pattern area. A minimum of five of these wells shall be installed per mine unit. [Applicable Amendments: 2, 24, 38, 45]

10.6 For the following mining units, UCLs are approved as delineated in the licensee's referenced submittals:

| Mining Unit | Submittal Date |
|---|---|
| Section 21:20-Sand (A-Well-Field) | November 30, 1987, and November 2, 1988 |
| Section 21:30-Sand (B-Well-Field) | November 2, 1988 |
| Section 14:50-Sand (North) (C-Well-Field) | February 13, 1989 and July 20, 1992 |
| Section 14:50-Sand (South) (C-Well-Field) | April 2, 1990 |
| Section 22/23:40-Sand (D-Well-Field) | March 12, 1991 |
| Section 15/22/23:40-Sand (E-Well-Field) | September 5, 1991 and September 13, 1992 |
| Section 14\23:50-Sand and 40-Sand (C- and D-Well-Field) | February 19, 1992 |
| Section 21:30-Sand (B-Wellfield, Well M-63) | November 5, 1993 |

[Applicable Amendments: 4, 6, 9, 12, 16, 17, 22, 30, 36, 43, 45, 49]

10.7 The licensee shall utilize a carbon dioxide solution as the lixiviant with

an oxygen or hydrogen peroxide oxidant. Any variation from this combination shall require a license amendment. [Applicable Amendments: 12, 36, 45]

10.8 Injection well pressures shall be maintained in accordance with commitments in Section 3.2 of the Operations Plan of the approved license application. [Applicable Amendments: 45]

10.9 Any significant changes which alter a production zone injection\recovery balance or processing plant circuit as illustrated in Figure 2 of the Operations Plan of the approved license application shall be reviewed by the CRSO and shall require prior approval by the NRC in the form of a license amendment. [Applicable Amendments: 36, 45]

10.10 To ensure the total satellite capacity is not exceeded, the annual throughput shall not exceed an average flow rate of 7500 gallons per minute, exclusive of restoration flow. Yellowcake production shall not exceed 1.897 million pounds annually. [Applicable Amendments: 17, 36, 45]

10.11 Radium settling ponds shall have at least 3 feet of freeboard. The purge storage reservoir shall have a 4-foot freeboard requirement. The licensee shall at all times maintain sufficient capacity in the purge storage reservoir to enable transferring the contents of any one radium settling pond to the reservoir. In the event of a radium settling pond leak and subsequent transfer of liquid, the freeboard requirements for the purge storage reservoir may be suspended during the repair period. [Applicable Amendments: 45]

10.12 All liquid effluents (solutions) from process buildings and other process waste streams, with the exception of sanitary wastes, shall be returned to the process circuit, or discharged to the waste solution well in accordance with Section 4.4 of the Operations Plan of the approved license application. All changes to disposal methods described in Section 4 of the Operations Plan shall be approved by license amendment. [Applicable Amendments: 45]

10.13 The licensee shall maintain effluent control systems as specified in Section 9.14 of the license application, with the following additions:

A. Yellowcake drying and packaging operations shall be immediately suspended if any of the emission control equipment for yellowcake drying or packaging areas is not operating within specifications for design performance.

B. The licensee shall, during all periods of yellowcake drying operations, assure that the manufacturer's recommended pressure is maintained for the package and dryer scrubbers. This shall be accomplished by either (1) performing and documenting checks of air pressure approximately every 4 hours during operation, or (2) installing instrumentation which will signal an audible alarm if the air pressure does not meet the manufacturer's recommended levels. If an audible alarm is used, its

operation shall be checked and documented daily.

[Applicable Amendments: 36, 45]

10.14 For work in restricted areas or areas as defined in 10 CFR 20.203 where the potential for exposure to radioactive materials exists and for which no SOP exists, a radiation work permit (RWP) shall be required. Such permits shall describe the following:

A. The scope of the work to be performed.

B. Any precautions (such as supplemental radiological monitoring and sampling) necessary to reduce exposure to radioactive materials to levels as low as reasonably achievable (ALARA).

Nonroutine maintenance activities which expose workers to airborne uranium or its daughters shall require use of continuous-breathing-zone monitors.

The RSO, RST, or their designees shall indicate by signature that each RWP has been reviewed prior to initiating the work. Exposure calculations shall be performed in accordance with Section 9.4 of the license application.

[Applicable Amendments: 45]

10.15 Any visitor, including contractors, shall be required to register at the main office and shall be appropriately instructed in security, safety, and radiation protection prior to entering process areas. Visitors, including contractors, shall be required to register at a designated sign-in station and shall be instructed in security, safety, and radiation proteciton, when appropriate, prior to entering a well field. [Applicable Amendments: 45]

10.16 Those employees working in the CPF, satellites, or wellfields shall be issued either TLDs or film-type dosimeters which shall be exchanged and read quarterly. [Applicable Amendments: 45]

10.17 The licensee shall require that all process and maintenance workers who work in uranium recovery areas or work on equipment contaminated with radioactive materials wear protective clothing including coveralls, rubber gloves, and boots or shoe covers. [Applicable Amendments: 45]

10.18 Within restricted areas, eating shall be allowed only in designated eating areas. [Applicable Amendments: 45]

10.19 Before leaving any restricted area, all process workers shall shower or monitor themselves using a calibrated alpha survey instrument. Surveys meeting or exceeding the radiation action level of 1000 dpm/100 $cm^2$ shall require personnel to decontaminate and resurvey themselves until contamination is less than the action level. The Site RSO or designee shall perform and document spot surveys for alpha contamination at least quarterly

on workers leaving the restricted area. [Applicable Amendments: 45]

10.20 All radiation monitoring, sampling, and detection equipment shall be recalibrated after each repair and as recommended by the manufacturer, or at least annually, whichever is more frequent. In addition, all radiation survey instruments shall be operationally checked with a radiation source each day when in use. [Applicable Amendments: 45]

10.21 The licensee shall maintain an area within the restricted area boundary and at each satellite facility for temporary storage of contaminated materials. All contaminated wastes shall be disposed at a licensed radioactive waste disposal site authorized to accept 11(e)2 byproduct material. [Applicable Amendments: 20, 45]

10.22 Three months prior to construction of Satellite No. 3 and ancillary facilities, the licensee shall submit a request for a revision to operations for NRC approval in the form of a license amendment. The submittal shall include a diagram and description for all major facility process components. The submittal shall also include a facility radiological monitoring program. [Applicable Amendments: 36, 45]

11.0 Monitoring, Recording, and Bookkeeping Requirements

11.1 Flow rates for production wells shall be measured and recorded on a daily basis. Injection flow rates shall be measured and recorded at least every 3 days. [Applicable Amendments: 45]

11.2 Well-field monitoring wells shall be monitored once every 2 weeks in accordance with Section 8.2 of the Operations Plan of the approved license application. In addition, the following monitoring program revisions are approved:

| | |
|---|---|
| May 19, 1988 | A- and B-Well-Field monitor well modification |
| May 2, 1990 | C-Well-Field monitor well identification |
| July 23, 1991 | C- and D-Well-Field monitoring for only water levels in some wells |
| August 19, 1991 | B-Well-Field excursion well monitoring |
| May 13, 1992 | C-, D-, E-Well-field monitor well modification |
| October 8, 1992 | B-Well-Field excursion well monitoring |

[Applicable Amendments: [8, 23, 33, 34, 42, 45]

11.3 Upper control limit (UCL) criteria shall be applied to all monitor wells to determine when action must be taken to control excursions during production and restoration activities. During production activities, each monitor well shall be sampled and analyzed for chloride, bicarbonate, and conductivity (excursion indicators) once every 2 weeks in accordance with Section 8.2 of the Operations Plan of the approved license application. During restoration, monitor wells shall be sampled and analyzed in accordance with

Section 4.5 of the Reclamation Plan of the approved license application.

If two UCLs are exceeded in a well, the licensee shall take a confirmatory water sample within 24 hours and analyze it for the excursion indicators. If the first confirmatory sample does not indicate exceedance of UCLs, a third sample shall be taken within 48 hours of receiving data for the first sample. If neither the second or third sample indicate exceedance, the first sample shall be considered in error.

If the second or third sample indicates an exceedance, the well in question shall be placed on excursion status. Upon confirmation of an excursion, the licensee shall implement corrective action. During excursion status, sampling and testing frequency shall be increased to weekly for all monitor wells on excursion. An excursion is considered concluded when the concentrations of all excursion indicators are below the levels that define an excursion, for 3 consecutive weekly samples.

[Applicable Amendments: 12, 28, 45]

11.4 The licensee shall establish an effluent and environmental monitoring program in accordance with Section 9.7 and 9.8 of the Operations Plan of the approved license application and Attachment 2 of the WDEQ-Water Quality Division Wastewater Land Application Permit No. 92-077 dated April 16, 1992. [Applicable Amendments: 36, 45]

11.5 The results of sampling, analyses, surveys, monitoring, equipment calibration, reports on audits and inspections, all meetings and training courses required by this license, and any subsequent reviews, investigations, and corrective actions, shall be documented. Unless otherwise specified in the NRC regulations, all such documentation shall be maintained for at least 5 years. [Applicable Amendments: 45]

11.6 During production, the RSO, RST, or a trained designee shall perform and document a daily walkthrough inspection of all operating areas to ensure all radiation protection and monitoring requirements are being followed. [Applicable Amendments: 36, 45]

11.7 The licensee shall perform monthly surveys for natural uranium and radon or radon progeny in accordance with procedures in Section 9.3.2 of the Operations Plan of the approved license application. If radon or radon progeny concentrations exceed 8 picocuries per liter (pCi/l) or 0.08 working level (25 percent MPC), respectively, sampling shall be weekly until 4 consecutive weekly samples exhibit less than the noted limits.

The calculation of internal exposure to radon, radon progeny, or natural uranium shall be based on a Time Weighted Exposure (TWE) calculation as shown in Section 9.4 of the Operations Plan of the approved license application. If occupancy times are established as an average for each category of worker, the licensee shall also, by means of a semiannual time

study, determine the basis upon which average occupancy periods are established.

If any worker reaches or exceeds 25 percent of the maximum permissible exposure limits as specified in 10 CFR Part 20, based upon a calculated TWE for the week or the calendar quarter, dependent on the solubility of the material, the RSO shall initiate an investigation of the employee's work record and exposure history to identify the source of the exposure. Necessary corrective measures shall be taken to ensure reducing future exposures to as low as reasonably achievable. Records shall be maintained of these investigations and results furnished to the NRC, Uranium Recovery Field Office, in the semiannual 10 CFR 40.65 report.

[Applicable Amendments: 5, 36, 45]

11.8 The licensee shall correlate workers' TLD badge readings with appropriate restricted area gamma surveys in accordance with Section 9.2 of the Operations Plan of the approved license application. [Applicable Amendments: 45]

11.9 The licensee shall perform alpha contamination surveys of the change rooms, eating areas, and offices in conformance with Section 1.5 and Table 1 of Regulatory Guide 8.30. If bioassay samples are analyzed in house, the licensee shall survey laboratory work surfaces as specified in Section 3.5 of Regulatory Guide 8.31. [Applicable Amendments: 45]

11.10 Occupational exposure and action level calculations shall be performed and documented within 1 week of the end of each regulatory compliance period as specified in 10 CFR 20.103(a)(2) and 10 CFR 20.103(b)(2), respectively. Routine radon progeny and particulate surveys shall be analyzed in a timely manner to allow exposure calculations to be performed in accordance with this condition. Nonroutine samples shall be analyzed and the results reviewed by the RSO within 2 working days after sample collection. [Applicable Amendments: 45]

11.11 The pipeline that transports waste water from the Satellite 2 to Satellite 1 treatment facility shall be monitored as follows:

A. Standpipes shall be utilized at 1000-foot intervals along the pipeline route for leak detection. Standpipes shall be monitored for leak detection and integrity on a monthly basis. All observations and maintenance checks shall be recorded.

B. Logs for pump rates and volumes shall be maintained on a daily frequency.

[Applicable Amendments: 17, 36, 45]

11.12 The licensee shall implement a urinalysis program as outlined in Revision 1

to Regulatory Guide 8.22 and Section 9.5 of the Operations Plan of the approved license application. [Applicable Amendments: 36, 45]

11.13 The licensee shall perform and document a weekly visual inspection of the radium settling ponds and the storage reservoir embankments, fences and liners, as well as measurements of pond and reservoir freeboard. Weekly checks of the radium setting pond leak detection system shall also be documented. Should analyses indicate that a pond is leaking, the pond contents shall be transferred into an alternate impoundment and repairs undertaken. [Applicable Amendments: 5, 45]

12. Reporting Requirements

12.1 At least 2 months prior to lixiviant injection in each mining unit, the mine unit hydrologic test results depicting hydrologic properties controlling ground-water flow, and the baseline water quality data, shall be submitted to the NRC. The submittal shall propose UCLs for chloride, bicarbonate, and conductivity in all monitoring wells for each mining unit in accordance with Section 7 of the Operations Plan of the approved license aplication. Authorization to begin lixiviant injection and associated activities shall be in the form of a license amendment to approve the proposed UCLs. [Applicable Amendments: 9, 12, 24, 30, 45]

12.2 The results of effluent and environmental monitoring shall be reported to the NRC in accordance with 10 CFR 40.65. This report shall also include the following:

A. Results from employee urinalyses if an exposure exceeds action levels described in Section 9 of the Operations Plan of the approved license application.

B. Injection rates, recovery rates, and injection trunkline pressures for each satellite facility.

C. Monthly water quality analyses for the irrigation sprinkler discharge consisting of: pH, conductivity, TDS, Na, Ca, Mg, K, Cl, $SO_4$, $HCO_3$, As, B, Se, $U_3O_8$, and Ra-226.

Monitoring data shall be reported in the format shown in the attachment to this license entitled, "Sample Format for Reporting Monitoring Data."

[Applicable Amendments: 36, 45]

12.3 In the event a lixiviant excursion is confirmed by ground-water monitoring, NRC shall be notified by telephone within 24 hours and by letter within 7 days from the time the excursion is confirmed. In addition, a written report shall be submitted to the NRC within 2 months of excursion confirmation. The report shall describe the excursion event, corrective actions taken, and results obtained. If the excursion is not controlled at

the time the report is submitted, the licensee shall suspend injection of lixiviant within the mining unit including and adjacent to the well on excursion until such time as the excursion is considered controlled or has terminated. If, at the time of reporting, the licensee can demonstrate that the excursion is controlled, the licensee may inject lixiviant at a rate which does not change or hinder the trend in ground-water quality improvement. Control of an excursion shall be indicated by ground-water quality data that reveal the plume of degraded water quality has not increased in extent and that show the ground-water quality of the impacted area is improving. [Applicable Amendments: 12, 45]

12.4 In the event radium settling pond analyses indicate that an impoundment is leaking, the NRC shall be notified by telephone within 48 hours of verification. Standpipe water quality samples shall be analyzed for chloride and conductivity once every 7 days during the leak period and once every 7 days for at least 2 weeks following repairs. Additionally, water samples collected at the pond standpipe shall be analyzed for the full suite of parameters as defined in the WDEQ, Land Quality Division, Guideline 8, Appendix 1, at least once per month during the leak period.

A written report shall be filed with the NRC within 2 months of first notifying the NRC that a leak exists. This report shall include analytical data, describe mitigative action, and discuss the results of that action.

[Applicable Amendments: 5, 45]

12.5 The licensee shall report any notifications of incidents in conformance with 10 CFR 20.403. Additionally, 1 month subsequent to a reportable incident, a written report shall be submitted to the NRC detailing the conditions leading to the incident, corrective actions taken, and results achieved. [Applicable Amendments: 45]

12.6 The licensee shall conduct restoration activities in accordance with the ground-water restoration plan included in Section 4 of the Reclamation Plan of the approved license application. The primary goal of restoration shall be to return the ground-water quality, on a production unit average, to baseline conditions. A secondary goal of returning the ground water to a quality consistent with the use or uses for which the water was suitable prior to in situ leach mining may be approved in accordance with Section 4.1 of the Reclamation Plan of the approved license application. [Applicable Amendments: 32, 45]

12.7 The licensee shall submit a detailed decommissioning plan to the NRC for review and approval at least 12 months prior to final shutdown of mining operations. [Applicable Amendments: 45]

12.8 An audit team comprising licensee management shall perform an annual ALARA audit of the radiation safety program in accordance with Section 2.3.3 of Regulatory Guide 8.31. The RSO shall accompany the audit team. A report of

**MATERIALS LICENSE**
SUPPLEMENTARY SHEET

License number: SUA-1511, Amendment No. 49

Docket or Reference number: 40-8857

FEB 14 1994

this audit shall be submitted to the NRC within 60 days after conducting the audit. The report shall also summarize the results of the daily walkthrough inspections. [Applicable Amendments: 36, 45]

FOR THE NUCLEAR REGULATORY COMMISSION

Date: FEB 14 1994

Ramon E. Hall, Director
Uranium Recovery Field Office
Region IV

THE STATE OF WYOMING

MIKE SULLIVAN
GOVERNOR

MAR - 4 1994

HIGH

# Department of Environmental Quality

Herschler Building • 122 West 25th Street • Cheyenne, WY 82002

| ADMINISTRATION | ABANDONED MINES | AIR QUALITY | INDUSTRIAL SITING | LAND QUALITY | SOLID & HAZARDOUS WASTE | WATER QUALITY |
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| FAX 777-7682 | FAX 634-0799 | FAX 777-5616 | FAX 777-6937 | FAX 634-0799 | FAX 777-5973 | FAX 777-5973 |


February 28, 1994

Mr. Bill Kearney
Power Resources, Inc.
Highland Uranium Project
P.O. Box 1210
Glenrock, Wyoming 82637

**RE: Power Resources, Inc., Permit No. 603, Change No. 17, TFN 2 5/348**

Dear Mr. Kearney:

This letter is to inform you that the Power Resources, Inc. permit revision request to change the number of casing volumes required to be removed from monitoring wells before water quality samples are collected for Permit No. 603 has been reviewed by the LQD and WQD staffs. Receipt of this letter grants Power Resources, Inc. permission to change their operations plan as submitted. This revision was processed as a Non-Significant Revision and recorded as Permit Change No. 17. The change materials will be directly inserted into the approved permit document.

If you have any questions, please feel free to contact Jim Meining in this office.

Sincerely,

Roger Shaffer

Roger Shaffer
Administrator
Land Quality Division

RS:JM$_{wcw}$
xc: Ramona Christensen, LQD Records Specialist
Georgia Cash, LQD
Bob Lucht, WQD
Cynthia Corbett-Miller, NRC
Steve Morzenti, PRI

Paul,

Requested information on SR-HUP 11(e) 2 byproduct waste generation and total $U_3O_8$ production. As you can see byproduct waste shipments were measured in $yd^3$ and not by weight. If you have any questions give me a call.

Jon

| | Pounds $U_3O_8$ Produced | $yd^3$ 11(e)2 byproduct waste generated/disposed | Ratio lbs produced to $yd^3$11(e)2 byproduct generated |
|---|---|---|---|
| 2005 | 1,340,000.00 | 128 | 9,531.25:1 |
| 2004 | 1,220,000.00 | 275 | 4,436.36:1 |