

**RAS 8948**

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

**DOCKETED 12/08/04**

COMMISSIONERS:

**SERVED 12/08/04**

Nils J. Diaz, Chairman  
Edward McGaffigan, Jr.  
Jeffrey S. Merrifield

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In the Matter of )  
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HYDRO RESOURCES, INC. )  
(P.O. Box 15910 )  
Rio Rancho, NM 87174 )  
\_\_\_\_\_ )

Docket No. 40-8968-ML

**CLI-04-33**

**MEMORANDUM AND ORDER**

**I. Introduction**

This long-pending adjudicatory proceeding concerns a license for a proposed multiple-site *in situ* leach uranium mining project in New Mexico that was issued to Hydro Resources, Inc. (HRI). Intervenors challenge the validity of the issued license in this proceeding initiated under 10 C.F.R. Part 2, Subpart L.<sup>1</sup> The proceeding was held in abeyance for approximately two years pending unsuccessful settlement negotiations, and resumed last year. Earlier this year, the Presiding Officer issued LBP-04-3,<sup>2</sup> a decision on the adequacy of HRI's financial assurance plan for the Church Rock Section 8 site. The Commission granted two petitions for review of the Presiding Officer's decision, one filed by HRI and the other by intervenors Eastern

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<sup>1</sup> The NRC recently amended its adjudicatory procedural rules in 10 C.F.R. Part 2. See Final Rule, "Changes to Adjudicatory Process," 69 Fed. Reg. 2182 (Jan. 14, 2004). The new procedural rules apply to proceedings noticed on or after February 13, 2004, and therefore have not been applied in this proceeding.

<sup>2</sup> 59 NRC 84 (2004).

Navajo Diné Against Uranium Mining (ENDAUM) and the Southwest Research and Information Center (SRIC).<sup>3</sup> In this decision, we affirm in part and reverse in part LBP-04-3.

## II. Background

HRI applied for and received an NRC materials license to conduct *in situ* leach mining at four sites in New Mexico: Section 8 and Section 17 located in Church Rock, New Mexico, and the Unit 1 and Crownpoint sites, located in Crownpoint, New Mexico. HRI proposed and its license authorizes a phased development of the properties, beginning with operations at Church Rock Section 8. In this proceeding, the issues concerning Section 8 were litigated first. Still pending before the Presiding Officer are issues concerning the other three proposed mining sites: Church Rock Section 17, Unit 1, and Crownpoint.

Before us today is the Presiding Officer's decision on the adequacy of HRI's financial assurance plan. HRI submitted its financial assurance plan for Section 8, termed the Restoration Action Plan (RAP), on November 21, 2000, and provided a revised plan on March 16, 2001. Intervenors ENDAUM and SRIC challenged several aspects of HRI's plan, including estimated groundwater restoration costs, estimated labor and equipment costs, and the proposed method of plugging the wells. In LBP-04-3, the Presiding Officer found that HRI's plan has several deficiencies requiring correction. Among those items, the Presiding Officer found that HRI's labor and equipment cost estimates were not properly supported and must be recalculated.

Both HRI and the intervenors petitioned for review of LBP-04-3, and the Commission granted both petitions. HRI's petition took issue with the Presiding Officer's rulings on the estimated labor and equipment costs. The intervenors' petition argued that the Presiding

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<sup>3</sup> CLI-04-14, 59 NRC 250 (2004).

Officer improperly refused to consider arguments that they had raised challenging HRI's estimate of the volume of water that will need to be processed and circulated to restore the groundwater in Section 8, a technical issue that bears significantly on the ultimate cost of groundwater restoration.

Below we first describe and address the water volume issue (referred to generally as the "pore volumes" issue) raised on review by the intervenors. Next, we address the Presiding Officer's labor and equipment findings challenged by HRI.

### **III. Analysis of Water Volume (Pore Volumes) Issue**

Understanding the water volume issue requires some knowledge of: (1) technical terms; (2) relevant procedural case history; and (3) two license conditions in HRI's license. Below we provide the necessary background before turning to our merits decision.

#### **A. Background on Pore Volumes**

The principal cost of groundwater restoration stems from the volume of water (usually expressed in "pore volumes") that must be pumped from or recirculated through the mine zone. The term pore volume is used to describe the quantity of free water in the pores of a given volume of rock.<sup>4</sup> It represents the water that "fills the void space inside a certain volume of rock," and as such "is an indirect measure of the volume of water that must be pumped or processed to restore the groundwater."<sup>5</sup> Thus, a pore volume is used as a parameter to describe "how many times the contaminated volume of water in the rock must be displaced or

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<sup>4</sup> Restoration Action Plan at E-2a.

<sup>5</sup> NUREG-1508, Final Environmental Impact Statement to Construct and Operate the Crownpoint Uranium Solution Mining Project, Crownpoint, New Mexico ("FEIS")(Feb. 1997) at 4-29.

processed to restore groundwater quality.”<sup>6</sup> Typically, the more pore volumes of water that must be pumped or processed to restore groundwater quality, the more it will cost to achieve groundwater restoration. Restoration costs, consequently, “are closely linked to the amount of water that must be processed to restore the groundwater.”<sup>7</sup>

HRI originally estimated that it would take 4 pore volumes of water to bring the groundwater in each of the proposed sites to restoration standards.<sup>8</sup> The NRC staff, however, found this estimate too low. Based upon the various HRI-submitted documents that it had reviewed, the staff estimated that it would take 9 pore volumes of water to adequately restore the groundwater at the proposed project sites. Accordingly, the staff in the FEIS “calculated groundwater impacts [at each of the proposed sites, including all of Church Rock] assuming the use of 9 pore volumes for groundwater restoration.”<sup>9</sup> HRI then similarly adopted this initial 9 pore volume assumption for groundwater restoration.

In adopting 9 pore volumes as an initial estimate, the staff relied upon data from various groundwater studies. In particular, the staff relied upon the results of a pilot project -- termed the Section 9 Pilot Project -- conducted by the Mobil Oil Company in 1979, approximately 1 mile north of the Unit 1 site.<sup>10</sup> The staff also reviewed the results of some small-scale site-specific tests, which HRI had submitted. However, the staff had “significant concerns,” given that the only site-specific tests that had been done were “small-scale” tests.<sup>11</sup> The staff wanted the

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<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

<sup>8</sup> *See e.g., id.*

<sup>9</sup> *See id.* at 4-40; *see also, e.g., id.* at 4-58 to 4-60, 4-122.

<sup>10</sup> *See, e.g., id.* at 4-37 to 4-40; 4-33 to 3-34.

<sup>11</sup> *See, e.g., id.* at 4-29, 4-62, 4-113.

added confidence that would come from having the results of a large-scale site-specific groundwater restoration demonstration. Thus, in the FEIS, the staff emphasized that more site-specific information would be necessary to actually *demonstrate* that restoration standards could in fact be achieved at the HRI sites on a large or “production-scale” level.<sup>12</sup> The staff further believed it would be prudent to obtain this commercial-scale information before HRI proceeded with operations “beyond Church Rock” (which at the time of the staff’s review included both sections 8 and 17), and particularly before HRI “approach[ed] the town of Crownpoint.”<sup>13</sup> Therefore, to address this lack of large-scale, site-specific information, the staff imposed particular license conditions.

For example, License Condition 10.28 mandates that HRI perform a large-scale groundwater restoration demonstration at the Church Rock site. This license condition bars HRI from proceeding to inject lixiviant beyond the Church Rock site -- *e.g.*, at Unit 1 or Crownpoint -- unless the NRC has approved the results of the Church Rock groundwater demonstration. License Condition 10.28 requires HRI to conduct a demonstration, “on a large enough scale, acceptable to the NRC,” to determine the number of pore volumes required to restore a production-scale well field, which would include a number of production and injection wells.<sup>14</sup> The demonstration results will act either to confirm the 9 pore volume initial estimate for restoration, or conversely, will indicate that this estimate was off the mark and requires revision. Thus, the intent of the groundwater restoration demonstration would be, as HRI’s counsel described, “to demonstrate 9 PVs [pore volumes] on a fairly large scale.”<sup>15</sup>

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<sup>12</sup> See, *e.g.*, *id.* at 4-62, 4-113.

<sup>13</sup> See Hearing Transcript (Nov. 8, 2001) at 304, 307.

<sup>14</sup> See SUA-1508, LC-10.28; FEIS at 4-15.

<sup>15</sup> Transcript at 288. In LBP-04-3, the Presiding Officer directed the NRC staff to revise License Condition 10.28. The terms of the original LC 10.28 prohibits HRI from injecting lixiviant

Similarly, in addressing surety requirements, License Condition 9.5 specifies that surety for the restoration of HRI's initial well fields be based on the 9 pore volumes estimate, and 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 established or demonstrated by the restoration demonstration in LC 10.28.<sup>16</sup> The license condition stresses that 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."<sup>17</sup>

The reasonableness of 9 pore volumes as an estimate was challenged in earlier portions of this proceeding. In earlier litigation on financial assurance and on groundwater impacts, the intervenors alleged that groundwater restoration standards in Section 8 cannot be achieved with 9 pore volumes.<sup>18</sup> The Presiding Officers' initial decisions on these issues went against the intervenors. The decisions nonetheless noted that "the requirement does not end at 9 pore

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at either the Unit 1 or Crownpoint sites prior to submitting NRC-approved results of a groundwater restoration demonstration at "Church Rock" generally. This would have allowed HRI to inject lixiviant at both of the Church Rock sites – Section 8 and Section 17 – prior to conducting the required groundwater restoration demonstration. At the time the license condition was written, however, Church Rock had not been divided into two separate sites (sections 8 and 17). Because the license condition was intended to prevent HRI from proceeding beyond its initial mining site prior to conducting a commercial-scale restoration project, the Presiding Officer in LBP-04-3 directed the NRC staff to amend LC 10.28 to restrict HRI from proceeding beyond Church Rock Section 8 prior to conducting a groundwater restoration demonstration at Section 8. See 59 NRC at 95-96. Under the revised license condition, HRI will not be able to proceed to Section 17, Unit 1, or Crownpoint until a restoration demonstration at Section 8 has been conducted, reviewed, and approved.

<sup>16</sup> See SUA-1508, License Condition 9.5.

<sup>17</sup> *Id.*

<sup>18</sup> See, e.g., ENDAUM and SRIC's Brief (Financial Assurance for Decommissioning)(Jan. 11, 1999) at 15-16, and Att. 1, Sheehan affidavit at 15 n.6; Intervenors' Written Presentation with Respect to Groundwater (Jan. 11, 1999), Staub affidavit at 39-44; Intervenors' Joint Response to HRI's and the NRC Staff's Responses to the Presiding Officer's April 21, 1999 Questions (May 25, 1999) at 12.

volumes,” if in fact it is shown that more than 9 pore volumes are needed,<sup>19</sup> and likewise that the “surety amount may be increased if ‘at any time’ it is determined that wellfield restoration requires greater pore volumes or a higher surety.”<sup>20</sup>

The Commission explicitly affirmed the financial assurance ruling on pore volumes, concurring with the Presiding Officer that the intervenors’ expert had provided “unconvincing” testimony.<sup>21</sup> The Commission declined review of the Presiding Officer’s groundwater decision, stating that the intervenors had not identified any “clearly erroneous” factual finding or important legal error.<sup>22</sup> In short, the reasonableness of the initial 9 pore volume estimate for groundwater restoration at Section 8 was litigated, indeed litigated twice, in separate decisions on groundwater impacts and financial assurance.

#### **B. No New Information Warranting Re-litigation of Pore Volume Estimate**

In our earlier financial assurance decision in this proceeding, the Commission found that our regulations require the submission of a financial plan that includes cost estimates, and that this plan should be submitted with an applicant’s environmental report. We determined that HRI had not yet submitted the “requisite financial assurance plan, with cost estimates.”<sup>23</sup> We therefore prohibited HRI from using its license until it had submitted and the staff approved a “financial- assurance plan and cost estimates.”<sup>24</sup>

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<sup>19</sup> LBP-99-30, 50 NRC 77, 103-06 (1999).

<sup>20</sup> LBP-99-13, 49 NRC 233, 236-37 (1999)(citing License Condition 9.5).

<sup>21</sup> CLI-00-8, 51 NRC 227, 244 (2000).

<sup>22</sup> CLI-00-12, 52 NRC 1, 3 (2000).

<sup>23</sup> 51 NRC at 241.

<sup>24</sup> *Id.* at 242.

Pursuant to our order, HRI submitted its Restoration Action Plan, outlining cost estimates for restoration of Section 8. In calculating the groundwater restoration costs, HRI utilized the earlier-litigated assumption that it will take 9 pore volumes to restore Section 8 groundwater to restoration standards. Thus, HRI's estimated restoration costs are based on the processing and circulation of 9 pore volumes of groundwater. Before the Presiding Officer, the intervenors raised numerous challenges to the restoration plan. One argument was that the plan underestimated restoration costs because it grossly underestimated the water volume that would be necessary to restore Section 8 groundwater.

Thus, in challenging HRI's financial plan, the intervenors challenged -- again -- the *same* 9 pore volume estimate that had been litigated before. The Presiding Officer in LBP-04-3 therefore declined to consider the intervenors' arguments on the pore volume estimate, noting that the issue had been litigated earlier and indeed had been affirmed by the Commission.

Petitioning for review of LBP-04-3, the intervenors argued before us that HRI's Restoration Action Plan contains relevant new information bearing on the pore volumes estimate. Accordingly, in granting review, the Commission emphasized that we would focus "on the limited question of whether there is any significant issue on pore volumes that the intervenors reasonably could not have raised before HRI filed its Plan."<sup>25</sup> The intervenors, we stressed, "are not entitled now to an additional opportunity to raise arguments that either have been or *could have been* raised previously."<sup>26</sup> We directed that the briefs focus on this point.

Nowhere in their appellate briefs, however, do the intervenors point to any *new* information in the Restoration Action Plan which might call into question the adequacy of the 9 pore volume estimate. While the Restoration Action Plan "connect[s] pore volumes to a cost

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<sup>25</sup> CLI-04-14, 59 NRC 250, 253 (2004).

<sup>26</sup> *Id.* (emphasis in original).



estimate,”<sup>27</sup> as the intervenors state, the underlying technical basis for the 9 pore volume assumption used in the plan already has been challenged and litigated. The reappearance of the 9 pore volume estimate within the context of an actual budget, this time with a price tag attached, does not provide a new opportunity to raise arguments that could have been raised before, on an underlying technical issue that was litigated previously. In challenging the financial plan, the intervenors properly could raise questions about HRI’s estimated dollar cost of processing 9 pore volumes of water, but they could not challenge anew the pore volume estimate itself, an issue they had litigated and lost. When we said in our earlier financial decision in CLI-00-8 that HRI needed to submit a financial plan, and that the plan would be subject to a hearing, we never intended to allow re-litigation of matters previously decided. Our decision had already affirmed the 9 pore volume initial estimate for Section 8 groundwater restoration.<sup>28</sup>

On review, the intervenors argue that the Restoration Action Plan represented “the first time in the course of the proceedings where all the specific elements of [HRI’s] groundwater restoration calculations were revealed for the entirety of Section 8.”<sup>29</sup> But this is certainly not the case. The exact same data and formula -- the exact same “elements” -- used in the Restoration Action Plan for calculating the volume of groundwater expected to be processed in each zone of Section 8 were made available in this proceeding at the *latest* by February 1999. At that time, in response to the intervenors’ groundwater presentation, HRI witness Mark Pelizza submitted an affidavit with detailed information identical to that contained in the Restoration

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<sup>27</sup> Brief of Intervenors on Review of LBP-04-3 (Intervenors’ Initial Brief/Pore Volumes)(June 14, 2004) at 19.

<sup>28</sup> CLI-00-8, 51 NRC at 244.

<sup>29</sup> Intervenors’ Initial Brief/Pore Volumes at 18.

Action Plan.<sup>30</sup> Thus, contrary to the intervenors' claim, the Restoration Action Plan is not "the first time ... HRI presented its technical basis for its groundwater restoration cost estimates."<sup>31</sup>

Nor was HRI's information "buried" or in any sense hidden. In the Pelizza affidavit, HRI provided an entire section on pore volumes, prominently titled "Pore Volumes -- An Important ISL Term of Art." This section, together with a referenced chart attachment -- titled "Church Rock Section 8 -- Pore Volume Calculated By Zone" -- describes the factors HRI considered in calculating a pore volume, and lists the specific factors and pore volume calculations for all of Section 8, including each zone's area, thickness, volume, porosity, and the vertical and horizontal flare factors HRI will apply.<sup>32</sup> Any concerns about the methodology that HRI used for pore volume calculation, or about any of the specific pore volume values HRI assigned for all or portions of Section 8, could have and should have been raised then -- more than 5 years ago.

Indeed, in 1999 the intervenors requested and were granted an opportunity to reply to HRI's response to intervenors' groundwater presentation. Yet, in a lengthy reply filing

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<sup>30</sup> Compare Restoration Action Plan, Att. E2(a) with HRI's Response to Intervenors' Brief (Groundwater Issues) (Feb. 19, 1999), Exh. 1, Pelizza Affidavit at 12-14 and Attachment 3.

<sup>31</sup> Intervenors' Initial Brief/Pore Volumes at 20.

<sup>32</sup> A "pore volume" itself is not a fixed or constant unit, such as one gallon or liter. Consequently, to estimate *how many* individual pore volumes of groundwater must be processed at any given site, one must first calculate and establish how many gallons of water are represented in one pore volume for the site or zone at issue. HRI used the "ore volume" method to calculate the water gallons in one pore volume. This method calculates a pore volume at an *in situ* leach mine by multiplying the mine's wellfield area by the ore zone thickness, and the porosity of the rock. The result is then converted to units of measurement, *i.e.*, gallons. Moreover, to account for the portion of the aquifer that may contain lixiviant that may have "flared," or migrated laterally or horizontally and thus migrated outside of the boundaries of the calculated ore pore volume, a lateral and a vertical "flare factor" are used as further multipliers. See *generally* Restoration Action Plan at E2a. Thus, the formula HRI used was: Pore Volume = Area x Thickness x Porosity x Conversion Factor (for gallons) x Horizontal Flare Factor x Vertical Flare Factor.

containing three affidavits from experts, HRI's detailed pore volume calculations were never once challenged, nor even mentioned.<sup>33</sup>

The intervenors further claim that relevant parts of the technical basis for the groundwater restoration were scattered "throughout the record," requiring the "[i]ntervenors to assemble, from different parts of a voluminous record, some of the calculations HRI might have used for cost estimates."<sup>34</sup> But all of the key factors used in the Restoration Action Plan to calculate the pore volumes for Section 8 had already been discussed by HRI, indeed in a single document: the Pelizza affidavit with its attached pore volume calculation chart.<sup>35</sup>

Moreover, there is in the record earlier, very similar, information on Section 8 pore volume calculations that HRI had provided in a response to a staff Request for Additional Information (RAI # 59). This RAI response, which "tabulate[d] the restoration water quantity volumes which are contained in a pore volume" for Section 8, also could have served as a basis for challenging HRI's pore volume methodology, or as a basis for challenging any of the pore volume variables -- porosity, flare factors, etc. -- that HRI had specified for Section 8.<sup>36</sup> As the

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<sup>33</sup> See *generally* ENDAUM and SRIC's Reply in Response to HRI's and the NRC Staff's Response Presentations on Groundwater Protection Issues (April 8, 1999).

<sup>34</sup> Intervenors' Initial Brief/Pore Volumes at 20.

<sup>35</sup> The intervenors stress that the 1999 Pelizza affidavit was filed in the *groundwater* portion of the proceeding, and that neither the Presiding Officer nor the Commission cited this document in their financial assurance decisions. But the fact remains that the intervenors had opportunities to challenge the pore volume calculation in the Pelizza affidavit in both proceedings, both before the Presiding Officer and the Commission. They could have challenged it in their groundwater reply, or cited it in their petitions for review of the groundwater decision or of the financial assurance decision. Finally, it is not surprising that neither the Board or Commission decisions bearing on pore volumes specifically cited the Pelizza affidavit's pore volume calculation chart. After all, the intervenors never once referenced or challenged the affidavit's pore volume calculation data. They did challenge the 9 pore volume estimate, but their challenge focused on the results of the Mobil 9 study and its applicability to Section 8.

<sup>36</sup> See HRI Response to RAI # 59, "Groundwater Consumption," and Attachment 59-1, chart entitled "Groundwater Restoration Volume Calculated By Zone" for Section 8, attached to letter from M. Pelliza, HRI to J. Holonich, NRC (April 1, 1996).

intervenors themselves now point out, the RAI response calculated the “[t]otal restoration volumes in gallons ... for each zone and for the entire Section 8.”<sup>37</sup> Notably, the intervenors obtained this RAI response well over a year prior to filing their groundwater and financial assurance presentations, and thus had ample time to review and consider the information, and to raise any pertinent questions. On review, the intervenors argue that “[n]either the text of the [RAI] response itself, nor the [attached table], provided any basis for the selection of the variables used to estimate water consumption.”<sup>38</sup> But as the NRC staff states, “the Intervenors provide no explanation why they could not have argued these same points in 1999,” when they filed their groundwater presentation.<sup>39</sup>

The intervenors further claim that HRI “changed the values” it used to calculate groundwater restoration cost estimates in different parts of the proceeding. This is true. HRI’s 1996 response to RAI# 59 used a porosity factor of .21, the staff’s 1997 FEIS assigned a porosity factor of .28, and the 1999 Pelizza affidavit used a porosity factor of .25. These differences, however, do not cure the intervenors’ failure to have raised any question or concern about any of these porosity figures, or about any of the other values consistently used by HRI in its pore volume calculations. All these numbers appeared years ago in documents of which the intervenors were well aware. Questions about the porosity values or any other specified values -- be it whether they were adequately explained, supported or inconsistently used -- should have been raised long ago.<sup>40</sup>

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<sup>37</sup> Intervenors’ Initial Brief/Pore Volumes at 8.

<sup>38</sup> *Id.*

<sup>39</sup> NRC Staff’s Response Brief (July 12, 2004) at 18.

<sup>40</sup> Moreover, we do not believe that the 0.03 difference in porosity value between what the FEIS proposes and what HRI’s plan specifies would otherwise warrant our remanding this

It was the intervenors' obligation to review the record carefully for any material information pertaining to the pore volume calculations. If a party were free to raise new arguments once it realized "that maybe there was something after all to a challenge it either originally opted not to make or which simply did not occur to it at the outset,"<sup>41</sup> NRC adjudicatory proceedings would prove endless. Thus, intervenors have an obligation to review the record closely and to raise their arguments promptly. The Commission must insist that intervenors and all parties be disciplined in their scrutiny of the record.

We turn now to arguments inappropriately raised for the first time in the briefs on review. When we granted review of LBP-04-3, it was based on the intervenors' argument that HRI had never "attempt[ed] to justify its pore volume estimate" until it filed its Restoration Action Plan, and therefore that the plan contained new information on the "rationale" for the 9 pore volume estimate.<sup>42</sup> Accordingly, the Commission specified that review would be "focused ... on the limited question" of whether there is any significant issue on pore volumes that the intervenors reasonably "could not have raised previously."<sup>43</sup> As we have noted in this decision, however, the intervenors' briefs do not point to any issue that they could not have raised earlier in this proceeding.

Perhaps realizing that the technical challenges to the pore volume estimate that they seek to raise in fact could have been raised earlier, the intervenors have used their briefs on review to present entirely new claims, not articulated in the petition for review. Indeed, the intervenors now raise as their prime argument the claim that the 9 pore volume estimate "cannot

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issue to the staff for its re-assessment.

<sup>41</sup> *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 & 2; Catawba Nuclear Station, Units 1 & 2), CLI-03-17, 58 NRC 419, 428-29 (2003)(citations omitted).

<sup>42</sup> ENDAUM and SRIC Petition for Review of LBP-04-3(Mar. 18, 2004) at 6, 2.

<sup>43</sup> CLI-04-14, 59 NRC at 253.

serve as the basis” for HRI’s groundwater restoration costs for all of Section 8’s wellfields because the estimate “applies only to HRI’s restoration demonstration project,”<sup>44</sup> which HRI has indicated is planned for the first well field, following uranium recovery operations. As we understand it, the intervenors’ new argument is that they have been denied the opportunity to challenge the basis for HRI’s cost estimates for the entirety of Section 8 because the pore volume estimate only applies to the first well field in Section 8. They argue that they now should be allowed to challenge HRI’s pore volume calculations “for the entirety of Section 8, not just the initial demonstration wellfield.”<sup>45</sup> Because License Conditions 9.5 and 10.28 require HRI to perform a large-scale restoration demonstration in Church Rock sufficient to demonstrate the number of pore volumes necessary to restore a production-scale well field, the intervenors suggest that the initial 9 pore volume estimate for restoration was never intended to apply to all of Section 8, only to the restoration demonstration, and therefore only to an initial well field where HRI plans to conduct the demonstration.

This distinctly new argument surfaced before the Commission only in the briefs on appeal, and as such we need not address it. The Commission “deem[s] waived any arguments not raised before the Board or not clearly articulated in the petition for review.”<sup>46</sup> Parties are expected to identify their “strongest arguments clearly and concisely” in the petition for review.<sup>47</sup> Moreover, License Conditions 9.5 and 10.28, upon which the intervenors’ new argument rests,

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<sup>44</sup> Intervenors’ Initial Brief/Pore Volumes at 23.

<sup>45</sup> ENDAUM and SRIC’s Reply to HRI’s and the NRC Staff’s Responses (Intervenors’ Reply/Pore Volumes)(July 26, 2004) at 4.

<sup>46</sup> *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant), CLI-01-11, 53 NRC 370, 383 (2001).

<sup>47</sup> *Hydro Resources, Inc.*, CLI-01-4, 53 NRC 31, 46 (2001).

were in place as of 1998. The intervenors give no persuasive reason for why this argument was not made earlier in briefs before the Presiding Officer or Commission.

Thus, we do not consider the intervenors' new argument litigable this late in the proceeding. We will, however, take the time here to clarify a few points.

Significantly, what was *litigated* earlier in this proceeding was the reasonableness of the initial 9 pore volume estimate for groundwater restoration of Section 8 *as a whole*. The parties did not litigate whether 9 pore volumes should prove sufficient to restore simply one or two well fields in Section 8, but whether Section 8 generally could be successfully restored assuming a 9 pore volume restoration effort. In short, the intervenors already have challenged the reasonableness of the initial pore volume estimate for the *entirety* of Section 8.<sup>48</sup>

License Condition 9.5's direction that surety for restoration of the "initial well fields" be based on 9 pore volumes and be "maintained at this level" until data from the restoration demonstration is obtained does not change the fact that 9 pore volumes remains the *initial* pore volume estimate for *all* of Section 8, and indeed for the other proposed project sites as well.<sup>49</sup> That the staff set up an approach to allow the 9 pore volume estimate to be confirmed or revised does not eliminate the 9 pore volume initial estimate for HRI's proposed sites, including

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<sup>48</sup> Intervenors are also wrong in claiming that "the calculations used to arrive at the 9 pore volume figure apply only to the groundwater restoration demonstration." See Intervenors' Reply/Pore Volumes at 8. The underlying technical basis for the 9 pore volume estimate is applicable to all of Section 8. The current 9 pore volume estimate for the restoration of the proposed sites is based on the results of the Mobil Section 9 demonstration project. Further, the water volume calculations for each zone of Section 8 were obtained using the same methodology and the same assumed values for porosity, flare factors, etc., with the only difference being the area of each zone. Nor has any argument been raised showing why the pore volume estimate for restoration of the initial well field(s) should be different from that of the other well fields in Section 8. Four well fields are currently planned for Section 8. See HRI's Consolidated Operations Plan at C-18, Figure 1.4-6.

<sup>49</sup> See, FEIS at 4-29, 4-40, 4-58 to 4-60, 4-62, 4-122.

Section 8.<sup>50</sup> If the demonstration results confirm the estimate, no revision to the pore volume estimate will be necessary. Conversely, if HRI is unable to successfully complete the restoration demonstration using up to 9 pore volumes, it “can’t use that same number [as the estimate] for the remaining sites,”<sup>51</sup> as NRC staff counsel explained to the Presiding Officer.

This proceeding, though complex, has not deprived the intervenors of a meaningful opportunity to challenge the financial assurance plan. As we explained above, the intervenors had a fair opportunity to challenge the 9 pore volume estimate for Section 8, which was based upon the available information to date. The fact that data from the restoration demonstration project will be reviewed for confirmation of the 9 pore volume estimate does not obviate the fact that a meaningful hearing has been provided for the adjudication of the 9 pore volume estimate.<sup>52</sup>

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<sup>50</sup> Indeed, the staff only required that the restoration demonstration results be approved before HRI proceeded to the Unit 1 or Crownpoint sites. By necessity, then, the staff’s 9 pore volume estimate for groundwater restoration clearly was intended to apply at least to *all* of Church Rock, Sections 8 and 17.

<sup>51</sup> See Transcript at 284-85.

<sup>52</sup> Moreover, under the prudent licensing approach here, “[i]f 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.” SUA-1508, LC-9.5. The staff indicates that intervenors will have notice of license amendments to adjust the surety amount. See Transcript at 395-96; see *also id.* at 217-18, 244-45, 392, 407-09; SRP, Final Report, NUREG-1569 (June 2003), App. C at C-4. Therefore, the intervenors may have a further opportunity to participate on pore volume considerations. In addition, HRI is required to update and the NRC is to review the surety annually. See 10 C.F.R. Part 40, App. A, Criterion 9; SUA-1508, LC-9.5. All the parties in the proceeding apparently concur that HRI’s annual updates may result in license amendments. See SRP, App. C at C-4; see *also* Transcript at 392, 399, 405, 407-09.

Further, HRI’s license requires it to return groundwater quality parameters to restoration goals and applicable standards. SUA-1508, LC-10.21. If 9 pore volumes proves insufficient to meet the goals, HRI will need to use more than 9 pore volumes, and the surety will be revised accordingly. If HRI objects to using a higher number of pore volumes, an alternative would be to seek a relaxation of the restoration standards specified in the license. The staff and HRI agree that any such request would have to be in the form of a license amendment, where again the intervenors would have the opportunity to intervene. See Transcript at 234, 239-40, 250-51.



In sum, the Commission affirms LBP-04-3's finding that the pore volume estimate was litigated previously. We find no new information in the Restoration Action Plan to warrant revisiting the initial 9 pore volume estimate for groundwater restoration in this proceeding.<sup>53</sup> But we expect the NRC staff to continue to monitor and review safety concerns, including those brought to its attention through an adjudicatory proceeding.

#### **IV. Analysis of Labor and Equipment Issues**

##### **A. Background**

In LBP-04-3, the Presiding Officer found that two cost estimates in HRI's Restoration Action Plan required either modification or re-assessment. First, the Presiding Officer found unacceptable HRI's estimated costs of the equipment necessary for reclamation. Specifically, he found that HRI improperly had assumed that "the major equipment" necessary for decommissioning would remain onsite, available for an independent contractor to use for decommissioning activities in the event HRI were to abandon Section 8 prior to the site's restoration. He therefore ordered that HRI obtain costs estimates from two or more independent contractors, average these, and submit them in an amended financial assurance plan, for NRC staff approval. The Presiding Officer further ordered that in determining the equipment costs, "it

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<sup>53</sup> Actual surety arrangements need not be made until before operations begin. See 10 C.F.R. Part 40, App. A, Criterion 9; CLI-00-8, 51 NRC at 240 n.15. Surety for well fields is typically established as they go into productions. See SRP at 6-24. The amount of surety that must be retained must be sufficient at all times to cover the costs of decommissioning and reclamation of the "areas that are expected to be disturbed before the next license renewal." In the case of HRI, which has no immediate plans to begin operations, and, the NRC staff has said, still needs to obtain "other regulatory agency permits . . . prior to operation," it is impossible to determine what areas are "expected" to be disturbed prior to the next license renewal. See Letter to Mark Pelizza (April 16, 2001), from Daniel Gillen, NRC, Re: Acceptance of Restoration Action Plan. It could well be years before HRI begins operations in Section 8. No operations have taken place since the initial license was issued 6 years ago. Under the circumstances, the staff has taken a reasonable approach to require a surety update prior to the commencement of mining. *Id.*

cannot be assumed that the major equipment necessary for decommissioning is available.”<sup>54</sup>

The revised restoration estimates would have to include at least the cost of leasing the “major” equipment.

Second, the Presiding Officer found HRI’s projected labor costs unacceptable. He concluded that HRI had not supported its assumption that an independent contractor would have laborers capable of performing multiple functions (*i.e.*, wearing “multiple hats”). In the Presiding Officer’s view, HRI had not complied with the language of Criterion 9, found in 10 C.F.R. Part 40, Appendix A, which directs licensees’ cost estimates to “take into account [the] total costs that would be incurred if an independent contractor were hired to perform the decommissioning and reclamation work.” He gave HRI a choice: either amend the estimated labor costs in the Restoration Action Plan to the level proposed by the intervenors, or submit a revised plan based upon the averaged cost estimates from at least two independent contractors.

We granted HRI’s petition for review of these two rulings because both involve questions on the proper interpretation and application of Criterion 9, which requires licensee decommissioning cost estimates to “take into account” the costs that “would be incurred” by an independent contractor hired to restore a site. In addition, the Presiding Officer’s call for new cost estimates to include the costs of all “major equipment” appeared open to different interpretations on what would be considered “major” equipment. It was unclear, for example, whether this was to include the costs of replacing all existing wells, pumps, pipelines, and other stationary equipment.

On review, HRI and the NRC staff argue that the labor and equipment assumptions are reasonable, supported by the record, and that the Presiding Officer has misapplied Criterion 9,

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<sup>54</sup> LBP-04-3, 59 NRC at 101.

or, as the staff describes, “read too much into the generally-worded Criterion 9 provision.”<sup>55</sup> The intervenors argue that HRI and the staff have ignored the plain language of Criterion 9, and that “when the plain language of a statute or regulation is clear, all inquiry as to its meaning must end there.”<sup>56</sup> They stress that HRI’s estimates are based on its own experience and costs, not on the costs of an independent contractor, and therefore do not comply with Criterion 9. We find that the “labor” and “equipment” rulings in LBP-04-3 warrant reversal. Below we address the two issues in turn.

### **B. Labor Estimates**

At the heart of the disputes over the labor cost estimates is how best to interpret the requirements of Criterion 9. We therefore begin with a look at the pertinent language of Criterion 9:

[T]he 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.

The terms of the regulation do not require that a licensee actually obtain cost estimates from an independent contractor, but they do insist that the estimates “take into account” the costs associated with hiring an independent contractor to restore a site. To better understand the intent of Criterion 9, it is helpful to look at the available NRC guidance documents on *in situ* uranium extraction facilities, including the NRC staff’s Standard Review Plan for license applications.

Although the SRP does not constitute a legally binding interpretation, the SRP explains that the purpose of the financial surety is to provide sufficient resources for reclamation of a site

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<sup>55</sup> NRC Staff’s Brief on Labor and Equipment Issues (NRC’s Initial Brief Labor/Equipment)(June 14, 2004).

<sup>56</sup> Intervenors’ Response to HRI and NRC Staff’s Initial Briefs on Review (Intervenors’ Response Labor/Equipment)(July 12, 2004) at 9.

“by a third party, if necessary.”<sup>57</sup> The SRP outlines contractor-related expenses that should be provided for in the surety, including additional estimates to cover contractor profit and overhead:

All costs (unit and total) are to be estimated on the basis of third party, independent contractor costs (include overhead and profit in unit costs or as a percentage of the total).<sup>58</sup>

Thus, contractor overhead costs and profit are to be factored into the financial plan. They may be either calculated and added to the financial plan as separate, additional items, or “loaded” into the estimated hourly wage rates.<sup>59</sup>

Moreover, the SRP also states that applicants are to provide in the financial plan for project management costs. This category would cover such expenses as paying for the overall management of a restoration project, including engineering design and review, mobilization, quality control, and any other management-related costs that may not already be covered by other categories.<sup>60</sup> In addition, the financial plan should set aside a separate amount of funds to cover contingencies, or unforeseen expenses. By way of general guidance, the SRP notes that an acceptable “minimum” contingency figure would be 15% of the estimated restoration costs.<sup>61</sup>

As to how an applicant should base its cost assumptions, the SRP states that, “[t]o the extent possible,” cost assumptions should be based on the applicant’s “experiences with generally accepted industry practices,” “research and development activities at the site,” or “previous operating experience in the case of license renewal.”<sup>62</sup> Unit costs, calculations,

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<sup>57</sup> SRP at 6-24.

<sup>58</sup> See *id.* at Appendix C, C-5.

<sup>59</sup> See *id.* at Appendix C, C-4, C-1.

<sup>60</sup> See *id.* at Appendix C, C-4.

<sup>61</sup> See *id.* at Appendix C at C-4.

<sup>62</sup> See *id.* at 6-24, 6-26.

references, and the assumptions used in making the cost estimates are to be provided, however.<sup>63</sup>

As a general matter, then, it seems neither unreasonable nor inconsistent with the SRP, for an applicant that has had experiences in the uranium recovery field -- including experience in restoration activities -- to draw upon its own prior experience as a basis in estimating restoration cost estimates. In all cases, the basis for any assumptions must be adequately described by the applicant and verified by the staff, but the Commission sees no reason, *per se*, to bar an experienced applicant from relying at least partially upon its own knowledge and experience of restoration expenses. The staff's review includes comparing proposed unit costs with standard industry cost guides, as well as consulting with local and state authorities on local and regional costs.<sup>64</sup>

Now we turn to the specific dispute over the labor positions proposed in HRI's Restoration Action Plan.

For the labor estimates, HRI's plan set forth 11 proposed positions. The salaried positions include Operations Manager, Environmental Manager, Radiation Safety Officer, Chemist, Senior Geologist, and Wellfield Foreman. Non-salaried positions include Electrician, Plant Operator, Truck Driver, Wellfield Operator, and Pump Hoist Operator.<sup>65</sup> The financial plan lists estimated expenses associated with these positions, including salaries, wages, workmen's compensation, medical expenses and payroll taxes.

Particularly at issue, however, are introductory statements in the financial plan's labor section, whereby HRI stated that the technical employees would wear "multiple hats":

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<sup>63</sup> See *id.* at Appendix C, C-1.

<sup>64</sup> *Id.* at Appendix C, C-5; see also Transcript at 350-51..

<sup>65</sup> Restoration Action Plan at E-2(d).

For the purpose of the Financial Assurance Plan, HRI assumed the employment of technical professionals whose expertise is needed on a limited basis during the restoration mode. Anticipated positions are listed in the Restoration Budget rows 1-15. However, to justify their full time status and utilize their time on the job, it is assumed that they are required to provide a multitude of services, i.e., every employee will be wearing multiple hats. As such, individual job descriptions are difficult.<sup>66</sup>

Nonetheless, the plan does go on to provide a summary of the tasks to be handled by each of the 11 budgeted positions. To give an example, we provide below a sample position description, that of the Environmental Manager, which has lengthiest job description:

Environmental Manager. Responsible for the radiation health and safety, environmental compliance and quality assurance program at the Crownpoint Uranium Project. Supervise the Radiation Safety Officers to ensure that all radiation safety, environmental compliance and permitting/licensing programs will be conducted in a responsible manner and in compliance with all applicable regulations and permit/license conditions.<sup>67</sup>

In challenging the Restoration Action Plan, the intervenors argued that HRI had underestimated the personnel requirements for wellfield and plant operators during the restoration period, and that “neither the State nor NRC can or should assume multiple responsibilities for individual employees.”<sup>68</sup>

In addition, the intervenors’ expert claimed that it appeared that HRI was “planning its personnel needs around only one eight-hour shift,” instead of a continuous 24-hour operation, which he stated is important to restore an *in situ* mine safely.<sup>69</sup> The cost estimates, he claimed, reflected only one eight-hour shift per day for the stated positions, not the three eight-hour shifts that would be needed for continuous operation. The expert therefore stated that if, as he

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<sup>66</sup> *Id.*

<sup>67</sup> *Id.*

<sup>68</sup> Intervenors’ Response to HRI’s Cost Estimates and Restoration Action Plan (Intervenors’ First Response)(Dec. 21, 2000), Ingle Affidavit at 20-21.

<sup>69</sup> *Id.* at 20-21.

suspected, HRI's cost estimates were based on only one eight-hour shift, then the labor costs needed to be tripled, to account for three shifts.<sup>70</sup> He also argued that HRI should have listed a full-time position for an operator of the brine concentrator and reverse osmosis units (two types of water restoration equipment), and indeed should have listed 3 such full-time operators, to cover three different 8-hour shifts.<sup>71</sup>

HRI responded by stating that its listed personnel would be adequate to run operations 24 hours per day using only a single 8-hour shift. Its expert described how the restoration machinery is largely automated, and that therefore at night restoration operations could run unmanned with automatic shutdowns in the case of leaks or other equipment malfunction. He stressed that it was possible to assign multiple roles to individuals because of equipment automation. For similar reasons, he specified that HRI would not need a full-time operator for the reverse osmosis/brine concentrator equipment, and detailed the limited oversight necessary to operate and maintain these units.<sup>72</sup>

HRI's expert also said that the labor estimates were based on "actual operating experience in Texas, not conjecture."<sup>73</sup> He provided a chart comparing the labor positions proposed for Church Rock with the positions used for restoration work at two commercial mines in Texas, run by Uranium Resources, Inc., HRI's "sister company." An affidavit by the supervisor of operations at URI's Texas sites stated that "in the real world," the proposed staffing levels for Church Rock "are a fact of life," and that "through the use of technology" greater staffing levels

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<sup>70</sup> *Id.* at 22.

<sup>71</sup> *Id.* at 22.

<sup>72</sup> Reply of HRI to Intervenors Response to RAP (HRI Reply to Intervenors)(Jan. 22, 2001), Pelizza Aff. at 19-20; Van Horn Aff. at 4-6.

<sup>73</sup> *Id.*, Van Horn Aff. at 6.

were not necessary.<sup>74</sup> In statements before the Presiding Officer, the NRC staff expert concurred that it was “reasonable to assume that there will be some overlap of duties” for workers involved in restoration because “[y]ou’re probably not going to have one guy just sitting out there turning a well field valve and then not do something else that doesn’t occupy his time full time.”<sup>75</sup>

In LBP-04-3, the Presiding Officer rejected the intervenors’ argument that HRI needed to triple its proposed personnel to account for three 8-hour shifts instead of a single 8-hour shift. He agreed with HRI that the proposed budget for one 8-hour shift per day would be “sufficient to operate the decommissioning project around the clock” because most of the machinery is largely automated:

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 intention to rely on automated machinery with automatic shutdowns to supplement its workforce, along with a budget for a single 8-hour shift per day is sufficient.<sup>76</sup>

Nonetheless, however, the Presiding Officer found that the record did not support “HRI’s decision to require employees to wear ‘multiple hats,’” and that HRI’s assumption of “multi-hatted” employees violated Criterion 9, which requires surety estimates to be based on the total costs of an independent contractor completing the restoration:

HRI ... 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.... Given that Criterion 9 specifically

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<sup>74</sup> *Id.*

<sup>75</sup> See Transcript at 349-50. Citing the example of a contractor hired to restore a site in Wyoming, the staff’s expert said that “the most likely guys that are going to come in and restore [a] well field are other uranium *in situ* leach miners,” already familiar with restoration operations. See *id.*

<sup>76</sup> LBP-04-3, 59 NRC at 102.



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.<sup>77</sup>

On review, the NRC staff argues that the intervenors provided no evidence that a uranium mining operation, “staffed by personnel qualified to fill the 11 labor categories identified by HRI ... would need additional personnel in order to adequately restore a wellfield.”<sup>78</sup> Rather than addressing the 11 labor positions identified by HRI, the intervenors “instead pursued their claim that HRI improperly failed to budget for restoration operations on a 24-hour basis,” the staff claims.<sup>79</sup>

We agree. First, notwithstanding the Presiding Officer’s contrary decision, in our view there is sufficient evidence in the record to assume that an independent contractor in the *in situ* leach field may have employees carry out related distinct tasks.<sup>80</sup> Moreover, as we stated in our order granting review, what is at issue is the adequacy of the eleven proposed positions for the restoration work. Thus, the key question is whether “the proposed labor categories appear

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<sup>77</sup> *Id.*, 59 NRC at 103. Curiously, the Presiding Officer did not rule explicitly on the issue of whether there needs to be a full-time reverse osmosis/brine concentrator operator. Perhaps this was an issue left to be resolved by the independent contractor estimates that the Presiding Officer called for. But the rationale that the Presiding Officer accepted for the sufficiency of the single 8-hour shift – machine automation – is precisely the same rationale offered by HRI for why no full-time reverse osmosis/brine concentrator operator was needed. HRI provided detailed, unrebutted description of the automated nature of this restoration equipment. In their appellate briefs, none of the parties specifically addresses the operation of the reverse osmosis/brine concentrator equipment.

<sup>78</sup> NRC Staff’s Initial Brief Labor/Equipment Brief at 13.

<sup>79</sup> *Id.* at 14.

<sup>80</sup> See *supra* at 23-25. Criterion 9 does not require us to assume or plan for the least experienced or least efficient independent contractor.

reasonably sufficient in number (e.g., person-hours) and expertise for the proposed restoration tasks and volume of restoration work.”<sup>81</sup>

HRI set forth a summary of the types of tasks that each position would carry out. On their face, the position descriptions do not appear unreasonable or unduly impractical. Other than their conclusory claim that the NRC should not assume that a contractor would have an employee with “multiple responsibilities,” the intervenors never suggested which of these positions would be unworkable as described. And apart from their initial claim -- rejected by the Presiding Officer -- that two additional labor shifts would be necessary, they never suggested what additional number of employees might be required to complete the proposed restoration work.

At best, the intervenor’s expert offered some general anecdotal statements that “multiple hats does not work when you hire a third party from reclamation experience [in] Wyoming,” and the vague hypothetical example that contractors “may actually need to have one person, a geologist, who that’s what they do, and somebody else who maintains the brine concentrator.”<sup>82</sup> (HRI’s plan does not propose having a geologist regularly in charge of maintaining the brine concentrator.) Simply put, in no respect did the intervenors provide a credible challenge to the proposed labor positions in the Restoration Action Plan.<sup>83</sup>

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<sup>81</sup> CLI-04-14, 59 NRC at 251-52.

<sup>82</sup> Transcript at 346.

<sup>83</sup> In a separate argument, the intervenors claimed that HRI’s proposed salaries and wages were underestimated if one compared the dollar figure HRI proposed with the dollar amount spent at a restoration project in Fernald, Ohio, assuming that labor costs are “linearly” related to gallons of water processed. This salary argument, however, did not claim that the Fernald project required more labor positions for similar restoration work than that proposed for Section 8. Indeed, the argument appears to be based on an attempted rough comparison of labor positions “comparable” to those HRI proposed for Section 8. Nor is it even clear from the information provided how many workers there were at the Fernald project; only labor categories are listed, not how many employees may have been hired for each position. See Intervenors’ First Response, Abitz Affidavit at 13-14.

Moreover, the intervenors' general "multiple hats" argument was, as the NRC staff states, connected to their more focused claim that HRI should have provided for three 8-hour labor shifts instead of a single shift.<sup>84</sup> HRI provided the identical rationale for the Restoration Action Plan's proposed single 8-hour labor shift and for its assumption that employees would be capable of carrying out multiple tasks. Both assumptions rely upon machine automation. But while the Presiding Officer found reasonable HRI's argument that a "combination of manpower and machine" would permit operations 24 hours per day with only a single 8-hour labor shift and without constant manning and supervision of the restoration equipment, he did not explain why machine automation would not, in similar fashion, permit employees to handle more than one task.<sup>85</sup>

At bottom, the NRC seeks to verify whether there is a reasonable amount of labor proposed to complete the various aspects of a restoration project. The staff thus reviews the kinds and numbers of experts and laborers proposed to perform the tasks and processes that will be necessary to complete the restoration. This includes examining the person hours of labor proposed and the unit cost estimates proposed. Beyond that, the staff does not speculate on how a contractor may allocate particular duties among a proposed labor force, so long as individuals tasked with a job are qualified to perform it, and the proposed labor force appears sufficient in number and expertise to complete the job. It may well be that one contractor may hire two or three individuals on a limited, part-time basis to perform single tasks, and another

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<sup>84</sup> See, Intervenors First Response, Ingle Affidavit at 20-21.

<sup>85</sup> HRI provided un rebutted evidence on the highly automated nature of the reverse osmosis and brine concentrator units, two major kinds of water restoration equipment. HRI's expert explained, for example, that reverse osmosis units are so automated they essentially "run themselves and require only periodic shutdown and maintenance," *i.e.*, cleaning of the membranes about every four weeks, a 6 hour process. "[P]er the manufacturer," the operations of the brine concentrator require only about 4 hours of "general overview" per shift, HRI's expert described, explaining that such overview can be part of the shift operator's normal routine. HRI Reply to Intervenors, Pelizza Aff. at 20, Van Horn aff. at 4-6.

contractor may find it efficient and workable to hire and train one employee full-time to handle both duties. In the end, it is unclear whether the number of person-hours listed for the restoration work would be significantly different. In any event, here the intervenors raise only generalized, conclusory allegations about the reasonableness of HRI's labor proposal.

It is true, as the intervenors claim and as the Presiding Officer stressed, that HRI "did not identify any independent contractor whom it contacted for its estimate," and that HRI did not "identify any independent contractor on whose performance at other ISL sites its estimate was based."<sup>86</sup> But the plain terms of Criterion 9 do not *require* applicants to obtain information directly from an independent contractor, or to seek out and base cost estimates on the actual costs that a specific contractor spent on a project. Cost estimates must be explained and reasonable, but they need not come directly from an independent contractor. Such estimates need only "take into account" reasonable, common sense judgments on costs one "would" incur in hiring an independent contractor.<sup>87</sup> Nor is it the case, as the Presiding Officer seemingly thought, that HRI presented "no information" at all associated with an independent contractor performing restoration. HRI's plan does provide for various contractor-associated expenses, such as contractor overhead and profit, etc. Indeed, the NRC staff required HRI to revise its general contingency figure from 15% to 25% for several dirt work and demolition activities to account for several unpredictable factors, including the staff's concern that labor rates for earthwork personnel can be highly variable.<sup>88</sup>

In short, we agree with the NRC staff that the Presiding Officer, in demanding that HRI now seek out independent contractor estimates from two or more contractors, "read too much"

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<sup>86</sup> Intervenors' Response Labor/Equipment at 14.

<sup>87</sup> See 10 C.F.R. Part 40, Appendix A, Criterion 9.

<sup>88</sup> See, e.g., Letter to Philip Ting, NRC, from Mark Pelizza, HRI, Re: Request for Additional Information (Mar. 16, 2001) at 5; Transcript at 351; RAP at § 9.

into the requirements of Criterion 9. Accordingly, we reverse LBP-04-3's ruling on the labor cost estimates.

### **C. Equipment**

The Presiding Officer found HRI's equipment cost estimates unacceptable because HRI had not budgeted for the purchase or rental of "major" equipment.<sup>89</sup> (Such "major" equipment presumably would include the brine concentrator and reverse osmosis units, two kinds of water restoration equipment). The Presiding Officer thus rejected arguments by HRI and the NRC staff that the water restoration equipment likely would remain onsite and available for an independent contractor to use if HRI abandoned the site prior to restoration. The Presiding Officer based his reasoning on Criterion 9's requirement that an applicant "take into account" the costs that would be incurred in hiring an independent contractor. He also cited evidence presented by the intervenors's expert, indicating that at the Bison Basin restoration project in Wyoming, new equipment, such as new reverse osmosis units, had to be ordered for site reclamation. Further, he expressed concern that in the case of a declared bankruptcy, the equipment might be seized and removed by creditors.

In addressing this novel equipment question, we begin with a few general observations. First, under Criterion 9, the NRC seeks to assure that "sufficient" resources will be available for reclamation. To further this aim, Criterion 9 calls for the conservative assumption that restoration will need to be conducted by a third party contractor, and consequently, as we noted above, it has been the staff's practice to insist that licensees set aside significant additional amounts in the surety estimate to pay for the potential expenses associated with hiring a third party, *i.e.*, contractor overhead, profit, management costs, etc., as well as additional funding for

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<sup>89</sup> See LBP-04-3, 59 NRC at 99-101.

contingencies. These are all some of the ways in which the NRC seeks to assure an adequate surety to cover independent contractor costs.

Financial assurance plans, however, are not intended to cover every imaginable circumstance. We do not, for instance, direct licensees to assume that there will be an accident - requiring special restoration activities -- and to provide in the financial plan an additional category of funds specifically for accident-related restoration. If Criterion 9 were interpreted to demand the *most* conservative prediction conceivable, based on a “worst case” type of scenario, the NRC would, as a general matter, unnecessarily and unduly burden the great majority of licensees. The cost of such an approach would significantly outweigh the possible benefit.

On the equipment issue before us, Criterion 9 does not explicitly address equipment, and so we turn again to the available NRC guidance on *in situ* uranium extraction reclamation plans. In the Standard Review Plan for license applications, we find two conflicting provisions. On one hand, the SRP states generally that equipment owned by the licensee should not be credited in the estimate to reduce cost calculations.<sup>90</sup> But more specifically, in the section on cost estimates for groundwater restoration, the SRP provides that the capital costs of “water treatment” equipment -- this would include reverse osmosis and brine concentrator units -- need *not* be included in the reclamation plan. Because this equipment is used in the initial stages of operations, the SRP assumes that the capital costs of the equipment will have been paid off prior to the restoration phase:

The water treatment equipment used during the uranium recovery phase of the operation is generally suitable for the restoration phase. The capital cost of this equipment is usually absorbed during the initial stages of the operation, leaving only the costs of operation, maintenance, and replacement filters for the restoration phase.<sup>91</sup>

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<sup>90</sup> See SRP, Appendix C at C-5.

<sup>91</sup> *Id.*, Appendix C at C-3.

Identical guidance is provided in an NRC staff technical position paper on financial assurance for uranium recovery facilities.<sup>92</sup> Generally speaking, then, a financial assurance plan should account for the cost to obtain the equipment that an independent contractor would need, but the NRC's long-held assumption has been that the water treatment equipment purchased prior to operations would remain available for the decommissioning phase. HRI brought this provision to the Presiding Officer's attention, but the Presiding Officer did not address it in his financial assurance decision.<sup>93</sup>

Of course, even if one assumes that the capital costs of the water treatment equipment have been fully absorbed, there still is, conceivably, the possibility that in the event a licensee declares bankruptcy, creditors could file a claim seeking removal and sale of the equipment, and a bankruptcy court conceivably could order the equipment's removal. Nonetheless, the Commission does not believe that this possibility warrants -- as a general matter -- requiring that all uranium recovery licensees provide for the costs of obtaining new water treatment equipment. Reverse osmosis and brine concentrator units are "fixed" or bolted down capital equipment that likely would require notable expenditures of time and money to decontaminate, making it less likely that creditors would seek to remove them. The same is true for other permanently-in-place equipment installed prior to operations, *i.e.*, wellfield pipes and pumps.

If, as the SRP details, restoration will require "additional [water treatment] equipment," such as additional reverse osmosis or brine concentrator units, beyond that purchased and installed during the operational phase, the financial plan should provide for the cost or rental of

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<sup>92</sup> See Technical Position on Financial Assurances for Reclamation, Decommissioning, and Long-term Surveillance and Control of Uranium Recovery Facilities (Oct. 1988) at 22.

<sup>93</sup> See, *e.g.*, HRI's Reply to Intervenors' at 16; Transcript at 340.

these additional needed units.<sup>94</sup> Similarly, if water treatment equipment is “near the end of its serviceable life,” the surety should be adjusted to account for the equipment’s replacement costs.<sup>95</sup> There will be a yearly opportunity – the required annual surety updates – to monitor and assess whether water treatment and other permanent equipment -- e.g., pipes and wells -- necessary for restoration may be in deteriorating condition. Further, HRI’s license requires that a minimum 15% of restoration costs be added to and maintained in the surety to cover contingencies, which would include unforeseen expenses associated with equipment needs.<sup>96</sup>

The staff evaluates financial plans on a case-by-case basis, and thus can require special measures of particular licensees where warranted, whether at the initial surety stage or later, if changes in operations or other events bearing on decommissioning costs occur. Required annual surety updates provide a flexible and continuous means to allow for NRC-required “[a]djustments to reclamation plans.”<sup>97</sup>

Criterion 9 does not require an initial surety that covers every theoretical possibility. And it does not, as the intervenors claim, contemplate annual surety adjustments “only when changes in operations occur.”<sup>98</sup> The plain terms of the regulation itself clearly provide that the updates are

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<sup>94</sup> See SRP, Appendix C at C-3.

<sup>95</sup> *Id.*

<sup>96</sup> See SUA-1508, LC-9.5. Pursuant to the SRP, HRI’s plan provides for the operating and maintenance expenses associated with the water treatment equipment, including replacement of filters, membrane, and instruments. The plan also provides for the maintenance and potential replacement of submersible pumps and motors, plant and field piping and valves. See RAP at E-2(d). The intervenors take issue with HRI having based these maintenance estimates on HRI’s own operating experience, but again, we do not read Criterion 9 to bar an applicant outright from drawing upon its own experiences to justify otherwise reasonable assumptions.

<sup>97</sup> See SRP, Appendix C at C-4.

<sup>98</sup> Intervenors’ Response to HRI’s and Staff’s Briefs (Labor/Equipment)(July 12, 2004) at 19.



intended to cover “any [] conditions” that may affect the cost estimates. Moreover, there are significant practical considerations in the case of HRI’s license. We could be years away before any operations begin at Section 8, and a number of details of the project – which may bear on labor and equipment needs – will not be known until operations begin. Thus, the annual surety reviews are a practical and *necessary* means for assuring an adequate financial surety for Section 8, as well as for every licensed site.<sup>99</sup>

#### **IV. Conclusion**

For the reasons given in this order, the Commission *affirms* LBP-03-4's ruling on the pore volumes issue, and *reverses* the rulings on the labor and equipment issues.

IT IS SO ORDERED.

For the Commission

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Annette L. Vietti-Cook  
Secretary of the Commission

Dated at Rockville, Maryland,  
this 8<sup>th</sup> day of December 2004.

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<sup>99</sup> We conclude with an additional observation not raised on review by the intervenors, but which merits the NRC staff’s future attention. In LBP-04-3, the Presiding Officer rejected the intervenor argument that HRI’s plan failed to provide for contract administration expenses (project management.) The Presiding Officer accepted HRI’s explanation that the plan already contains an amount covering “contingency/profit.” However, HRI’s plan apparently conflates the “contingency/profit” category and the project management expenses’ category. Moreover, contractor profit and the general “contingency” category are typically set forth separately. HRI’s combined figure leaves unclear how much has actually been proposed for each of these categories. We therefore expect the NRC staff, at the next annual surety update for Section 8, to re-examine and clarify the particular amounts estimated to cover contractor profit, project management, and contingencies.