PARSONS ENGINEERING SCIENCE, INC.

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December 14, 1995

Via US postal service

Capt Christopher Williston
Armstrong Laboratory/OEB
2402 E Drive, Bldg. 175 W
Brooks AFB, Texas 78235-
5353

Re: Contract F33615-89-D-4003, Order 67, Mod 2, CSSA Groundwater Evaluation, Camp Stanley Storage Activity, Texas

Meeting Minutes on source remedial options for SWMU O-1 and B-3.

Dear Capt Williston:

Enclosed is one copy of the minutes of the December 7, 1995 meeting with CSSA, AL, AFCEE, and Parsons ES at CSSA, Boerne, Texas. We are also transmitting three copies of these minutes each to Mr. Brian Murphy, CSSA/RRAD and to Ms. Jo Jean Mullen, AFCEE/ERD.

Please call me at (512) 719-6000 if you have any questions or comments.

Sincerely,

Susan V. Roberts
Project Manager

Enclosure

xc: Brian Murphy, CSSA
Jo Jean Mullen, AFCEE/ERD
R.C. Wooten, Parsons ES
K. Rice, Parsons ES
B. Vanderglas, Parsons ES

MEETING MINUTES

Reference: Contract F33615-89-D-4003, Delivery Order 67
CSSA Groundwater Evaluation, Camp Stanley Storage Activity, Texas

Meeting: December 7, 1995
CSSA, Boerne, Texas

Subject: Technical information on source remedial options for SWMU O-1 and B-3

The meeting was held in the CSSA building 1 conference room, beginning at 0900 hours on December 7, 1995. The following were in attendance:

Name	Organization
Capt Christopher Williston	AL/OEBW
David McMindes	AFCEE/ERD
Jo Jean Mullen	AFCEE/ERD
Rene G. Hefner	AFCEE/ERC
Lt Col Dean Schmelling	CSSA CDR
Brian Murphy	CSSA, Environmental Officer
Tom Tutwiler	CSSA Deputy Director, Special Projects
John G. Lauber	CSSA
Marc Gill	Booz Allen & Hamilton, San Antonio
Wesley Dalton	Booz Allen & Hamilton, San Antonio
Ernesto J. Perez	Booz Allen & Hamilton, San Antonio
Susan Roberts	Parsons ES, Austin
Brian Vanderglas	Parsons ES, Austin
Michael Roddy	Parsons ES, Austin
Ken Rice	Parsons ES, Austin

The purpose of the meeting was to discuss potential source remedial options identified to date.

The technical source remedial option meeting agenda included an introduction of participants and presentation of pertinent technical information concerning SWMU O-1 and B-3 by Parsons ES personnel. The meeting ended with a discussion on additional data objectives necessary to make decisions on the most cost-effective and efficient source removal action.

Introduction of Participants

Brian Murphy	CSSA Environmental Officer
Lt Col Dean Schmelling	CSSA Commander
Tom Tutwiler	CSSA Deputy Director of Special Projects
Capt Christopher Williston	Armstrong Laboratory/OEB
David McMindes	AFCEE/ERD
Jo Jean Mullen	AFCEE/ERD
Rene Hefner	AFCEE Environmental Hydrologist
Marc Gill	Booz, Allen & Hamilton, SETA contractor for AFCEE
Wesley Dalton	Booz, Allen & Hamilton, SETA contractor for AFCEE
Ernesto Perez	Booz, Allen & Hamilton, SETA contractor for AFCEE
Susan Roberts	Parsons ES Project Manager
Brian Vanderglas	Parsons ES C.P.S.S.
Michael Roddy	Parsons ES Geochemist
Ken Rice	Parsons ES Task Manager for SWMU Closures

Presentations

Capt Williston began the meeting by indicating that the options discussed in this meeting did not include all possible remedial options, and the identification of additional options which may address contamination at the SWMUs should be brought forward.

Susan Roberts gave a brief discussion on background information concerning CSSA, delivery orders for which the information was gathered, and the pertinent data gathered to

date on SWMU O-1 and B-3. The information included EM and GPR surveys conducted with identification of anomalies, soil types located at CSSA, mapping of faults, and previous soil gas surveys conducted.

Mike Roddy followed with a discussion on updated data concerning soil gas concentrations. An updated soil gas map was presented for clarity. The map located "hot spots" in each of the SWMUs of concern. David McMindes commented that if background data (i.e., drilling, aerial surveys, geophysical anomalies located, etc.) has been accomplished, use soil gas data as focus of future work. Mike Roddy indicated he will complete a technical memorandum on the soil gas survey recently completed.

Ken Rice discussed the soil and groundwater sample analytical data collected to date for the SWMUs, presenting the highest concentrations identified in each SWMU for each constituent of concern (chlorinated volatiles, and the metals Cd, Cr, Pb, and Ni). Ken also discussed the remedial options identified to date that included Low Temperature Thermal Desorption, Soil Vapor Extraction, Solidification/Stabilization, Soil Washing and Landfilling, presenting the advantages and disadvantages of each option identified, and which options addressed volatiles, metals, or both.

Brian Vanderglas discussed the options identified for biodegradation of the VOC constituents of concern, identified as tetrachlorethene (PCE), trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride (VC). Concerns were expressed on the costs associated with the technologies presented. Brian indicated that the majority of the costs were due to excavation of the material and construction of "bio cells" for the excavated materials. The bio cells may need to be constructed to hazardous waste containment specifications. A question was raised concerning the necessity of permitting the bio cells. The possibility of creating a Corrective Action Management Unit (CAMU) may be applicable.

Data Objectives

The meeting concluded with a discussion of data objectives to be accomplished in December 95 and January 96. It was agreed that the group would try to meet at the end of January 96. Data objectives resulting from the meeting and necessary for identifying remedial options at B-3 and O-1 is provided as an attachment to this meeting minutes.

DRAFT

14 December, 1995

CAMP STANLEY STORAGE ACTIVITY
GROUNDWATER EVALUATION

DATA OBJECTIVES AS OF 07 DEC 95

Contract F33615-89-D-4003
Order 67, Groundwater Evaluation
Camp Stanley Storage Activity (CSSA), Texas

Based on the 07 Dec 95 meeting between representatives of CSSA; Armstrong Laboratories/OEB; US Air Force Center for Environmental Excellence; Booz, Allen and Hamilton; and Parsons Engineering Science, the following list of data objectives for the referenced project were agreed upon. Specific information of interest for each site and each item follows in chronological order

DATA OBJECTIVES

SWMU B-3

1. Soil concentrations in soil gas "hot spots"
   a. Total VOCs
   b. TCLP VOCs
   c. SPLP VOCs
2. Collect soil samples for:
   a. TCLP metals
   b. Total metals
   c. SPLP metals
   d. Physical characteristics: (porosity, particle sizing, moisture, nutrients, total organic carbon, *others as appropriate*)
3. Background samples
4. Drill/sample soil borings to determine extent of metals and VOCs contamination
5. Determine concentrations of VOCs in perched water
6. Air permeability testing

SWMU O-1

1. Soil concentrations in soil gas "hot spots"
   [Done in Dec 95.]
2. Collect soil samples for:
   a. TCLP for VOCs and metals
   b. SPLP for VOCs and metals
   c. Physical characteristics: (porosity, particle sizing, moisture, nutrients, total organic carbon, *others as appropriate*)
3. Background samples
4. Air permeability testing
5. Bench scale testing of VOC volatilization from soils

14 December, 1995

ADDITIONAL INFORMATION TOWARDS PERFORMANCE OF DATA OBJECTIVES

SWMU B-3

December 1995

1. Define soil concentrations within soil gas survey "hot spots".

   - Collect eight soil samples during the week of 18 Dec 95 in accordance with the Sampling and Analysis Plan for the groundwater evaluation project (ES, May 1993). Six soil samples will be collected for VOC analysis, including sampling for duplicate and MS/MSD. Five of the soil samples will be collected at a depth of 0-2 feet. One soil sample will be from a depth of 2-5 feet. Sample locations are presented in Figure 1.
   - Analyze samples for total VOCs by SW846 8260
   - TCLP for VOCs of concern by SW846 1311/8260
   - SPLP for VOCs of concern, for sample collected at depth greater than 2 feet, by SW846 1312/8260
   - Laboratory TAT for the above will be 5 to 10 days for totals and 15-20 working days for TCLP and SPLP. Data validation is estimated at 10 working days.

2. Collect four soil samples at depths ranging from 0-5 feet for analysis by:

   - Total metals (Cd, Cr, Ni, Pb) by SW-846 7130 for Cd, 6010 for Ni and Cr, and 7421 for Pb
   - TCLP for metals of concern by SW-846 1311/6010, 6010 for Cr and Ni, 7130 for Cd, and 7421 for Pb
   - SPLP for metals (Cd, Cr, Ni, Pb) by SW-846 1312/6010 for Cr and Ni, 7130 for Cd, and 7421 for Pb

   ⇒ Laboratory TAT for the above will be 5 to 10 days for totals and 15-20 working days for TCLP and SPLP. Data validation is estimated at 10 working days.

   - Soil physical characteristics to aid in performance assumptions for potential remedial actions:
     - Porosity (bulk density)
     - Particle sizing (hydrometer testing)
     - Moisture content
     - Nutrients in soil (total Kjedahl nitrogen)
     - Total organic carbon (TOC)

- pH
- Phosphates
- Permeability (undisturbed and remolded)

3. Collect and analyze background samples for all metals of concern at CSSA SWMUs *(this action is in accordance with the SOW for AL/OEB order 126 and is proposed to be performed under that order. See notes below for more information).*

January 1996

4. Drill soil borings to determine the extent of VOC and metals contamination.

   - Drill soil borings and collect soil samples in accordance with Sampling and Analysis Plan (May 1993) for the groundwater evaluation project.
   - Analyze soil samples by SW-846 8260; 10-working days TAT.
   - Install soil vapor extraction test wells at a minimum of four soil borings for air permeability testing at depth, as trenches may extend to 10 to 14 feet BGL.

5. Should perched groundwater be encountered during drilling, install shallow monitoring well(s). Analyze perched water (if present) for chlorinated organic compounds.

   - Install shallow groundwater monitoring wells in accordance with finalized workplan for SWMU closures (AMC delivery order RL17).
   - Analyze groundwater samples by SW846 8260; 10-working days TAT

6. Perform air influence testing for determination of a radial influence of a SVE well; monitor off-gas concentrations. Because this work has not yet been described, a plan of testing will be submitted in early Jan 96 to CSSA, AL/OEB, and AFCEE. It is anticipated that this work will be performed in late Jan 96.

SWMU O-1

December 1995

1. Define soil concentrations within soil gas survey "hot spots". This has been accomplished during a sampling event on November 17, 1995. Results are:

   - Maximum total PCE and metals for surface soils < 2 feet are 25 ppm and 610 ppm, respectively.
   - Figure 2 shows the approximate location of the soil samples.

2. Collection of samples for TCLP and SPLP will be above liner. Collect one soil sample for analysis:

   - TCLP and SPLP for metals of concern by SW846 1311 and 1312/6010 or appropriate 7000 series. 10-working days TAT
   - TCLP and SPLP for PCE by SW846 1311 and 1312/8260, 10-working days TAT
   - Soil physical characteristics to aid in performance assumptions for potential remedial actions:
     - Porosity (bulk density)
     - Particle sizing (hydrometer testing)
     - Moisture content
     - Nutrients in soil (total Kjedahl nitrogen)
     - Total organic carbon (TOC)
     - pH
     - Phosphates
     - Permeability (undisturbed and remolded)

*3. Collect and analyze background samples for all metals of concern *(this action is in accordance with the SOW for AL/OEB order 126 and is proposed to be performed under that order. See notes below for more information)*.

January 1996

4.. Perform air influence testing only if liner is not competent. *(For air influence testing, see notes on #6, SWMU B-3. See notes regarding liner in #5, SWMU O-1.)*

5. Bench scale testing of VOC volatilization from soils, and determination of liner competence.

   a) 1. It is propose to dig a test pit above the existing liner, without disturbing the liner. Spread soils on plastic, install flexible field tile, and create a berm with clean soils and plastic around the excavated soils. Install PVC and vents; cover with plastic.

      2. Test with PID for VOCs at PVC pipe.

      3. Collect one soil sample from excavated soils and analyze by SW-846 8240 for 5-day TAT.

   b) Return each of 3 to 6 weeks and repeat steps a2 and a3. Evaluate analytical data during the test period to assess probable reduction of VOCs in soil.

   c) Use data to aid in determining final remedial option to best treat the O-1 unit soils for source removal of VOCs.

* **Proposed to be performed under AL/OEB order 126:** Collection of background samples for metals analysis and statistical evaluation of metals concentrations

Some background populations have been determined under order 126 for closure of the F-14 and B-20 sites. These are three soil types and the Glen Rose limestone.

⇒ In accordance with the August 1994 TNRCC letter of accordance for the B-20 closure investigation and CSSA's letter of response, each background population will consist of 10 samples collected in areas of no known waste management and no known military operations.

⇒ There are nine background soil and rock populations. Soil types were determined from the Bexar County Soil Conservation Survey (USDA, 1966).

⇒ Native soil types at CSSA are listed below. Populations that were sampled, analyzed, statistically evaluated, and reported in the "B-20 Final Remedial Investigation Report" of June 1995 are noted as (√) below, with qualifier notes as necessary:

Soil

Tarrant association, gently undulating

Tarrant association, rolling

√ Krum complex *(statistically evaluated for As, Ba, Cd, Cr, Pb, and Hg during B-20 RI)*

Trinity-Frio frequently flooded

√ Crawford and Bexar *(statistically evaluated for As, Ba, Cd, Cr, Pb, and Hg during B-20 RI)*

Brackett

√ Brackett-Tarrant *(statistically evaluated for As, Ba, Cd, Cr, Pb, and Hg during B-20 RI)*

Lewisville silty clay

Rock

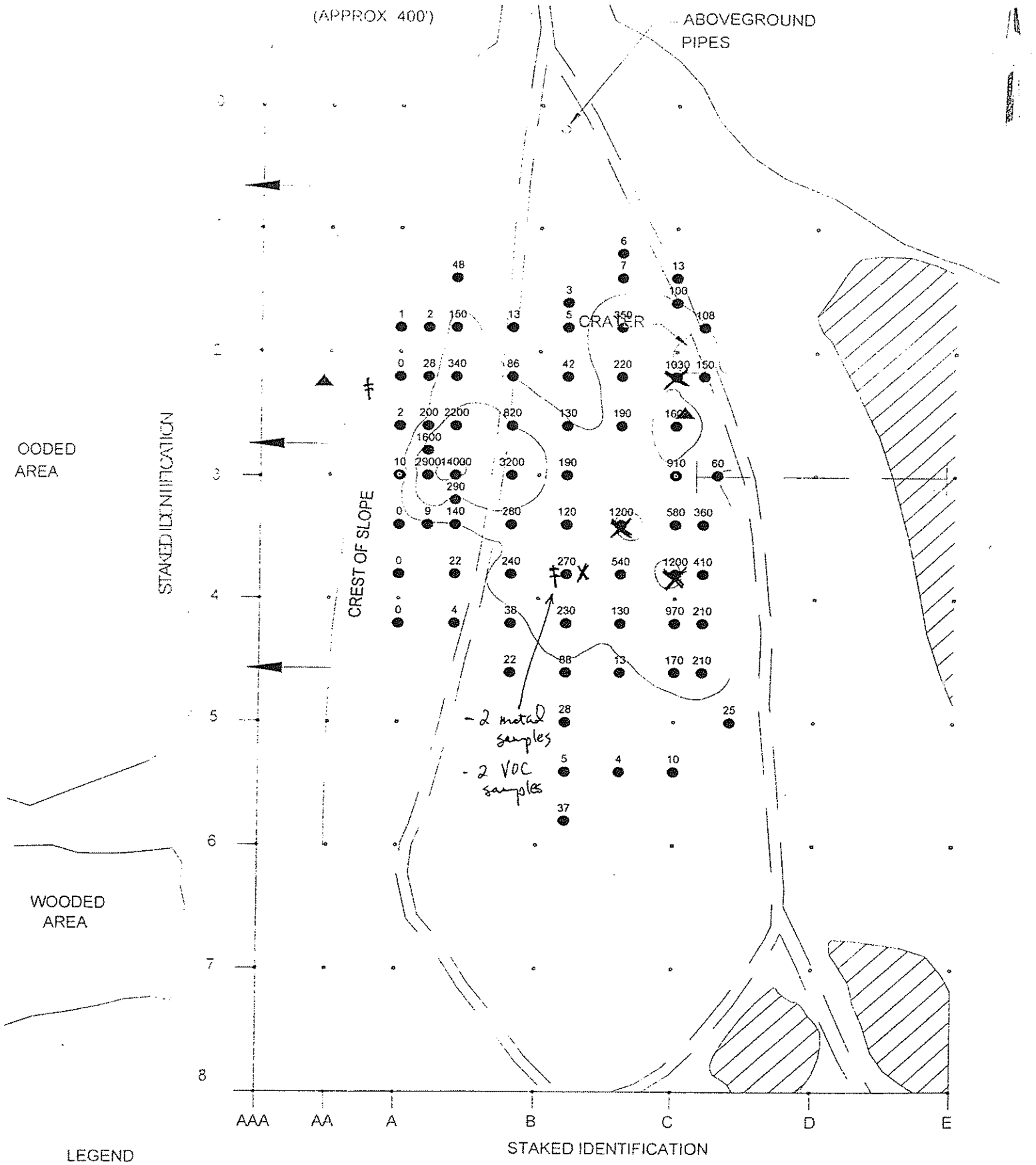
√ Glen Rose limestone *(statistically evaluated for As, Ba, Cd, Cr, Pb, and Hg during B-20 RI; other metals analyzed and the data validated during the F-14 closure investigation).*

⇒ Metals will be collected in accordance with metals of concern at all SWMUs for statistical evaluation of closure investigation data (the analytical methods are those listed in the AMC delivery order RL17, "Draft Workplan for Closure Investigations," Nov 95):

- Arsenic (SW-846 7060)
- Barium (SW-846 6010)
- Cadmium (SW-846 7130)
- Chromium (SW-846 6010)

- Copper (SW-846 6010)
- Lead (SW-846 7421)
- Nickel (SW-846 6010)
- Mercury (SW-846 7470)
- Zinc (SW-846 6010)

⇒ As of 08 Dec 95, a letter of request for approval of background sampling locations is under preparation for draft submittal to CSSA, AL/OEB, and AFCEE. The letter will include, per soil type, a topographic map of CSSA, all known SWMU locations, the soil type and the proposed sample locations. The final letter and nine maps will be submitted to TNRCC with a request for expedited review, so that samples can be collected in Dec 95 and analyses be evaluated in Jan 96. The data validation will also take place in Jan 96. The background data sets will be used for evaluation of metals concentrations at all SWMUs, but will also be necessary in decision making for source removal of VOCs and possible metals at SWMUs B-3 and O-1.



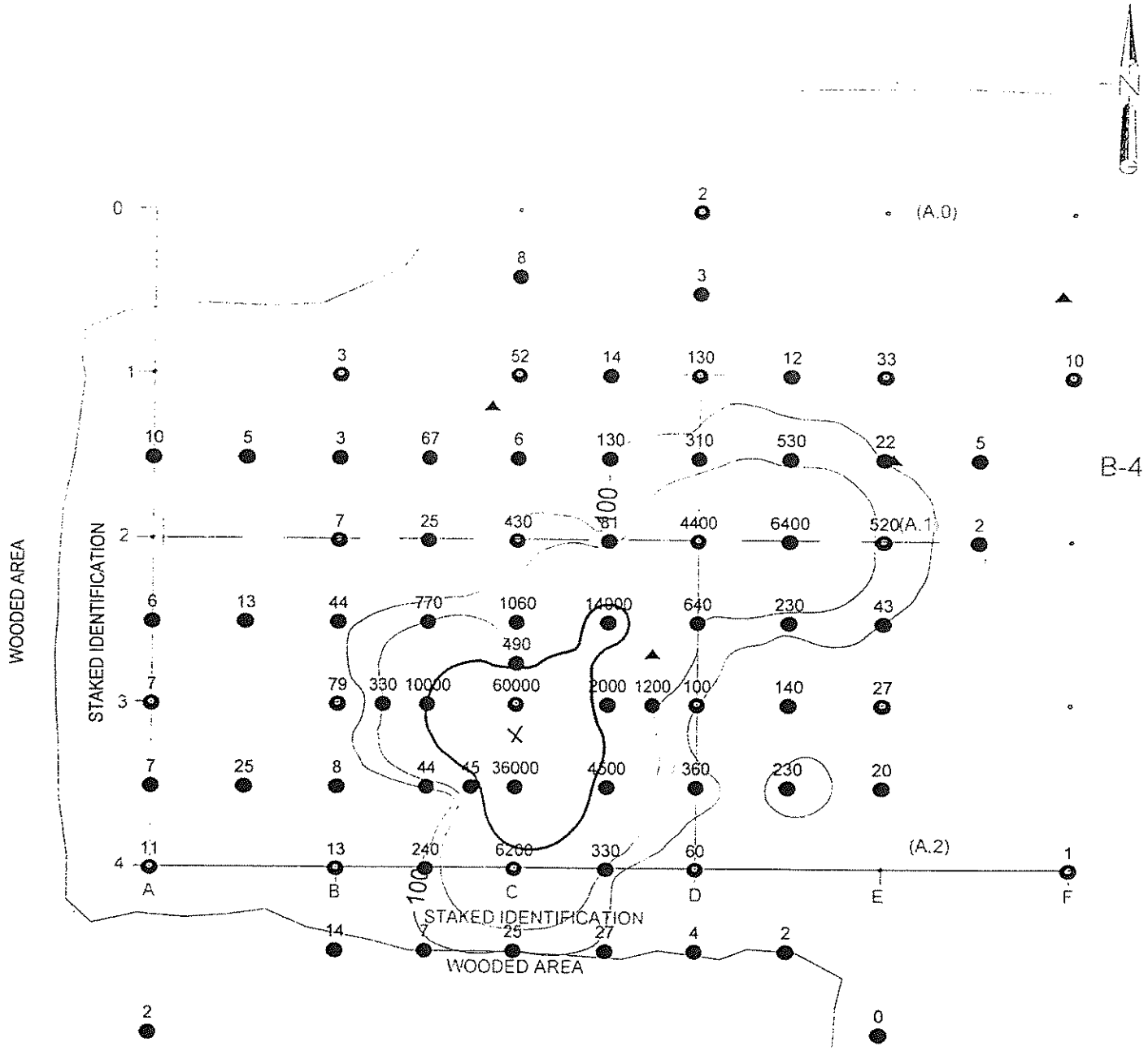
LEGEND

- SURFACE METAL
- STAKED GEOPHYSICAL GRID POINT
- LIMESTONE OUTCROP
- DIRT ROAD
- DOWNSLOPE
- X Proposed sample locations - VOCs
- ‡ Proposed metal sample locations

SCALE 0 25 50 FEET

Distribution of Trichloroethene in Soil Gas at SWMU B-3

Figure 1



LEGEND

APPROXIMATE BOUNDARY OF TREES AND SHRUBS

STAKED GEOPHYSICAL GRID POINT

SCATTERED METAL DEBRIS AT SURFACE

(A,0) CORRESPONDS WITH B-4 GRID

LOCATION OF GSSI SIR-3 GPR PROFILE SHOWN ON FIGURE 6.4

LOCATION OF PULSE EKKO GPR PROFILE SHOWN ON FIGURE 6.5

x Proposed sample location;
Nov. '95 sample location

0 25
SCALE FEET

Distribution of PCE in Soil Gas at the Oxidation Pond

Figure 2