

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

In the matter of

SEQUOYAH FUELS CORPORATION
and GENERAL ATOMICS

(Gore, Oklahoma Site
Decontamination and
Decommissioning Funding)

Docket No. 40-8027-FA

Source Material License
No. SUB-1010

AFFIDAVIT OF TIMOTHY P. BROWN

December 27, 1993

I, Timothy P. Brown, depose and say:

1. I am a professional hydrogeologist employed by L. Lehman & Associates; 1103 W. Burnsville Parkway, Suite 209, Burnsville MN, 55337. A statement of my professional qualifications is attached.
2. I have reviewed the December 3rd, 1993 Affidavit of John S. Dietrich, which is attached to Sequoyah Fuels Corporation's Answer in Opposition to NACE's Motion to Intervene (December 6, 1993).
3. The purpose of this affidavit is to discuss the reasons why I believe that Ed Henshaw's property may become contaminated if decommissioning of the Sequoyah Fuels facility is not carried out properly. I will also address the reasons why I believe there is an inadequate basis for Mr. Dietrich's assertions regarding the potential for contamination of the groundwater on Mr. Henshaw's property. My affidavit includes Attachment 1, which is a schematic drawing showing the location of Mr. Henshaw's property in relation to the SFC site and some of the important hydrologic features in the area.
4. In Paragraph 7 of his affidavit, Mr. Dietrich refers to SFC's 1991 Facility Environmental Investigation (FEI), the Addendum to the FEI of 1992 and Questions for Clarification -- SFC Environmental Assessment also dated 1992. I have thoroughly reviewed these documents. I have also reviewed other pertinent reports and studies

relating to environmental quality at Sequoyah Fuels Corporation's Gore, Oklahoma site including:

- 1) Kerr-McGee Corporation, Monitor Locations Sequoyah Facility, Site Map and well descriptions # 110-C-1021, Aug. 8, 1985.
- 2) Sequoyah Fuels Corporation, Ammonium Nitrate Fertilizer Program, 1989 Completion Report, April, 1990.
- 3) Sequoyah Fuels Corporation, Ammonium Nitrate Fertilizer Program, 1990 Completion Report, April, 1991.
- 4) Sequoyah Fuels Corporation, Applicant's Environmental Report, Revision 1, for Sequoyah Facility, January, 1992.
- 5) Sequoyah Fuels Corporation, Sequoyah Fuels Corporation Action Plan, January, 1992.
- 6) Sequoyah Fuels Corporation, Sequoyah Fuels Corporation Groundwater Monitoring Plan, March, 1992.
- 7) Sequoyah Fuels Corporation, Partial Response to NRC Inquiry Regarding Environmental Assessment, September, 1992.
- 8) Sequoyah Fuels Corporation, Environmental Program for Sequoyah Facility, September, 1992.
- 9) Sequoyah Fuels Corporation, Preliminary Plan for Decommissioning (PPCD), February, 1993.
- 10) B.B. Tucker, R.L. Westerman, and G.V. Johnson, Sequoyah Fuels Corporation Fertilizer Program Report, Oklahoma State University, 1988.

5. The soil and groundwater at the SFC site are contaminated with radioactive chemicals such as uranium, thorium and radium, and nonradioactive chemicals such as nitrates, fluoride, arsenic and heavy metals. These contaminants occur at various locations on the site, but appear to be concentrated beneath the process buildings, and also beneath the nitrate settling ponds that lie to the south and west of the process buildings.

6. In paragraph 8 of his affidavit, Mr. Dietrich states that SFC's waste ponds are about one-half mile northwest of Mr. Henshaw's property. According to Mr. Dietrich, the groundwater under the waste ponds flows in a generally westward direction, "away from Mr. Henshaw's property". Thus, he concludes in Paragraph 9 that "there is no indication of any groundwater flow path which would allow flow of groundwater from beneath SFC's industrial site and associated pond areas to reach Mr. Henshaw's property".

7. Mr. Dietrich's conclusion is based on measurements of the groundwater's upper surface in the immediate vicinity of the waste ponds, as described in Paragraph 8 of his affidavit. However, these measurements are inadequate to support Mr. Dietrich's conclusion, because they represent: a) too small a portion of the areal groundwater potentiometric surface, and b) not enough of the vertical extent of groundwater, to reliably identify all flow paths of the groundwater in the area.

- a) Inadequate measurement of areal groundwater flow. SFC has measured the areal potentiometric surface elevations in the processing area and directly under

the impoundments to the south. These two areas represent a small portion of the larger flow field at the SFC Gore site and are insufficient to characterize, with reasonable confidence, groundwater flow which could affect Mr. Henshaw's property. Figures 48 through 54 of the FEI (Attachments 2-8 to this Affidavit), which show geologic cross-sections of the area, reveal a complex and unpredictable pattern of hydrologic unit relationships. There exist many juxtaposed rock units which exhibit a wide range of hydrologic properties. As water flows through these dissimilar rocks, flow direction may bend and twist as the pressure field accommodates sharp changes in conductivity and porosity.

- b) In addition, several site maps, including Kerr-McGee Corporation's Site Plan and Area Map #110-C-151, Rev. 5, (Attachment 9 to this Affidavit), show a fault zone running from roughly the old Carlisle School, due east of the processing area, through Mr. Henshaw's property south of the site. This fault zone contains groundwater and likely plays a significant role in the area hydrodynamics. It may act as a fast pathway or as a barrier to groundwater flow. Data collection and analysis has not been performed to determine the impact of the fault, as SFC's efforts have concentrated on the immediate area of the processing buildings and waste ponds.
- c) Accordingly, given the very small area examined by SFC, and given the complexity of the geology at the SFC site including the presence of a fault zone, to characterize the groundwater flow as "westward" for the entire area is a gross over-simplification which potentially misses localized flow patterns. The potentiometric surface should be measured over a continuous area encompassing at least the SFC and Henshaw properties, with sufficient resolution such that the flow field can be reliably mapped.
- d) Inadequate measurement of vertical groundwater flow. Another reason why the data cited by Mr. Dietrich are inadequate to support his conclusion is that they relate only to the upper groundwater zones. In fact, Mr. Dietrich's affidavit fails entirely to address the possibility that deeper levels of groundwater may flow toward Mr. Henshaw's property. It is not uncommon for different levels of a groundwater flow system to have different directions of flow. Deeper layers of groundwater may be confined and nearly isolated so that entirely different flow directions are achieved. Contaminants may then seep into deeper zones through slow leakage or diffusion and/or through conduits created by the drilling of deep wells. Such conduits have been created by the drilling of seven wells to depths below 100 feet at the SFC site, including a 400 feet deep well in the center of the processing area which is associated with an early proposed injection disposal system (see Attachment 1). Some of the deep wells were "plugged" in 1987 but were in place for many years. These wells are likely to have previously functioned as fast pathways for contaminant transport from the upper levels of groundwater to depths well below SFC's current monitoring network. Depending on the effectiveness of the plugging and sealing of the wells, which to my knowledge has not been evaluated, they may continue to act as conduits from upper to lower groundwater layers. Once they reach lower levels, contaminants may be transported in a direction contrary to the flow direction that is apparent

based on the potentiometric surface map. In this case, none of SFC's reports provide any data for depths below 40-50 feet; thus SFC has no basis for assuming that contaminated groundwater in deeper zones does not flow toward Mr. Henshaw's property.

8. Mr. Dietrich focuses in his affidavit on the potential for groundwater contamination from the nearest source to Mr. Henshaw's property, the waste ponds. However, the process buildings, while they are further away from Mr. Henshaw's property, are also a potentially significant source of contamination with very high concentrations of uranium, fluoride, nitrate, arsenic and barium (see: Figures 77 and 97 of the FEI, Attachment 10-13). If unidentified flow paths exist in the groundwater, either in the upper or deep zones, contaminated groundwater beneath these buildings may eventually reach and contaminate Mr. Henshaw's property. To my knowledge SFC has not performed any surveys at depths below 50 feet beneath these buildings to determine whether these contaminants exist at or below this depth.

9. Accordingly, I conclude that, with respect to the potential for groundwater contamination of Mr. Henshaw's property by radioactive and other hazardous chemicals beneath the SFC process buildings and waste ponds, SFC has not provided enough data to reliably assert that groundwater at some depth does not flow toward Mr. Henshaw's property. If anything, the available data suggests that groundwater flows in the area are variable and complex, are not reliably characterized as "westward" only, and may flow in other directions as well. The complex stratigraphic relationships as well as the presence of a faulted zone in the area between the process buildings and Mr. Henshaw's property should be expected to have significant impacts on the area groundwater flow. These important hydrologic features have not been adequately described, nor have their effects on local groundwater flow been addressed. Accurate characterization, as well as reliable prediction of the hydrodynamic system behavior around the SFC facility, will require the collection and analysis of considerably more data than has been accomplished.

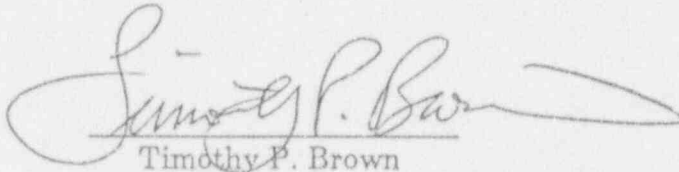
10. Mr. Henshaw's property may also be susceptible to contamination from SFC's raffinate spreading fields which adjoin his property on several sides (see Attachment 1). Raffinate is a highly concentrated nitrate solution containing heavy metals including arsenic, barium, mercury, lead, selenium, uranium, and others. SFC's Fertilizer Completion Reports have indicated that levels of nitrates and cadmium have at times been above the Environmental Protection Agency's drinking water limits, and that levels of gross alpha emission and uranium have been above the currently proposed EPA limits for radioactive substances (see: Sequoyah Fuels Corporation, Ammonium Nitrate Fertilizer Program, 1989 Completion Report, April, 1990). Data collected relating to groundwater quality in the raffinate spreading areas are extremely limited, so that the effects of SFC's raffinate spreading program on groundwater quality have not been fully determined. Several of these fields are eastward of Mr. Henshaw's property. Thus Mr. Henshaw's property is at risk of contamination whatever direction groundwater flows in the area.

11. If the groundwater on Mr. Henshaw's property becomes contaminated, it may adversely affect the quality of well water on the property, thereby impacting the health and quality of life for the Henshaw family and future generations.

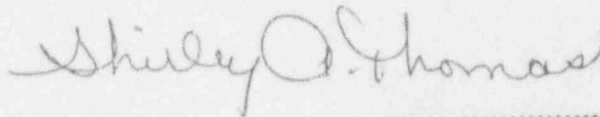
12. Airborne transport of contaminants from the SFC site is another potential source of contamination of Mr. Henshaw's property. Large quantities of soil at the site are contaminated with uranium and other pollutants. Soil that is not properly contained may be blown by the wind and become airborne, traveling the short distance to Mr. Henshaw's property and beyond. Improper decommissioning activities could also stir up contaminated soil, allowing the wind to carry them beyond the borders of the site.

13. The statements of fact in this Affidavit are true and correct to the best of my knowledge, information and belief.

Date: 12/27/93


Timothy P. Brown

12/27/93





TIMOTHY P. BROWN Hydrogeologist
L. LEHMAN & ASSOCIATES, INC.
1103 West Burnsville Parkway, Suite 209
Burnsville, Minnesota 55337
(612) 894-0357

EDUCATIONAL BACKGROUND:

M.S. Civil Engineering, 1992 - University of Minnesota
B.S. Geo-Engineering, 1990 - University of Minnesota
B.S. Geophysics, 1990 - University of Minnesota

WORK HISTORY:

Staff hydrogeologist

L. Lehman & Associates, Inc.; 1991 - Present

Research Assistant

University of Minnesota, 1990 - 1991

EXPERIENCE:

Ground Water Modeling

- Masters thesis quantifying uncertainty in ground water model output utilizing O.D.L. Strack's analytic element model.
- Developing and reviewing models for the State of Nevada in the international flow and transport model validation effort for nuclear waste repository performance codes (INTRAVAL).
- Implementation of VTOUGH multi-phase unsaturated zone flow model for test cases relating to the proposed Yucca Mountain high-level radioactive waste project utilizing the Nevada Cray Supercomputer.

Hydrologic Investigations

- Analysis of VOC contaminant trends at the Flying Cloud Landfill.
- Study of fracture flow effects on unsaturated porous media ground water flow patterns at the Nevada test site.
- Analysis of water level trends and cycles at Devil's Hole National Monument using an in-house linear regression cosine curve fitting program (FIT.M).

Technical Program Management

- Principal investigator for firm's project at the Sequoyah Fuels nuclear facility in Gore, Oklahoma. Coordinated research and prepared legal briefings and reports for the client.
- Coordinated research and hydrologic study for the client's lawsuit involving the DOE's Mound Facility.

Resume: Timothy P. Brown
continued

PROFESSIONAL ACTIVITIES:

Certifications

Registered Engineer In Training (EIT), State of Minnesota

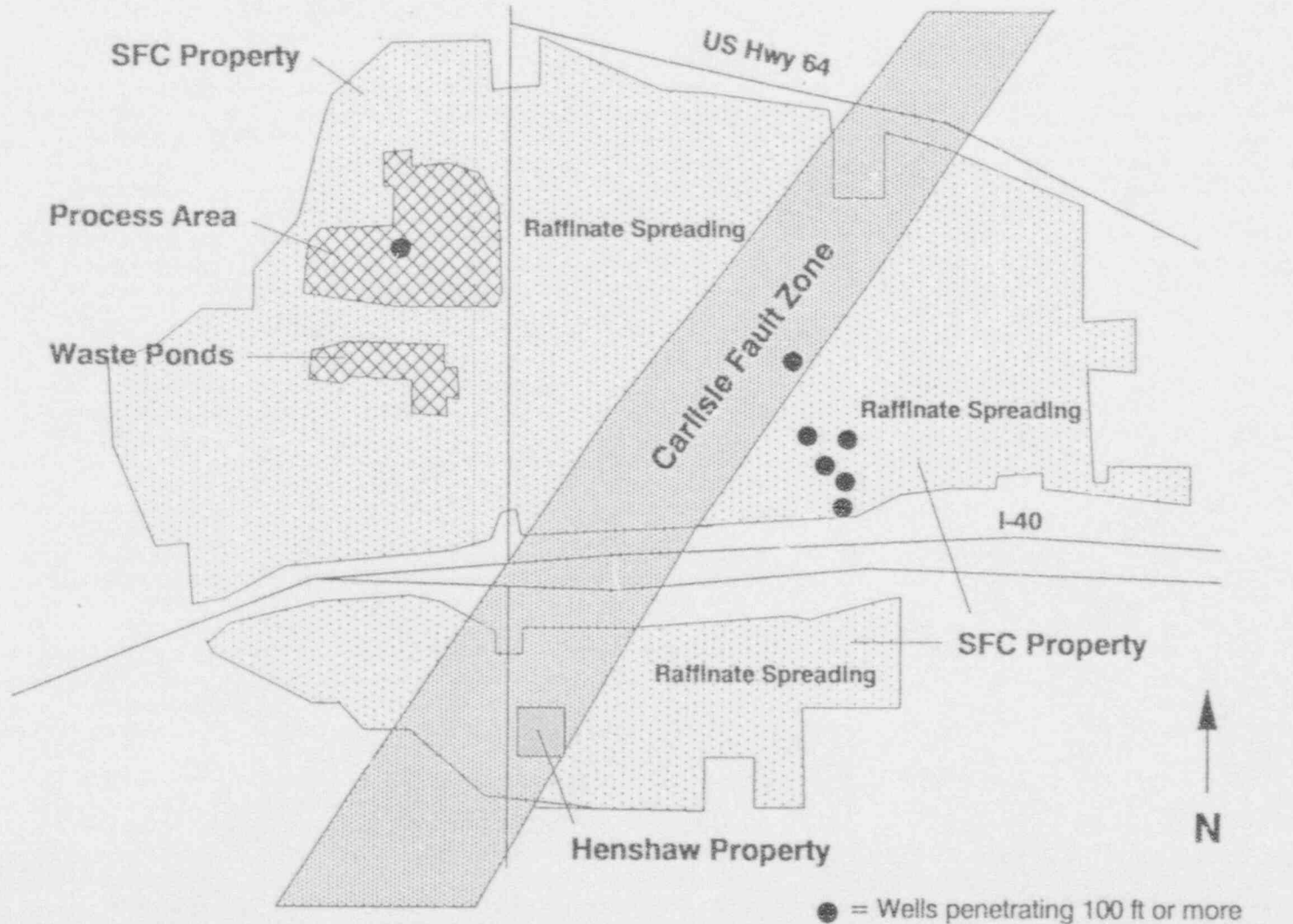
Associations

National Water Well Association

Minnesota Ground Water Association

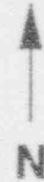
Schematic of SFC Site and Important Local Features

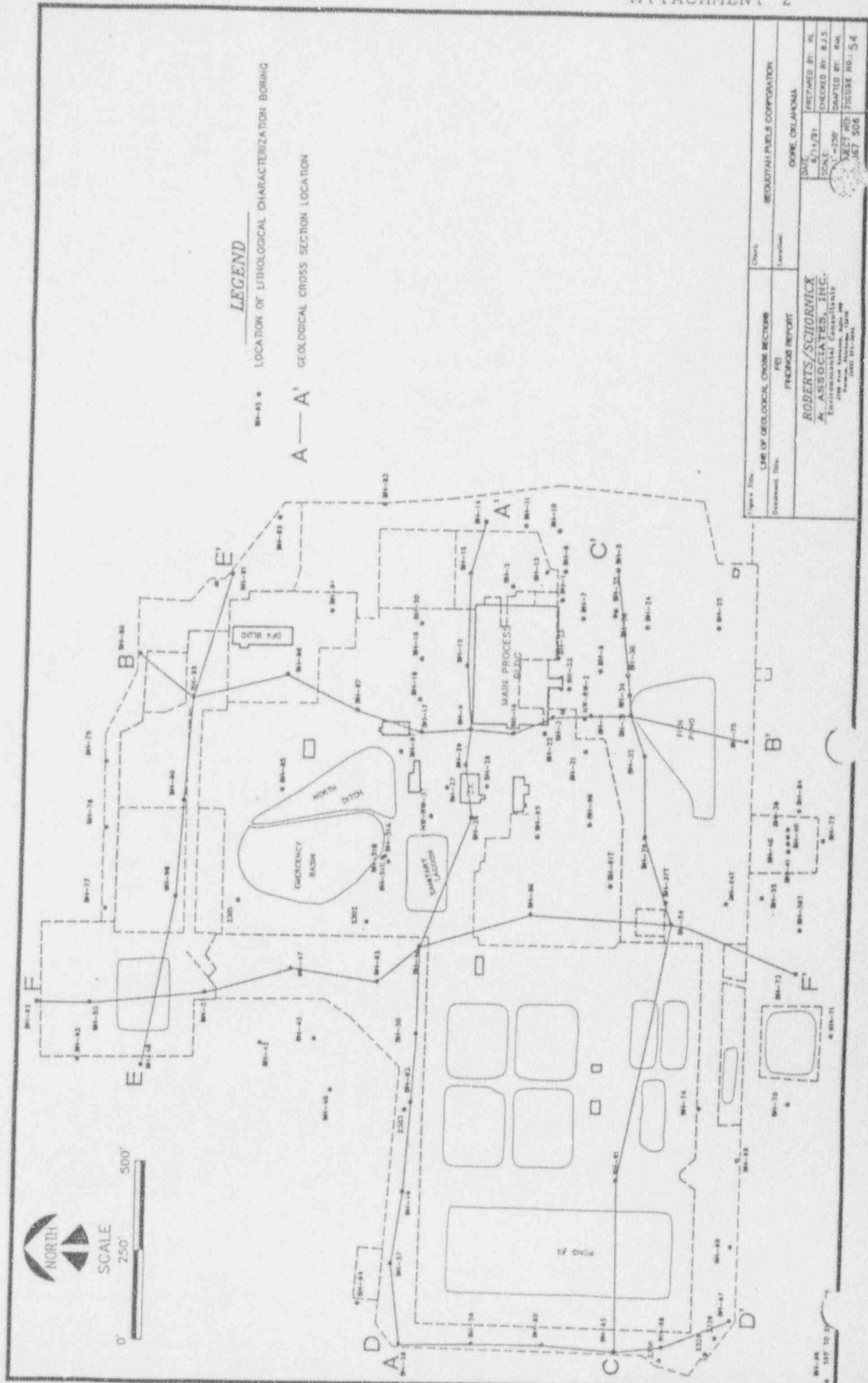
Locations from: Kerr-McGee Corp., Monitor Locations Sequoyah Facility
Site Map and Well Descriptions # 110-C-1021, and 110-C-151 Rev. 5, 1985.



● = Wells penetrating 100 ft or more

Prepared by: L. Lehman & Associates, 1993

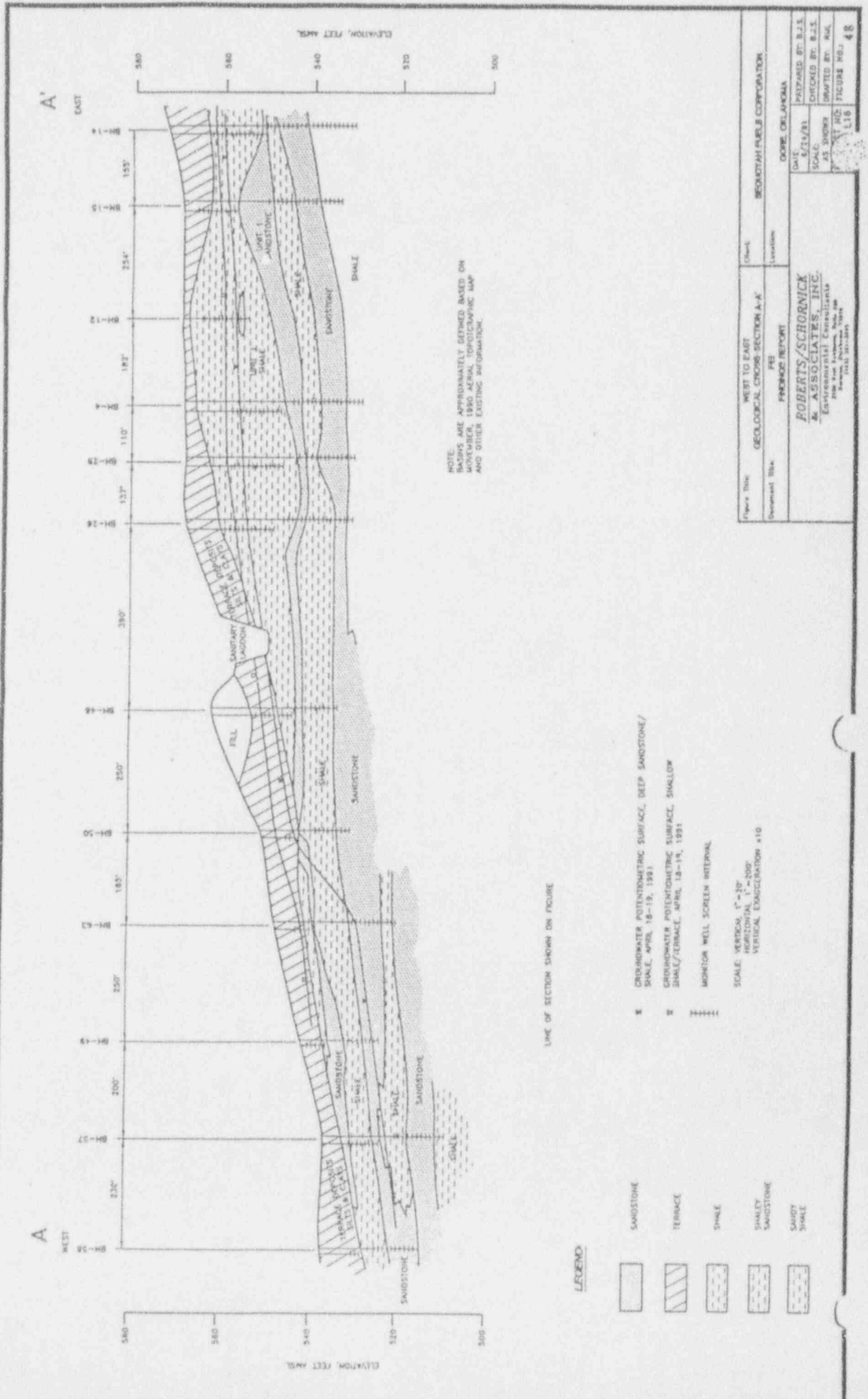


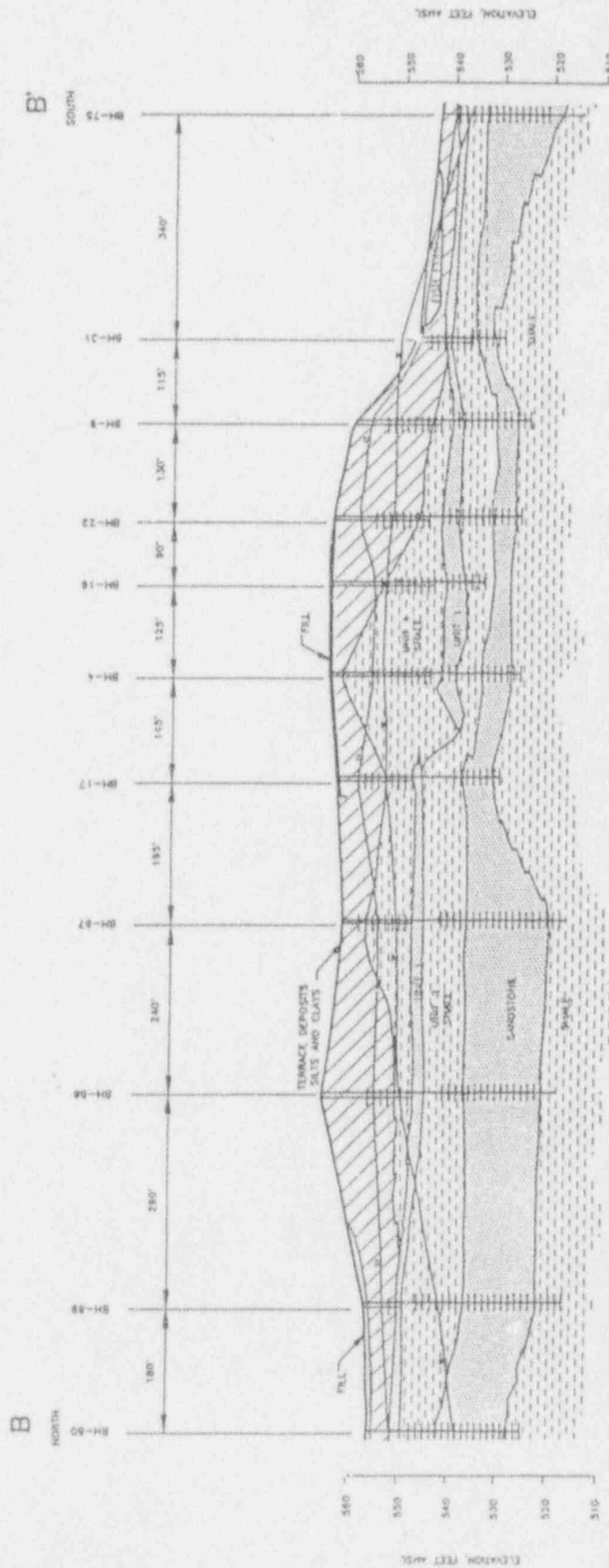


LEGEND

BH-11 • LOCATION OF LITHOLOGICAL CHARACTERIZATION BORING
 A—A' GEOLOGICAL CROSS SECTION LOCATION

Figure Title:	LINE OF GEOLOGICAL CROSS SECTIONS	Client:	BECKMANN PULVER CORPORATION
Document Title:	FBI PROPOSED REPORT	Location:	COOKE, OKLAHOMA
ROBERTS/SCIORNICK & ASSOCIATES, INC. Environmental Consultants 1000 North Lincoln, Suite 100 Tulsa, Oklahoma 74103		PREPARED BY: RL CHECKED BY: B.J.S SCALE: 1"=250' DRAWN BY: BAC SHEET NO.: 506 FIGURE NO.: 54	





NOTE: BASINS ARE APPROXIMATELY DEFINED BASED ON NOVEMBER, 1990 AERIAL TOPOGRAPHIC MAP AND OTHER EXISTING INFORMATION.

LINE OF SECTION SHOWN ON FIGURE

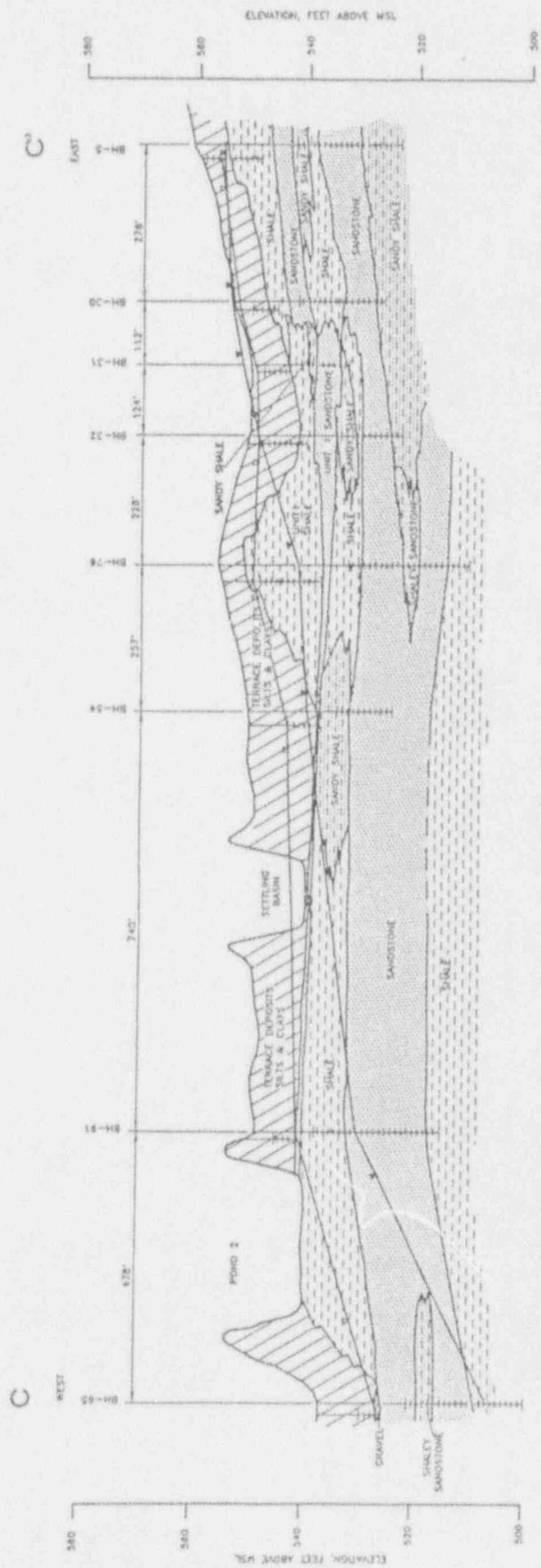
LEGEND

- SANDSTONE
- TERRACE
- SHALE
- SHALY SANDSTONE
- SAND SHALE

- * GROUNDWATER POTENTIOMETRIC SURFACE, DEEP SANDSTONE/SHALE, APRIL 18-19, 1993
- * GROUNDWATER POTENTIOMETRIC SURFACE, SHALLOW SAND/TERRACE, APRIL 18-19, 1993
- ***** MONITOR WELL SCREEN INTERVAL

SCALE: VERTICAL, 1"=12'
HORIZONTAL, 1"=100'
VERTICAL, DENSIFICATION x7.3

Figure Title	WORTH TO NORTH GEOLOGICAL CROSS SECTION B-B'	Client	BECKLEY LEVELS CORPORATION
Drawn/Checked	FEI	Location	OCW, OKLAHOMA
PROJECT REPORT			
ROBERTS/SCHORNICK ASSOCIATES, INC.			
2000 WEST 10TH AVENUE, SUITE 100, OKLAHOMA CITY, OKLAHOMA 73106			
DATE	PREPARED BY	CHECKED BY	DATE
JUL 1991	JUL 1991	JUL 1991	JUL 1991
SCALE	DATE	SCALE	DATE
1:100	JUL 1991	1:100	JUL 1991
FIGURE NO. 49			



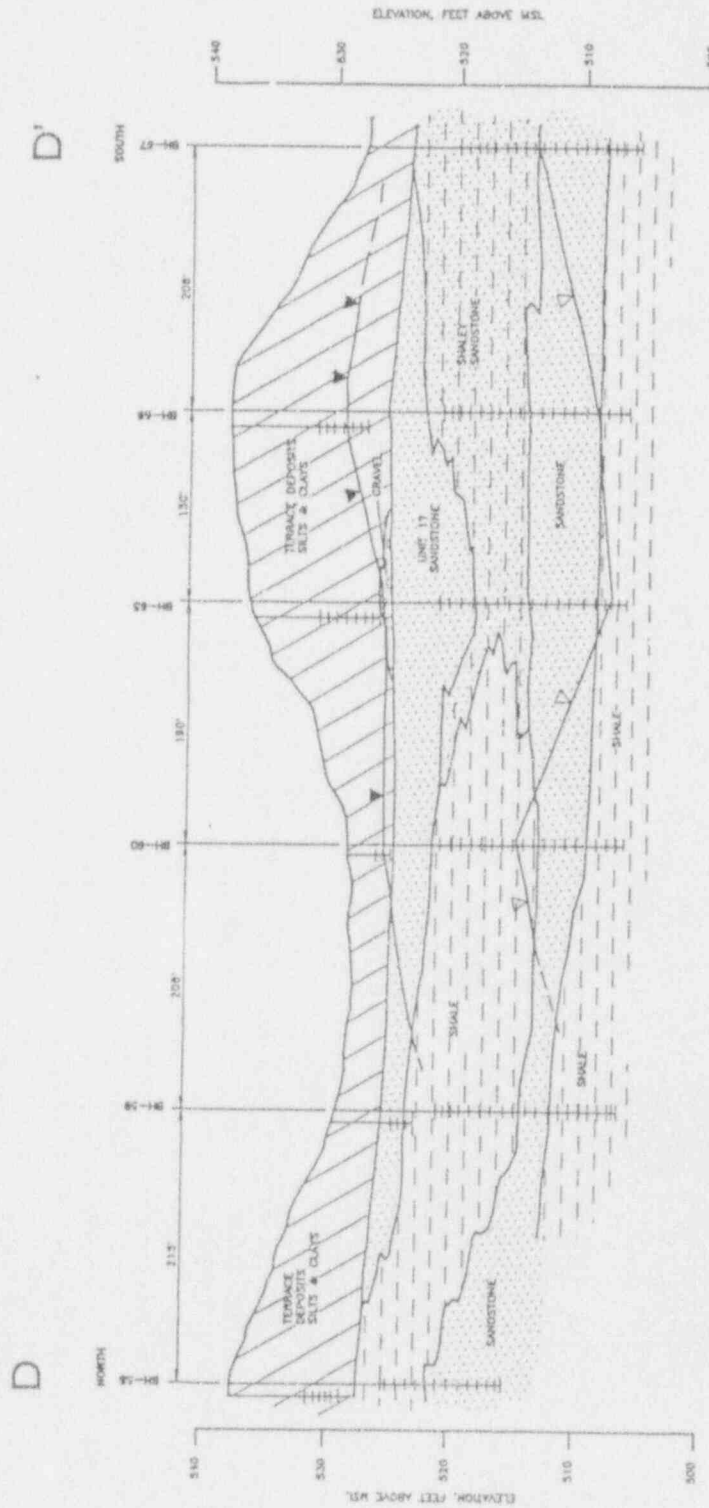
NOTE: BASINS ARE APPROXIMATELY DEFINED BASED ON NOVEMBER, 1990 AERIAL TOPOGRAPHIC MAP AND OTHER EXISTING INFORMATION.

LINE OF SECTION SHOWN ON FIGURE 54

LEGEND

- SANDSTONE
 - TERRACE
 - SHALE
 - SANDY SHALE
 - SHALEY SANDSTONE
 - SANDY SHALE
1. GROUNDWATER POTENTIOMETRIC SURFACE, DEEP SANDSTONE/SHALE, APRIL 15-19, 1991
 2. GROUNDWATER POTENTIOMETRIC SURFACE, SHALLOW TERRACE/SHALE, APRIL 15-19, 1991
 MOHORI WELL SCREEN INTERVAL
- SCALE: VERTICAL: 1"=20'
 HORIZONTAL: 1"=200'
 VERTICAL EXAGGERATION X10

Figure Title	WEST TO EAST GEOLOGICAL CROSS-SECTION C-C	Client	BEEDOTAM FUELS CORPORATION
Drawn	FEI	Location	DOOR, OLAHOKA
Prepared By	ROBERTS/SCHORNICK & ASSOCIATES, INC.	Date	8/13/91
Checked By	Environmental Consultants	Checked By	B.J.S.
Drafted By		Drafted By	E.C.C.
Figure No.	U1	Figure No.	50



LINE OF SECTION SHOWN ON FIGURE 54

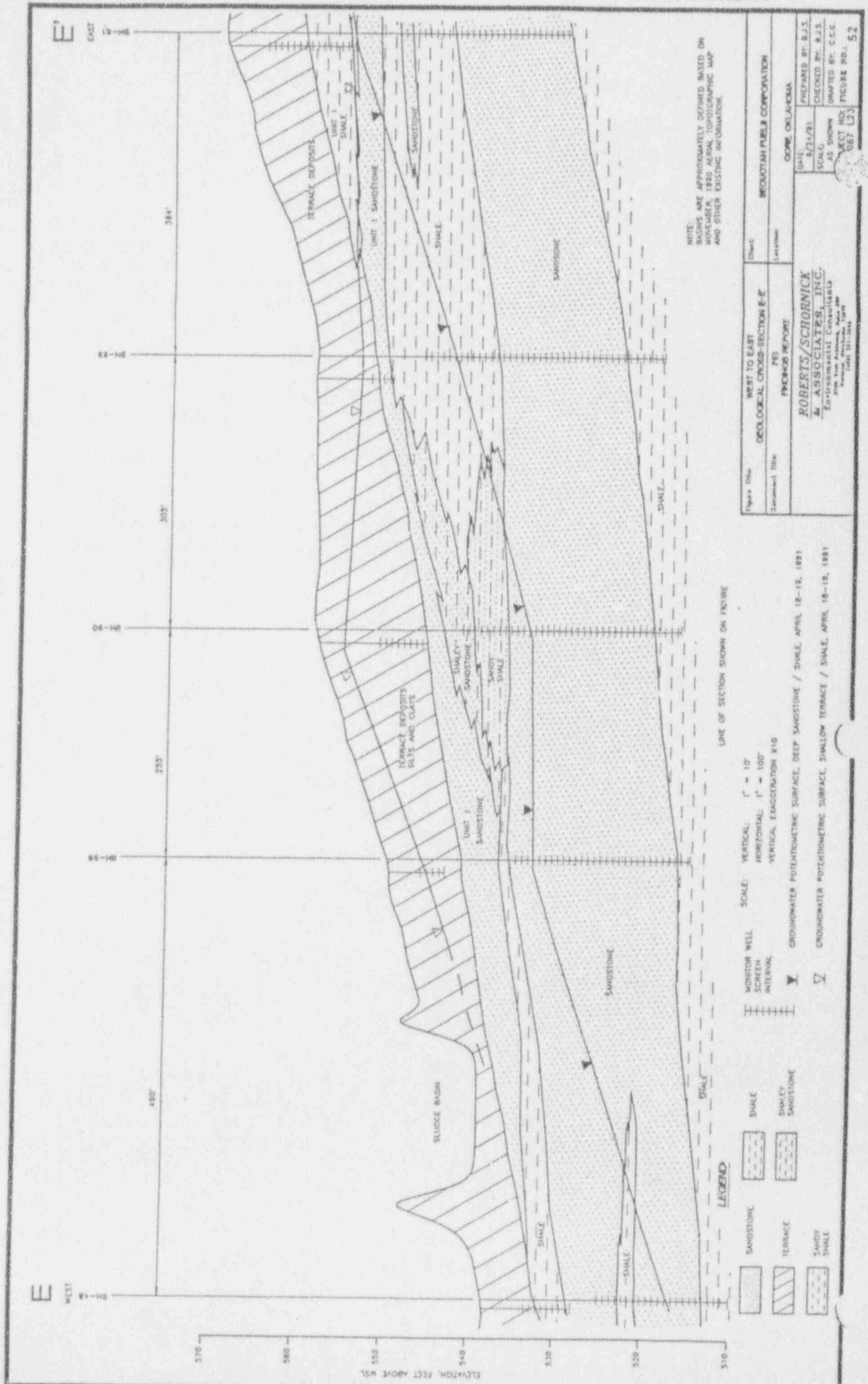
LEGEND

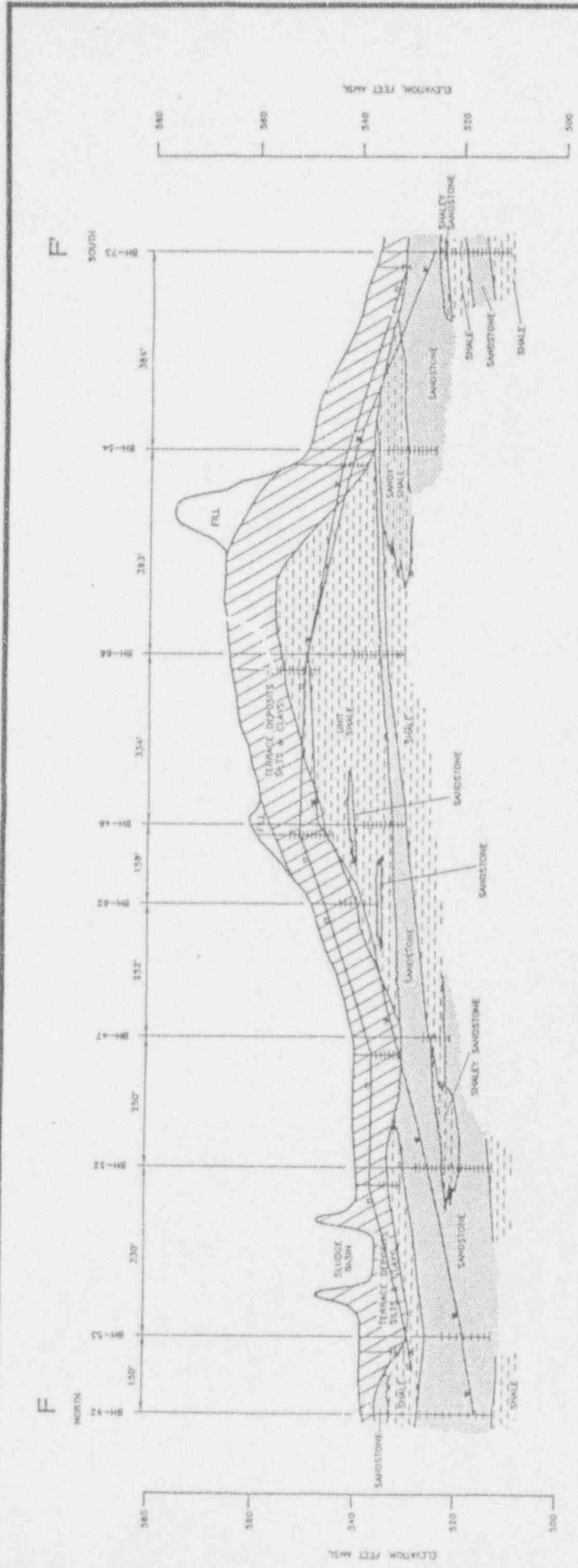
- SANDSTONE
- TERRACE
- SANDY SHALE
- SHALE
- SHALY SANDSTONE

- GROUNDWATER POTENTIOMETRIC SURFACE, DEEP SANDSTONE/SHALE
APRIL 18-19, 1991
- GROUNDWATER POTENTIOMETRIC SURFACE, SHALLOW TERRACE/SHALE
APRIL 18-19, 1991
- MONITORING WELL SCREEN INTERVAL

SCALE: HORIZONTAL: 1" = 10'
VERTICAL: 1" = 100'
VERTICAL EXAGGERATION 10X

Figure Title: NORTH TO SOUTH GEOLOGICAL CROSS SECTION D-D'	Client: SECUCOYAN FUELS CORPORATION
Prepared By: B.J.S.	Checked By: B.J.S.
Drafted By: C.C.C.	Figure No.: 51
FREEDOM REPORT ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 1100 East University, Suite 200 Tulsa, Oklahoma 74106 Phone: 918-437-1222	
Date: 8/24/91	Project: AS 200000
Scale: AS 200000	Sheet: 122










NOTE: BASINS ARE APPROXIMATELY DEFINED BASED ON NOVEMBER, 1990 AERIAL TOPOGRAPHIC MAP AND OTHER EXISTING INFORMATION.

LINE OF SECTION SHOWN ON FIGURE

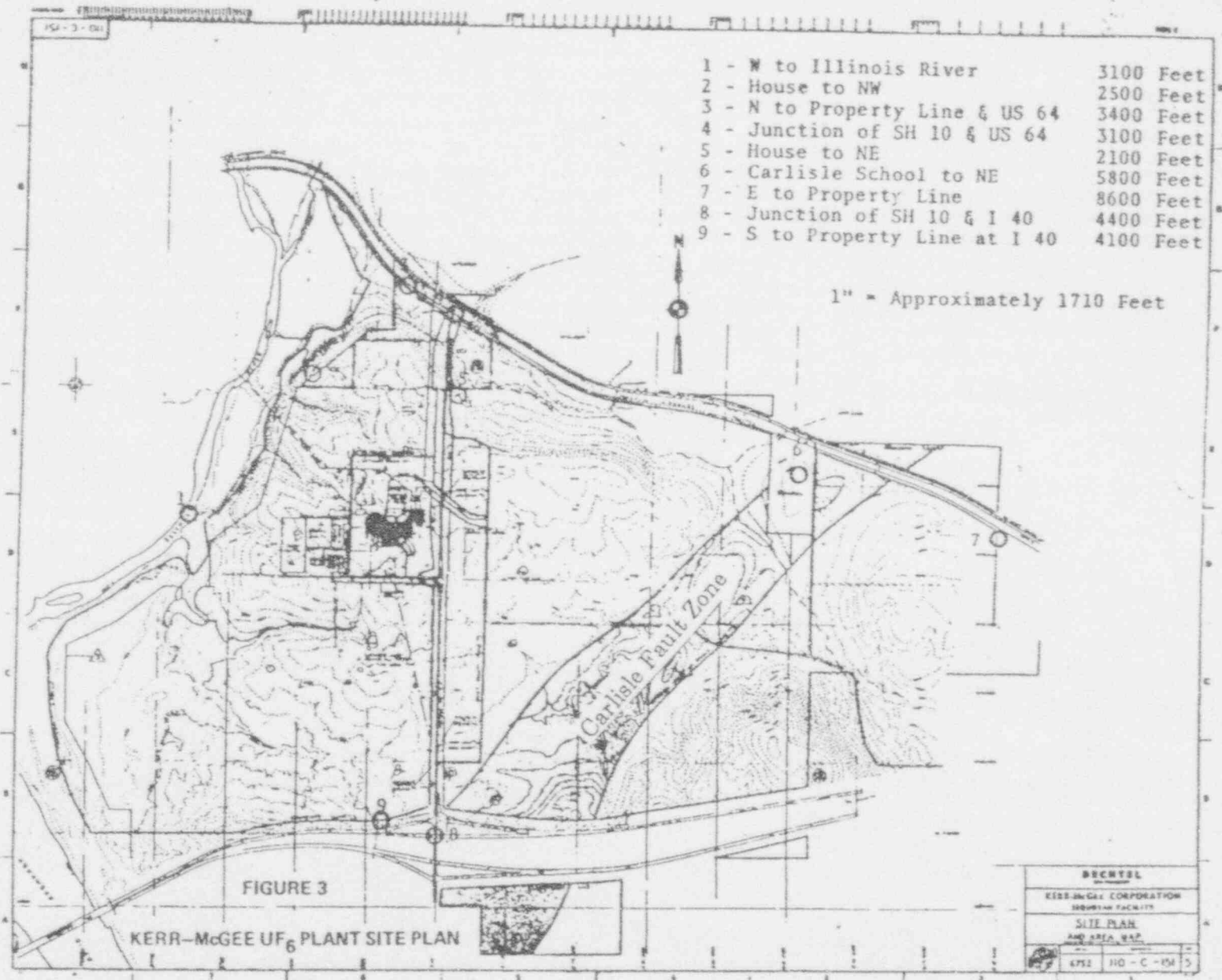
LEGEND

-  SANDSTONE
-  TERRACE
-  SHALE
-  SHALY SANDSTONE
-  SHALY SHALE

- X GROUNDWATER POTENTIOMETRIC SURFACE, DEEP SANDSTONE/SHALE, APRIL 18-19, 1991
- X GROUNDWATER POTENTIOMETRIC SURFACE, SHALLOW SHALE/TERRACE, APRIL 18-19, 1991
- +++++ MONITOR WELL SCREEN INTERVAL

SCALE: HORIZONTAL, 1" = 200'
VERTICAL, DACCAGULATION 4:1

Figure Title	NORTH TO NORTH	Client	OCOME, OKLAHOMA
Document Title	GEOLOGICAL CROSS-SECTION F-F'	Location	SEEDYFISH FIELDS CORPORATION
Prepared By	FRANK R. ROBERTS	Date	12/1/91
Checked By	ROBERTS/SCHONICK & ASSOCIATES, INC.	Checked By	B.J.S.
Drawn By	Environmental Consultants	Drawn By	C.E.C.
Scale	1" = 200'	Sheet No.	1087 L24
Figure No.	53		



LEGEND

LOCATION OF SHALLOW SHALE/TERRACE DEPOSITS MONITOR WELL AND FLUORIDE CONCENTRATION IN GROUNDWATER, MG/L, APRIL 23 TO MAY 17, 1991

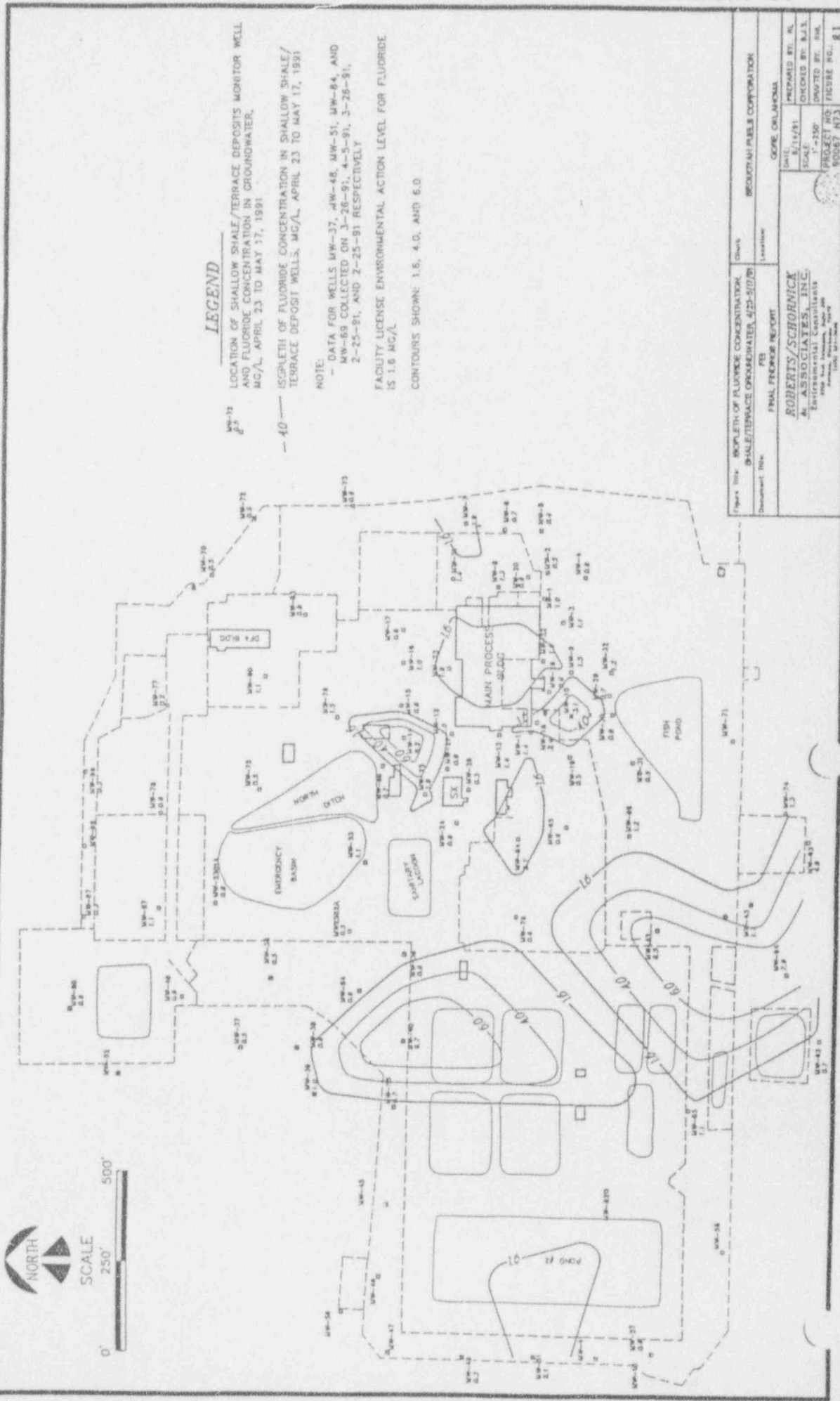
ISOPLETH OF FLUORIDE CONCENTRATION IN SHALLOW SHALE/TERRACE DEPOSIT WELLS, MG/L, APRIL 23 TO MAY 17, 1991

NOTE:

- DATA FOR WELLS MW-37, MW-48, MW-51, MW-84, AND MW-89 COLLECTED ON 3-28-91, 4-3-91, 3-28-91, 2-25-91, AND 2-25-91 RESPECTIVELY

FACILITY LICENSE ENVIRONMENTAL ACTION LEVEL FOR FLUORIDE IS 1.6 MG/L

CONTOURS SHOWN: 1.6, 4.0, AND 6.0



Project Title	WELLS MONITORING OF FLUORIDE CONCENTRATION IN SHALLOW SHALE/TERRACE DEPOSITS, 4/23-5/17/91	Client	BOHEMAN PULP CORPORATION
Document No.	EEI	Location	GOPE OULMALL
Final Report	FINAL FRESHWATER REPORT	Prepared By	RL
Client	ROBERTS/SCHORNICK & ASSOCIATES, INC.	Checked By	RLS
Scale	1" = 250'	Drawn By	RLS
Project No.	90067	Figure No.	81
Revision	07/31/91		

LEGEND

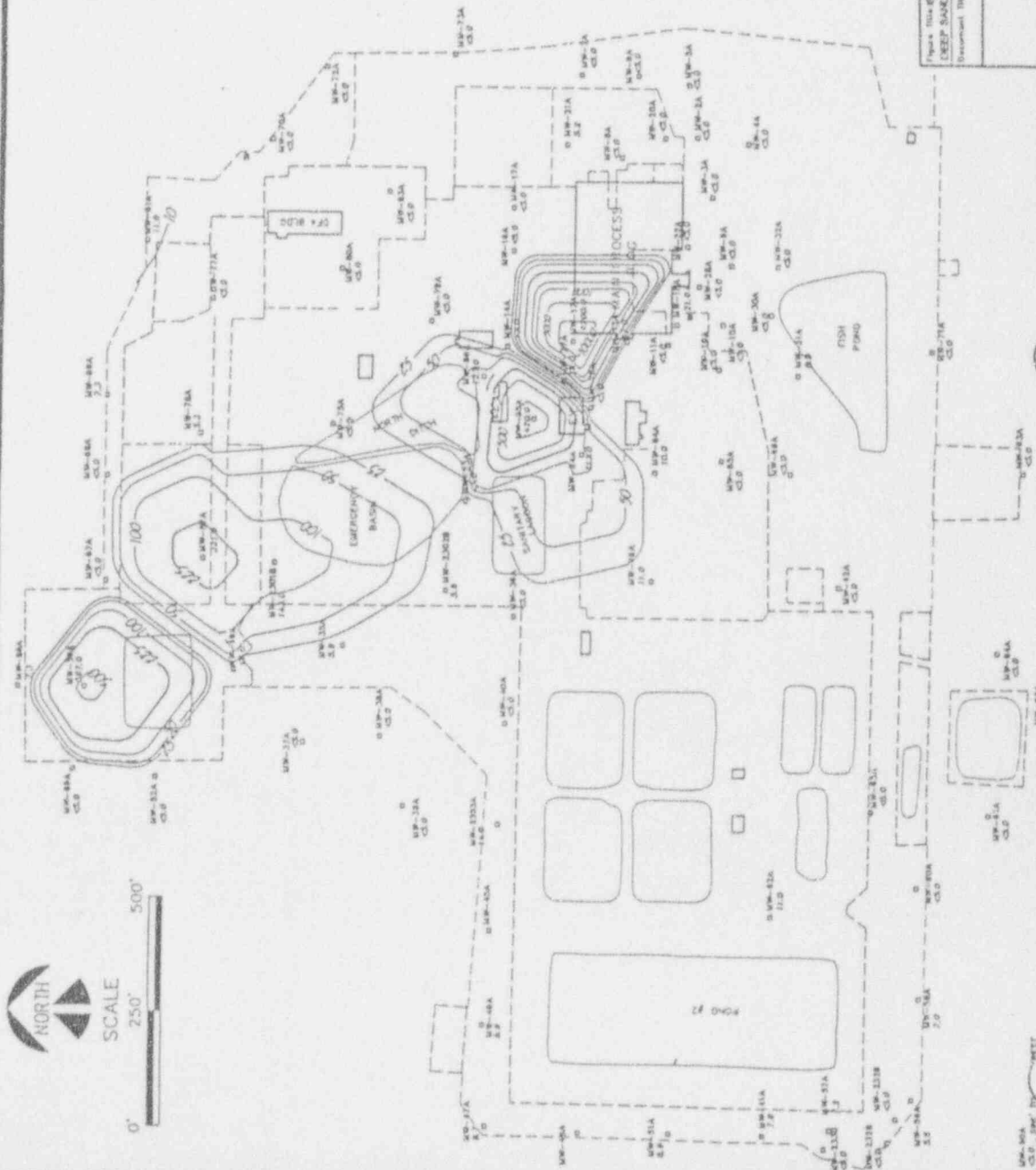
LOCATION OF DEEP SANDSTONE/SHALE MONITOR WELL AND TOTAL URANIUM CONCENTRATION IN GROUNDWATER, UC/L, APRIL 23 TO MAY 17, 1991

ISOPLETH OF TOTAL URANIUM CONCENTRATION IN GROUNDWATER, UC/L, APRIL 23 TO MAY 17, 1991

FACILITY LICENSE ENVIRONMENTAL ACTION LEVEL IS 225 UC/L FOR URANIUM

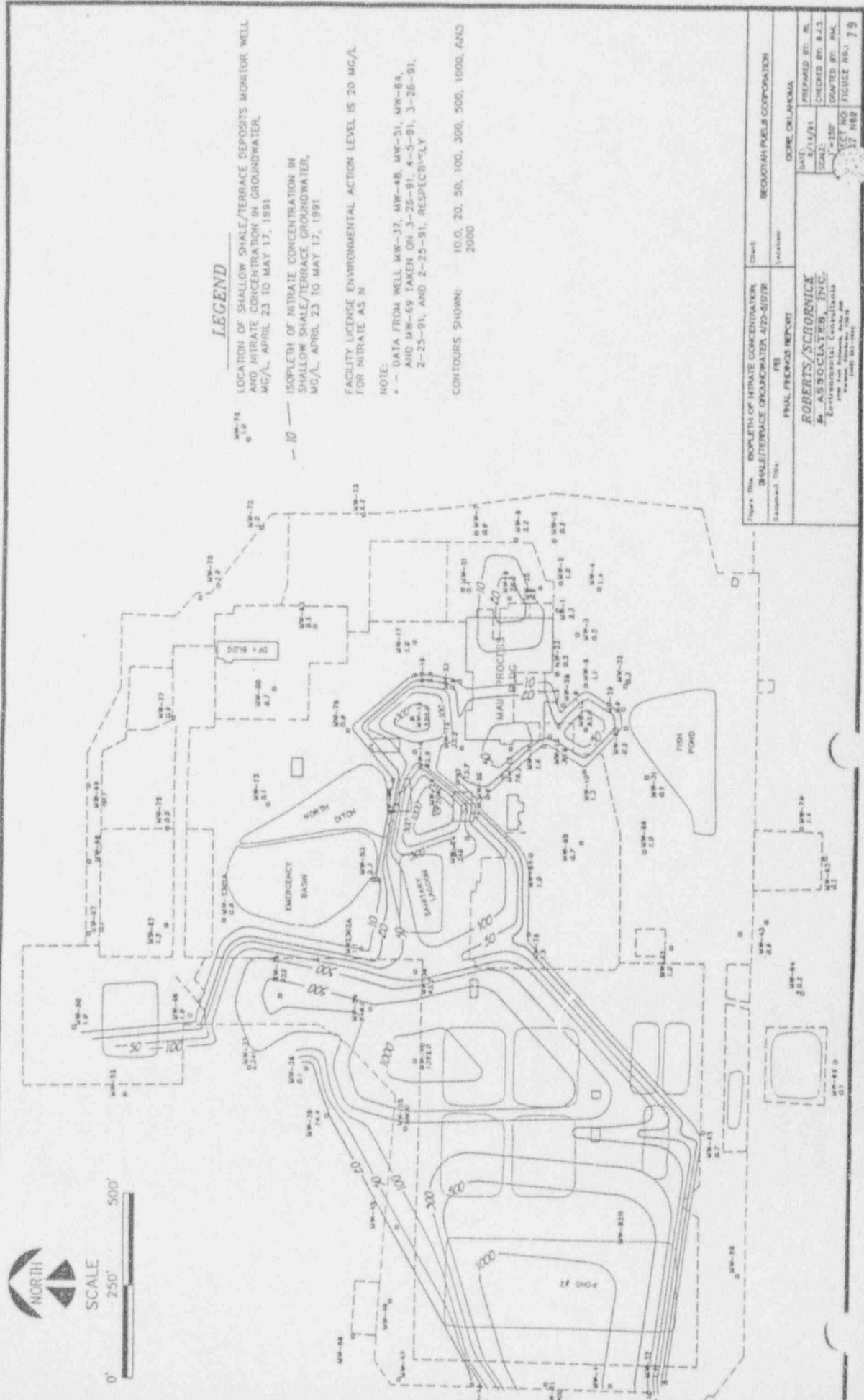
NOTE:
 * - DATA FROM WELL MW-41A AND MW-47A TAKEN ON 2-06-91 AND 12-27-90, RESPECTIVELY

CONTOURS SHOWN: 25, 50, 100, 225, 500, 1000, 5000, 10,000, AND 15,000



Project Title: FINAL REPORT OF TOTAL URANIUM CONCENTRATION IN DEEP SANDSTONE/SHALE GROUNDWATER, 4/23/91-5/17/91	Client: BEADON FUELS CORPORATION
Document Title: FINAL PROGRESS REPORT	Location: OORE, OKLAHOMA
Prepared By: RL	Date: 4/15/91
Checked By: B.L.I.	Scale: 1"=250'
Drawn By: PHL	Sheet No.: 78
Figure No.: 78	

ROBERTS/SCHORNICK & ASSOCIATES, INC.
 Environmental Consultants
 1000 West Main Street, Suite 100
 Oklahoma City, Oklahoma 73101
 Phone: (405) 241-7000



LEGEND

LOCATION OF SHALLOW SHALE/TERRACE DEPOSITS MONITOR WELL AND NITRATE CONCENTRATION IN GROUNDWATER, MG/L, APRIL 23 TO MAY 17, 1991

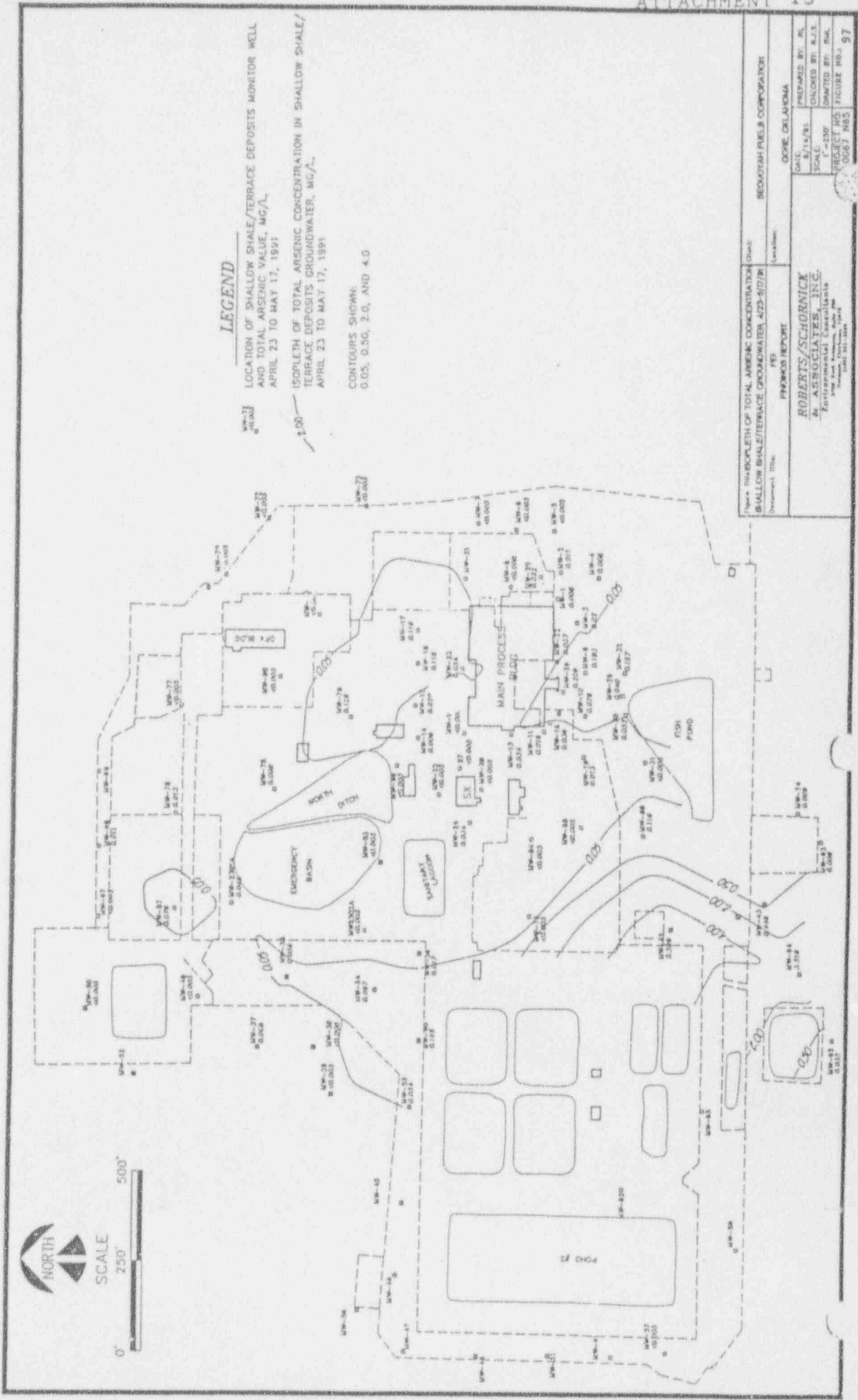
ISOPLETH OF NITRATE CONCENTRATION IN SHALLOW SHALE/TERRACE GROUNDWATER, MG/L, APRIL 23 TO MAY 17, 1991

FACILITY LICENSE ENVIRONMENTAL ACTION LEVEL IS 20 MG/L FOR NITRATE AS N

NOTE: DATA FROM WELL MW-37, MW-48, MW-51, MW-64, AND MW-69 TAKEN ON 3-25-91, 4-5-91, 3-26-91, 2-25-91, AND 2-25-91, RESPECTIVELY.

CONTOURS SHOWN: 10.0, 20, 50, 100, 300, 500, 1000, AND 2000

Client	BOGOTHAH PUELS CORPORATION
Location	DOONE, OKLAHOMA
Project Title	FINAL PROPOSAL REPORT
Prepared By	ROBERTS/SCHORNICK
Checked By	AS ASSOCIATES, INC.
Dated By	AS ASSOCIATES, INC.
Scale	AS ASSOCIATES, INC.
Figure No.	79
Date	2/15/91
Scale	AS ASSOCIATES, INC.
Dated By	AS ASSOCIATES, INC.
Figure No.	79



LEGEND

LOCATION OF SHALLOW SHALE/TERRACE DEPOSITS MONITOR WELL AND TOTAL ARSENIC VALUE, MG/L.
APRIL 23 TO MAY 17, 1991

ISOPLETH OF TOTAL ARSENIC CONCENTRATION IN SHALLOW SHALE/TERRACE DEPOSITS GROUNDWATER, MG/L.
APRIL 23 TO MAY 17, 1991

CONTOURS SHOWN:
0.05, 0.50, 2.0, AND 4.0



PREPARED BY: RL CHECKED BY: R.J.S. DATE: 8/15/91 SCALE: 1"=250' DRAWN BY: RL PROJECT NO.: 0067 NB5 FIGURE NO.: 97	
BEKOVIAH PEARL CORPORATION OKLAHOMA	
FRANKS REPORT FRI	
SHALLOW SHALE/TERRACE DEPOSITS MONITOR WELL AND TOTAL ARSENIC CONCENTRATION IN SHALLOW SHALE/TERRACE DEPOSITS GROUNDWATER, 4272-5107W DRAWN: 8/15/91 SCALE: 1"=250' PROJECT NO.: 0067 NB5 FIGURE NO.: 97	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 1000 North Lincoln Street Tulsa, Oklahoma 74104 Phone: (918) 438-1000 Fax: (918) 438-1001	

FROM NRC RIV DRSS 12/28/93 11:58 P. 2

- 1 -

December 14, 1993

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE PNO-IV-93-038

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Region IV staff on this date.

Facility

Sequoyah Fuels Corporation
Sequoyah Fuels Corporation
Gore, Oklahoma
Dockets: 04008027 License No: SUB-1010

Licensee Emergency Classification

Notification of Unusual Event
Alert
Site Area Emergency
General Emergency
X Not Applicable

Subject: LICENSED MATERIAL FOUND OFF-SITE

On December 13, 1993, the licensee informed NRC Region IV staff of an incident that occurred during the late night/early morning of December 11-12, 1993. Licensee representatives reported that local police stopped a vehicle and that during the course of arresting two out of the three individuals present (the two were arrested for outstanding warrants), the police confiscated three hand-held two-way radios that were discovered during a search of the vehicle. While attempting to identify the owner of the radios through radio communications, the police contacted the Sequoyah facility and it was determined that the radios belonged to SFC. It appears that the radios were stolen by a former employee (the licensee and the police are investigating which employee and when the radios were stolen).

As a precautionary measure, the licensee sent a health and safety technician to the police station early on December 12, to survey the radios. The surveys indicated very low levels of smearable contamination (maximum of 35 dpm/100 square centimeters of beta), as well as low levels of fixed contamination. Although alpha and beta contamination levels identified on two of the three radios were below the release limits established by the licensee, a small area on one of the radios had fixed beta contamination levels of 20,000 dpm/100 square centimeters, which is above SFC's release level of 15,000 dpm/100 square centimeters. The licensee's technician placed all three radios in a plastic bag, marked "Caution Radioactive Materials" and, at the police's request, left them in the police station's evidence room (a locked room).

The Mayor and Chief of Police of Gore, Oklahoma, contacted Region IV staff on the morning of December 13 to report that the police department had retained the radios as evidence. Subsequent communications indicated that the Gore officials were planning to release the radios to SFC during the afternoon of December 13. Gore officials had quarantined one prisoner in "medical lockdown" prior to communications with NRC and had requested that County Health Department representatives survey the three police officers who handled the radios as well as the prisoner. Representatives of the Oklahoma Radiation Control Program reported that a member of the County Health Department and representatives from SFC planned to conduct additional surveys of police personnel on the afternoon of December 13. Based on the licensee's December 12 survey, Region IV staff have informed the Gore officials that the levels of contamination were very low and

12/28/93 11:59 P. 3 TOTAL P. 3

FROM NRC RIV DRSS

PNO-IV-93-038

-2-

posed no hazard to the police officers who handled them, the prisoner, or any other staff.

The state of Oklahoma has been informed. Region IV received notification of this occurrence by telephone from Craig Harlan at 9:00 am. Region IV has informed NMSS.

This information has been confirmed with a licensee representative.

Contact: Michael Vasquez
(817)860-8121

Linda Kasner
(817)860-8121

2 P. 2 12/28/93 11:56 FROM NRC REGION IV DRSS

-1-

December 14, 1993

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE PNO-IV-93-038

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Region IV staff on this date.

Facility

Sequoyah Fuels Corporation
Sequoyah Fuels Corporation
Gore, Oklahoma
Dockets: 04008027 License No: SUB-1010

Licensee Emergency Classification
Notification of Unusual Event
Alert
Site Area Emergency
General Emergency
X Not Applicable

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As a precautionary measure, the licensee sent a health and safety technician to the police station early on December 12, to survey the radios. The surveys indicated very low levels of measurable contamination (maximum of 35 dpm/100 square centimeters of beta), as well as low levels of fixed contamination. Although alpha and beta contamination levels identified on two of the three radios were below the release limits established by the licensee, a small area on one of the radios had fixed beta contamination levels of 20,000 dpm/100 square centimeters, which is above SFC's release level of 15,000 dpm/100 square centimeters. The licensee's technician placed all three radios in a plastic bag, marked "Caution Radioactive Materials" and, at the police's request, left them in the police station's evidence room (a locked room).

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Contact: Michael Vasquez
(817) 860-8121

Linda Kasner
(817) 860-8121

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

- - - -

BRIEFING ON SITE DECOMMISSIONING MANAGEMENT PLAN

- - - -

PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Monday, November 8, 1993

The Commission met in open session,
pursuant to notice, at 9:30 a.m., Ivan Selin,
Chairman, presiding.

COMMISSIONERS PRESENT:

IVAN SELIN, Chairman of the Commission
KENNETH C. ROGERS, Commissioner
FORREST J. REMICK, Commissioner
E. GAIL de PLANQUE, Commissioner

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STAFF SEATED AT THE COMMISSION TABLE:

WILLIAM C. PARLER, General Counsel

JOHN HOYLE, Assistant Secretary

JAMES TAYLOR, Executive Director for Operations

GUY ARLOTTO, Deputy Director, NMSS

RICHARD BANGART, Director, Office of State Programs,
NMSS

JOHN GREEVES, Deputy Director, Fuel Cycle Safety and
Safeguards Division, NMSS

JOHN AUSTIN, Chief, Decommissioning and Regulatory
Issues Branch, NMSS

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1 one is three times the limit in a zone, one would have
2 to spend 2,000 hours in that one spot to receive a
3 dose that is not unacceptable and that's just not
4 going to happen. People will move around. So, we
5 think we're reasonably conservative. The only
6 question is do you put a cap at three times the limit
7 or ten times the limit? That is a matter that the
8 staff is continuing to consider.

9 But even though the NUREG is a draft, it's
10 the best thing that we have on the street and we're
11 urging licensees to use it.

12 COMMISSIONER ROGERS: Well, this kind of
13 issue was brought up at the participatory rulemaking
14 sessions and certainly it's a matter of considerable
15 interest to certain groups. I think there is a high
16 sensitivity to this question of averaging and it would
17 seem to me that it would behoove us to try to get as
18 much public input on that issue as possible because it
19 will come time and time again until there is a general
20 feeling that, yes, this is a reasonable thing to do.
21 From a technical point of view, it sounds very
22 reasonable. But if you focus just on the possibility
23 of those hot spots, people sometimes get very upset
24 about them. I think that it does seem to me that it
25 shouldn't be something that's outside of the

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1 participatory rulemaking framework. It's something
2 that's come up very much in that process and I think
3 a great deal of care should be taken in how we
4 finalize our position on how to do this averaging
5 because it's a very, very sensitive issue.

6 MR. TAYLOR: We agree.

7 MR. AUSTIN: Yes.

8 MR. TAYLOR: John, continue.

9 MR. AUSTIN: Okay. Another issue which
10 I'd like to get into on the next briefing chart later
11 is the thorium disposal issue.

12 MR. TAYLOR: That's on the next slide.

13 MR. AUSTIN: That's on the next slide.
14 I'll get to that in a moment. If I could just go
15 through this one.

16 What we've learned primarily through the
17 Chemetron case is that we have reinforced our desire
18 to cooperate with the states as we go through the
19 decommissioning of these sites. As we discussed
20 earlier, there are some issues at these sites that are
21 not under our jurisdiction but are under the
22 jurisdiction of a state and they have that regulatory
23 interest and we're trying to avoid a situation where
24 a licensee has complied with or would want to comply
25 with all of our requirements, but then to find at a

1 very late stage that the state has an interest. So,
2 we are trying to go into something like an outreach
3 program with the states to keep them informed of what
4 we're doing and what our expectations are and what our
5 requirements are.

6 On Sequoyah Fuels, that case reinforces
7 the link between remediation criteria and financial
8 assurance. One cannot set a level of funding that
9 would be required for decommissioning with confidence
10 if one does not know what the remediation standard is
11 going to be. There's a direct link and it can involve
12 a factor of ten or 100 in what the decommissioning
13 cost could be, depending on the specific remediation
14 standard.

15 COMMISSIONER de PLANQUE: So how are we
16 dealing with that?

17 MR. AUSTIN: In the difficult cases, and
18 I would put all of the thorium contaminated sites in
19 that category, we are exploring the need to perform an
20 environmental impact statement that would look through
21 the options, alternatives, on-site disposal, shipping
22 to a facility like Envirocare, shipping to a used mine
23 that would lower the human intrusion potential,
24 examining those potential environmental impacts and
25 arriving at what we would call an ALARA, what is as

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1 low as reasonably achievable, factoring in cost to
2 establish the remediation standard in that way.

3 COMMISSIONER de PLANQUE: But you're still
4 left without knowing exactly what the standard is.
5 Suppose you dispose on-site?

6 MR. PARLER: In view of the fact, at least
7 as I understand it, that some of these things are in
8 litigation, I would respectfully suggest that you just
9 keep in general.

10 MR. AUSTIN: Okay.

11 COMMISSIONER de PLANQUE: Are you
12 currently using the branch technical position limits
13 in this regard?

14 MR. AUSTIN: Yes, we are using the branch
15 technical position of 1981 for uranium and thorium.
16 We're using concentration limits that the staff has
17 used over the years for other radionuclides, like
18 cobalt, strontium, cesium. And when we come up with
19 an oddball radionuclide, we try to make a comparison
20 on a risk basis to something that has already been
21 used.

22 On the branch technical position, it's
23 options 1 and 2, but the action plan calls for the
24 staff to look to an ALARA analysis, either above the
25 line or below the line. Generically we're looking at

1 for those where there is a potential that the
2 remediation standard could be prohibitively expensive,
3 we're looking at the possibility of on-site disposal
4 in the vicinity of the site, disposal in the vicinity
5 of the site, and entertaining the notion of exempting
6 the licensee from the unrestricted use standard
7 provided that there be restrictive covenants in the
8 deed and possibly other assurances that the human
9 intrusion scenario would be acceptably low.

10 Another option that the staff is
11 considering is a perpetual license, in a way similar
12 to the AMAX case. In the AMAX case the license would
13 be terminated, but you have the federal government
14 periodically checking up on that site. In NRC space,
15 if there were a perpetual license, the concept would
16 be to establish a fund, the interest from which would
17 allow for an inspection every ten years and it would
18 be a way to keep that site in the consciousness of the
19 Agency.

20 So, those are the kinds of things we're
21 looking at.

22 MR. TAYLOR: These are just ideas.

23 MR. AUSTIN: Ideas. Before we undertake
24 any one of those kinds of things, we would consult
25 with the Commission.

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CERTIFICATE OF SERVICE

I certify that on December 30, 1993, copies of the foregoing NATIVE AMERICANS FOR A CLEAN ENVIRONMENT'S REPLY TO SEQUOYAH FUELS CORPORATION'S ANSWER IN OPPOSITION TO NACE'S MOTION TO INTERVENE were served by first-class mail and/or by FAX on the following:

Office of Commission Appellate Adjudication
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Administrative Judge James P. Gleason
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Administrative Judge G. Paul Bollwerk
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555


*Administrative Judge Jerry R. Kline
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Richard G. Bachmann, Esq.
Steve R. Hom, Esq.
Susan G. Uttal, Esq.
Office of General Counsel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Maurice Axelrad, Esq.
Newman & Holtzinger
1615 L Street N.W. Suite 1000
Washington, D.C. 20036

*Stephen M. Duncan, Esq.
Bradfute W. Davenport, Jr., Esq.
Mays & Valentine
110 South Union Street
Alexandria, VA 23314

*Office of the Secretary
Docketing and Service
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555



Diane Curran

*Also by FAX