



Department of Energy
Oak Ridge Operations
Post Office Box E
Oak Ridge, Tennessee 37831

E-00960

AUG 10 1987

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Mr. Ted Gable
Air and Waste Management Division
U.S. Environmental Protection Agency
26 Federal Plaza
New York, New York 10278

Dear Mr. Gable:

EXCAVATION OF DRUMS FROM THE NFSS VICINITY PROPERTY "G"

Attached in response to your 7/20/87 telephone conversation with Bob Atkin of my staff regarding the subject matter, is a report documenting the evolution of events leading to the excavation and removal of drums from vicinity Property "G". Also attached is a sketch showing the location of known sampling wells in the proximity of Property "G".

Please contact Bob Atkin at (615) 576-1826 should you need any additional information.

Sincerely,

ORIGINAL SIGNED BY:
S. W. AHRENDTS

S. W. Ahrendts, Director
Technical Services Division

BII PREPARED

Attachments: As Stated

cc: P. A. Giardina
U.S. EPA
26 Federal Plaza
New York, N.Y. 10278

B. C. Senefelder
SCA Chemical Services, Inc.
1550 Balmer Road
Model City, N.Y. 14107

N. H. Nosenchuck
N.Y. Dept. of Environmental Conservation
50 Wolf Road
Albany, N.Y. 12233

OFFICIAL FILE COPY

Celebrating the U.S. Constitution Bicentennial — 1787-1987

CONCURRENCES		
RTG SYMBOL	CE-53	
INITIALS/SIG	Atkin	
DATE	8/7/87	
RTG SYMBOL	CE-53	
INITIALS/SIG	Wig	
DATE	8/7	
RTG SYMBOL	CE-53	
INITIALS/SIG	Ahrendts	
DATE	8-12-87	
RTG SYMBOL		
INITIALS/SIG		
DATE		
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DATE		
RTG SYMBOL		
INITIALS/SIG		
DATE		
RTG SYMBOL		
INITIALS/SIG		
DATE		

SITE DESCRIPTION AND BACKGROUND

The Niagara Falls Storage Site (NFSS) is a DOE owned interim storage site for the Formerly Utilized Sites Remedial Action Program (FUSRAP). FUSRAP is a DOE program designed to conduct remedial action at approximately 30 sites contaminated with radioactive waste generated primarily from the early days of the Atomic Energy program. The NFSS consists of 190 acres and houses an encapsulation cell containing 250,000 yd³ of radioactively contaminated soils and residues. The soils have been accumulated from the cleanup of the NFSS vicinity properties as well as the NFSS itself. The disposal cell design has been addressed by an Environmental Impact Statement.

HISTORY

During the summer of 1986, final remedial actions were being conducted on the NFSS vicinity properties. One of these properties, designated as Property G, is presently owned by Chemical Waste Management. Property G is physically contiguous to the NFSS. During the remedial action process in August, 1986, an exposed drum was noted and monitored for radioactivity. The monitoring confirmed elevated levels.

Efforts were made to separate the tar like material and radioactive contamination so that only the radioactive materials could be returned to the NFSS. When the attempt failed, all the materials were drummed and brought back to the NFSS where they were placed in interim storage external to the encapsulation cell. On August 21, 1986, the contents were sampled. The sample was forwarded to CEP laboratory for analysis of RCRA characteristics, organic compounds, and heavy metals.

- After exhumation of the exposed drum, portions of additional buried drums were observed. Due to the unknown extent of the burial, the already committed cleanup budget, and unknown nature of the drum contaminants, the remaining drums could not be excavated immediately. When additional funds became available in October, 1986 analytical results had not been returned by CEP. Due to the short construction season in Niagara Falls, further work on the Property G drums was postponed until the spring of 1987. The delay was also felt to be beneficial since additional planning time would be available.

Further inspection on June 23, 1987 of the drums revealed that one was labelled "K-65". K-65 residues were one of the types of radioactive waste encountered during the NFSS cleanup. The K-65 residues are uranium ore processing wastes rich in radium-226.

Radiological monitoring of the drum indicated elevated readings are confined to the bottom of the drum. This suggests that the radiological contamination may be a heel of K-65 residues solidified in the bottom of the drum left from a previous use, and that the emptied drums may then have been filled with the sludge-like material. E-000960

ANALYSIS RESULTS

On December 8, 1986, Bechtel received the results of the analysis on the drum sample (attached as Table 1). In summary, all concentrations of metals were below normally occurring concentrations in soil, and the material did not exhibit any of the RCRA characteristics. The analyses for organics revealed several compounds with percent quantities.

ADDITIONAL ACTIONS

To try to scope the magnitude of the drum burial, an electromagnetic terrain conductivity survey was conducted in the areas adjacent to the excavated drum. Several targets were located within an area of approximately 50 feet by 50 feet.

In June, 1987, planning for removal of the drums was complete and resources allocated. During the time frame after the electromagnetic survey and prior to the onset of drum removal, the area containing the drums was graded by Severson Containment Corp. Thus, visual signs of the drums were no longer available. Excavation of drums in the area began. As drums were uncovered, they were removed, radiologically monitored, and placed in overpacks. During removal, most drums were found to not have lids; others were ruptured, and some contents had been spilled. Spilled materials which exhibited radiological contamination above background were also excavated and placed in drums. Excavation continued until all observable drums were removed. Final count on excavated drums was 31 (plus the one removed in 1986). Forty-nine drums were generated from the excavation of spilled sludges. All 31 drums of sludge were transported across the property line to the NFSS. Only 25 of the soil filled drums were brought to the NFSS. The remaining 24 drums were left adjacent to the excavation. The soil filled drums left adjacent to the excavated area are not expected to exceed DOE's guidelines for release for unrestricted use from a radiological perspective. All 49 soil filled drums have been sampled for radiological analysis. Results are not expected to be available until mid-August.

As of July 23, the excavation remains open to allow DOE's independent verification contractor to radiologically verify the area as suitable for release for unrestricted use.

PENDING ACTION

Bechtel has completed preparation of a sampling plan for the sludge drums. The plan is appended as Attachment 1. The plan is designed to provide information necessary to make a determination whether the material is hazardous waste, radioactive waste, or radioactive mixed waste. The sampling was performed as soon as industrial hygiene support was available, and was initiated the week of July 27. Compositing was felt to be appropriate as a cost savings measure based on the visual observation that all drum contents appear similar.

DISPOSAL OPTIONS

If the material is radiologically contaminated but not a hazardous waste, storage at NFSS will be appropriate.

If the drum contents are not radiologically contaminated but are a hazardous waste, negotiations for return of the waste to Chemical Waste Management (the Property G owner) will be undertaken.

Should the waste prove to be radioactive mixed, treatment and separation techniques will be addressed. No known source of disposal for radioactive mixed waste is currently available to the FUSRAP for the New York State/sites.

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TABLE 1
PROPERTY G DRUM
CHEMICAL ANALYSIS RESULTS

Metals

Cadmium	0.090 ppm
Chromium	2.000 ppm
Copper	5.300 ppm
Mercury	0.045 ppm
Nickel	5.000 ppm
Lead	1.600 ppm
Zinc	10.000 ppm

Organics

13.8%	of 1-Methylnapthalene
4.8%	of Anthracene
4.0%	of Benz (a) Anthracene
4.7%	of Chrysene
11.8%	of Fluoranthene
15.7%	of Napthalene
17.0%	of Phenathrene
10.1%	of Pyrene
18.0%	of Unknown

RCRA Characteristics

Not ignitable
Not reactive
Not corrosive
No EP toxicity

Drum Sampled: August 21, 1986

APPENDIX A

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Sampling Program for Barrels of Sludge from Property G
(Including Modifications)

1. Perform all sampling operations in accordance with environmental hygiene and health physics personnel protection procedures.
- *2. The sides of the overpacks have been numbered. Number the lids. The overpacks have been numbered as follows:
001, 002, 003, 004, 007, 008, 009, 010, 011, 012, 015, 016,
017, 018, 022, 023, 024, 025, 026, 027, 028, 029, 030, 031,
032, 033, 034, 035, ⁰³⁶ 037, 038
- *3. Six composite samples will be made of the sludges as follows:

<u>Composite No.</u>	<u>Overpack Barrel No.</u>
1	001, 002, 003, 004, 007
2	008, 009, 010, 011, 012
3	015, 016, 017, 018, 022
4	023, 024, 025, 026, 027
5	028, 029, 030, 031, 032
6	033, 034, 035, 036, 037, 038
- *4. Drive pipe sleeve into barrel. Using hand piston sampler (soil test DR-470 or equivalent), pull core from sleeve. Collect VOA samples from core removed near the bottom of the barrel. Two cores will be taken from each barrel. If the cores from the lower part of barrel extract chunks of K-65 residue from the barrel bottom remove the K-65 residue pieces and place them in a plastic bag. The bag will be placed back into the barrel from which the residue was removed before resealing the overpack.
- *5. Place all the cores for a composite in a 5 gallon metal bucket (or equivalent) and homogenize with a mason's trowel or other appropriate hand tool. Composite should be kept in cooler on ice whenever it is not being handled.
- *6. Fill two amber glass jars, two nalgene jars for each composite sample. Record all information on sample labels. There should be five (or six) VOA samples collected for each composite.

Modifications and/or addition to original sampling plan.

7. Record the composite number in the field log book and record all pertinent observations. As a minimum write a description of the composite including: E-00960
- a. homogeneity of the cores used for the composite
 - b. color and viscosity of material
 - c. texture
 - d. ease of working e.g. stiff, plastic, watery, etc.
 - e. surface activity of material
8. Put samples (chemical) on ice as soon as possible.
- *9. Decontaminate all tools between composites. It is not necessary to clean the piston sampler between barrels within a composite. The decontamination method is attached.
10. Close and secure all barrels after sampling is completed.
11. Place all samples under a chain of custody. Send the samples for chemical analysis to R. F. Weston and send samples for radiological analysis to TMA/Eberline. Include two VOA bottles filled with reagent grade deionized water as travel blanks.
- *12. Radiological analysis shall be for U^{238} by Geli, Th^{232} , Ra^{226} . See attached RFW Request for Analytical Services form for an example of the information the form should contain.

Modifications to Decon Procedure

High pressure H_2O will not be used. Tools will be scrubbed with a wire brush using Alconox soap.

All liquids used in decon shall be collected in a barrel and sample and analyzed for radioactive materials (U^{238} , Th^{232} , Ra^{226}).

Reagent grade HCL will be diluted to 3-5% HCL.

Solvent will be reagent grade methanol.

- * Modifications and/or addition to original sampling plan.

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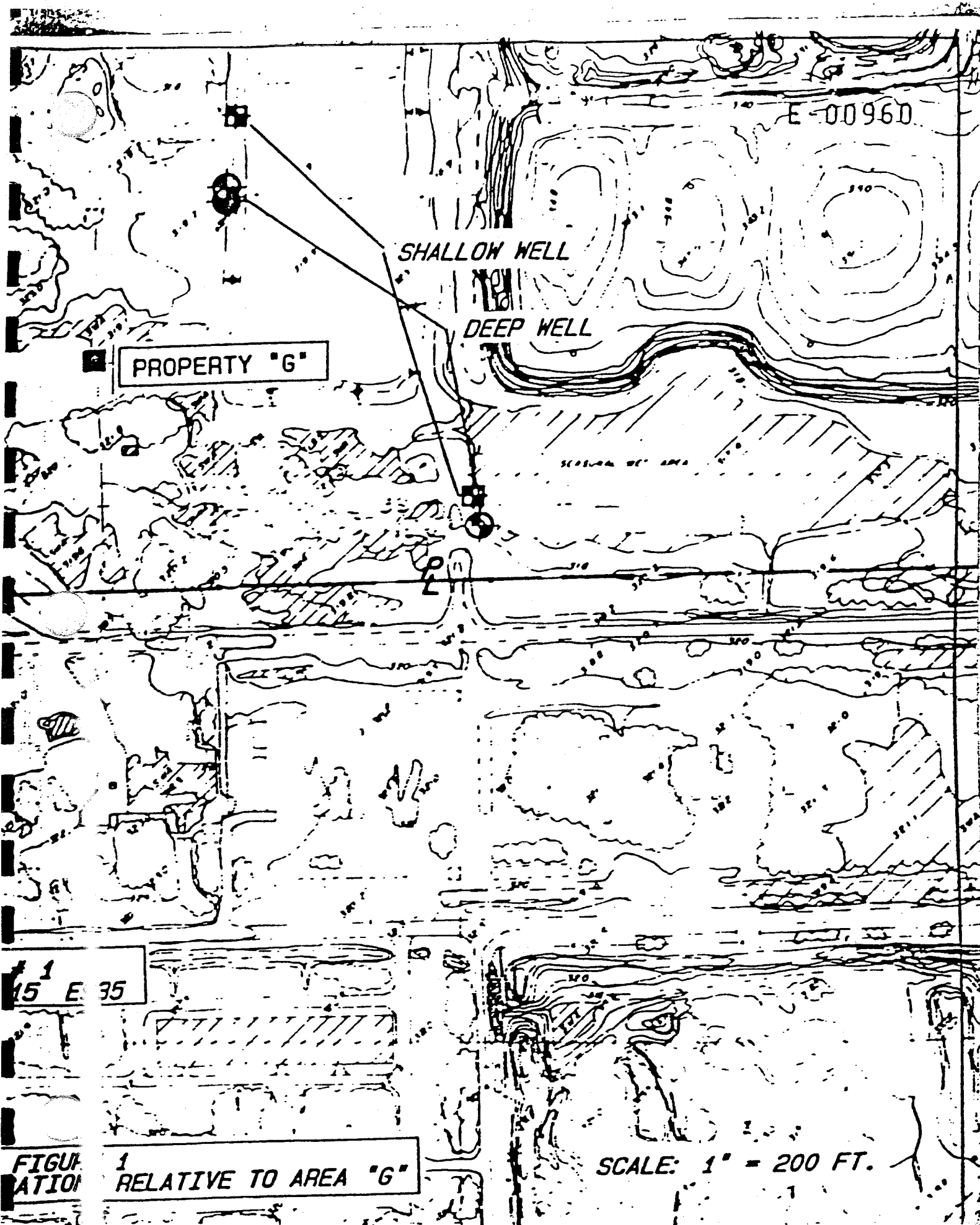
CHEMICAL WASTE MANAGEMENT
PROPERTY

NIAGARA FALLS STORAGE SITE

BM # 2
N 015 W020

BM # 1
N 015 E935

FIGURE 1
WELL LOCATIONS



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SHALLOW WELL

DEEP WELL

PROPERTY "G"

SEASONAL WET AREA

15 E 35

FIGURATION 1
RELATIVE TO AREA "G"

SCALE: 1" = 200 FT.