

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD PANEL

Before Administrative Judges:

Thomas S. Moore, Presiding Officer
Dr. Richard F. Cole, Special Assistant
Dr. Robin Brett, Special Assistant

LBP-04-03

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RULEMAKINGS AND
ADJUDICATIONS STAFF

SERVED February 27, 2004

In the Matter of

HYDRO RESOURCES, INC.
(PO Box 15910,
Rio Rancho, New Mexico 87174)

Docket No. 40-8968-ML

ASLBP No. 95-706-01-ML

February 27, 2004

MEMORANDUM AND ORDER
(Ruling on Restoration Action Plan)

In CLI-00-08, 51 NRC 227 (2000), the Commission reversed the decision of the now retired Presiding Officer, Judge Peter Bloch, LBP-99-13, 49 NRC 233 (1999), in this 10 C.F.R. Part 2, Subpart L, informal proceeding, ruling that Hydro Resources, Inc. (HRI) is prohibited from using its Part 40 source and byproduct materials license (SUA-1508) to perform *in situ* leach (ISL) mining at its two Church Rock and two Crownpoint, New Mexico sites until a financial assurance plan is filed and approved by the NRC Staff. The Commission remanded the decision for further proceedings on the adequacy of HRI's financial assurance plan.

In response to HRI filing a financial assurance plan for Church Rock Section 8, which the NRC Staff subsequently approved, Intervenor, Eastern Navajo Diné Against Uranium Mining (ENDAUM) and Southwest Research and Information Center (SRIC), have challenged the adequacy of the plan. For the reasons set forth below, I find, with the concurrence of Judge Brett and Judge Cole, who have been appointed as Special Assistants, that HRI's plan for Section 8 has several deficiencies that must be corrected.

I. BACKGROUND

A. Procedural History of Financial Assurance Matters

Although this proceeding has a lengthy history,¹ it suffices to note with respect to the last outstanding issue concerning the Church Rock Section 8 site that in March 1999, Judge

¹ Over a period of years, HRI applied for, and subsequently received, a materials license to mine uranium ore at four different locations: Sections 8 and 17, contiguously located in Church Rock, New Mexico, and Unit 1 and Crownpoint, located in Crownpoint, New Mexico. See Letter from Joseph J. Holonich to Richard F. Clement (Jan. 5, 1998) (regarding issuance of source material license SUA-1508, for the in situ leach uranium mining project at Crownpoint, New Mexico) [hereinafter SUA-1508]. Soon after Judge Bloch granted the Intervenor's request for a hearing, HRI informed him that "at this time" it intended only to mine Section 8, and had not yet decided to mine the other sites. See HRI's Request for Clarification or Reconsideration of Presiding Officer's Memorandum and Order of May 13, 1998; and Request for Bifurcation of the Proceeding (June 4, 1998) at 2-3. Consequently, HRI requested Judge Bloch to hold the proceedings involving Section 17, Unit 1, and Crownpoint in abeyance and to proceed only with the adjudication of Church Rock Section 8 because any decisions on the other projects were "potentially years away" and therefore "not ripe for consideration." Id. at 3. Judge Bloch agreed that only Section 8 was ripe for hearing and granted HRI's request to limit the proceeding to issues specific to Section 8 and those issues that challenged the overall validity of the license. See Memorandum and Order (Scheduling and Partial Grant of Motion for Bifurcation) (Sept. 22, 1998) at 2-3 (unpublished). Judge Bloch concluded that after the first phase of the proceeding, he would then decide whether to proceed immediately with the rest of the case or wait until HRI had decided to mine the other sites. See Memorandum and Order (Oct. 13, 1998) at 4 (unpublished). The Commission denied review of the bifurcation order. See CLI-98-22, 48 NRC 215 (1998).

On August 20, 1999, Judge Bloch concluded the first phase of the proceeding. See LBP-99-30, 50 NRC 77 (1999). In that decision, he ordered the parties to file a proposed schedule for the remainder of the case. HRI filed a motion to place all issues concerning the remaining sites, Section 17, Unit 1, and Crownpoint, in abeyance until it decided to mine the sites. Judge Bloch agreed it would be wasteful to litigate the issues concerning these sites if HRI had no present intention to mine them, and therefore put the remainder of the proceeding in abeyance. See LBP-99-40, 50 NRC 273 (1999). He directed, however, that HRI give eight months advance notice before undertaking any mining activities on the sites that have not been subject to a hearing. The Intervenor's appealed the abeyance order to the Commission and while it was pending, Judge Bloch retired. The Commission reasoned that because HRI's license was for all four sites, litigating one and holding the hearing on the other three sites in abeyance was illogical and unfair. See CLI-01-4, 53 NRC 31, 38 (2001). The Commission overturned LBP-99-40, and ruled that the hearing should resume within six months to litigate the issues on the remaining sites, or that HRI should accept an amendment limiting its license to the already largely litigated Section 8 site. See id. Since that time, however, at the request of the parties, the proceeding was held in abeyance to allow the parties to attempt to settle the remaining issues for all four sites. See Order (Nov. 19, 2001) (unpublished). Unfortunately, the parties settlement efforts proved fruitless.

Bloch issued a partial initial decision concerning decommissioning and financial assurance acknowledging that HRI had failed to submit a decommissioning financial assurance plan, but holding that such a plan was not necessary until just prior to project commencement.² Intervenor SRIC and ENDAUM appealed that decision to the Commission and, in CLI-00-08,³ the Commission reversed LBP-99-13, holding that HRI was required to submit a financial assurance plan prior to licensing. Rather than revoking HRI's existing license, the Commission instead chose to add an additional license condition prohibiting HRI from using its license until its financial assurance plan was approved by the NRC Staff.⁴

Pursuant to the Commission's decision, HRI submitted its financial assurance plan, the Restoration Action Plan (RAP), for its initial mining site--Church Rock Section 8--on November 21, 2000.⁵ Pursuant to 10 C.F.R. § 2.1233 and the direction of the Commission, ENDAUM and SRIC thereafter submitted a written presentation alleging a number of deficiencies in the RAP.⁶ In January 2001, HRI and the NRC Staff, also as ordered by the Commission, responded to the Intervenor's concerns in separate written filings.⁷

² See LBP-99-13, 49 NRC at 235.

³ See 51 NRC 227 (2000).

⁴ See CLI-00-08, 51 NRC at 238 (2000).

⁵ See Church Rock Section 8/Crownpoint Process Plant Restoration Action Plan (Nov. 17, 2000), revised on Mar. 16, 2001 [hereinafter RAP].

⁶ See Intervenor's Response to Hydro Resource Inc.'s Cost Estimates and Restoration Action Plan of November 21, 2000 (Dec. 21, 2000) [hereinafter Intervenor's Response].

⁷ See NRC Staff's Response to Intervenor's Financial Assurance Brief (Jan. 22, 2001) [hereinafter Staff Response]; Reply of Hydro Resources Inc. to Intervenor's Response to HRI's Cost Estimates for Decommissioning and Restoration Action Plan (Jan. 22, 2001) [hereinafter HRI Response].

In March 2001, HRI submitted an amended RAP for Section 8 that was approved by the NRC Staff on April 16, 2001.⁸ Thereafter, the Intervenor's request to address the amended RAP and subsequent Staff approval was granted.⁹ In May 2001, the Intervenor submitted a second written presentation alleging additional deficiencies in the amended RAP.¹⁰ In their two responses, the Intervenor raises a number of areas of concern about the Section 8 RAP, including, inter alia, concerns about the project scope, the groundwater restoration costs, labor costs, and the proposed method of plugging the wells.¹¹

B. Applicable Regulatory Process

As stated in an earlier decision by Judge Bloch, the principal regulations that govern this materials license application proceeding, 10 C.F.R. § 40.32(c) and (d), require an applicant to demonstrate that its equipment, facilities, and planned procedures will protect the public health and will not endanger life or property in the surrounding community.¹² In addition, because the adequacy of an applicant's proposed financial assurance plan for site decommissioning is at issue, the proceeding is also governed by 10 C.F.R. Part 40 Appendix A, Criterion 9 (Criterion 9). Criterion 9 requires an applicant to establish a surety arrangement that is adequate to ensure that sufficient funds would be available to carry out decommissioning and decontamination of the site. Further, Criterion 9 states that "[i]n establishing specific surety

⁸ Letter from Daniel M. Gillen to Mark S. Pelizza (Apr. 16, 2001) (regarding acceptance of Restoration Action Plan for Hydro Resources in-situ uranium mining project, License SUA-1580 [sic]).

⁹ See Order (Apr. 26, 2001) (unpublished).

¹⁰ See Intervenor's Reply to the Responses of Hydro Resources Inc.'s and NRC Staff's Restoration Action Plan Presentations of January 22, 2001 and Information Generated Subsequent to Those Presentations (May 24, 2001) [hereinafter Intervenor's Second Response].

¹¹ See generally Intervenor's Response; Intervenor's Second Response.

¹² See LBP-99-1, 49 NRC 29, 32 (1999).

arrangements, the licensee's cost estimates must take into account total costs that would be incurred if an independent contractor were hired to perform the decommissioning and reclamation work."¹³

In demonstrating that the cost estimates for the purpose of a surety contained in the applicant's proposed financial assurance plan are adequate for decommissioning and reclamation, the ultimate burden of proof falls upon the applicant.¹⁴ If, however, an intervenor indicates a specific reason that the financial assurance plan should be rejected, the intervenor bears the burden of going forward with that specific reason.¹⁵ Once the intervenor establishes a prima facie case, the applicant then bears the burden of demonstrating the adequacy of the license application as well as rebutting the specific allegations raised by the intervenor.¹⁶

In the present case, the Intervenors initially must establish the legitimacy of their specific concerns. If they do so, the ultimate burden falls upon HRI to demonstrate the adequacy of its financial assurance plan, i.e., that the estimated funds are sufficient to cover the costs for proper decommissioning and decontamination of the proposed site by an independent contractor.

II. RESOLUTION OF INTERVENORS' AREAS OF CONCERN

A. RAP Addresses Only Section 8

The Intervenors initially claim that HRI's RAP addresses only Section 8 and fails to address the decommissioning of the remaining three sections: Section 17, Unit 1, and

¹³ 10 C.F.R. Part 40, App. A, Criterion 9 (2004).

¹⁴ See Consumer Power Co. (Midland Plant, Units 1 and 2), ALAB-123, 6 AEC 331, 345 (1973).

¹⁵ See id.

¹⁶ See id.

Crownpoint. According to the Intervenor, failure to provide a RAP that addresses all four sites is a clear violation of the financial assurance regulations established in Criterion 9.¹⁷ In response, both HRI and the NRC Staff point out that HRI's RAP directly responds to the Commission's order in CLI-00-08, which instructs HRI to submit a RAP that addresses only the decommissioning of Section 8.¹⁸

As HRI and the Staff correctly note, this issue was clearly addressed by the Commission in CLI-00-08. As stated by the Commission, "[t]he plan in the first instance need only address the Section 8 site where HRI plans to begin operations first."¹⁹ Because this issue has been decided by the Commission, all arguments questioning the validity of that decision must be addressed to the Commission and cannot be raised here. Accordingly, the Intervenor's concern in this regard cannot be sustained.²⁰

B. HRI's Estimation of the Volume of Water and Time Needed for Restoration

As their second major area of concern, the Intervenor claims that the RAP is inadequate because HRI has seriously underestimated the volume of water and the length of time necessary to restore the groundwater of Section 8.²¹ According to the Intervenor, HRI has

¹⁷ See Intervenor's Response at 12.

¹⁸ See HRI Response at 2-3; Staff Response at 14.

¹⁹ 51 NRC at 242.

²⁰ Further, this issue has now been rendered moot by HRI's subsequent submissions, and NRC Staff approval, of RAPs for the remaining three sites. See Letter from Melvyn N. Leach to Mark S. Pelizza (Dec. 12, 2001) (approving Restoration Action Plan for Crownpoint); Hydro Resources Inc. Submittal of a Restoration Action Plan for Crownpoint (Nov. 21, 2001); Letter from Melvyn N. Leach to Mark S. Pelizza (Oct. 16, 2001) (approving Restoration Action Plan for Unit One); Hydro Resources Inc. Submittal of a Restoration Action Plan for Crownpoint Unit One (Sept. 17, 2001); Letter from Melvyn N. Leach to Mark S. Pelizza (Aug. 22, 2001) (approving Section 17 Restoration Action Plan); Hydro Resources Inc. Submittal of a Restoration Action Plan for Church Rock Section 17 (July 24, 2001).

²¹ See Intervenor's Response at 13.

made significant “technical errors,” and has included several “unsubstantiated assumptions” in its restoration calculations for Section 8.²² Because the restoration costs account for such a large percentage of the entire decommissioning cost estimate, the Intervenor argues that HRI’s assumptions and errors could significantly undercut its final surety amount.²³

In estimating the quantity of water necessary for site restoration, there are two important elements: pore volume and flare factors. Although pore volume is the term used to describe “the quantity of free water in the pores of a given volume of rock,”²⁴ it is also the term used by the ISL mining industry as a unit of reference to “describe the amount of circulation that is needed to leach an ore body, or describe the times water must . . . flow[] through a quantity of depleted ore to achieve restoration.”²⁵ Flare factors are the multipliers used by the ISL mining industry to account for the inevitable horizontal and vertical spread or “flare” of the leach solution outside the specified boundaries of the calculated ore zone.²⁶ For its part, HRI increased the pore volume (i.e., the quantity of water in the pores of a given quantity of rock) by factors of 1.5 and 1.3 respectively to account for the potential horizontal and vertical flare in

²² See id.

²³ See id. at 13-14.

²⁴ RAP at E-2(a). When used to describe the quantity of water in the pores of a volume of rock, pore volume is calculated by “determining the three dimensional volume of rock (that is also the ore zone) and multiplying this number by the percent pore space.” Id. In this regard, the RAP indicates that for Section 8

HRI used the ‘ore area’ method to determine pore volumes, where the extent of economic ore within a mine unit is outlined and digitized to provide the area. This area is then multiplied by the average ore thickness to provide the three dimensional volume of the ore that is to be leached. This volume is converted to a PV [pore volume] by multiplying the ore volume by the percent porosity and then converting to the units of measurement (i.e. gallons).

Id.

²⁵ Id.

²⁶ Id.

computing its cost estimates.²⁷ Thus, the pore volume, as a reference unit to describe the times water must be circulated through a depleted ore zone to achieve restoration, is determined by multiplying five factors: (1) the horizontal flare, (2) the wellfield area, (3) the vertical flare, (4) the ore thickness, and (5) the porosity.²⁸ All subsequent uses of the term pore volume in this decision refer to the ISL mining definition. Here, as ordered by the NRC Staff, HRI then multiplied the result of its pore volume calculation by a factor of 9 (i.e., 9 circulations or flushes of the pore volume) to determine water treatment and disposal volumes and costs.²⁹ The flare factors were calculated by engineers working for Uranium Resources, Inc. (URI), the parent company for HRI, based upon operating experience at other restoration demonstrations and commercial operations.³⁰ Specifically, the methods utilized to calculate the pore volumes are generally consistent with the methods used for the Mobil Section 9 Pilot Restoration Project conducted near Crownpoint, New Mexico, between 1979 and 1986.³¹

²⁷ See HRI Response, Aff. of Mark S. Pelizza Responding to Affs. of Steven Ingle and Richard Abitz at 5, ¶ 1 [hereinafter Pelizza Aff.].

²⁸ See *id.* Stated otherwise, the formula for determining the pore volume of an ISL mine is defined as: Pore volume = (wellfield area) x (horizontal flare factor) x (average ore thickness) x (vertical flare factor) x (porosity).

²⁹ See RAP at E-2(a). The NRC Staff determined, based on the information submitted by HRI, “that practical production-scale groundwater restoration activities would at most require a 9 pore volume restoration effort” and that “surety should be maintained at this level until the number of pore volumes required to restore the groundwater quality of a production-scale well field has been demonstrated by HRI.” Final Environmental Impact Statement to Construct and Operate the Crownpoint Uranium Solution Mining Project, Crownpoint, New Mexico, NUREG-1508, BLM NM-010-93-02, BIA EIS-92-001, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, in cooperation with U.S. Bureau of Land Management and U.S. Bureau of Indian Affairs, February, 1997 at 4-40 [hereinafter FEIS].

³⁰ See Pelizza Aff. at 5, ¶ 1.

³¹ See *id.* at 6, ¶ 1.

The Intervenor's argue that the record contains no "technical basis" to support the values used by HRI to calculate its pore volume estimates.³² Further, the Intervenor's claim that when compared with "real-world experience," HRI's pore volume estimates are unrealistic and unreasonable, and that more realistic estimates could more than double the cost of groundwater restoration.³³ HRI currently estimates that groundwater restoration would cost approximately 7.1 million dollars over a five-year period.³⁴ According to the Intervenor's, this number cannot be reconciled with the empirical data from other restoration projects.³⁵ The Intervenor's claim that using more realistic cost estimates based on the data provided from other restoration projects, would necessitate that HRI factor in a more accurate reflection of the amount of water used over a longer period of time to restore the site.³⁶ Using these newly calculated numbers, the Intervenor's argue that the overall restoration cost would increase three fold or more from HRI's original estimate, thus totaling between twenty and thirty million dollars.³⁷

The Intervenor's first challenged the NRC's designation, and HRI's subsequent use, of the 9 pore volumes in their January 11, 1999, brief in opposition to HRI's application for a material license.³⁸ The brief primarily addressed HRI's financial assurances for

³² See Intervenor's' Second Response at 5.

³³ See Intervenor's' Response at 16.

³⁴ See RAP, Attach. A-1.

³⁵ See Intervenor's' Response at 16-17.

³⁶ See id.

³⁷ See id. at 17.

³⁸ See Eastern Navajo Dine Against Uranium Mining's and Southwest Research and Information Center's Brief in Opposition to Hydro Resources, Inc.'s Application for a Materials License With Respect To: Financial Assurance for Decommissioning (Jan. 11, 1999) at 15
(continued...)

decommissioning, but also included safety arguments.³⁹ The Intervenor claimed that the 9 pore volume standard established by the Staff in the FEIS as necessary to achieve groundwater restoration, and consequently as the initial baseline for determining the surety amount, was not based upon safety considerations, but rather was based upon what was convenient for the licensee.⁴⁰

In LBP-99-13, Judge Bloch found there was no merit to the Intervenor's argument.⁴¹ He noted that the 9 pore volume estimate was based upon the Staff's professional judgement, and reflected an increase from HRI's initial estimate of 4 pore volumes.⁴² Furthermore, Judge Bloch pointed out that the number of pore volumes could be increased in the future if, at any time, it was determined that proper restoration would require greater pore volumes.⁴³

Judge Bloch's decision was appealed by the Intervenor to the Commission and upheld in CLI-00-8.⁴⁴ In its decision, the Commission noted that the arguments made by the Intervenor's expert were not convincing, and highlighted the fact that the Staff could require HRI to increase the pore volumes and surety amount prior to HRI commencing operations if

³⁸(...continued)
[hereinafter Financial Assurance Brief]. The brief was filed in response to HRI's 1988 materials license application, as amended, and its license. See id. at 1. The Intervenor claimed that HRI failed to submit any of the decommissioning funding information required by 10 C.F.R. § 40.36 and Criterion 9 with its license application-related documents. See id. at 7. Consequently, the Intervenor argued, HRI's license application must be rejected on the grounds that it failed to satisfy the clear requirements of the regulations. See id. at 12.

³⁹ See generally id.

⁴⁰ See id. at 15.

⁴¹ See 49 NRC at 237.

⁴² See id. at 236.

⁴³ See id. at 236-37.

⁴⁴ See 51 NRC at 244.

necessary.⁴⁵ Because this issue has been affirmed by the Commission, any challenges must be directed to the Commission and cannot be raised here.⁴⁶ Thus, the Intervenor may not now

⁴⁵ See id. at 244-45.

⁴⁶ During the informal hearing, counsel for the Intervenor argued that they had been denied the opportunity to litigate fully the number of pore volumes established by the Staff in License Condition 9.5 and that the earlier decision upholding the 9 pore volume standard was decided before all the necessary information was available to address adequately the issue. See Transcript of Nov. 8, 2001 (discussing the RAP) at 258 [hereinafter Tr.]. License Condition 9.5 states, in pertinent part:

As a prerequisite to operating under this license, the licensee shall submit an NRC-approved surety arrangement to cover the estimated costs of decommissioning, reclamation, and groundwater restoration. . . . If at any time it is found that well field restoration requires greater pore-volumes or higher restoration costs, the value of the surety will be adjusted upwards. . . . Annual updates to the surety amount, required by 10 C.F.R. Part 40, Appendix A, Criterion 9, shall be provided to the NRC at least 3 months prior to the anniversary date of the license issuance.

SUA-1508.

At the time Judge Bloch found that a 9 pore volume standard was appropriate there was no RAP to litigate so the Intervenor attacked the 9 pore volume standard by arguing the standard was established for the convenience of the applicant rather than based on technical support. See Financial Assurances Brief at 15-16. In response, HRI asserted that “[t]he 9 pore volume number represents NRC’s best professional judgment based on the [S]taff’s experience that more than 9 pore volumes typically achieves negligible returns.” See Hydro Resources, Inc.’s Response to Intervenor’s Briefs with Respect to Hydro Resources, Inc.’s Technical and Financial Qualifications and Financial Assurance for Decommission (Feb. 11, 1999) at 19. HRI did not, however, offer any technical explanation for 9 pore volumes being adequate to restore the groundwater. Likewise, the Staff brief in response to the Intervenor’s claim that 9 pore volumes was inadequate merely cited License Condition 9.5, which allows for an adjustment to the surety should the 9 pore volumes prove inadequate. See NRC Staff Response to Intervenor’s Presentation on Technical Qualification, Financial, and Decommissioning Issues (Feb. 18, 1999) at 7. The Intervenor moved to file a reply to the terse responses of HRI and the Staff, although the motions did not specifically mention the 9 pore volume estimate. See ENDAUM and SRIC’s Motion for Leave to File a Reply Brief and Rebuttal Testimony on Issues of Financial Assurance for Decommissioning and Financial and Technical Qualifications or, in the Alternative, to Strike Documents Submitted on Those Issues (Feb. 26, 1999). This request, however, was denied. See Memorandum and Order (March 10, 1999) (unpublished).

While neither HRI nor the Staff provided a technical explanation for the 9 pore volumes, Judge Bloch nonetheless found the 9 pore volume estimate sufficient based on deference to the Staff’s “professional judgement” and because License Condition 9.5 allows for an

(continued...)

challenge HRI's use of 9 pore volumes in the RAP.

C. HRI's RAP Accounts for Only One-Third of Surety for Groundwater Restoration and Well-Plugging.

The Intervenor asserts that HRI proposes initially to fund only one-third of the total estimated surety amount for groundwater restoration and well-plugging costs.⁴⁷ In this regard, HRI explains that during the first year of planned operations only a "fraction" of the site will have been developed and, therefore, only a fraction of any groundwater restoration liability will have been incurred.⁴⁸ HRI points out that the same is true for the well-plugging costs because, with only a fraction of the site being developed, only a fraction of the wells will be drilled. As the project continues, HRI states, depleted areas will be restored as new areas are developed and, as a result, the annual cost of restoration will be incremental.⁴⁹ The Intervenor claims that prior

⁴⁶(...continued)

adjustment, should the number prove to be inadequate. See 49 NRC at 236. In their appeal to the Commission, the Intervenor failed to raise specifically the Board's decision to deny the Intervenor's request to file a reply. Thus, to whatever degree the Intervenor may not have had an opportunity to litigate fully this issue, they failed properly to appeal this matter to the Commission. Consequently, it is too late for the Intervenor to argue here that they did not have an opportunity to litigate the 9 pore volume standard. The Commission has ruled that 9 pore volumes are sufficient with respect to Section 8, thus closing the door to any further challenge to the underlying technical issues concerning the 9 pore volumes here. See 51 NRC at 244.

As a practical matter, however, completion of the required commercial demonstration at Section 8, infra pp. 13-14, will moot any challenge to the pore volume estimate because it will provide a pore volume number based on the best possible, site-specific data. Therefore, any potential unfairness to the Intervenor can be cured without now revisiting the Commission's decision in CLI-00-8 affirming the 9 pore volume standard.

⁴⁷ See Intervenor's Response at 13; see also RAP at F.

⁴⁸ See id.

⁴⁹ See id.

experience in site reclamation demonstrates that one-third of the estimated amount will not cover the costs of restoring the site properly if financial difficulties result in the company abandoning the proposed project.⁵⁰

In response, HRI indicated that the one-third amount only applies to the groundwater restoration and well-plugging portions of the surety with the rest of the costs being fully funded.⁵¹ Furthermore, HRI's expert, Mark S. Pelizza, testified that because the license has a five year term, it is anticipated HRI will mine only one-fifth of the Section 8 site in the first year.⁵² Thus, he asserted, the proposed funding of one-third of the total estimated surety amount actually exceeds the anticipated liability that will be incurred.⁵³

The Intervenor's challenge is without merit. HRI's estimate is supported by the surety adjustment contained in License Condition 9.5 that requires HRI annually to recalculate the reclamation amount for the upcoming year and readjust the surety amount accordingly.⁵⁴ Further, License Condition 9.5 requires an NRC-approved updated surety before undertaking any expansion or operational change not included in the previous surety, which ensures that if HRI plans to mine more than one-fifth of the site during the first year, the surety amount will be adjusted accordingly.⁵⁵ In these circumstances, I find that HRI's estimates are reasonable. Thus, in light of License Condition 9.5, HRI's initial use of one-third of the anticipated costs for groundwater restoration and well-plugging satisfies the requirements of Criterion 9.

⁵⁰ See Tr. at 391; Intervenor's Response at 13.

⁵¹ See Tr. at 402-03; RAP at F.

⁵² See Tr. at 400-01.

⁵³ See Tr. at 401.

⁵⁴ See Tr. at 401-02.

⁵⁵ See id.

D. License Condition 10.28

As challenged by the intervenors, and as I noted during the November 8, 2001, informal hearing, License Condition 10.28 allows HRI to mine both Section 8 and the neighboring Section 17 before requiring it to submit to the NRC Staff the results of a full-scale groundwater restoration project. As currently written, License Condition 10.28 states:

Prior to the injection of lixiviant at either the Unit 1 or Crownpoint site, the licensee shall submit NRC-approved results of a groundwater restoration demonstration conducted at the Church Rock site. The demonstration shall be conducted on a large enough scale, acceptable to the NRC, to determine the number of pore volumes that shall be required to restore a production-scale well field.⁵⁶

The language of License Condition 10.28 underlies the intervenors' concern that a full scale restoration project is needed to verify the restoration estimates contained in the RAP.⁵⁷

In addressing the intervenors' concern, Staff expert William H. Ford, explained that License Condition 10.28 was created in response to the NRC Staff's concern that a commercial scale restoration project was necessary at HRI's first wellfield.⁵⁸ Thus, when created, License Condition 10.28 was intended to prevent HRI from mining any additional sites prior to conducting a commercial scale restoration project at its initial mining site. License Condition 10.28, however, was written before the Church Rock site was split into Section 8 and Section 17 and never subsequently amended.⁵⁹

When questioned about the commercial scale groundwater restoration project, HRI's expert stated that the "Section 8 production well field demonstration [would] give us the

⁵⁶ SUA-1508 at 9.

⁵⁷ See Tr. at 302-03.

⁵⁸ See Tr. at 304-06.

⁵⁹ See Tr. at 308.

absolute best information that we have to make all the adjustments” and that it was HRI’s “intention to do the demonstration project right away in the first well field.”⁶⁰ Given this new information, I conclude that the Staff should amend License Condition 10.28 to read as follows:

Prior to the injection of lixiviant at the Church Rock Section 17 site, Unit 1 site, or the Crownpoint site, the licensee shall submit to the NRC for approval the results of a groundwater restoration demonstration conducted at the Church Rock Section 8 site. The demonstration shall be conducted on a scale, acceptable to the NRC, that is large enough to determine the number of pore volumes that shall be required to restore a production-scale wellfield.

E. HRI’s Proposed Number of Wells and Method of Well-Plugging

The Intervenor challenge the accuracy of the number of proposed wells HRI listed in the RAP and the adequacy of the method proposed by HRI for plugging these wells during decommissioning. The Intervenor assert that HRI proposed, in earlier submitted documents, to drill 1700 wells at the original Church Rock site (i.e., before it was split into Section 8 and Section 17), which means that roughly one-half (850) of those wells would be drilled on Section 8.⁶¹ HRI’s RAP for Section 8, however, allocates funding for the decommissioning of only 215 injection and 226 extraction wells, totaling 441 wells.⁶² The Intervenor continue that, given this inconsistency in the number of wells, the estimated cost for well restoration could double if, in fact, the earlier estimate is correct.⁶³

The Intervenor also challenge the well-plugging method proposed by HRI.⁶⁴ According to the Intervenor’s expert, Dr. Richard J. Abitz, the groundwater of the proposed zone will be of poor quality and “under greater hydrostatic pressure relative to overlying groundwater in non-

⁶⁰ Tr. at 311.

⁶¹ See Intervenor’s Response at 25.

⁶² See id.

⁶³ See id. at 26.

⁶⁴ See id.

ore zones.”⁶⁵ For this reason, Dr. Abitz explained, the cement used for well-plugging must be placed in each well in a manner that avoids the formation of air gaps, which may jeopardize the integrity of the plugs in an occurrence called “bridging” and could lead to the migration of contaminated water.⁶⁶ In this instance, Dr. Abitz recommended the tremie line method for plugging the wells, which introduces the cement at the bottom of the well, in place of HRI’s proposed method, which introduces the cement from the top of the well.⁶⁷ Due to the increased drilling required to place cement at the bottom of the well, the Intervenor’s argue that the tremie method would nearly double the cost of well-plugging.⁶⁸

In response to the Intervenor’s assertions, Mr. Pelizza stated that the exact number of wells that will be needed at Section 8 is unknown and will remain unknown until “delineating drilling is conducted and the wellfield is actually designed.”⁶⁹ He indicated that the number of wells used to support the surety estimates in the RAP, however, is consistent with the wellfield illustration proposed by HRI in its Consolidated Operations Plan (COP).⁷⁰ Moreover, he claimed any changes that occur during the course of the project must be accounted for in the

⁶⁵ Intervenor’s Response, Exh. 2, Written Testimony of Dr. Richard J. Abitz in Support of Intervenor’s Response to Hydro Resources Inc.’s Cost Estimates and Restoration Action Plan of November 21, 2000 (Dec. 19, 2000) at 15, ¶ 25.

⁶⁶ See id.

⁶⁷ See id. at 16, ¶ 26.

⁶⁸ See Intervenor’s Response at 27.

⁶⁹ Pelizza Aff. at 17, ¶ 13.

⁷⁰ See id.; see also COP, Rev. 2.0 at Figure 1.4-8 (Aug. 15, 1997). The COP was submitted by HRI in response to the Staff’s request for additional information. In an effort to organize over a decade’s worth of filings, including information regarding several additional proposed mines, HRI created the COP. As HRI states, “[the COP] will contain all the specifications, and representations which have been articulated to NRC in the past under one cover.” See id. at 2.

annual surety update required by License Condition 9.5.⁷¹ Further, in defense of HRI's proposed well-plugging method, Mr. Pelizza argued that HRI's proposed method (i.e., the positive placement method) will adequately seal the wells at Section 8. He asserted that the "positive placement method of plugging wells is simple, and successful plugging is easily verified."⁷² In addition, he stated that the Texas Natural Resources Conservation Commission, to which the EPA has delegated primary authority for groundwater injection program control in Texas, has accepted proposals to use this same method for well-plugging on wells of similar depth in that State.⁷³

In its response, the NRC Staff asserts that the number of wells proposed by HRI is sufficient because the Staff intends to correct any miscalculations in the RAP with the annual surety updates required by License Condition 9.5.⁷⁴ The Staff's response, however, is silent with regard to the Intervenor's claim that the proposed well-plugging methodology is inadequate.⁷⁵ Interestingly, during the application process, the NRC Staff also questioned HRI's proposed method of well-plugging.⁷⁶ Specifically, the Staff instructed HRI to demonstrate approval for its proposed well-plugging methodology from the Office of the New Mexico State Engineer prior to commencing operations.⁷⁷ In response to the Staff's request, HRI submitted the New Mexico State Engineer Rules and Regulations Governing the Drilling of Wells and

⁷¹ See Pelizza Aff. at 18, ¶ 13.

⁷² Id. at 18, ¶ 14.

⁷³ See id.

⁷⁴ See Staff Response at 10.

⁷⁵ See id.

⁷⁶ See Letter from Philip Ting to Mark S. Pelizza (Feb. 16, 2001) (regarding request for additional information).

⁷⁷ See id.

Appropriation and Use of Ground Water, noting that Articles 4-19.1 and 4-20.2 require the New Mexico State Engineer to supervise all construction and well-plugging activity associated with ISL development. HRI cited the same New Mexico regulations at the informal hearing.⁷⁸

Based upon the existing record data, I find HRI has provided the best current estimate of the number of wells that will be utilized at the Section 8 site. As HRI notes, until the project has actually begun and the wellfield is designed, the precise number of wells to be drilled cannot be known. Additionally, any subsequent change in the number of wells will be resolved with the annual surety update required by License Condition 9.5. Accordingly, the Intervenor's assertions present no basis to require an amendment to the RAP.

HRI's proposed well-plugging methodology presents a different matter. The New Mexico regulations cited by HRI in response to the Staff's specific request for information do not confirm that HRI's proposed well-plugging methodology is acceptable to the New Mexico State Engineer's Office. Indeed, inquiry of this matter during the hearing revealed that HRI has yet to receive approval from the State Engineer's Office.⁷⁹ In light of the evidence the Intervenor presented demonstrating the importance of proper well-plugging, HRI's failure to obtain the necessary state approval for its proposed well-plugging methodology is critical to the acceptance of this portion of the RAP concerning appropriate surety costs. Accordingly, HRI's surety estimates for well-plugging that are based upon the use of the positive placement method, cannot be accepted for the initial surety estimate.

This deficiency in HRI's RAP is easily remedied. HRI must revise the RAP for Section 8, using the estimated costs for the tremie line method of well-plugging in calculating the surety amount for its initial mining of this section. It is noted that the tremie line method of well-

⁷⁸ See Tr. 359-61.

⁷⁹ See *id.* at 360-61.

plugging was previously approved by the New Mexico State Engineer's Office in conjunction with the nearby Mobil Test Project--a project that has been cited frequently by both HRI and the NRC Staff in this proceeding.⁸⁰ If the State of New Mexico subsequently approves some other method of well-plugging for Section 8, after its initial surety costs are calculated using the costs of the tremie line method of well-plugging, HRI may seek to adjust appropriately its surety amount under License Condition 9.5.

F. Independent Contractor Costs

As the Intervenor note, adequate surety arrangements under Criterion 9 require HRI to take into account the total costs that would be incurred if an independent contractor had to step in and perform the decommissioning and reclamation work.⁸¹ HRI, however, has based the surety costs estimates in the RAP upon its own estimated operating, labor, and maintenance costs.⁸² Thus, the Intervenor assert that HRI's analysis is suspect because HRI has not shown that an independent contractor will be able to: (1) use HRI-owned equipment like the brine concentrator;⁸³ (2) hire employees to wear "multiple hats" to pare costs;⁸⁴ and (3) afford tests, such as mechanical integrity tests, for proper site restoration.⁸⁵

1. Credit for Existing On-Site Equipment

A surety not based on an independent contractor's cost of reclamation gives rise to the Intervenor's concern that if significant financial difficulties arise, HRI might simply "walk away"

⁸⁰ See id. at 364.

⁸¹ See Intervenor's Second Response at 19.

⁸² See RAP at E-2(a) and (b)..

⁸³ See Intervenor's Response at 23-24.

⁸⁴ See id. at 27-28.

⁸⁵ See id. at 31.

from the site.⁸⁶ In support of this claim, the Intervenor point to the Bison Basin project in Wyoming, where the agreement state permit holder did not file for bankruptcy but simply “walked away” from the site, leaving the State of Wyoming with the job of overseeing the restoration of a degraded site.⁸⁷ The Intervenor argue that a similar situation could arise at any NRC licensed mining facility, such as HRI.⁸⁸ And, by not filing for bankruptcy, a licensee that simply leaves the site removes the protection that HRI’s counsel argues is provided by the bankruptcy court.

During the informal hearing, HRI argued that basing its surety amount on its own cost estimates is reasonable because an independent contractor likewise will save on costs in decommissioning the site by using on-site equipment and “multiple hat” laborers.⁸⁹ According to HRI, because most of the necessary equipment for restoration would already be on-site, an independent contractor could just use that equipment in the restoration of the site.⁹⁰ In the event the HRI’s equipment was tied up in a bankruptcy proceeding, HRI’s counsel argued that an NRC “clean-up claim” would have primacy over competing creditor claims and therefore, it is reasonable for the NRC to assume the equipment would be available to an independent contractor for the purpose of determining the surety.⁹¹ According to HRI counsel, in analogous cases when licensees file for bankruptcy, courts have liquidated all the site assets and placed

⁸⁶ See Tr. at 339.

⁸⁷ See id.

⁸⁸ See id.

⁸⁹ See id. at 343-48.

⁹⁰ See id. at 323 and 327.

⁹¹ See id. at 326-27.

the proceeds in a trust to fund site clean-up.⁹² HRI further argued that, in determining the costs of an independent contractor, it is reasonable to assume its laborers would wear “multiple hats.”⁹³

For its part, the NRC Staff argued that it assumed that an independent contractor would use HRI’s equipment and adopt similar labor practices for site decommissioning.⁹⁴ In calculating whether the surety was adequate, the Staff accepted HRI’s assumption that all major equipment on the site used during operation would remain available for an independent contractor to use.⁹⁵ To support its labor analysis, the Staff pointed to the NRC’s observation of Bison Basin, Wyoming. According to the Staff, at Bison Basin, the independent contractors brought in to clean up the ISL mining operation after the owner abandoned the site were the facility’s former employees, who could wear “multiple hats” and also “knew exactly where the wells were and how it was put together.”⁹⁶

Criterion 9 requires licensees to base their surety estimates upon the total costs of an independent contractor decommissioning the site. Requiring a surety amount adequate to cover the costs of third party reclamation and decommissioning allows the NRC to mitigate the potentially devastating damages that could arise should a licensee become insolvent or abandon a site. Unlike the site-specific physical factors that are evaluated during the application process, the surety estimate, based upon the total costs of an independent contractor, is designed to eliminate the need to evaluate and predict the current and future

⁹² See id.

⁹³ See RAP at E-2 (d); Pelizza Aff. at 18-20, ¶ 15; Tr. at 333-34, 344-50.

⁹⁴ See Tr. at 326, 344.

⁹⁵ See id. at 326.

⁹⁶ Id. at 349.

financial status of each licensee and foresee the future physical condition of the licensee's reclamation equipment,⁹⁷ or to discern and address the intricacies and vagaries of bankruptcy law. Arriving at this estimate without regard to a potential licensee's financial successes or failures is essential to ensure that all sites are adequately protected. Given the specificity of the language of Criterion 9, which unequivocally states that the surety arrangement must account for all the costs of an independent contractor to restore the site, coupled with HRI's inability to demonstrate that it has fully accounted for the costs of an independent contractor in the RAP, I conclude that the portions of the RAP based upon HRI's own estimated decommissioning costs cannot be accepted.

Once again, the deficiency in this portion of the RAP is easily remedied. HRI must submit an amended RAP, for NRC Staff approval, that provides the costs of decommissioning based upon the averaged estimates of two or more independent contractors to decommission and restore the site. In determining such costs, it cannot be assumed that the major equipment necessary for decommissioning is available, and therefore, the revised estimates for the surety should account for the cost of at least leasing the major equipment. Basing the surety on the averaged cost of two or more independent contractors and factoring in the cost of leasing the equipment meets fully the requirements of Criterion 9 by ensuring that appropriate funds for site decommissioning are not subject to the vagaries of the bankruptcy law or a host of other

⁹⁷ See Intervenor's Second Response, at Attach. B-3. The Intervenor's cite a report prepared by the Wyoming Department of Environmental Quality. In this report, the hydrologist notes that some of the equipment used by the State in decommissioning the site was in need of repair. Id. at 13. See also Staff Response, Ford Attach. A, Bison Basin Decommissioning Project, Phase 1 (Aquifer Restoration) (June 1998) at 1. In this report, prepared by the Land Quality Division of the Wyoming Department of Environmental Quality, the State of Wyoming notes that the new equipment needed for site reclamation included three osmosis units, contract pumps, well heads and wellfield lines.

unforeseen circumstances. To conclude otherwise ignores the plain language of Criterion 9 that “the licensee’s cost estimates must take into account the total costs that would be incurred if an independent contractor were hired to perform the decommissioning and reclamation work.”⁹⁸

2. Labor Costs

The Intervenor also raise concerns about HRI’s projected labor costs. According to the Intervenor’s expert, Steven C. Ingle, in order to restore safely an ISL mine, the decommissioning operation must be maintained on a twenty-four hour basis.⁹⁹ The Intervenor contend that although the RAP proposes to operate on a twenty-four hour basis, the budgeted manpower hours in the RAP equate to only one eight-hour shift per day.¹⁰⁰

In addition, Mr. Ingle asserted that the RAP is unclear on the number of actual employees needed to decommission properly the site because HRI proposes to use one employee to staff five or six different positions.¹⁰¹ Mr. Ingle believes HRI’s proposal to allow employees to wear “multiple hats” seriously underestimates the manpower necessary to staff a decommissioning operation on a twenty-four hour basis, which, in turn, seriously underestimates the labor costs for decommissioning the site.¹⁰² Furthermore, Mr. Ingle stated that for the purpose of calculating the appropriate surety, the NRC cannot assume that

⁹⁸ 10 C.F.R. Part 40, App. A, Criterion 9 (2004) (emphasis added).

⁹⁹ See Intervenor’s Response, Exh. 1, Written Testimony of Mr. Steven C. Ingle in Support of Intervenor’s Response to Hydro Resources Inc.’s Cost Estimates and Restoration Action Plan of November 21, 2000 at 20, ¶ 29 [hereinafter Ingle Aff.].

¹⁰⁰ See Intervenor’s Response at 28.

¹⁰¹ See Ingle Aff. at 21, ¶ 29. As an example, Mr. Ingle points out that HRI’s RAP does not include a full time position for a brine concentrator operator, a position that Mr. Ingle believes is essential for any decommissioning operation. See id. at 22, ¶ 30.

¹⁰² See id. at 21, ¶ 29.

individual employees of an independent contractor will take on multiple responsibilities.¹⁰³ Thus, the Intervenor argues that the RAP does not provide a sufficient surety to cover the necessary labor costs to decommission the site.¹⁰⁴

HRI responds to the Intervenor's concerns by asserting HRI will conduct restoration operations 24 hours a day, 7 days a week, as shown by the operating statistics in the RAP Section E.2, Attachment E-2-1 (row 19).¹⁰⁵ HRI proposes using a combination of manpower and unmanned automated machines with automatic shutdowns in the event of a leak or other malfunction to meet performance criteria.¹⁰⁶ HRI further reiterates its position that one employee will fill a number of positions in its operation. According to HRI, the operation will require short periods of technical expertise at various intervals throughout the decommissioning process, which will allow one person to perform multiple tasks.¹⁰⁷ The NRC Staff's response is again silent with respect to the Intervenor's concerns about the RAP's inadequate labor budget.¹⁰⁸

HRI's explanation of site restoration operating continually by using a combination of manpower and machine is satisfactorily supported in the record before me. I find that HRI's

¹⁰³ See id.

¹⁰⁴ See Intervenor's Response at 27-28.

¹⁰⁵ See Pelizza Aff. at 18, ¶ 15. Mr. Pelizza asserted that the increasing availability and dependability of automated technologies will make production operations in an automated mode even more important. See id. at 20, ¶ 15.

¹⁰⁶ See id. at 20, ¶ 15.

¹⁰⁷ See RAP at E-2(d); Pelizza Aff. at 18-20, ¶ 15. In response to Mr. Ingle's example involving the brine concentrator operator, Mr. Pelizza explained that operating the brine concentrator will be one of several jobs performed by the shift operator. Mr. Pelizza also claimed that HRI does not need to maintain twenty-four hour shifts, because its restoration machinery is "largely automated," allowing it to run unmanned at night. See id. at 20, ¶ 16.

¹⁰⁸ See Staff Response.

intention to rely on automated machinery with automatic shutdowns to supplement its workforce, along with a budget for a single eight-hour shift per day is sufficient to operate the decommissioning project around the clock and does not violate the surety requirements established in Criterion 9.

On the other hand, the current record does not support HRI's decision to require employees to wear "multiple hats" to decrease the costs of decommissioning as being in accord with the requirements of Criterion 9. As previously explained, Criterion 9 requires surety estimates to be based upon the total costs of an independent contractor completing the decommissioning project.¹⁰⁹ HRI, however, has put forth no persuasive evidence that supports its assumption that an independent contractor will assign one employee to several tasks in the same manner as HRI intends to manage its employees. Indeed, HRI has presented no cost estimates associated with an independent contractor performing any of the functions of decommissioning. Given that Criterion 9 specifically requires that the surety amount be based upon the total costs of an independent contractor decommissioning the site and the RAP, as it currently stands, contains no independent contractor cost estimates, I find that HRI has failed to meet the requirements of Criterion 9 in this respect. Accordingly, the labor cost estimates of the current RAP cannot be accepted.

The rejection of the existing labor cost estimates does not leave HRI without a remedy. To cure this deficiency, HRI may amend its RAP with the labor costs increased to the level proposed by the Intervenors.¹¹⁰ Alternatively, HRI may submit to the NRC Staff the average of

¹⁰⁹ See 10 C.F.R. Pt. 40, App. A, Criterion 9 (2004).

¹¹⁰ See Intervenors' Response at 27-28.

the cost estimates from at least two independent contractors and amend its RAP accordingly. These new cost estimates will bring the labor costs of the RAP in compliance with the plain language of Criterion 9.

3. Brine Concentration Costs

The Intervenor claim that the HRI's cost estimates in the RAP for the brine concentration system contain several deficiencies. According to the Intervenor, HRI: (a) overstates the efficiency of the brine concentration system and underestimates the brine concentration volume;¹¹¹ (b) describes a restoration flow rate in the RAP that differs significantly from the restoration flow rate described in previous documents;¹¹² and (c) relies on a price estimate for a brine concentrator designed to process the reverse osmosis unit waste water with less total dissolved solids (TDS).¹¹³

a. Efficiency of the Brine Concentrator

The Intervenor challenge HRI's assumption in the RAP that the brine concentration system will operate with a 99.1% rate of efficiency.¹¹⁴ According to the Intervenor, the manufacturer's description of HRI's proposed brine concentration system describes it as having a 97% efficiency rating.¹¹⁵ The Intervenor argue that the approximately 2% difference between HRI's estimate and the manufacturer's estimate will triple the amount of brine that must be processed and lead to additional disposal costs.¹¹⁶

¹¹¹ See id. at 20-21.

¹¹² See id. at 21-23.

¹¹³ See id. at 24-25.

¹¹⁴ See id. at 20.

¹¹⁵ See id.

¹¹⁶ See id. at 21.

In response to the Intervenor's claim, Mr. Pelizza admitted that HRI overstated the efficiency of the brine concentrator in the initial RAP and that, based upon further discussions with the manufacturer, one should expect 2% brine from the brine concentrator.¹¹⁷ According to Mr. Pelizza, using a 2% brine flow figure will result in a brine waste flow of approximately 2.5 gallons per minute (gpm),¹¹⁸ which was reflected in the amended version of the RAP.¹¹⁹

As admitted by Mr. Pelizza, HRI overestimated the efficiency of its brine concentrator in its original RAP and has subsequently updated the RAP to reflect a more accurate estimate. The 2.5 gpm brine flow anticipated by HRI represents an increase of approximately 1.5 gpm over the number included in the original RAP and is only a small fraction of the anticipated nominal restoration flow rate of 580 gpm. Thus, even without the subsequent corrections to the RAP, the 2% difference in the estimated efficiency rate would have little, if any, impact upon the overall operating estimates of the brine concentration system. Given, however, that HRI has already updated the RAP to reflect the corrected operating efficiency, I find that the Intervenor's claim is effectively moot. Accordingly, the Intervenor's challenge to the estimated efficiency of the brine concentration system cannot be sustained.

b. Flow Rate Discrepancies

The Intervenor's challenge the 580 gpm flow rate described in the RAP because it is approximately three times greater than the flow rate of 200 gpm reported in HRI's COP and the NRC Staff's FEIS.¹²⁰ The figures originally provided in the COP and FEIS, the Intervenor's note, have 50 gpm of reject water exiting the reverse osmosis unit and entering the brine

¹¹⁷ See Pelizza Aff. at 15, ¶ 9.

¹¹⁸ See *id.*

¹¹⁹ See RAP at Attach. E-2-1.

¹²⁰ See Intervenor's Response at 21.

concentration system.¹²¹ In the RAP, however, HRI has adjusted these figures so that 116 gpm of reject water exit the reverse osmosis unit and enter the brine concentration system.¹²² The Intervenors express concern over this vast increase in the amount of restoration water entering the system and argue that such a large discrepancy must be explained before “any confidence can be placed in the RAP.”¹²³

In response, Mr. Pelizza stated that HRI increased the restoration equipment capacity to accommodate the 9 pore volume requirement established in License Condition 9.5.¹²⁴ The original flow rate used in the COP and FEIS was modeled on HRI’s original estimate of 4.4 pore volumes.¹²⁵ The Staff subsequently adjusted HRI’s 4.4 pore volumes to 9 pore volumes. In the RAP, therefore, the reverse osmosis unit was sized to operate at a nominal capacity of 580 gpm to accommodate the Staff’s increase in pore volumes.¹²⁶ The larger unit will allow the restoration activities to occur simultaneously at approximately the same rate as the depletion of the wellfields.¹²⁷

I find that HRI’s explanation is adequate to explain the change in the brine concentration system’s capacity. An increase in the restoration equipment capacity is necessary to accommodate the additional gallons of water being processed when the pore volumes were increased from HRI’s proposed 4.4 pore volumes to the NRC required 9 pore volumes.

¹²¹ See id. at 22.

¹²² See id.

¹²³ Id.

¹²⁴ See Pelizza Aff. at 15, ¶ 10.

¹²⁵ See id.

¹²⁶ See id.

¹²⁷ See id. at 15-16, ¶ 10.

Accordingly, the Intervenor's argument raises no grounds to require a modification of the RAP regarding any alleged discrepancies in the system's capacity.

c. Actual Brine Concentration System Costs

The Intervenor next claim that HRI failed to account properly for the actual costs of the brine concentration system.¹²⁸ They highlight a letter HRI received from Resources Conservation Company, the brine concentrator manufacturer, providing a cost quote for the system.¹²⁹ The letter was submitted in conjunction with the RAP, and indicates that the brine concentration system is capable of handling 4800 milligrams per liter (mg/l) TDS.¹³⁰ Based upon the wording of the letter,¹³¹ Mr. Ingle theorized that HRI provided the brine concentration system manufacturer with an estimate of the waste water quality of the reverse osmosis unit that was too low, resulting in a quote for a brine concentrator that does not have adequate capacity to treat such a concentrated and contaminated waste stream.¹³² While acknowledging that the estimate provided by Resources Conservation Company was for a brine concentrator capable of effectively treating waste water with a maximum TDS of 4800 mg/l,¹³³ Mr. Ingle nonetheless believed a manufacturer estimate of 4800 mg/l TDS was too low and that the actual range of TDS will be between 1500 mg/l and 5500 mg/l.¹³⁴ Moreover, if HRI is forced to

¹²⁸ See Intervenor's Response at 24.

¹²⁹ See id.

¹³⁰ RAP at Attach. E-2-4.

¹³¹ See id.

¹³² See Intervenor's Response, Exh. 1, Written Testimony of Mr. Steven C. Ingle in Support of Intervenor's Response to Hydro Resources Inc.'s Cost Estimates and Restoration Action Plan of November 21, 2000 at 18, ¶ 26 (Dec. 19, 2000) [hereinafter Ingle Aff.].

¹³³ See id.

¹³⁴ See id.

purchase a brine concentrator capable of handling a TDS level closer to the 5500 mg/l mark, which Mr. Ingle believed is likely to occur, then the brine concentration costs will significantly increase.¹³⁵

In response, Mr. Pelizza admitted that the Intervenor's claim regarding the estimate of TDS concentrated in the brine is valid.¹³⁶ He pointed out, however, that the object of the restoration project is to reduce the TDS levels and asserted they will quickly be reduced with the initial restoration efforts.¹³⁷ As support, Mr. Pelizza relied upon data from the Mobil Section 9 Pilot Restoration Project, which reduced its initial TDS level from 5500 mg/l to under 2000 mg/l with one pore volume.¹³⁸ Mr. Pelizza noted that the TDS levels at the Mobil Project were much higher than those anticipated at the Church Rock site.¹³⁹ Moreover, based upon the existing data and his experience with other restoration projects, Mr. Pelizza believed HRI can anticipate an initial TDS level of approximately 4000 mg/l, well below the 5500 mg/l postulated by Mr. Ingle.¹⁴⁰

Given Mr. Pelizza's experience in groundwater restoration and the corresponding Mobil data, I find that his estimate of 4000 mg/l has sufficient support. Furthermore, as correctly highlighted by Mr. Pelizza, the goal of the restoration project is to reduce the TDS level. The Intervenor's concern that a brine concentrator that can handle only 4800 mg/l clearly violates the NRC regulations governing ground water restoration costs is severely overstated. The TDS

¹³⁵ See id.

¹³⁶ See Pelizza Aff. at 16, ¶ 12.

¹³⁷ See id. at 16-17.

¹³⁸ See id. at 17.

¹³⁹ See id.

¹⁴⁰ See id.

level will likely not exceed 4800 mg/l, if at all, for more than the first pore volume. Further, License Condition 9.5 will require HRI to provide a surety update if it discovers that the original brine concentrator cannot handle the anticipated TDS levels so that a different, more expensive brine concentrator must be substituted. Accordingly, the Intervenor's challenge to the estimated cost of the brine concentration system cannot be sustained.

G. Lack of Cost Estimates for Fundamental Components

The Intervenor's also note that HRI's RAP fails to provide cost estimates for several "crucial elements."¹⁴¹ These include the costs for: (1) replacing and disposing of the sand filter and cartridge filters; (2) an appropriate reducing agent; (3) plugging ore delineation holes; (4) leakage clean-up from evaporation ponds; (5) back-up equipment; (6) contract administration and inflation; and (7) mechanical integrity testing.¹⁴² The Intervenor's further argue that HRI's cost estimates for post-restoration groundwater stability testing are incorrect and HRI must establish a proper water quality baseline before commencing mining activities.

In his affidavit, Mr. Pelizza responded to each of the Intervenor's claims. First, Mr. Pelizza pointed out that the reverse osmosis disposal costs are included in the RAP.¹⁴³ As noted in Attachment E-8-1 of the RAP, the backwash solids from the reverse osmosis unit will be collected in the evaporation ponds and the costs for decommissioning of these ponds are included in the surety estimate.¹⁴⁴ Regarding the reducing agent costs, Mr. Pelizza stated that HRI does not intend to use a reducing agent and notes that NRC regulations do not specifically

¹⁴¹ See Intervenor's Response at 29.

¹⁴² See *id.* at 30-31.

¹⁴³ See Pelizza Aff. at 21, ¶ 21.

¹⁴⁴ See *id.*

require the use of a reducing agent.¹⁴⁵ In response to the claim that the RAP lacks cost estimates for ore delineation holes, Mr. Pelizza explained that HRI plans to plug and abandon its ore delineation holes before leaching operations begin and, therefore, it did not provide a cost estimate for plugging these activities in the RAP as part of decommissioning activities.¹⁴⁶

In addressing the Intervenor's concern about evaporation pond leakage, Mr. Pelizza stated that HRI did not include the costs for cleanup of evaporation pond leakage because HRI plans to use a redundant liner in the evaporation ponds and does not anticipate any leakage.¹⁴⁷ Mr. Pelizza also explained that because HRI does not intend to purchase backup equipment, it did not include the costs for backup equipment. Instead, if equipment breaks down, HRI plans to shutdown operations and perform the necessary maintenance on the machines.

Regarding contract administration costs and inflation, Mr. Pelizza explained that HRI will adopt the administrative contingency/profit factor required by the NRC and has included a 15% contingency/profit factor in the RAP.¹⁴⁸ He also highlighted License Condition 9.5, which requires an annual surety update that includes inflation adjustments, and stated that by requiring an inflation adjustment, License Condition 9.5 alleviates the need for long term inflation adjustments in the initial surety amount.¹⁴⁹ Further, in response to the Intervenor's claim concerning mechanical integrity testing, Mr. Pelizza explained that the mechanical integrity testing will be conducted as part of routine operations and, therefore, is not included in

¹⁴⁵ See id. at 21, ¶ 23.

¹⁴⁶ See id. at 21, ¶ 24.

¹⁴⁷ See id. at 22, ¶ 25.

¹⁴⁸ See id. at 22, ¶ 27; RAP, Section F.

¹⁴⁹ See id. at 22, ¶ 28.

the decommissioning.¹⁵⁰ Finally, Mr. Pelizza responded to the Intervenor's challenge to HRI's analytical costs by stating that the stability figures for analytical costs are correct.¹⁵¹ He noted that the stability sample budget was based on the sampling frequency described in the COP.¹⁵²

I find that Mr. Pelizza has provided an adequate explanation concerning the missing "crucial" cost estimates highlighted by the Intervenor. Accordingly, the Intervenor's concerns in this regard also cannot be sustained. Furthermore, regarding the Intervenor's concern that baseline water quality parameters need to be established, it should be noted that License Condition 10.21 requires HRI to establish "groundwater restoration goals" on a "parameter-by-parameter" basis prior to injecting lixiviant into a wellfield. This requirement in License Condition 10.21 directly addresses the Intervenor's concern. Thus, this claim also fails.

IV. CONCLUSION

For the reasons set forth above, the RAP for Section 8 contains the following deficiencies that must be corrected: (1) as stated in Section II E, HRI, having calculated its surety using a well-plugging method for Section 8 not yet approved by the State of New Mexico, must recalculate the well-plugging costs using the same tremie line method approved by the State for the Mobil Section 9 Pilot Restoration Project for its initial surety well-plugging cost estimate; (2) as stated in Section II F(1), HRI, having improperly assumed the availability of onsite equipment in calculating its surety estimate, must recalculate its reclamation costs based on the average costs that two or more independent contractors, without using HRI's equipment, would accrue in decommissioning; and (3) as stated in Section II F(2), HRI, having assumed

¹⁵⁰ See id. at 23, ¶ 29.

¹⁵¹ See id. at 23, ¶ 28.

¹⁵² See id.

improperly that the laborers an independent contractor would use would wear “multiple hats,” can either accept the cost estimates proposed by the Intervenor in recalculating its labor costs or, alternatively, use the averaged cost estimates proposed for labor by two or more independent contractors. Further, the Staff shall amend License Condition 10.28 as indicated in Section II D.

Therefore, in accordance with Commission’s decision in CLI-00-08 prohibiting HRI from using its license, SUA-1508, until the filing and approval of an acceptable restoration action plan for Section 8, the license prohibition is reinstated until the foregoing deficiencies in the RAP for Section 8 are corrected in conformity with this decision. Pursuant to 10 C.F.R. § 2.1253, the parties of this proceeding each may file a petition for review of this decision in accordance with the procedures set out in 10 C.F.R. § 2.786.

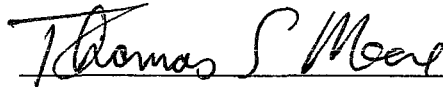
Barring any reversal or remand, this decision effectively brings to a close the informal adjudication of the Intervenor’s areas of concern dealing with the Church Rock Section 8 site. Yet to be adjudicated are the Intervenor’s ten areas of concern (i.e., ten issues and attendant subissues) with respect to each of the three remaining sites, Church Rock 17, Unit 1, and Crownpoint. In this respect, it should be noted that all parties agree that prior to conducting any mining activities, HRI must obtain an aquifer exemption from the appropriate issuing authority by demonstrating that the underlying aquifer to be contaminated by the ISL mining is not potable water.¹⁵³ Because of the substantial resource implications for all parties as well as the Presiding Officer of this remaining informal adjudication, the unique circumstances of this proceeding, and the Commission’s desire for the most efficient adjudication of proceedings, the Commission may wish in this case to re-examine the agency’s current practice of docketing and

¹⁵³ See Tr. at 202-03; 206-08.

then reviewing and adjudicating ISL mining applications prior to applicants or licensees having the required aquifer exemptions.¹⁵⁴

It is so ORDERED.

BY THE PRESIDING OFFICER¹⁵⁵

A handwritten signature in black ink, reading "Thomas S. Moore", written over a horizontal line.

Thomas S. Moore
ADMINISTRATIVE JUDGE

Rockville, Maryland
February 27, 2004

¹⁵⁴ See *id.* at 31. In LBP-98-9, Judge Bloch admitted, as an area of concern, the Intervenor's claim that HRI had failed to obtain proper permits from the Navajo nation. See 47 NRC 261, 281 (1998). In CLI-98-16, the Commission reversed the Judge Bloch's decision. See 48 NRC 119 (1998). It should be noted that, to date, the NRC, HRI, and the Intervenor have spent considerable resources preparing, reviewing, and adjudicating HRI's license application for Section 8. Yet in spite of the expenditure of these resources, it is far from certain that HRI will ever be able to use its license. For example, HRI and the NRC Staff have diametrically opposed views on the continuing validity of the earlier 1989 aquifer exemption for Section 8. Tr. at 202-04. Similarly, it appears that HRI and the Intervenor have differing views on whether HRI will be successful in obtaining an aquifer exemption from the appropriate issuing authority that the Intervenor, Eastern Navajo Diné Against Uranium Mining and SRIC, claim is the Navajo nation. See generally *HRI, Inc. v. EPA*, 198 F.3d 1224 (10th Cir. 2000). In any event, should it be eventually determined by the appropriate federal, state or Indian nation issuing authorities that there is not a valid exemption for Section 8 and future applications are denied, then the NRC, HRI, and the Intervenor will have squandered significant scarce resources on this matter because the NRC license cannot be utilized without a proper aquifer exemption. The same situation exists with respect to the Church Rock Section 17, Unit 1, and Crownpoint sites thereby further wasting substantial scarce resources should the required aquifer exemptions not be issued. Thus, the Commission, as a matter of sound administration and fiscal policy, may wish to reconsider its current position that an applicant or licensee, such as HRI, need not first obtain required aquifer exemptions before the agency will docket an initial application, a license amendment application, or a renewal application for a Part 40 license involving ISL mining. The applicant or licensee response to such an administrative docketing requirement would not be subject to challenge in the informal adjudication but would ensure that scarce agency resources are not needlessly expended in circumstances in which a license realistically may never be able to be used.

¹⁵⁵ Copies of this memorandum and order were sent this date by e-mail or facsimile transmission to counsel for each of the parties.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of

HYDRO RESOURCES, INC.

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Docket No. 40-8968-ML

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing LB MEMORANDUM AND ORDER (RULING ON RESTORATION ACTION PLAN) (LBP-04-03) have been served upon the following persons by U.S. mail, first class, or through NRC internal distribution.

Office of Commission Appellate
Adjudication
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Administrative Judge
Thomas S. Moore, Presiding Officer
Atomic Safety and Licensing Board Panel
Mail Stop - T-3 F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Administrative Judge
Richard F. Cole, Special Assistant
Atomic Safety and Licensing Board Panel
Mail Stop - T-3 F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Administrative Judge
Robin Brett
2314 44TH Street, NW
Washington, DC 20007

Administrative Judge
Michael C. Farrar
Atomic Safety and Licensing Board Panel
Mail Stop - T-3 F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

John T. Hull, Esq.
Mitzi A. Young, Esq.
Office of the General Counsel
Mail Stop - O-15 D21
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Diane Curran, Esq.
Harmon, Curran, Spielberg
& Eisenberg, L.L.P.
1726 M Street, NW, Suite 600
Washington, DC 20036

David C. Lashway, Esq.
Shaw Pittman
2300 N Street, NW
Washington, DC 20037

Docket No. 40-8968-ML
LB MEMORANDUM AND ORDER (RULING ON
RESTORATION ACTION PLAN) (LBP-04-03)

Anthony J. Thompson, Esq.
Law Offices of Anthony J. Thompson, P.C.
1225 19th Street, NW, Suite 200
Washington, DC 20036

Jep Hill, Esq.
Jep Hill and Associates
P.O. Box 30254
Austin, TX 78755

William Paul Robinson
Chris Shuey
Southwest Research and
Information Center
P.O. Box 4524
Albuquerque, NM 87106

Grace Sam
P.O. Box 85
Church Rock, NM 87311

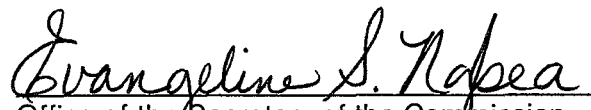
Laura Berglan
DNA-PEOPLE'S LEGAL SERVICES, INC.
P.O. Box 765
Tuba City, AZ 86045

Eric D. Jantz, Esq.
Douglas Meiklejohn, Esq.
New Mexico Environmental Law Center
1405 Luisa Street, Suite 5
Santa Fe, NM 87505

Levon Henry, Attorney General
Steven J. Bloxham, Esq.
Navajo Nation Department of Justice
P.O. Box 2010
Window Rock, AZ 86515

ENDAUM
P.O. Box 150
Crownpoint, NM 87313
Attn: Office Manager

William Zukosky
DNA-PEOPLE'S LEGAL SERVICES, INC.
222 East Birch
Flagstaff, AZ 86001


Office of the Secretary of the Commission

Dated at Rockville, Maryland,
this 27th day of February 2004