# Licensing Issues for the Development of New Uranium Recovery Projects

**Prepared for the National Mining Association (NMA)/Nuclear Regulatory Commission (NRC) Conference**

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# Purpose of Presentation

- **The Domestic Uranium Recovery Industry Has Returned to Viability**
  - Uranium Prices Now Exceed $45 Per Pound;
  - Utility Uranium Inventories Have Been Depleted;
  - Worldwide Focus on Development of Nuclear Power Reactors Has Intensified;
  - New Reactor Technologies Being Subsidized by Federal Government;
  - Contracts for Combined Construction & Operating License Applications (COLs) Awarded

# Response to Demand for Uranium

- Uranium Recovery Companies Already Have Begun to Acquire Known Uranium Resources and to Explore For More New Properties
- Development of New Uranium Recovery Projects Likely Will Commence in the Next 1-2 Years
- Uranium Recovery Regulations Undergoing Revision (i.e., Potential NRC Revisions to Part 40/41)

# Development of New Uranium Recovery Projects

- **New Uranium Recovery Projects Likely Will Be A Combination of Conventional (Title II) and In Situ Leach (ISL) (Solution) Uranium Recovery Projects**

- **Uranium Recovery License Applications Necessarily Will Have to Satisfy Components of NRC Regulations & Guidance:**

  - 10 CFR Part 40, Appendix A;
  - **NUREG-1569**: *Standard Review Plan for In Situ Leach Uranium Extraction License Applications;*
  - **NUREG-1748**: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*;
  - **NUREG-1620:** *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act*
    - Prior to Receiving a License for a Conventional (Title II) Uranium Mill, NRC Likely Will Require an Approved Reclamation Plan So That Financial Assurance May Be Calculated

# NRC Items Providing Insight to Licensing Issues

- **Applicants/Licensees Should Be Aware of Issues That May Be Raised in:**
  - Commission Policy Statements;
    - Probabilistic Techniques;
    - Risk-Informed, Performance-Based Licensing
  - National Mining Association (NMA) White Papers & Commission/NRC Staff Responses (Where Relevant);
  - NRC Staff Requests for Additional Information (RAIs);
  - Administrative Litigation
    - (1997-2006) Litigation Involving Hydro Resources, Inc. (HRI) Has Provided Continued Insight Into and Interpretation of ISL Licensing Requirements With Some Application to Conventional Uranium Mills

# HRI Litigation Outlines Licensing Issues

- **Development of New ISL or Conventional Uranium Recovery Projects Likely to Encounter the Following Issues in NRC Staff RAIs or Administrative Litigation**:

  - Groundwater Restoration and Financial Assurance
  - Historic and Cultural Resource Preservation
  - Radiological Air Emissions
  - Environmental Impact Statement (EIS) Adequacy
  - Financial & Technical Qualifications
  - Environmental Justice
  - Liquid Waste Disposal
  - Surface Water Protection

# Groundwater Restoration & Financial Assurance

- **Groundwater Restoration & Associated Financial Assurance is the Primary Issue Associated with ISL Uranium Recovery**

- **Dual Regulatory Programs for Groundwater Protection During ISL Uranium Recovery Operations & Restoration:**

  - **NRC (AEA)**

    - 10 CFR Part 40 Licensing

  - **Environmental Protection Agency (Safe Drinking Water Act, Underground Injection Control (UIC) Program)**

    - UIC Permit;
    - Aquifer Exemption

# Groundwater Restoration & Financial Assurance

- **Commission Requires Simplified Approach to Groundwater Restoration & Financial Assurance: Restoration Action Plans (RAPs) (CLI-00-08)**
  - **Provide NRC With Methods for Groundwater Restoration and Data to Justify Applicable Restoration Standards;**
  - **Provide Cost Breakdown for Various Aspects of Decommissioning:**
    - Labor Costs
    - Equipment Decontamination
    - Groundwater Restoration

# Groundwater Restoration & Financial Assurance

- **HRI Litigation Also Creates New Interpretation of Financial Assurance Requirements:**
  - **Atomic Safety Licensing Board (LBP-04-03) Determines that 10 CFR Part 40, Appendix A, Criterion 9's "Independent Contractor" Requirement Did Not Permit Financial Assurance Calculations to Include:**
    - Labor Costs Based on Employees Performing Decommissioning Wearing "Multiple Hats" (i.e., Perform Multiple Tasks)
    - Major Equipment Costs Assuming Use of Site Equipment During Decommissioning
  - **RESULT: LICENSEES COULD HAVE TO ASSUME PURCHASE OF MAJOR SITE EQUIPMENT TWICE—WHICH IS A FINANCIALLY INFEASIBLE REQUIREMENT**

# Groundwater Restoration & Financial Assurance

- **Commission Reverses Licensing Board's Decision and Criterion 9 Requirements Are Clarified (CLI-04-33):**
  - Independent Contractor Requirement Not Rigidly Applied in a Vacuum;
  - Licensee Can Rely on Standard Industry Practices;
  - ISL Uranium Recovery Operations Are Geared to Allow Employees to Perform Multiple Tasks During Restoration

# Groundwater Restoration & Financial Assurance: CLI-04- Continued

- **Major Site Equipment Is Necessary to Proper Restoration:**
  - Wellfields;
  - Wellfield Piping;
  - Brine Concentrators or Reverse Osmosis Equipment;
  - IX Columns
- **Annual Surety Updates As Required By Criterion 9 and NUREG-1569 Provide Adequate Safeguards for Revising Financial Assurance**
- **CONCLUSION: THESE ISSUES APPEAR UNIFORMLY RELEVANT TO ASSESSING SURETY FOR URANIUM RECOVERY OPERATIONS**

# Historic and Cultural Resource Preservation

- **All New Uranium Recovery Projects (ISL & Conventional) Require Historic & Cultural Resource Surveys in Compliance With**:
  - National Historic Preservation Act of 1966 (NHPA)
  - Native American Graves Protection & Repatriation Act of 1990 (NAGPRA) (If Applicable)

# Historic and Cultural Resource Preservation

- **Section 106 of NHPA and Implementing Regulations is Primary Focus of Surveys**:
  - **NUREG-1569 at Appendix A:** Focus on Following Consultation Requirements for Historic and Cultural Resources:
    - National Register of Historic Places;
    - State Historic Preservation Officer (SHPO);
    - Tribal Historic Preservation Officer (THPO) (If Applicable);
    - Phased Compliance & Identification

# Historic and Cultural Resource Preservation

- **Potential Intervenors Attacked HRI on Basis of**:
  - Viability of Consultation and Survey with Officials;
  - Pre-2001 NHPA Regulations v. 2001 NHPA Regulatory Amendments for Allegedly Prohibiting "Phased" Identification & Compliance;
    - HRI Litigation (LBP-05-26 & CLI-06-11 *denying review*) This Critical Decision Determined That "Phased" Identification & Compliance is Permissible (e.g., Where Multiple Sites and/or Stages of Development are Part of the Overall Project)

# Radiological Air Emissions

- **ISL Uranium Recovery Licensees Are Required to Satisfy NRC Regulations for Public & Occupational Dose:**
  - 10 CFR § 20.1301 of 100 mrem/y (Public Dose);
  - 10 CFR § 20.1201 of 5 rem/y (5,000 mrem/y) (Occupational Dose)
- **Calculation of Public & Occupational Dose Addresses an *Incremental Dose Above Background Radiation Exposure:***
  - (Total Dose) – (Dose from Background) = **Total Effective Dose Equivalent** (TEDE)

# Radiological Air Emissions

- **Intervenors in HRI Litigation Focused on Materials (Mining Spoils) Left Behind at Section 17 Site and Argued**:
  - Radiation from Such Material Was Not Part of "Background Radiation"……Therefore;
  - Resulting TEDE from Section 17 Exceeded Regulatory Limits

# Radiological Air Emissions

- **HRI and NRC Staff Disagreed with Intervenors' Argument:**
  - Section 17 Material Resulted from *Mining* Activities Which NRC Does Not Regulate;
  - Section 17 Material Was Not Atomic Energy Act (AEA) Material (i.e., Source/Byproduct Material) But Was Technologically Enhanced Naturally Occurring Radioactive Material (TENORM);
  - "Background Radiation" Can Be From Natural *or* *Anthropogenic* Sources

# Radiological Air Emissions

- **Both Licensing Board (LBP-06-01) and Commission (CLI-06-07 *Granting Review* & CLI-06-14) Concur with HRI & NRC Staff Position:**
  - Mining Spoils Are Outside of NRC's AEA Jurisdiction;
  - Radiation from Such Materials is "Background Radiation" With Scope of 10 CFR §§ 20.1003 & 20.1301;
  - Radiation from Such Materials is Not Part of Site TEDE Calculations
  - **CONCLUSION: THE DECISION IS RELEVANT TO PROPOSED SITES NEAR OLD MINING SITES INCLUDING:**
    - **DRILL HOLE RESIDUE;**
    - **ORE DUST;**
    - **MINING WASTE PILES**

# EIS Adequacy

- **NRC Performs an EIS for New Uranium Recovery Projects Under Certain Circumstances:**
  - Likely Necessary for a New Conventional (Title II) Mill Site;
  - Not Always Necessary for ISL Projects in the Past But Perhaps May Be Required in Light of HRI Litigation
- **Final EIS for the HRI Crownpoint Uranium Project (NUREG-1508):**
  - Addressed All Aspects of Potential Site-Specific Impacts at Four Crownpoint Uranium Project (CUP) Sites;
  - Performed With Cooperating Agencies;
    - Bureau of Indian Affairs (BIA) Requires EIS When Indian Lands Involved;
    - Bureau of Land Management (BLM)
    - Environmental Protection Agency (EPA)

# EIS Adequacy

- **Intervenors May Attack Adequacy of NRC Analyses For:**
  - Strict Compliance with Council on Environmental Quality (CEQ) Regulations;
  - Cumulative Impacts;
  - Quality of Analytical & Technical Data;
  - Potential Site-Specific Impacts;
  - Alternatives to Proposed Licensing Action
- **Intervenors Also May Raise EIS Supplementation Issues:**
  - Allege New Circumstances That Warrant Additional Analysis;
  - **HOWEVER:** Such Allegations Must Survive Scrutiny Under NRC Standard of "Significant New Circumstance"

# EIS Adequacy

- **HRI Litigation Decision from Licensing Board on EIS Adequacy Issues Still Pending;**

- **Decision from Licensing Board on Supplementation Issue Finalized in One Phase;**

  - Development of Housing Project Which Has Not Proceeded Past a ***Conceptual Stage*** Does Not Warrant FEIS Supplementation (LBP-04-23 & CLI-04-39 *Denying Review*);
  - Decision on Section 8 Finalized Regarding:
    - NRC Not Bound By CEQ Regulations (*See* 10 CFR Part 51/Federal Register);
    - Large Body of Decisions on EIS Adequacy

# Financial & Technical Qualifications

- **NRC Requires that Applicants for Uranium Recovery Project Licensing Demonstrate**:
  - Adequate Corporate & Management Structures (NUREG-1569 at 5-1-5-9);
  - Sufficient Financial Assets to Engage in Licensed Activities & Radiation Protection;
  - Adequate Qualifications for Site Personnel & Radiation Safety (NUREG-1569 at 5-11-5-14)

# Financial & Technical Qualifications

- **In HRI Litigation, Intervenors Conceded Financial & Technical Qualifications for Purposes of Three of Four Sites**

- **However, Intervenors May Attack on the Following Grounds**:
  - Need for Additional Uranium Production;
  - Inadequate Radiation Safety Training & Personnel;
  - Inadequate Financial Assets for Ongoing Licensed Operations

# Environmental Justice

- ***Executive Order 12898*** Entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*:
  - NRC Admits Environmental Justice Contentions as Part of NEPA Process
  - Focuses on Analyses That Have Direct Relationship to the Environment or Cost-Benefit Analyses: *See e.g., One Thousand Friends of Iowa v. Mineta*, 250 F. Supp. 2d 1064, 1072 (S.D. Iowa 2002)

# Environmental Justice

- **Intervenors Attacked HRI on Environmental Justice Grounds and Licensing Board Determined**:
  - Presiding Officer Found That Executive Order 12898, By Its Own Language, Is Not a Binding Regulatory Requirement;
  - No Environmental Justice Issue If No Significant Impacts Are implicated by the Proposed Action;
  - The Uranium Ore Body's Location Determines Location of the Proposed Project

# Liquid Waste Disposal

- **ISL Uranium Recovery Projects Generate Liquid Wastes that Must Be Disposed of Properly**:
  - Production "Bleed" Fluids and Sludges Are 11e.(2) Byproduct Material;
  - Restoration Fluids and Sludges Also *Now* Are 11e.(2) Byproduct Material

# Liquid Waste Disposal

- **Other Liquid Waste Disposal Issues That May Be Raised by Potential Intervenors Include**:
  - Disposal in Injection Wells;
  - Adequacy of Liquid Reduction Through Reverse Osmosis & Brine Concentration for Disposal at Conventional (Title II) Mill Sites;
  - Land Farming/Evaporation;

# Summary and Conclusions

- Given the Re-Emergence of the Domestic Uranium Market and the Viability of ISL Uranium Recovery, New Projects Need to Be Licensed;
- NRC Has Developed Guidance for Preparation of License Applications;
- Intervenors Almost Certainly Will Challenge Some Aspects of Some License Applications;
- CONCLUSION: Applicants Must Be Thoroughly Prepared to Address These Issues in License Applications and Potential Litigation or Be Faced With Significant Delays and/or Failure to Receive a License