ORISE
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION
ENERGY/ENVIRONMENT SYSTEMS DIVISION

February 16, 1994

Mr. Sam Nalluswami
Division of Low-Level Waste Management
and Decommissioning
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: REVISED CONFIRMATORY SURVEY PLAN FOR THE V-1 POND SITE, BP CHEMICALS, INC., LIMA, OH [DOCKET NO. 040-07604]

Dear Mr. Nalluswami:

Enclosed is the subject document which has incorporated the comments provided during our February 15, 1994 telephone conversation. As we discussed, ESSAP personnel will be on the BP Chemical site to initiate the confirmatory survey on February 23, 1994 and should complete the survey by February 24, 1994.

Please do not hesitate to contact either Michele Landis at (615) 576-2908 or me at (615) 576-5073 if you have any questions or require additional information.

Sincerely,

Timothy J. Vitkus
Environmental Project Leader
Environmental Survey and
Site Assessment Program

TJV:rd

Enclosure

cc: T. Mo, NRC/NMSS, 4E4
D. Tiktinsky, NRC/NMSS, 6E6
K. Lambert, NRC, Region III
J. Berger, ESSAP
M. Landis, ESSAP
PMDA, NRC, 6E6
File/247

5/10
JA
050000
9403230100
XA

P.O. BOX 117, OAK RIDGE, TENNESSEE 37831-0117

NMSS/

REVISED CONFIRMATORY SURVEY PLAN
FOR THE V-1 POND SITE
BP CHEMICALS, INC.
LIMA, OHIO

INTRODUCTION AND SITE HISTORY

BP Chemicals, Inc. (BPC) owns and operates a chemical production facility in Lima, Ohio. The facility, formerly owned by the Vistron Corporation, manufactures chemical products for industrial and agricultural use. One of the chemical products produced is acrylonitrile, a raw material utilized in the plastics industry. From 1963 to 1971, Vistron's acrylonitrile production process used a catalyst which contained uranium depleted in uranium-234 and uranium-235. The catalyst was produced in the Catalyst Plant then transferred to Acrylonitrile Plants No. 1 and No. 2 (ANI and ANII) for acrylonitrile production. Resultant process wastes, containing both depleted uranium as well as RCRA hazardous wastes, were transferred to on-site impoundments. The manufacture, use, storage, and distribution of the uranium source material was authorized under Atomic Energy Commission, predecessor agency to the Nuclear Regulatory Commission (NRC), licenses SUB-756 and SUB-908.

In 1971, the plant was converted to produce and utilize a non-radioactive catalyst. However, as a result of the uranium catalyst use, portions of the plant equipment and grounds had become radiologically contaminated. In order to identify the locations and extent of the contamination, Vistron initiated site characterization activities in 1977. At that time, Radiation Management Corporation was contracted by Vistron to survey and assess the radiological status of the site. Site assessment was followed by remediation of those areas identified as having major contamination, and in 1980 the last containers of licensable material were removed from the site.

Prepared by the Environmental Survey and Site Assessment Program of Oak Ridge Institute for Science and Education, Oak Ridge, TN, under interagency agreement (NRC Fin. No. A-9076) between the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy.

In 1982, the Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE), formerly the Radiological Site Assessment Program of Oak Ridge Associated Universities (ORAU), conducted a radiological survey of the Vistron site at the request of the NRC. The results of that survey indicated that areas of the plant, which had been associated with the use of the uranium catalyst, had residual uranium contamination on surfaces and in soil in excess of the NRC guidelines established for release of an area to unrestricted use.[1] Specifically, these areas included soils and structures associated with the ANI and ANII, the Thermal Oxidizer area, the Central Warehouse, and in the surface impoundments known as the V-1, Deep Well, Burn, and Celite Ponds, all of which are located in the eastern portion of the plant.

In 1987, BPC, who had acquired the site, renewed site decontamination efforts in order to terminate the remaining NRC Source Material License No. SUB-908. BPC contracted Nuclear Engineering Services to perform additional radiological surveys and decontamination beginning with the Catalyst Plant. Remedial actions were completed on the Catalyst Plant and ESSAP performed a confirmatory radiological survey during April 1988.[2]

BPC next addressed ANII, specifically, Reactor Vessels A and B, the Central Warehouse, ANI, and contaminated soils. Chem-Nuclear Environmental Services (CNES), under contract to BPC, performed radiological surveys and decontamination activities during 1991. ESSAP performed confirmatory surveys for each of these and is currently preparing the draft report.

As part of this site-wide decontamination and decommissioning program, BPC is now conducting closure operations for the four mixed waste ponds. Remediation of the first pond, known as the V-1 pond, included removal and treatment of water followed by excavation, transfer, and temporary storage of the contaminated sludges and soils. A test fill pad has been established within the excavation in order to demonstrate that engineering requirements could be met for the closure cell. The closure cell will be used for the permanent disposal of the mixed wastes. Prior to cell construction, BPC performed radiological surveys to demonstrate that the grounds satisfy the NRC guidelines for release from licensing restrictions. The Nuclear Regulatory Commission, Decommissioning and Regulatory Issues Branch, Low-Level Waste Management

and Decommissioning Division has therefore requested that the Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) perform a confirmatory radiological survey of the soil associated with the former V-1 pond, prior to construction of the closure cell over the area.

SITE DESCRIPTION

The BPC site is located on Fort Amanda Road, approximately 1.5 km southwest of Lima, Ohio (Figure 1). The plant layout, illustrated in Figure 2 indicates the location of the V-1 pond in the northeast quadrant of the plant. The 6,000 m^2 excavated area contains no structures or inside features other than the 730 m^2 test fill pad. Depth of the excavation is approximately 6 meters. Sides are of a relatively steep slope with an access ramp cut into the contours.

OBJECTIVE

The objective of the confirmatory process is to provide independent document reviews and radiological data, for use by the NRC in evaluating the adequacy of the licensee's radiological status report, relative to the established guidelines.

RESPONSIBILITY

Work described in this survey plan will be performed under the direction of Michele Landis, Project Manager and Tim Vitkus, Project Leader of the Energy/Environment Systems Division of ORISE. The cognizant ESSAP site supervisor has the authority to make changes to the survey procedures as deemed necessary. After consultation with the NRC site representative, the scope of the survey plan may be altered. Deviations to the plan or procedures will be documented in the site log book.

DOCUMENT REVIEW

ESSAP has reviewed the licensee's radiological status survey report.[3] Procedures and methods utilized by the licensee were reviewed for adequacy and appropriateness. The post-remedial action data was reviewed for accuracy, completeness, and compliance with guidelines. Comments on these documents were provided to the NRC in a February 2, 1994 correspondence.[4]

PROCEDURES

A survey team from ESSAP will visit the BPC site and perform visual inspections and independent measurements and sampling in the V-1 pond excavation and surrounding area. Survey activities will be conducted in accordance with the ESSAP Survey Procedures and Quality Assurance Manuals. The survey procedures applicable to this survey are listed on pages 7 and 8 of this plan.

REFERENCE GRID

The licensee established a reference grid consisting of 100 m^2 grid blocks which ESSAP will use for referencing measurement and sampling locations.

SURFACE SCANS

Gamma surface scans will be conducted at 1-2 meter intervals over 50% of the excavated area using NaI detectors coupled to ratemeters with audible indicators. Locations of elevated direct radiation, suggesting the presence of surface or near surface contamination, will be marked for further investigation.

SOIL SAMPLING

Surface soil samples (0-15 cm) will be collected from 30 randomly selected grid blocks and/or from locations of elevated direct radiation identified by gamma surface scans. Two of the samples will be collected from the area beneath the test fill pad area.

EXPOSURE RATE MEASUREMENTS

Exposure rate measurements at 1 meter above the surface, will be performed at each soil sampling location. exposure rate measurements will be performed using a pressurized ionization chamber.

Background exposure rate measurements, performed by ESSAP during a 1991 survey in the Lima, Ohio area, will be used for comparison purposes.

SAMPLE ANALYSIS AND DATA INTERPRETATION

Samples and data will be returned to ORISE's ESSAP laboratory in Oak Ridge, Tennessee for analysis and interpretation. Soil samples will be analyzed by solid state gamma spectrometry. The radionuclide of interest is uranium-238; however, spectra will be reviewed for other identifiable photopeaks. Total uranium will be estimated based on a uranium-238 to total uranium activity ratio of 1:1.3. Soil sample results will be reported in units of pCi/g. Exposure rate measurement results will be reported in μR/h.

The data generated will be compared with the NRC guidelines and the results presented in a draft report and provided to the NRC for review and comment.

GUIDELINES

The NRC's soil concentration guideline value for depleted uranium is 35 pCi/g and a maximum exposure rate guideline of 10 μR/h above background.[5]

TENTATIVE SCHEDULE

Measurement and Sampling	February 22 through 25, 1994
Sample Analysis	March 1994
Draft Survey Report	March 1994

LIST OF CURRENT PROCEDURES TO BE USED IN THE SURVEY

Applicable procedures from ORISE ESSAP Survey Procedures Manual (Revision 8; December 31, 1993) include:

Section 5.0 Instrument Calibration and Operational Check-Out
- 5.1 General Information
- 5.2 Electronic Calibration of Ratemeters
- 5.3 Gamma Scintillation Detector Check-Out and Cross Calibration
- 5.7 Pressurized Ionization Chamber Calibration and Check-Out

Section 7.0 Scanning and Measurement Techniques
- 7.1 Surface Scanning
- 7.5 Gamma Radiation (Exposure Rate) Measurement

Section 8.0 Sampling Procedures
- 8.1 Surface Soil Sampling
- 8.9 Sample Identification and Labeling

Section 9.0 Integrated Survey Procedures
- 9.2 General Survey Approaches and Strategies

Section 10.0 Health and Safety and Control of Cross Contamination

Section 11.0 Quality Assurance and Quality Control

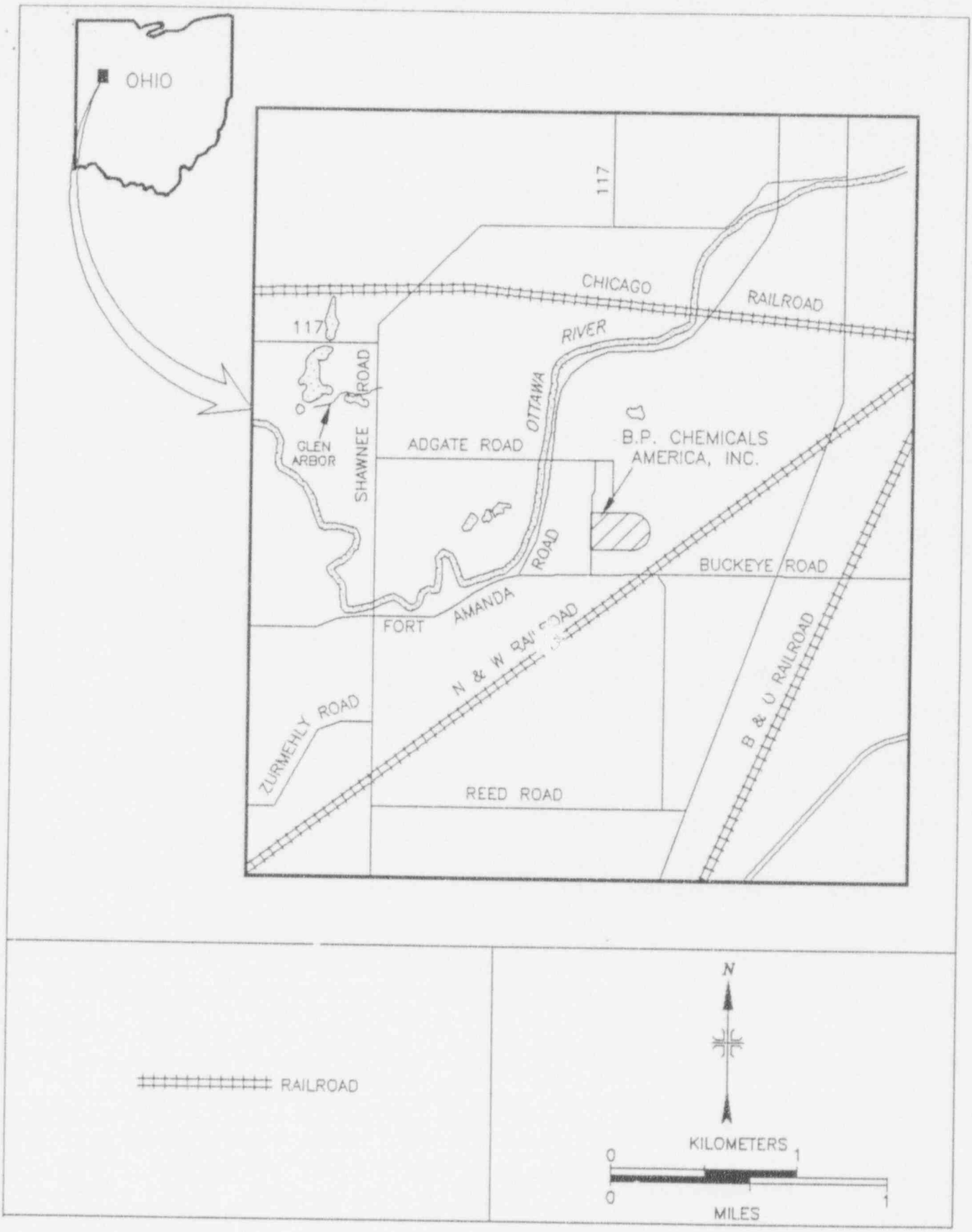

FIGURE 1: Lima, Ohio Area Map – Location of BP Chemicals America, Inc.

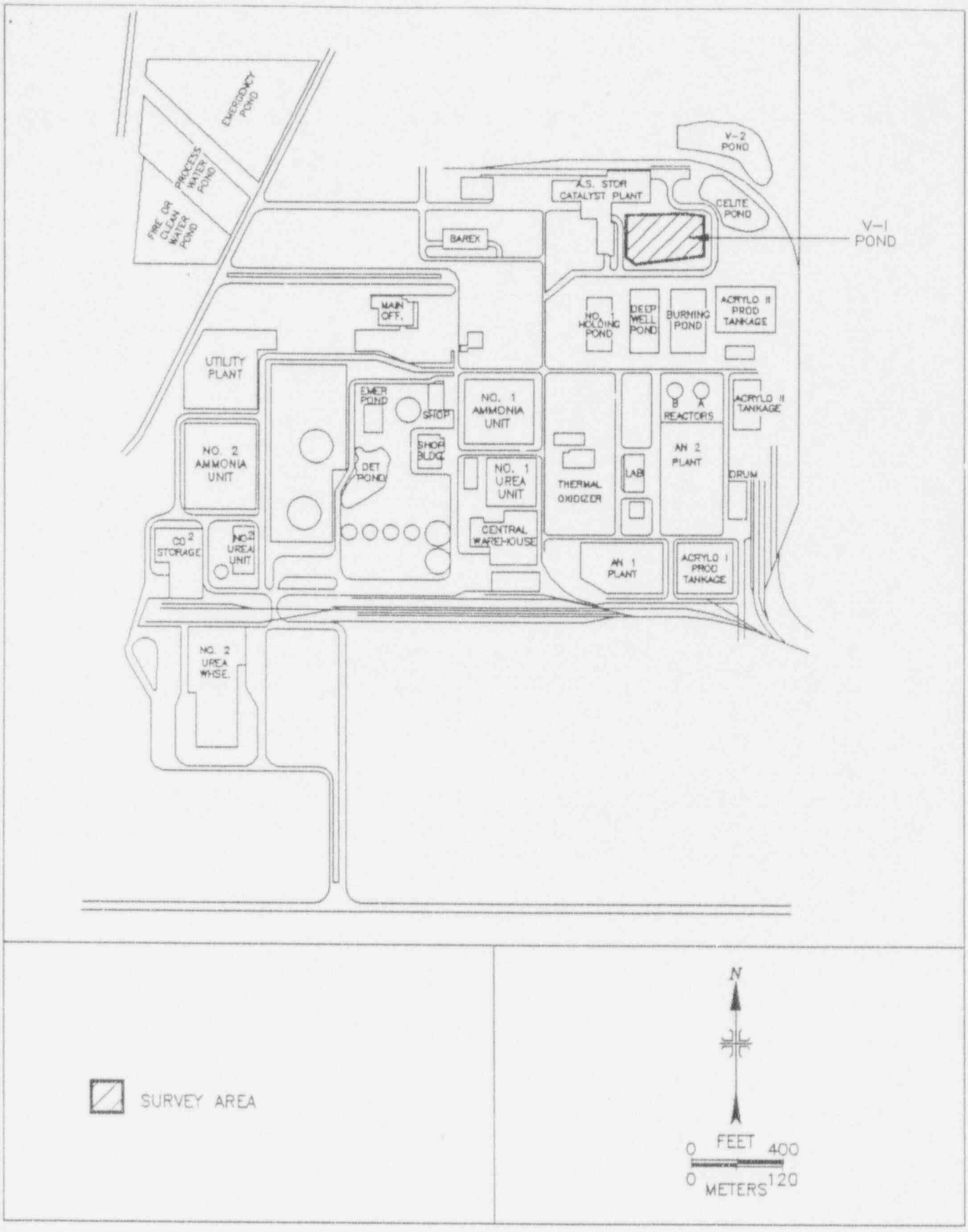

FIGURE 2: BP Chemical America, Inc. Plant Layout – Location of V-1 Pond

REFERENCES

1. B.P. Rocco, Oak Ridge Associated Universities, "Radiological Survey of Vistron Corporation, Lima, Ohio," August 1983.

2. M.R. Landis, Oak Ridge Associated Universities, "Confirmatory Survey of the Catalyst Plant, BP Chemical, Inc., Lima, Ohio," July 1988.

3. B.P. Chemicals, Inc. "Radiological Status Survey of the V-1 Pond Site, Mixed Waste Pond Closure Project," January 21, 1994.

4. Letter from A. Ansari, ORISE to S. Nalluswami, U.S. Nuclear Regulatory Commission, "Radiological Status Survey of the V-1 Pond Site, BP Chemicals, Inc., Lima, Ohio [Docket No. 040-7604]," February 2, 1994.

5. U.S. Nuclear Regulatory Commission, "Branch Technical Position on the Disposal of Residual Thorium or Uranium," October 1981.

APPENDIX A
V-1 POND
BP CHEMICALS, INC.
LIMA, OHIO

Plan Preparation - $6,500

Plan preparation includes the following activities: document reviews, survey plans, trip planning and the cost and time estimates.

On-Site Activities - $11,600

On-site activities will include 4 man-days at the site performing the following: gamma and surface scans, soil sampling, and exposure rate measurements.

The on-site expenses also include trip preparation (equipment calibration and packing), travel to and from the site, hotel expenses, and per diem, unpacking equipment, and logging in samples.

Sample Analysis - $3,000

Based on the information obtained from ESSAP cost estimate sheets, soil analysis will cost ~ $3,000.

Report Preparation - $11,500

The report preparation will include the following activities: tabulation of data, illustration, and writing and reviewing the draft and final reports, word processing and reproduction.

Total Cost Estimate - $32,600

**Estimates are for survey of all areas listed in the NRC Request for Technical Assistance received by ESSAP. Reduction or increase in the number of areas being surveyed would result in changes to the original estimate in the "on-site activities" and "sample analyses" categories. Due to the nature of the survey, this estimate is a best guess site and weather conditions and survey findings may change the scope of the survey and increase or decrease the cost estimate. The NRC site representative will be notified if major changes to the scope of the survey need to be taken.*