

**ATTACHMENT E**

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**ATOMIC SAFETY AND LICENSING BOARD PANEL**

Before Chief Administrative Judge  
B. Paul Cotter, Jr., Presiding Officer

Administrative Judge  
Thomas D. Murphy, Special Assistant

In the matter of	)	
	)	
HYDRO RESOURCES, INC.	)	Docket No. 40-8968-ML
2929 Coors Road	)	
Suite 101	)	ASLBP No. 95-706-01-ML
Albuquerque, NM 87120	)	

**AFFIDAVIT OF MARK S. PELIZZA**

I, Mark S. Pelizza being duly sworn, declare as follows:

1. My name is Mark S. Pelizza. I am of sound mind and body and competent to make this affidavit. The factual statements herein are true and correct to the best of my knowledge, and the opinions expressed herein are based on my best professional judgment.

**Professional Qualifications**

2. I am Vice President of Health, Safety and Environmental Affairs with Uranium Resources, Inc., parent company to HRI, Inc. and URI, Inc. My resume is attached to this Affidavit as Exhibit A. I have served in this position for two years. Prior to being named Vice President, I served Uranium Resources, Inc. as Environmental Manager with similar corporate environmental responsibilities. I have been employed with Uranium Resources, Inc. for nearly 18 years. I have been employed as a health, safety and environmental professional with the in situ uranium industry for 20 years. I have been active with professional trade organizations in

developing the current in situ uranium industry rules, regulations and policies, cooperating with federal and state regulatory agencies in doing so.

3. During my employment with Uranium Resources, Inc., I have personally supervised all radiological and non-radiological occupational health, safety and environmental programs for operations conducted by URI in Texas. This includes radiological and non-radiological occupational and environmental baseline data collection, operational programs, restoration/reclamation programs and regulatory liaison. I have been Uranium Resources, Inc., primary managerial support representative for all environmental litigation. As such I have first hand knowledge of the issues that were addressed in the affidavit of Dr. Resnikoff which is attached to Petitioners Stay Request.

4. I have personally supervised all radiological and non-radiological health, safety and environmental permitting activities associated with HRI since the company and the Crownpoint Uranium Project was conceived. In this capacity all environmental studies, reports, papers, permit and license applications and regulatory requirements have either been completed by me or under my supervision. I have been HRI's representative at numerous public presentations regarding the project over the past decade. I have been HRI's regulatory liaison throughout the project. Given this background I have a first hand knowledge of the Crownpoint Uranium Project (CUP) developmental history, and the environmental regulatory framework under which HRI will be required to operate.

### **Expert Opinion**

5. This declaration will serve to present my expert understanding of health, safety and environmental effects of In Situ Leach (ISL) uranium development at HRI's New Mexico properties. Also I will discuss my experience licensing the CUP. In doing so I will take the opportunity to evaluate some of the allegations and conclusions in the affidavit of Dr. Marvin Resnikoff.

6. Many of the facts upon which Dr. Resnikoff bases his opinion are inaccurate with respect to the ISL industry in general, the CUP in particular, and URI's operating history. As a result he

reaches misleading or incorrect conclusions. Further with respect to potential environmental regulatory concerns associated with the CUP or ISL technology in general, the Petitioners' expert fails to consider the mitigating effects of standard ISL operational control measures and specific provisions that have been included in the proposed CUP license and Operations Plan to limit any potential impacts associated with such concerns. As a result, his affidavit is misleading.

7. Based on my experience with a lengthy career in the ISL industry at operations essentially identical to the CUP, I find that Dr. Resnikoff's affidavit contains unsupported opinions that have no basis in real world operations. This includes both radiological concerns and groundwater concerns. To the best of my knowledge, there have never been any significant radiological impacts on public health or the environment at *any* ISL project

### **Radiological Effects**

8. Dr. Resnikoff's claims relate to alleged radiological impacts that may have no bearing on *this* project. Throughout his affidavit, Dr. Resnikoff demonstrates a complete misunderstanding of HRI's license, and of the typical ISL uranium recovery operation described in the affidavit of Richard Clement. This is because, as described in Mr. Clement's affidavit, the CUP will be developed in a phased approach. This licensing approach requires HRI to satisfy specific requirements before moving from one phase to the next and demonstrates NRC's recognition that final decisions regarding certain aspects of the project cannot and should not be made at this time.

9. Dr. Resnikoff's failure to understand the process can be demonstrated by his allegations of "immediate and irreparable" harm from land applying wastewater at the CUP. Resnikoff at ¶ 5 and at ¶ 24. Resnikoff reaches these conclusions based on a series of erroneous assumptions.

10. For example, Dr. Resnikoff assumes that HRI will use *only* land application techniques. This assumption is premature and most likely incorrect. Depending on the technique (or combination of techniques) used, wastewater may be disposed of by land application, by deep well injection, by evaporation, or some combination. However, *no final decision has yet been made on a single or any combination of wastewater disposal options*. When HRI makes this

decision, it will be based on factors such as water rights availability, uranium market conditions and technical and cost considerations.

11. Dr. Resnikoff's erroneous assumption that HRI will use 100% groundwater sweep technology to restore the aquifer in the ore zone leads him to the incorrect conclusion that HRI will apply contaminated water to the land surface in quantities greatly in excess of the company's and NRC's estimates.

12. Dr. Resnikoff's calculation of the pore volumes that will be required at the CUP are similarly based on erroneous assumptions and standards. For example, Dr. Resnikoff claims that tests indicate that 28 pore volumes will be required to achieve restoration to baseline. Even if this were correct, baseline is not necessarily the appropriate standard. Rather, EPA's drinking water standards may be the appropriate restoration standard. Based on restoration to these drinking water standards, NRC and HRI calculated that 9 pore volumes would be a very conservative number that is protective of public health and the environment. I know of no example in the ISL industry where 28 pore volumes was needed. Moreover, because groundwater sweep usually is most effective early in the restoration phase, ISL operators frequently begin with groundwater sweep for two or three pore volumes and then switch to reverse osmosis technology. Because this will most likely occur at HRI's New Mexico properties, Dr. Resnikoff's land application of 28 pore volumes is an entirely unrealistic scenario.

13. Other Resnikoff assumptions are incorrect. For example, he greatly underestimates the surface area that would be available for wastewater disposal at the CUP, thereby greatly increasing his estimated soil concentration. Even if HRI decides to use 100% land application, 640 acres would be available for restoration, not the 52 acres suggested by Dr. Resnikoff. Resnikoff at ¶18. Applying wastewater over 640 acres would result in much lower soil concentrations than Resnikoff calculates.

14. Based on these erroneous assumptions, Resnikoff still calculates an annual dose of 29 millirem per year (mrem/y), which is well within NRC's regulatory requirement of 100 mrem/y. Resnikoff at ¶ 20. Moreover, Resnikoff fails to acknowledge that any calculations regarding radiation effects and limits are, by their nature, imprecise. As the General Accounting Office has

noted, radiation limits reflect a series of theories and assumptions, making them "inherently imprecise."<sup>1</sup> Calculations of radiation doses from a specific facility are based on these same imprecise theories and assumptions.

#### **HRI's Reliance on the Experience of Uranium Resources, Inc.**

15. Dr. Resnikoff criticizes HRI's reliance on the experience of URI and Uranium Resources, Inc. Both URI and HRI are subsidiaries of Uranium Resources, Inc. I believe this experience has been, and will continue to be, very useful to HRI. URI is a recognized leader in the ISL industry and has staffed HRI with several highly experienced individuals with over 60 years of combined ISL experience. (See Exhibit B). This has helped HRI develop a proposal that will use state-of-the-art technology to safely and cost-effectively develop a valuable natural resource with the absolute minimum of potential environmental impacts.

16. In his affidavit, Dr. Resnikoff makes several false or misleading allegations about Uranium Resources, Inc. For example, he claims that the Texas Water Commission required URI to cease reverse osmosis wastewater disposal in that state. Resnikoff at ¶ 10. This allegation is untrue. At URI's Kingsville Dome Project, rather than asking the company to cease reverse osmosis, the Texas Water Commission has stated that for that site reverse osmosis and deep well disposal is the preferred technology. (See Exhibit C to this affidavit, TNRCC Permit UR02827, VII.K.)

17. Additionally, Dr. Resnikoff claims that URI's efforts to restore to baseline have failed. Resnikoff at ¶ 15. This statement is misleading. URI has restored all of its in situ recovery facilities in Texas to levels acceptable to the Texas Water Commission (TWC). (See, e.g. Letters from TWC approving restoration attached as Exhibit D.) There is no absolute requirement to restore to baseline since it frequently makes no sense, in terms of public health and environmental protection, to restore to baseline for all contaminants. For example, the radionuclide concentrations (i.e., radium, uranium, radon) naturally occurring in the ore zone typically exceed levels considered protective of public health by orders of magnitude, and

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<sup>1</sup> See, GAO "Nuclear Health and Safety: Consensus on Acceptable Radiation Risk to the Public is Lacking" GAO/RCED-94-190, Sept. 1994, p. 30.

perhaps even tens of orders of magnitude. Accordingly, this water cannot be used as a source of drinking water either before or after uranium recovery operations and restoration have taken place. Indeed, before installing wells at an ISL facility, the operator must receive an underground injection control (UIC) permit and aquifer exemption. The regulatory standard for granting an aquifer exemption is that the underground water cannot now and will not in the future serve as a source of drinking water because of the presence of commercially producible minerals. Therefore, for aquifers that meet this standard, it may not make sense to return every constituent to baseline.

18. This issue highlights a basic point that Petitioners affiants fail to address in that the underground water in the ore zone *already contains* high levels of radionuclide contamination . . . after all, this is a uranium recovery operation. Based on my experience reviewing data for the CUP, my experience with URI's operating ISL facilities, and my general understanding of groundwater concentrations at ISL facilities, the radionuclide concentrations in the uranium ore bodies at the CUP *far exceed* and federal or state groundwater standards *prior to any uranium recovery operations*.

19. Dr. Resnikoff also claims that HRI's parent, URI, has disposed of wastewater at Bruni, Texas so that soil concentrations are above regulatory limits. Resnikoff at ¶ 13. This allegation is untrue. Soil concentrations at Bruni are within regulatory limits.

20. Resnikoff implies that URI abandoned its ISL operation in Bruni, Texas. Resnikoff at ¶ 11. This is not so. Rather, URI restored the site to the satisfaction of state regulators, and awaits NRC concurrence. Similarly, URI's Longonia and Benevides recovery facilities were operated and restored successfully.

### **Mobilization of Preexisting Contamination**

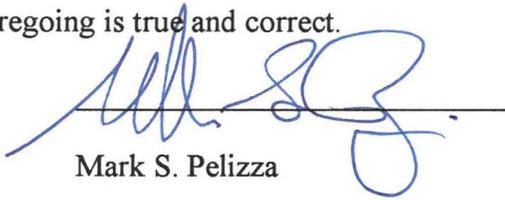
21. Resnikoff claims that HRI's activities at Church Rock Section 17 will cause the mobilization of preexisting contamination. Resnikoff at ¶ 27. This claim has no basis in fact. As Dr. Resnikoff notes, Section 17 is the only location where there is existing soil contamination from the earlier uranium recovery operations of a company unrelated to HRI. However, Resnikoff *erroneously* claims that there will be road construction, satellite processing plant construction etc. at that location. This is incorrect: any construction or land disturbing activities will occur on Section 8, *where there is no pre-existing contamination*. The only activities that will occur on Section 17 will be drilling wells and some trenching, neither of which will cause any more significant disturbance to the land than traditional ranching and farming activities.

22. Moreover, this allegation supports my view that Dr. Resnikoff is not familiar with the CUP properties. If he had visited the site, he would know that the possibility of contamination blowing onto neighboring properties from Section 17 is completely unrealistic.

### **Conclusion**

23. The proposed ISL uranium recovery facilities in Church Rock and Crownpoint are essentially the same as URI's currently operating facilities in Texas. However, URI's Kingsville Dome and Rosita ISL facilities currently operate safely and successfully in Texas in areas with greater population density than at the Church Rock and Unit 1 properties. At none of these uranium recovery facilities has URI encountered any of Dr. Resnikoff's hypothetical problems. Moreover, as noted in the affidavits of Mr. Bartles and Mr. Clement, consistent with the phased approach embodied in HRI's NRC license and industry-wide standard operating procedures (SOPs), nothing can go forward at Church Rock, much less Crownpoint or Unit 1, without satisfying such requirements and SOPs.

I declare on this 23<sup>rd</sup> day of January, 1998 at Dallas, Texas, under penalty of perjury, that the foregoing is true and correct.

  
Mark S. Pelizza

Sworn and subscribed before me, the undersigned, a Notary Public in and for the State of Texas, on this 23<sup>rd</sup> day of January, 1998, at Dallas, Texas. My commission expires on April 8, 1999.



Notary



**EXHIBIT A**

## MARK S. PELIZZA

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### Background

B.S. Geology, Fort Lewis College, 1974  
M.S. Geologic Engineering, Colorado School of Mines, 1978

### Experience

#### **URI, INC., DALLAS, TEXAS**

##### Environmental Manager

August 1980 through December 1995

##### Vice President – Health, Safety and Environmental Affairs

January 1996 through present

Oversee all URI's Texas, Wyoming, and New Mexico environmental responsibilities, including design, preparation and implementation of all environmental, ground water and radiological monitoring programs for uranium mining. Coordinate consultants, prepare applications for permits and licenses, negotiate license conditions and serve as corporate liaison with all regulatory agencies. Represent the Company in public forums pertaining to environmental issues and in-situ mining. Company representative in environmental activities, such as rule-making process, hearings, litigation, etc., and to organizations including American Mining Congress, Texas Mining and Reclamation Association, New Mexico Mining Association, Texas In-Situ Uranium Mining Environmental Association (TISUMEA), Underground Injection Practices Council and Uranium producers of America.

#### **UNION CARBIDE CORP., BENAVIDES, TEXAS**

##### Environmental Planning Engineer

February 1979 through August 1980

Obtained environmental licenses and permits, negotiated license and permit commitments and preparation of environmental reports. Designed and implemented all environmental monitoring programs, including ground water and radiological.

#### **VTN OF COLORADO, INC., DENVER COLORADO**

##### Engineering Geologist

July 1978 through February 1979

Developed environmental reports and engineering geological studies for proposed construction. Supervised drilling programs, water well design and development, well log interpretation and map preparation (geologic, isopach, structure contour, etc.). Conducted geologic investigations of oil shale mining projects, both in-situ and subsurface-types. Performed engineering geologic foundation studies within highly unstable regions.

#### **ENVIRONMENTAL CONSULTANTS, IND., DENVER, COLORADO**

##### Staff Scientist

Specialized in the areas of engineering geology, environmental geology and computer applications, composite mapping analysis using computer-aided techniques, applied to oil shale development in northwestern Colorado and a highway site selection in New York. Used computer techniques to graphically display and manipulate drilling statistics which were used to determine the reserves of natural gas in the United States. Engineering geology experience included a foundation of study for an urban transit way mall in Denver and analysis of geologic information for a highway site selection study.

**EXHIBIT B**

## Resume of Frank Lee Lichnovsky

**Hydro Resources, Inc. (HRI, Inc.) Albuquerque, New Mexico**

**Chief Geologist, 1996 - Present**

**Responsible for geologic studies of New Mexico projects utilizing subsurface data to define the stratigraphic and structure of individual projects. Prepare maps of ore, calculate ore reserves, and define the quality of the confining layers and ore sands. Evaluate data from other sources for possible acquisition. Prepare exhibits to accompany regulatory applications.**

**Uranium Resources, Inc. (URI, Inc.) Dallas, Texas.**

**Senior Geologist, 1987 - 1966**

**Responsible for geologic studies of New Mexico and Texas projects, utilizing subsurface data to define the stratigraphic and structure of individual projects. Prepare maps of ore, calculate ore reserves, and define the quality of the confining layers and ore sands. Evaluate data from other sources for possible acquisition. Supervise drilling, casing and completion of the pump test and production wells.**

**Geological Consultant (1983 - 1987) for numerous companies. Projects included installation of pumps test, claim assessment, calculating reserves, geologic review of reserves to define mineable ore, installation of additional production wells at an operating in-situ mine site.**

**Conoco, Inc.**

**Project Geologist, 1982 - 1983**

**Geologic studies of ore deposits, feasibility studies of ore deposits, delineation drilling, design and layout of the wellfields, installation of production wells and reserve calculation.**

**Freeport Sulphur Co.**

**Exploration Geologist, 1981 - 1982**

**Review stratigraphy and structure of the western flank of the Permian Basin of West Texas for the purpose of locating sediments and structures favorable for sulphur development. Field mapping of large unmapped areas as well as company properties, location of drill holes, describe drill cuttings and core. Prepare of cross sections depicting the geology and structure of the projects.**

**Wyoming Mineral Corp.**

**Project Geologist, 1976 - 1981**

**Exploration drilling, feasibility studies of discovered ore, delineation drilling, layout and design of wellfields, installation of production and monitor wells. Installation of electrical and piping. Supervision of grade control, flow control and well maintenance crews. Additionally, production**

forecasts and mine planning at all three in-situ mines. (Bruni and Three Rivers in Texas and Irigarary mine in Wyoming.)

**Utah International, Inc.**

**Uranium Exploration Geologist, 1973 - 1976**

Locate and evaluate potential uranium areas and formations, conduct both aerial and surface surveys, recommend property acquisition, set up drilling programs, supervise drilling, evaluate information gained from drilling, and the calculation of reserves.

**Nuclear Dynamics, Inc.**

**Uranium Exploration Geologist, 1972 - 1973**

Regional drilling to define redox fronts, delineation drilling to define ore reserves. Interpretation and correlation of drill hole electric logs, describe drilling cuttings, preparation of regional maps to determine favorable areas to explore.

**Duval Corporation**

**Mineral Exploration Geologist, 1968 - 1972**

Mineral exploration in West Texas and Australia starting with research of specific minerals and modes of occurrence as well as areas that were likely to be favorable for ore deposits. Geological mapping and geochemical surveys. Supervision of drilling and logging of drill hole samples and core.

**Texaco, Inc.**

**Geological Assistant, 1966 - 1968**

Assist production geologists in West Texas. Made geologic maps of new fields, updated maps by adding new wells to field maps and adjusting the contours. Kept production records for the fields. Constructed cross section of fields and adjoining areas.

**Education:**

**Sul Ross State University, B. S. Geology 1967**

**Post Graduate courses in Problem Solving, Decision Making and Managing Techniques  
Principles of Management**

**Memberships:**

**Society of American Institute of Mining, Metallurgical and Petroleum Engineers, Inc.**

**Society of Economic Geologists**

**New Mexico Geological Society**

**Registered Professional Geologist (Wyoming)**

**EXHIBIT C**



**TEXAS WATER COMMISSION**  
**Stephen F. Austin State Office Building**  
**Austin, Texas**

PERMIT NO. URO2827

KINGSVILLE DOME MINING PROJECT  
This permit supersedes and replaces  
TWC Permit No. URO2827 issued  
December 30, 1986

PERMIT to conduct underground  
injection under provisions of  
Chapters 26 & 27, Texas Water Code

I. Name of Permittee:

A. Name URI, Inc.

B. Address 12377 Merit Drive, Suite 750, LB14  
Dallas, Texas 75251

II. Type of Permit: Regular \_\_\_\_\_ Amended X

III. Nature of Business: In Situ Uranium Mining

IV. General Description and Location of Injection Activity

The permit area for this site is 2135 acres. There are ten currently designated mine areas. The production zone is in the Goliad Formation at the depth interval of 420 to 810 feet below mean sea level. Uranium will be produced from three sand units in the upper Goliad, each unit approximately 50 feet thick. Continuous excess water withdrawal will provide control of leachate movement. Monitor wells will provide horizontal and vertical surveillance of ground-water quality to ensure confinement of leachate in the subsurface mining zone.

CONTINUED on Pages 2 through 13.

The permittee is authorized to conduct injection activity in accordance with limitations, requirements, and other conditions set forth herein. This permit is granted subject to the rules and orders of the Commission, and the laws of the State of Texas. This permit is valid until amended or revoked by the Commission.

APPROVED, ISSUED, AND EFFECTIVE this 11th day of January, 1990

ATTEST:

Brenda W. Foster

Billy  
For the Commission

The mining procedure consists of injection of an alkaline leaching solution along with an oxidant into the uranium bearing formation through a pattern of injection wells. The uranium is solubilized by the leaching solution and the solution is pumped from a pattern of recovery wells to the processing plant where uranium is extracted by ion exchange. This solution is then reconstituted with leaching agents and recycled to the field for reinjection.

URI, Inc. shall use a non-ammonia leaching solution at all Production Areas. Before there is any modification in the composition of the leaching fluids beyond the description in the application, the operator shall provide descriptive information and obtain an amendment pursuant to the Rules of the Commission.

The mining operation is located approximately 8 miles southeast of Kingsville adjacent to FM 1118 in Kleburg County, Texas. The permit area is contained within Blocks 41, 42, 48, 49, 50, 51, 53, 54, and 55.

No surface discharge is authorized by this permit.

#### V. Character of Wastes

Waste streams resulting from the mining activity include:

- A. Production Bleed Stream - This stream will result from a withdrawal of fluids from the well field for leachate control.
- B. Plant Waste Stream - This stream results from waste fluids generated from the normal operations of plant facilities.
- C. Laboratory Stream - This waste stream is generated by routine chemical laboratory procedures and processes.
- D. Restoration Stream - This stream will result from ground water pumped from the well field during the restoration of the mine areas.
- E. Radioactive Solids - Any radioactive solid and semi-solid wastes will be transported and disposed of pursuant to the Texas Department of Health requirements.
- F. Non-Radioactive Solids - Non-radioactive solid and semi-solid wastes will be disposed of at an authorized waste disposal site in accordance with the Texas Water Commission rules.

VI. Standard Provisions

A. Commission Rules

This permit is subject to all rules of the Commission under the authority of Section 5.103, Texas Water Code. The following rules are incorporated herein by reference:

<u>31 TAC Section</u>	<u>Title</u>
331.1 - 331.13	General Provisions
331.31 - 331.36	Jurisdiction Over In Situ Uranium Mining
331.41 - 331.48	General Standards and Methods
331.81 - 331.86	Standards For Class III Wells
331.101 - 331.107	Standards For Class III Wells Production Area Development
331.122	Considerations Prior To Permit Issuance (Class III Wells)

B. Production Area Authorization

1. General - Mining in a Production Area within the Permit Area requires a Production Area Authorization from the Texas Water Commission. The Production Area Authorization includes the updated Mine Plan, a Restoration Table, Baseline Water Quality Table, Control Parameter Upper Limits, Monitor Well locations for the subject Mine Area, and special provisions (if applicable). These, as well as the application and any subsequent technical reports, are a part of and incorporated herein as terms and provisions of this permit.

The authorization for mining in a Production Area may be issued only after an original Application for Production Area Authorization and three (3) complete copies are submitted to the Executive Director. The Executive Director shall transmit the application with his recommendation to the Texas Water Commission which shall consider the application and recommendation at its regular agenda meeting after at least ten (10) days notice to all affected parties. The notice and Commission consideration of the application shall be limited to the issues pertinent to the requested Production Area Authorization as set out in this permit.

2. Information Required - The permittee will develop and submit the information required in the "Application for Production Area Authorization" - Form TWC-0304.

C. Sample Taking, Preservation, Analysis and Quality Control

1. Sampling - To obtain a valid sample, the sample well shall be pumped

during completion until water is free of mud and foreign material and until conductivity and pH are reasonably constant in a natural range. As samples are taken during Baseline, routine, and restoration sampling, the sampled well shall be pumped for a sufficient time to assure that water sampled is formation water. Excess water pumped from production wells or monitor wells containing leaching solutions shall not be discharged to the surface waters of the State.

2. Preservation and Analysis - Sample preservation, analysis and analytical quality control will be as defined in the current issues of Methods for Chemical Analysis of Water and Wastes (EPA - Technology Transfer). Total Dissolved Solids shall be determined by evaporation (180°C).
3. The permittee shall notify the Central Office in Austin of intent to collect samples for Baseline and final closing at least one week prior to sample collection to allow the Commission staff an opportunity to split samples for confirming analysis.

D. Wellhead Pressure

Pressure gauges shall be on all injection wells or on the injection manifold with the maximum allowable injection pressure clearly marked on each gauge. The wellhead pressure at any injection well shall be maintained so as to minimize the possibility of leakage from the Production Zone into the Non-Production Zones. In no instance will the injection pressure exceed .40 psi per foot of well depth.

E. Radioactive Materials License

Prior to mining in a Production Area the permittee shall have a valid license(s) from the Texas Department of Health covering the handling and processing of radioactive materials.

VII. Special Provisions

A. Control Parameters and Upper Limits

Conductivity, uranium and chloride shall be used as control parameters. Upper limit values will be calculated for the Production and Non-Production Zones as follows:

1. Add a value of 5 mg/l to the maximum uranium value determined on the Baseline sampling of the Mine Area Wells and the Production Area Wells of the Production Area being authorized.

2. Add 25% to the maximum conductivity value determined in the Baseline sampling of the Mine Area Wells and the Production Area Wells of the Production Area being authorized.
3. Add 25% to the maximum chloride value determined in the Baseline sampling of the Mine Area Wells and the Production Area Wells of the Production Area being authorized.

B. Plugging and Abandonment

Prior to abandoning Class III uranium wells, the wells shall be plugged with cement in a manner which will not allow the movement of fluids out of the injection zone either into or between freshwater aquifers.

The permittee shall notify the Executive Director before commencing plugging and abandonment. Plugging and abandonment shall be accomplished in accordance with the plans and specifications submitted in the application. Within 30 days after completion of plugging, the permittee shall file with the Executive Director a plugging report on forms provided by the Commission. Any revised, updated or additional plugging and abandonment plans shall be subject to Executive Director approval.

C. Financial Assurance

The permittee shall secure and maintain in full force and effect at all times a performance bond or other form of financial security, in accordance with 31 TAC 305.153 to provide for plugging and abandonment of the permitted Class III uranium wells. The bond or other form of financial security shall be in the amount of \$230,365.00 and shall be reviewed annually. The amount of financial security may, at the discretion of the Texas Water Commission in a separate and independent proceeding, be altered at a future date to provide for adequate plugging subject to prevailing general economic conditions. This permit does not authorize underground injection of fluid unless the permittee has in effect the performance bond or other form of financial security described above.

D. Wastewater Ponds

1. All wastewater ponds except those described in VII.D.3. below shall be lined with a minimum 30 mil thick chlorinated polyethylene liner or equivalent approved lining, and constructed with an underdrain leak detection system in accordance with the plans and specifications contained in the Permit Application. The leak detection system shall be monitored weekly. A minimum of two feet of freeboard shall be maintained in all ponds during normal operations. A minimum of one foot of freeboard may be maintained during emergency periods such as high rainfall, for a period not to

exceed fourteen days. An easily readable freeboard gauge shall be installed and maintained for each pond. The Central Office in Austin shall be notified immediately when the freeboard decreases to less than two feet.

2. If any leaks are detected in the pond liner, the Central Office in Austin shall be notified immediately. The pond fluids will be evacuated as soon as practicable to another location approved by the Director of the Water Rights and Uses Division and the leak repaired. A determination of the extent of any subsurface contamination shall be made and a report submitted to the Executive Director within 14 days after the leak is detected. The report shall also contain the company's plan for corrective action.
3. All ponds used for wastewater storage prior to injection down a waste disposal well shall be subject to the terms and conditions of the disposal well permit.

E. Mechanical Integrity

Proof of mechanical integrity for all injection wells shall be demonstrated by well completion (cementing) records and a pressure test as described in the application. Prior to beginning injection the permittee must receive certification from the Executive Director that well construction is in accordance with the plans and specifications contained in the permit application and technical report.

F. Production/Processing Facilities

The primary and supporting production/processing facilities along with supplies and materials used by or resulting from these facilities are to be installed, operated, maintained and handled in accordance with the plans, specifications, and descriptions submitted as part of the permit application in order to prevent dispersion of any materials, directly or indirectly, to surface or ground waters.

No surface discharge is authorized by this permit from any production or processing facilities.

G. Designated Non-Production Zone Wells in Additional Overlying Aquifers

1. Non-Production Zone Monitor Wells completed in additional overlying aquifers (above the first overlying aquifer) shall be sampled and Baseline water quality determined upon completion. Baseline water quality analyses (on Form TWC-0678) shall be submitted to the Central Office in Austin. Every three months, these Monitor Wells shall be sampled and analyzed for the Control Parameters specified in Section VII.A. The results of these quarterly sample analyses

shall be submitted to the Central Office in Austin on March 1st, June 1st, September 1st, and December 1st of each year.

2. If the results of a routine sample analysis in one or more of these overlying Monitor Wells shows that the value of any Control Parameter is equal to or above the Upper Limit established for that permit/mine area the operator shall complete a Verifying Analysis of samples taken for each apparently affected well within two days. The permittee shall determine if and to what extent leaching solutions are present in the overlying aquifers and effect clean-up in accordance with 31 TAC Section 331.106. Under such circumstances corrective action reports shall be submitted monthly to the Director of the Water Rights and Uses Division, in Austin.

H. Monitoring Frequency During Restoration

Once the permittee officially notifies the Central Office in Austin that full-scale restoration has commenced and injection of leachate has ceased in a particular Production Area as per 31 TAC Section 331.105(2), approval may be given by the Executive Director for a reduction in the frequency of monitoring. The restoration monitoring frequency shall be at least quarterly. The reduced frequency of monitoring may continue as long as full-scale restoration continues or until the value of any Control Parameter is equal to or above the Upper Limit Value for the Production Area. If full-scale restoration efforts by the permittee are suspended or interrupted for any reason, the permittee shall notify the Central Office in Austin and routine monitoring as per 31 TAC Section 331.105(1) shall be resumed. The permittee shall submit any proposed monitoring frequency changes to the Executive Director at least 30 days prior to the proposed implementation date of the new sampling schedule.

I. Reduced Sampled Analyses During the Restoration Stability Period

Restoration stability sample analyses, as required by 31 TAC Section 331.107, may be reduced in frequency for particular parameters if the permittee can demonstrate to the Executive Director that the particular parameter concentrations have not been elevated above Baseline during the mining process. These parameters (as designated by the Executive Director) shall be analyzed during the initial restoration verification sampling and the final restoration verification sampling and the final restoration sampling only. All other Restoration Parameters shall be analyzed and reported for each of the required monthly interval samplings.

- J. Restoration Demonstration - The permittee shall complete one or more restoration demonstrations before October 12, 1989. The demonstration shall include the following:

1. An isolated restoration demonstration pattern, completed in a Production Area, constructed to the same basic configuration as the proposed production well field pattern, and operated under the same conditions as the proposed mining procedures.
  2. Leaching of the pattern will be run for at least 3 months under commercial activity conditions using leaching agent concentrations equal or greater than is expected to be required for production.
  3. After leaching phase, a complete chemical description of the produced fluid will be obtained and a demonstration of a restoration will be initiated.
  4. Brine concentrate will be discharged to a disposal well or contained in on-site tankage until it can be disposed of at an authorized site.
  5. Sample analysis of fluids will be completed at least every week during the restoration demonstration to allow observation of the concentration of various restoration parameters. The permittee shall compile reports based on the weekly sampling. These progress reports shall be submitted to the Director, Water Rights and Uses Division of the Texas Water Commission biannually.
  6. Restoration will continue until the ground water is restored to levels consistent with baseline.
  7. With each progress report, the operator will calculate and submit the volume of ground water affected. Factors to be considered include: areal extent, formation thickness, and porosity. Upon the consideration of the restoration demonstration, submit the data, analysis, and conclusions in a final report.
  8. Authorization for expansion of mining into additional Production Areas will be contingent upon the results of the restoration demonstration within the 18 month period.
- K. During the full-scale restoration at this site, the permittee shall use reverse osmosis (R.O.) treatment of ground water from the mine zone aquifer in accordance with the plans outlined in the technical report submitted as part of the application.
- L. Waste water produced from the reject side of the R. O. unit, less that amount of water constituting the bleed streams, shall be replaced by an equal amount of makeup water purchased for that purpose. Prior to the purchased water being injected into the mine zone, it will be commingled with the R.O. product and mine zone water.

- M. Waste streams and reject restoration fluids will be disposed of down a Commission approved Class I waste disposal well. All terms and conditions of the waste disposal well permit will be complied with.
- N. Monitor wells shall be installed in the first aquifer underlying the production zone. These wells shall be sampled and analyzed and the results shall be reported according to the same schedule established for the monitor wells in the first overlying aquifer. The first underlying aquifer shall be determined as follows:
  - 1. A hydrologic test shall be conducted in each production area to determine if the "A" sand is in communication with the "B" or "C" sands.
    - (a) If the "A" sand is not in communication with the "B" or "C" sands it shall be considered to be the first underlying aquifer and shall be monitored in accordance with 31 TAC Section 331.103(b).
    - (b) If the "A" sand is in communication with the "B" or "C" sands it shall be monitored in accordance with 31 TAC Section 331.103(a). In this case the "AA" sand shall be considered to be the first underlying aquifer and shall be monitored in accordance with 31 TAC Section 331.103(b).
- O. The permittee shall use the same averaging process for restoration samples as is used to establish baseline water quality values so that constituent levels are directly comparable.
- P. Any modification to a Restoration Table in a Production Area Authorization which would exceed the high values contained in the Restoration Range Table, which is set out in Table 2 of this permit, shall require published notice and opportunity for a public hearing in accordance with 31 TAC Section 305.102.

#### VIII. Specific Definitions

- A. Permit Area - The Permit Area is defined as shown in Figures 1 and 2.
- B. Mine Plan - The Mine Plan is defined by Figure 2 Table 1. An updated Mine Plan will be issued as part of each future Production Area Authorization or Permit amendment.
- C. Application - The document entitled "Kingsville Dome Project, Expansion No. 1, Supplementary Technical Report," filed by URI, Inc. as received on May 13, 1988 and subsequent amendments thereof.

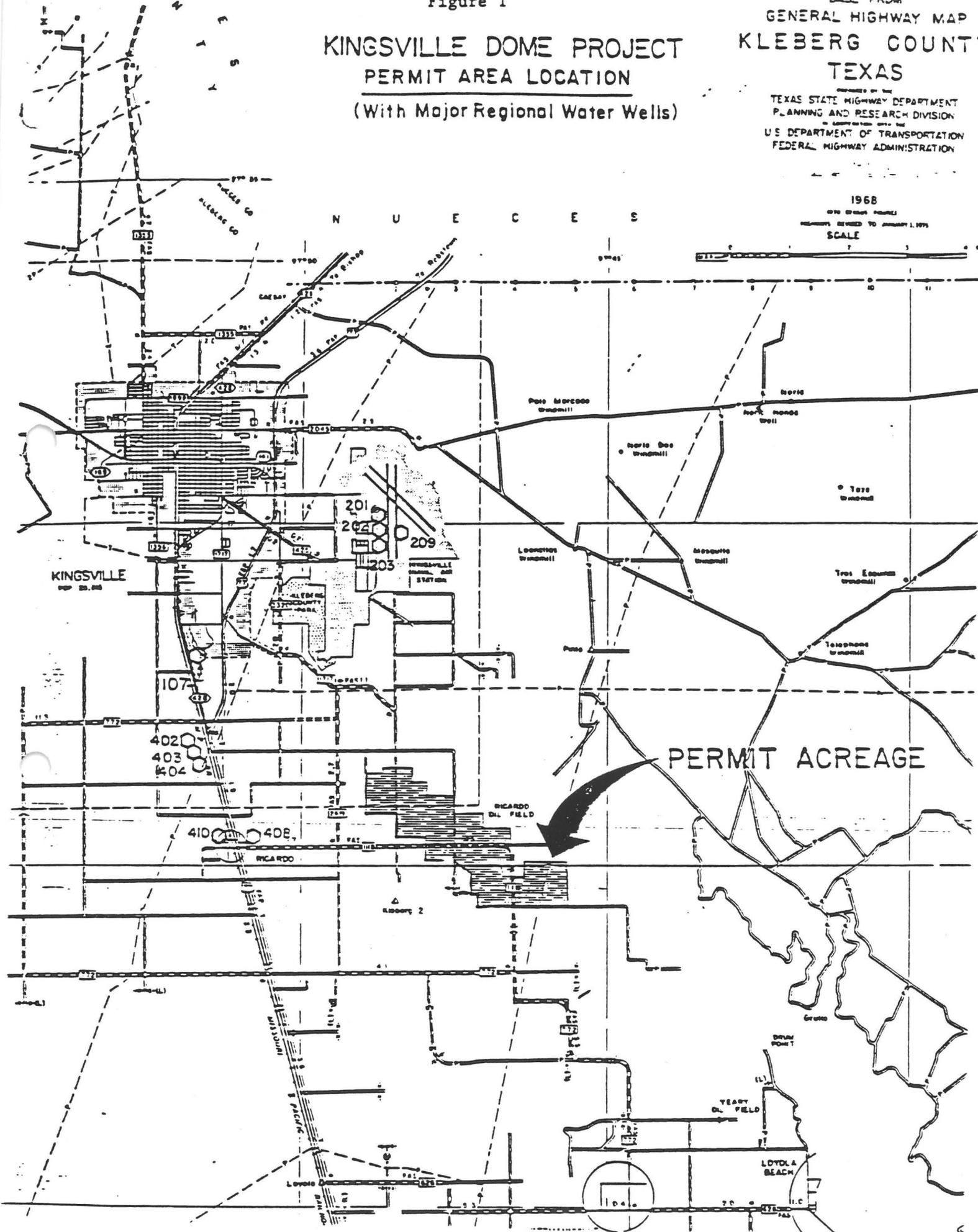
Figure 1

GENERAL HIGHWAY MAP  
KLEBERG COUNTY  
TEXAS

KINGSVILLE DOME PROJECT  
PERMIT AREA LOCATION  
(With Major Regional Water Wells)

BASED UPON THE  
TEXAS STATE HIGHWAY DEPARTMENT  
PLANNING AND RESEARCH DIVISION  
IN COOPERATION WITH THE  
U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

1968  
BY STATE ENGINEER  
REVISED TO JANUARY 1, 1971  
SCALE



# URANIUM RESOURCES, INC. KINGSVILLE DOME MINE PLAN

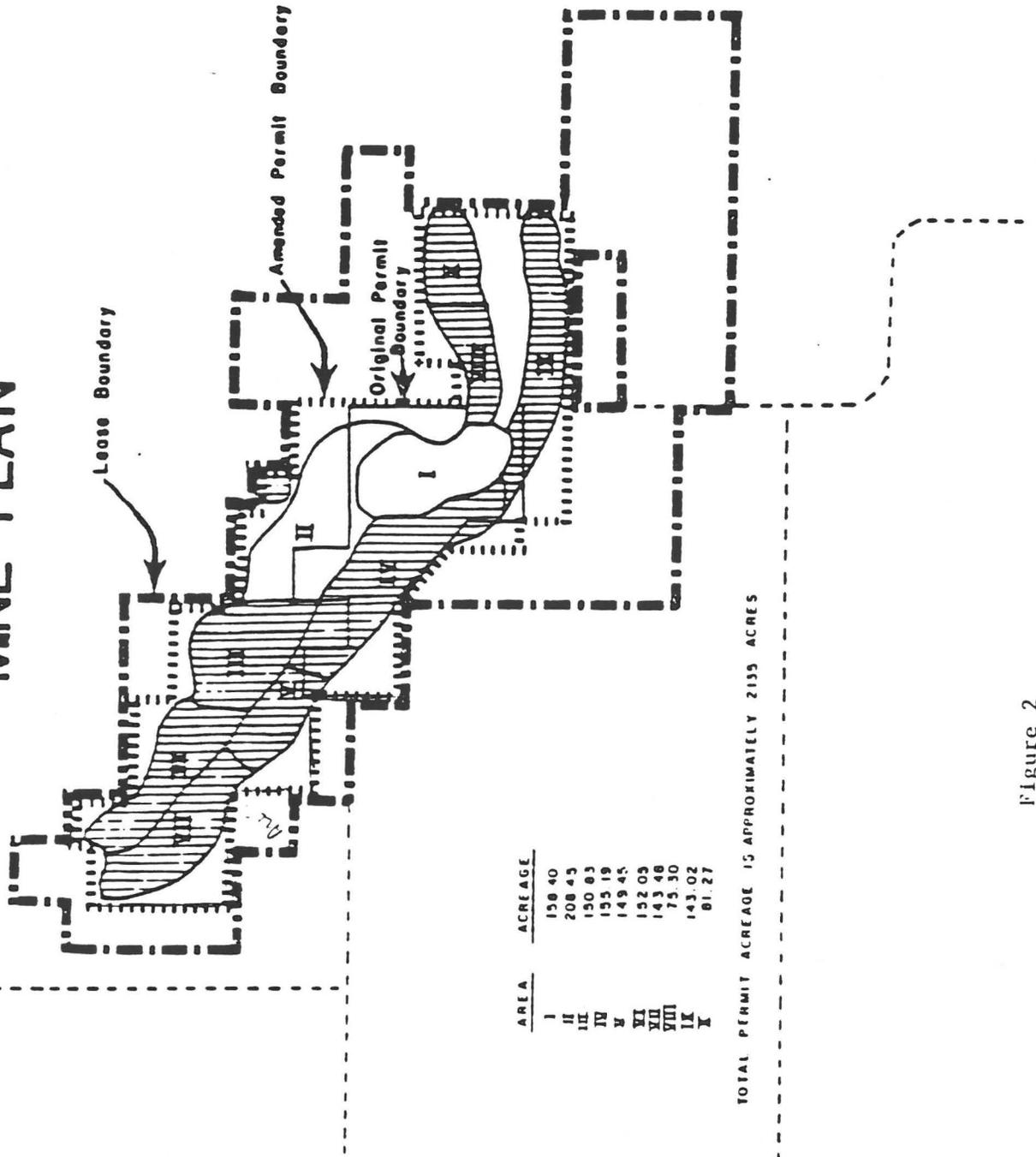


Figure 2

Table 1  
 Mine Plan

PAA #	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
I	PRODUCE	PRODUCE	RESTORE	RESTORE									
II		PRODUCE	PRODUCE	RESTORE	RESTORE								
III			PRODUCE	PRODUCE	RESTORE	RESTORE							
IV				PRODUCE	PRODUCE	RESTORE	RESTORE						
V					PRODUCE	PRODUCE	RESTORE	RESTORE					
VI						PRODUCE	PRODUCE	RESTORE	RESTORE				
VII							PRODUCE	PRODUCE	RESTORE	RESTORE			
VIII								PRODUCE	PRODUCE	RESTORE	RESTORE		
IX									PRODUCE	PRODUCE	RESTORE	RESTORE	
X											PRODUCE	PRODUCE	RESTORE

 PRODUCE  
 RESTORE

Table 2  
 RESTORATION RANGE TABLE

	<u>LOW</u>	<u>HIGH</u>
Ca	5.15	74
Mg	2.8	10
Na	288	352
K	4.72	12.1
CO <sub>3</sub>	0	71
HCO <sub>3</sub>	142	505
SO <sub>4</sub>	13	310
Cl <sup>4</sup>	196	352
F1	.49	1.10
N	.01	5.8
SiO <sub>2</sub>	9.1	22
pH*2	7.37	9.5
TDS	880	1230
EC**	1470	2100
Alk***	205	444
As	<.001	.023
Cd	<.0001	.0034
Fe	<.01	.26
Pb	<.001	.014
Mn	<.001	.08
Hg	<.0001	.01
Se	<.001	.072
NH <sub>3</sub>	.01	13
U	.002	1.89
Mo	<.01	.84
Ra 226****	.01	202

Parameter values are expressed in mg/l except where noted

- \* standard units
- \*\* umhos
- \*\*\* standard units
- \*\*\*\* pCi/l

**EXHIBIT D**

# TEXAS WATER COMMISSION )



Paul Hopkins, Chairman  
John O. Houchins, Commissioner  
B. J. Wynne, III, Commissioner

J. D. Head, General Counsel  
Michael E. Field, Chief Examiner  
Karen A. Phillips, Chief Clerk

Allen Beinke, Executive Director

February 11, 1988



Mr. Mark S. Pelizza  
Environmental Manager  
Uranium Resources, Inc.  
12377 Merit Drive  
Suite 750, LB14  
Dallas, Texas 75251

Re: Restoration Determination of Production Area No. 1 of the Longoria Mine Site,  
Permit No. UR02222-011

Dear Mr. Pelizza:

The Texas Water Commission has received the restoration data for Production Area No. 1 of the Longoria Mine Site. A review of the data indicates that Production Area No. 1 has been restored in accordance with the specifications contained in permit number UR02222-011 as required by 31 TAC Section 331.107. You are hereby authorized to cease any restoration activities, including monitoring, at Production Area No. 1.

Within 120 days of receipt of this letter closure of the wellfield shall be accomplished in accordance with the approved plugging and abandonment plans for this Production Area. Any modifications to the plugging and abandonment procedure must be approved in writing by the Commission.

Please notify the Commission prior to commencing plugging activities to provide the opportunity for TWC personnel to be present. If you have any questions please contact Dale P. Kohler of the In Situ Uranium Mining Unit at (512) 463-8278.

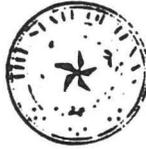
Sincerely,

Handwritten signature of Harry D. Pruett.  
Harry D. Pruett  
Director, Water Rights & Uses Division

DK:jt

cc: TWC Dist 11 Office - Weslaco  
Mr. David Lacker - Texas Department of Health  
Bureau of Radiation Control

# TEXAS WATER COMMISSION



Paul Hopkins, Chairman  
John O. Houchins, Commissioner  
B. J. Wynne, III, Commissioner

J. D. Head, General Counsel  
Michael E. Field, Chief Examiner  
Karen A. Phillips, Chief Clerk

Allen Beinke, Executive Director

February 11, 1988

Mr. Mark S. Pelizza  
Environmental Manager  
Uranium Resources, Inc.  
12377 Merit Drive  
Suite 750, LB14  
Dallas, Texas 75251

Re: Restoration Determination of Production Area No. 2 of the Longoria Mine Site,  
Permit No. UR02222-021

Dear Mr. Pelizza:

The Texas Water Commission has received the restoration data for Production Area No. 2 of the Longoria Mine Site. A review of the data indicates that Production Area No. 2 has been restored in accordance with the specifications contained in permit number UR02222-021 as required by 31 TAC Section 331.107. You are hereby authorized to cease any restoration activities, including monitoring, at Production Area No. 2.

Within 120 days of receipt of this letter closure of the wellfield shall be accomplished in accordance with the approved plugging and abandonment plans for this Production Area. Any modifications to the plugging and abandonment procedure must be approved in writing by the Commission.

Please notify the Commission prior to commencing plugging activities to provide the opportunity for TWC personnel to be present. If you have any questions please contact Dale P. Kohler of the In Situ Uranium Mining Unit at (512) 463-8278.

Sincerely,

  
Harry D. Pruett

Director, Water Rights & Uses Division

DK:jt

cc: TWC Dist 11 Office - Weslaco  
Mr. David Lacker - Texas Department of Health  
Bureau of Radiation Control