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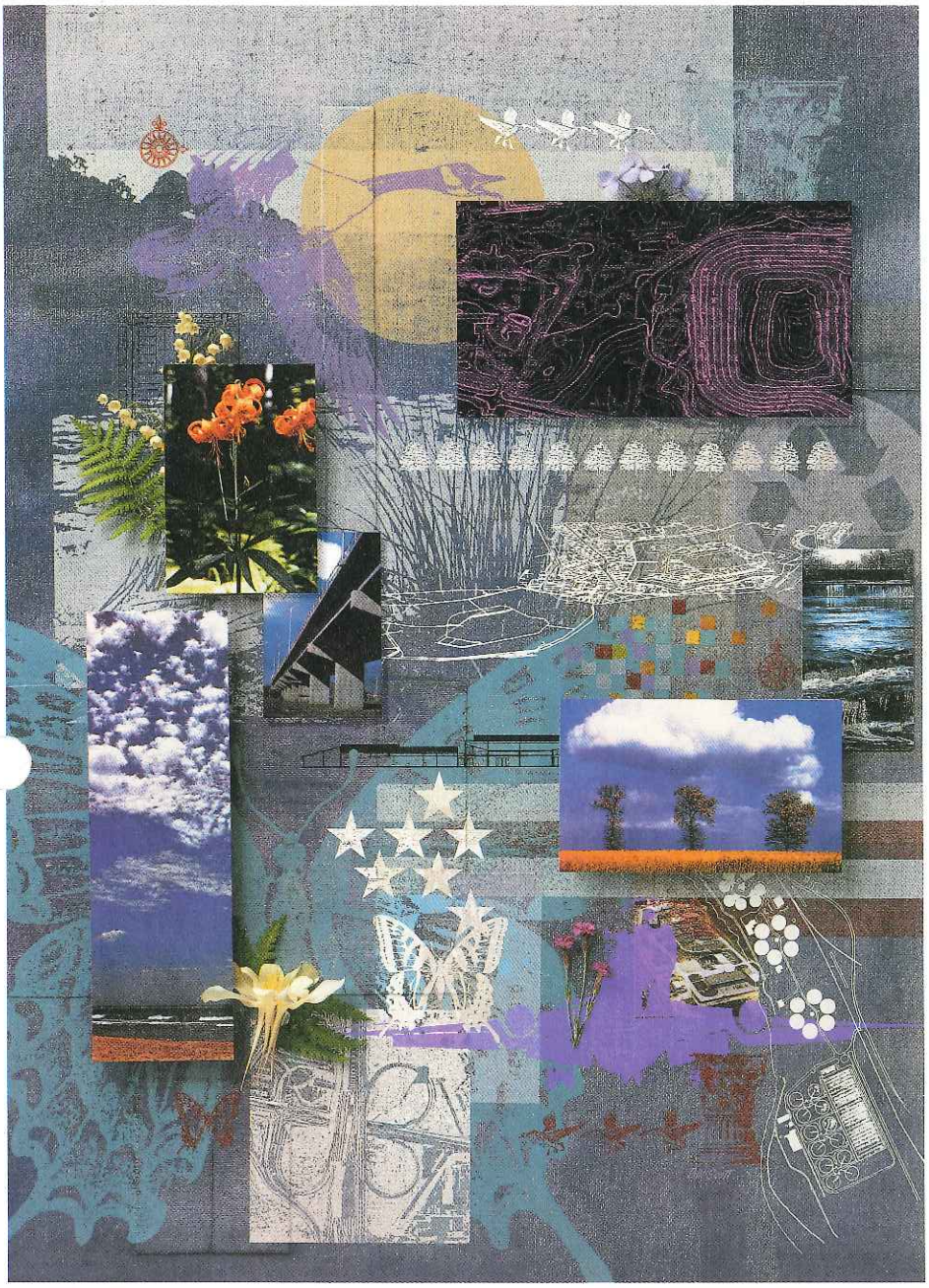

Quality through teamwork

RCRA Facility Investigation (RFI) Phase I Work Plan

Chemical Waste Management
Vickery, Ohio

U.S. EPA ID No. OHD 020 273 819

Prepared for:

CWM - Vickery

May 1996

RUST

Rust Environment & Infrastructure

RESPONSE TO THE PHASE I WP - QAPjP COMMENTS

RESPONSE TO GENERAL COMMENTS

Comment 1

The mechanism used in the Phase I RFI to move towards a Phase II RFI will be a comparison to the Project Reporting Limits or PRLs. The PRLs represent the highest analytical levels achievable by the laboratory to support a quantitative risk assessment. Analytical results above the PRL or, the result is a "non-detect" where the PRL is above the EPA Region 5 DQL, will be considered potential contamination for risk assessment.

Comment 2

The matrices to be sampled in the Phase I RFI WP include soil, sediment and groundwater.

Comment 3

Table 4-1 represent the Sampling and Analysis Project Rationale. This table discusses the history of the SWMUs or AOCs and describes the sampling program.

Comment 4

All of the discrepancies have been corrected to allow for easy correlation between the WP and the QAPjP.

Comment 5

All laboratory QA managers have been included in the QAPjP. The QA managers are also listed in Figure 7-2, the Project Organization Chart.

Comment 6

Project specific information has been placed in places where generic text was located.

Comment 7

All of the deficiencies, inconsistencies and discrepancies have been revised. All methods, SOPs and ASTM methods noted have been changed accordingly.

Comment 8

Region "V" has been replaced by Region 5.

RESPONSE TO SPECIFIC COMMENTS

Comment 1

All QA managers and other responsible members of the project team have signed the title page.

Comment 2

The titles of the individual SOPs have been included in the table of contents.

Comment 3

Recent groundwater monitoring data will be presented in the Phase I RFI supported by the collection of the groundwater samples in five on-site groundwater monitoring wells. This data will be validated using the SOP titled -"Data Validation Procedures for EPA Level II Data".

Comment 4

A quantitative risk assessment will be completed at the completion of both the Phase I and II RFIs to determine the need for a CMS.

Comment 5

See above response

Comment 6

A field duplicate will collected at the capillary drain sump to allow for an additional control and reproducibility of the sample.

Comment 7

A representative surface soil sample will be collected.

Comment 8

Groundwater characterization will be completed by a combination of the validation of recent historical monitoring data supported by the collection of groundwater samples from five on-site groundwater monitoring wells. Additionally, soil sampling will support the groundwater assessment. If soil sample results indicate the need for further groundwater characterization, this will be completed as part of the Phase II RFI.

Comment 9

"Appendix IX dioxin" has been changed to "Appendix IX dioxins/furans" throughout the text. Analytical results from the Clean Closure of Surface Impoundments 4, 5, and 7 indicated trace detections of dioxin in the fixed waste. Therefore the capillary drain water sample, along with the groundwater samples from the monitoring wells will be collected to confirm that no Appendix IX dioxins/furans are present in the soils. Additionally, to confirm no dioxin contamination exists at SWMU #15 (Oil Recovery Facility) any analytical result from the Appendix IX PCB analysis from SWMU #15 which indicate a detection above the PRLs will be analyzed from Appendix IX dioxins/furans. Historical records of the site indicated that trace amounts of dioxin were present Surface Impoundment 4. Based on the operations at the facility, no other areas on site would be affected.

All groundwater and water samples will include the field testing of pH, specific conductance and temperature. Groundwater sampling procedures are provided in Appendix C and D of the Phase I RFI WP.

Comment 10

Groundwater characterization will be completed by a combination of the validation of recent historical monitoring data supported by the collection of groundwater samples from five on-site groundwater monitoring wells. Additionally, soil sampling will support the groundwater assessment. If soil sample results indicate the need for further groundwater characterization, this will be completed as part of the Phase II RFI.

Comment 11

The text has been revised accordingly.

Comment 12

A comparison to the Project Reporting Limits or PRLs will be completed in the reduction of the data from the Phase I RFI. The PRLs represent the highest analytical levels achievable by the laboratory for risk assessment purposes. Analytical results above the PRL or, the result is a "non-detect" where the PRL is above the EPA Region 5 DQL, will be considered potential contamination for risk assessment.

Comment 13

Groundwater will be characterized as described in the response to Comment 10. As detailed in Section 4 of the Phase I RFI WP, many investigations have been performed on the CWM-Vickery site since 1983. This data has adequately characterized the geology and hydrogeology underlying the site. Additional hydrogeologic information is provided in Appendix C of the WP. This

information includes water level hydrographs for all monitoring wells on-site from 1986 to 1995, monitoring well construction details, precipitation data for 1995, two reports which discuss tritium analysis, and hydrogeological vertical flow nets. This information was provided to Dr. Wayne Pettyjohn to substantiate vertical flow of groundwater within the lacustrine and glacial till zones on-site.

Comment 14

See response to Comment 10 above. The text has been restated to state that the former surface impoundments posed a risk to soil and groundwater.

Comment 15

All releases were remediated immediately after occurrence. The report by ENSR that details the evaluation of the stream is presented in Appendix C.

Comment 16

The text has been revised accordingly.

Comment 17

The Table 1-1 has been revised accordingly.

Comment 18

The objectives for the Phase I RFI are discussed in Section 4 of the Work Plan. The Phase I RFI is specifically focussed on determining if releases have actually occurred. This will be done through determining if there are any hazardous constituents in the soils adjacent to and underlying the SWMUs and AOCs or in the sediments of surface streams draining the site. The Phase I report will propose specific and focussed investigations to assess the extent and risk-impact of those releases including the investigation of groundwater, if any are determined. The groundwater pathway and the off-site surface water receptors will be evaluated during the Phase I and II RFIs.

The characterization of the groundwater will be initially made by using a combination of soil sampling and by investigative groundwater sampling within five on-site monitoring wells, supported by recent historical groundwater data. Historical data will be presented in tables and representative samples will be validated. Validation of data will conform to the Standard Operating Procedure (SOP) titled "Data Validation Procedures for EPA Level III Data". This SOP is provided in Appendix A of the QAPjP. For the Phase I RFI, Project Reporting Levels (PRL) are presented as the highest analytical level achievable by the laboratory to support a quantitative risk assessment (QRA). Any detection above the PRL or a "non-detect" for which the PRL is above the EPA Region 5 DQL, will be defined as potential contamination for risk assessment.

All data (Phase I and II RFIs) will be used in a QRA at the completion of the RFI. If the results of the QRA determine the need for a CMS, the data will also be used to assess feasibility of using certain remediation technologies.

Comment 19

The text has been revised accordingly.

Comment 20

The mechanism used in the Phase I RFI to move towards a Phase II RFI will be a comparison to the Project Reporting Limits or PRLs. The PRLs represent the highest analytical levels achievable by the laboratory for the purposes of risk assessment. Analytical results above the PRL or, the result is a "non-detect" where the PRL is above the EPA Region 5 DQL, will be considered potential contamination for risk assessment.

Comment 21

Additional soil samples will be collected during the implementation of Phase I if field observations indicate visual contamination of the soil. The Region 5 Corrective Action Project Manager will be informed about this project scope change by telephone call from the CWM-Vickery Project Manager. The monthly status report will document the information.

Comment 22

Table 1-1 has been revised accordingly.

Comment 23

Table 1-2 has been revised accordingly.

Comment 24

Table 1-3 has been revised accordingly.

Comment 25

Table 1-4 has been revised accordingly.

Comment 26

Table 1-5 has been revised accordingly.

Comment 27

Table 1- 6 has been revised accordingly.

Comment 28

Table 1-7 has been revised accordingly.

Comment 29

Table 1-8 has been revised accordingly.

Comment 30

"U.S. EPA RCRA Project Coordinator" has been globally changed to "U.S. EPA RCRA Project Manager".

Comment 31

See above response

Comment 32

Figure 2-1 has been revised accordingly.

Comment 33

The fecal coliform analyses has been removed after carefully consideration. All laboratory personnel have been specified as requested in the comments.

Comment 34

Figure 2- 1 has been revised accordingly.

Comment 35

The text has been revised to clarify that the field screening of the core samples are variable due to the breaking open of the sampling device is not a controlled method, i.e., a jar or bag. Therefore VOCs are variably "lost" when the sampling device is open. This in turn, reduces the precision of the analyses.

Comment 36

It is expected that GP Environmental Services will provide data meeting QC acceptance criteria for 80 percent or more for soil samples and 90 percent for water samples using SW-846 methods.

Comment 37

The text has been revised accordingly.

Comment 38

The text has been revised accordingly.

Comment 39

This discrepancy has been resolved. A laboratory duplicate will be used for inorganic analysis and a matrix spike duplicate will be used for organic analysis.

Comment 40

Table 3-2 has been revised accordingly.

Comment 41

Table 3-3 has been revised accordingly.

Comment 42

Table 3-6 has been revised accordingly.

Comment 43

Table 3-7 has been revised accordingly.

Comment 44

Section 4 has been reviewed and revised to include accurate references of information in the comment.

Comment 45

The text has been revised accordingly.

Comment 46

The text has been revised to state that sample labels will be used. Additionally, the numbering system has been changed to reflect the comments.

Comment 47

The Sample custody procedures for GP Environmental Services and Core Laboratories are included in Appendix B. Custody procedures for Rust Geotech. Lab is provided in Appendix A within SOP #GT-001.

Comment 48

The text has been revised to contain all of the information that will be included in the final evidence files.

Comment 49

The details of the calibration for each of the laboratory instruments are provided in the SOPs. The calibration is summarized in Table 6-1.

Comment 50

The fecal coliform analysis has been removed from this project.

Comment 51

The text has been revised accordingly.

Comment 52

Table 7-1 has been revised accordingly.

Comment 53

See above response.

Comment 54

The text has been revised accordingly.

Comment 55

The text has been revised accordingly.

Comment 56

Table 8-1 has been revised accordingly.

Comment 57

This section has been revised as requested by the comments.

Comment 58

The text has been revised accordingly.

Comment 59

The text has been revised accordingly.

Comment 60

Table 11-1 has been revised accordingly.

Comment 61

The text has been revised to remove the need for precision and accuracy of the biochemical analyses due to that the fecal coliform analysis has been removed. Ground penetrating radar is the only geophysical method to be used in this project. A pilot test will be conducted to determine if the ground penetrating radar will be effective.

Comment 62

The precision of inorganic analyses will be determined as indicated in Section 12.1.

Comment 63

"U.S. EPA RCRA Project Coordinator" has been globally changed to "U.S. EPA RCRA Project Manager".

Comment 64

See above response.

Comment 65

The text has been revised accordingly.

Chemical Waste Management, Inc.
Response to Notice of Deficiencies (NODs)
RFI Phase I RFI Work Plan (WP) &
Quality Assurance Project Plan (QAPjP)

RESPONSE TO THE PHASE I RFI WP COMMENTS

RESPONSE TO GENERAL COMMENTS

Comment 1 - Comment on Response to General Comment 1.

The RFI Phase I WP has included groundwater sampling within five on-site groundwater monitoring wells to support the validation of recent historical groundwater monitoring data. Additionally, soil sampling results will support this groundwater assessment by indicating the needs for further characterization. These Phase I activities will be used to assess the groundwater on the CWM-Vickery facility. If the Phase I results indicate the need for additional groundwater assessment, this further characterization will be completed in Phase II.

Comment 2 -Comment on Response to General Comment 2.

Appendix IX parameters have been globally inserted as requested.

Comment 3 -Comment on Response to General Comment 4.

Boreholes at Grid-Node locations will be continuously cored using a 5-foot split barrel corer. One soil sample taken at a depth of approximately 2 to 4 feet below the bottom of the SWMU will be collected for laboratory analysis. At Selected locations, headspace screening will be used to determine which soil samples are sent to the laboratory for analysis. The soil sample interval which possesses the highest headspace screening result will be sent to the laboratory for analysis. Boreholes will be terminated when headspace analysis of gross VOCs are not detected, identification of soils do not indicate visual contamination and historical information supports termination (i.e., termination depth of the borehole is below the recorded depth of the surface impoundment). Details on soil sampling are provided in Section 5.7.1.1 and 5.7.1.2.

Comment 4 - Comment on Response to General Comment 10.

The groundwater pathway will be evaluated within the Phase I WP. If further characterization groundwater is needed, it will be completed as part of the Phase II RFI.

RESPONSE TO SPECIFIC COMMENTS

Comment 1 - Comment on Response to Specific Comment 10.

In the unlikely event that the injection well system cannot accept the decontamination waters generated during the Phase I RFI, they will be properly disposed at an approved off-site facility.

Comment 2 - Comment on Response to Specific Comment 11.

Section 5.7.2 has been changed to clarify that a "California" modified split spoon will be driven between an interval of 0 - 2 feet below ground surface. This procedure will allow for the collection of undisturbed soil.

Comment 3 - Comment on Response to Specific Comment 12.

In Section 5.7.1.2 the text describes that at Selected locations headspace screening will be used to determine which soil samples are sent to the laboratory for analysis. The soil sample interval which possesses the highest headspace screening result will be sent to the laboratory for analysis.

Comment 4 - Comment on Response to Specific Comment 15.

The text has been revised to state 34 soil samples will be collected.

Comment 5 - Comment on Response to Specific Comment 17.

Based on the results of the meeting dated March 25, 1996 between the EPA Region 5 and CWM-Vickery, et al, a mutual agreement was reached regarding the certified clean closures of certain SWMUs. Historical information will be presented to confirm these clean closures. Additionally, a water sample will be collected from the capillary drain sump which obtains its water from the soils underlying certified clean closed surface impoundment 4, 5, and 7 and groundwater samples will be collected from five on-site monitoring wells to support the validation of recent historical monitoring data. These above activities will confirm the certification of clean closed SWMUs.

Comment 6 - Comment on Response to Specific Comment 26.

Ground penetrating radar is proposed to determine the location and depth of the underground piping, if any. An estimated depth of four to six feet has been provided within the work plan as an estimated depth to the underground piping, if the GPR is unsuccessful due to the clay soils which underlie the site.

Comment 7 - Comment on Response to Specific Comment 47

Groundwater contamination, if any, will be determined by the validation of recent historical

monitoring data supported by the collection of groundwater from five on-site monitoring wells. Additionally, soil sampling data will support this groundwater assessment. If any of these Phase I activities indicate the need for further characterization of groundwater, it will be completed as part of the Phase II RFI.

RESPONSE TO NEW GENERAL COMMENTS

Comment 1

The objectives for the Phase I RFI are discussed in Section 4 of the Work Plan. The Phase I RFI is specifically focussed on determining if releases have actually occurred. This will be done through determining if there are any hazardous constituents in the soils adjacent to and underlying the SWMUs and AOCs or in the sediments of surface streams draining the site. The Phase I report will propose specific and focussed investigations to assess the extent and risk-impact of those releases including the investigation of groundwater, if any are determined. The groundwater pathway and the off-site surface water receptors will be evaluated during the Phase I and II RFIs.

The characterization of the groundwater will be initially made by using a combination of soil sampling and by investigative groundwater sampling within five on-site monitoring wells, supported by recent historical groundwater data. Historical data will be presented in tables and representative samples will be validated. Validation of data will conform to the Standard Operating Procedure (SOP) titled "Data Validation Procedures for EPA Level III Data". This SOP is provided in Appendix A of the QAPjP. For the Phase I RFI, Project Reporting Levels (PRL) are presented as the highest analytical level achievable by the laboratory to support a quantitative risk assessment (QRA). Any detection above the PRL or a "non-detect" for which the PRL is above the EPA Region 5 DQL, will be defined as potential contamination for risk assessment.

All data (Phase I and II RFIs) will be used in a QRA at the completion of the RFI. If the results of the QRA determine the need for a CMS, the data will also be used to assess feasibility of using certain remediation technologies.

Comment 2

The text has been revised to state that there are 53 SWMUs and 10 AOCs.

Comment 3

As detailed in Section 4 of the Phase I RFI WP, many investigations have been performed on the CWM-Vickery site since 1983. This data has adequately characterized the geology and hydrogeology underlying the site. Additional hydrogeologic information is provided in Appendix C of the WP. This information includes water level hydrographs for all monitoring wells on-site from 1986 to 1995, monitoring well construction details, precipitation data for 1995, two reports which discuss tritium analysis, and hydrogeological vertical flow nets. This information was

provided to Dr. Wayne Pettyjohn to substantiate vertical flow of groundwater within the lacustrine and glacial till zones on-site.

Comment 4

Please refer to response to comment 3 and Appendix C of the Phase I RFI WP.

Comment 5

As stated above in response to comment 3, many investigations have been completed on the CWM-Vickery facility to characterize the geology and hydrogeology. This information, if applicable, will be included in the Phase I RFI report to support the activities proposed. Aquifer tests are not proposed on-site due to this enormous database of information. Should the need for additional aquifer testing become evident after the Phase I RFI, it will be proposed in Phase II, if necessary.

RESPONSE TO NEW SPECIFIC COMMENTS

Comment 1 (Section 4.0, Page 2 of 6, Paragraph 1)

Groundwater contamination in the vicinity of the SWMUs and AOCs, if any, will be determined using combination of groundwater sampling in five on-site monitoring wells supported by recent historical monitoring data. Additionally, it is still proposed that soil samples will support the groundwater assessment by providing indications of contamination. If soil samples indicate the need for additional characterization of the groundwater, this groundwater assessment will be completed as part of the Phase II RFI.

Comment 2 (Section 4.0, Page 2 of 6, Paragraph 1)

All historical releases to surface water were remediated immediately after their occurrence. Sediment samples are proposed at the exit point of surface stream draining the site to confirm the remediation and no contamination exists.

Comment 3 (Section 4.0, Pages 4 through 5 of 6, Bulleted Items)

A quantitative risk assessment will be completed after the Phase I and II RFI to determine a CMS, if necessary.

Comment 4 (Section 5.0, Page 1 of 53, Paragraph 1)

The text has been revised to state that the results of the Phase I RFI will be used to determine areas which require additional characterization. The information from both Phase I and II will be used to perform a quantitative risk assessment to determine the corrective action at the site, if needed.

Comment 5 (Section 5.1, Page 2 of 53, Paragraph 2)

The text has been revised to state that the soils below the SWMUs will also be sampled.

Comment 6 (Section 5.1, Page 3 of 53, Paragraph 1)

All discrepancies have been clarified. Table 1-1 of the QAPjP presents the Summary of the Sampling and Analysis Plan. Section 5 of the Workplan reiterates the table.

Comment 7 (Section 5.2.5.1.3, Page 10 of 53)

The text has been revised to address the comment

Comment 8 (Section 5.9)

The text has been revised to reflect the correct section references. Grid Node sampling procedures are located in Section 5.7.1.1. Selected locations sampling procedures are located in Section 5.7.1.2. Surface soil sampling collection procedures are located in 5.7.2. And, Sediment sample collection procedures are located in Section 5.7.3.

Comment 9 (Section 5.9.6, Page 31 of 53)

Surface soil sampling will be completed in the SWMU group due to the fact that all potential contamination from each of these SWMUs would originated as a surface spill. The SWMUs which make up this group are the FATs and pumphouses. This was overlooked in the original workplan and corrected in the August 1995 workplan.

Comment 10 (Section 5.9.6, Page 32 of 53, Paragraph 0)

This was a typographical error and has been corrected.

Comment 11 (Section 5.11, Page 54 of 54, Paragraph 4)

Based on past historical groundwater samples, total and filtered metals will be collected due to the background groundwater quality in the vicinity of CWM-Vickery facility.

Comment 12

Tables 5-1 through 5-4 were deleted from the workplan in the August 1995 submittal and remain deleted in this submittal. Please delete them from the text.

Comment 13 (Section 7.1, Page 2 of 6, Paragraph 2)

The bulleted text has been stricken from the text and the objectives have been clarified.

Comment 14 (Section 7.1, Page 2 of 6, Paragraph 2)

The Phase I RFI at CWM-Vickery TSD Facility is specifically focussed on determining if releases have actually occurred. This will be done through determining if there are any hazardous waste constituents in the soils adjacent to and underlying the identified SWMUs and AOCs, or in the sediments of surface streams draining the site. If so, the Phase I RFI report will propose specific and focussed investigations to assess the extent and risk-impact of those releases, including investigation of groundwater. The groundwater pathway and the off-site surface water receptors will be evaluated during the Phase I and Phase II RFIs and therefore will eliminate the need for a Phase III.

The characterization of the groundwater in the areas around the SWMUs and AOCs will be initially made by using a combination of the soil sampling proposed in this Phase I WP and by investigative groundwater sampling within five on-site groundwater monitoring wells, supported by recent historical groundwater monitoring data. The soil sampling data will be used to determine if releases have occurred in certain SWMUs and AOCs. If the soils are found not to contain contaminants, the presence of groundwater contamination remains unlikely. Additionally, the complete review of the groundwater data for validity of where this data may be applied will be completed to identify areas of groundwater concern.

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SECTION 1
INTRODUCTION

This RESOURCE CONSERVATION RECOVERY ACT (RCRA) Facility Investigation (RFI) PHASE I Work Plan (WP) has been prepared by Rust Environment & Infrastructure Inc. (Rust) for ~~the~~ Chemical Waste Management INC. (CWM)-Vickery, ~~Treatment, Storage and Disposal (TSD) Facility~~. This PHASE I RFI is being completed under the direction of the United States Environmental Protection Agency (U.S. EPA) as a condition to the issuance of a Part B Permit to CWM-Vickery dated October 24, 1994. Corrective Action Requirements, as documented in the Part B Permit and in accordance with Section 3004 (u) of RCRA, must be instituted as necessary by CWM-Vickery to protect human health and the environment from all releases of hazardous waste(s) or hazardous constituent(s) from any solid waste management unit (SWMU) at the facility, regardless of the time at which the waste was placed in such units. These Corrective Measures, whether on-site or off-site, will be addressed by conducting an RFI ~~RCRA Facility Investigation~~, Corrective Measures Study (CMS), and the Corrective Measure Implementation, as necessary. This WP ~~document~~ describes the ACTIVITIES TO BE CONDUCTED DURING THE Phase I ~~Work Plan for the~~ RFI.

The purpose of an RFI is to thoroughly evaluate the nature and extent of the releases, if any, of hazardous waste(s) or hazardous constituent(s). ~~This is done by collecting necessary data to support the Corrective Action Process (CAP).~~ This PHASE I RFI WP includes several plans to describe the procedures that will be followed during implementation of Phase I field activities. As always, when conducting field investigations, it may be necessary to revise the RFI PHASE I WP to increase or decrease the detail of information collected to accommodate facility-specific situations.

This RFI Phase I WP is divided into the following specific plans:

- Data Management Plan (DMP)
- Project Management Plan (PjMP)
- Public Involvement Plan (PIP) and Schedule of Activities.
- Health and Safety Plan (HASP)
- Quality Assurance Project Plan (QAPjP)

Each of the above plans will be described in detail in later sections. A brief description of each of the plan's contents are presented in the following sections.

1.1 Data Management Plan

A DMP has been prepared ~~for the RFI~~ in order to document and track the PHASE I RFI data and results. THE DMP ~~This plan~~ describes the procedures Rust will follow to identify and establish data documentation materials and procedures, project file requirements and project-related progress reporting procedures and documents. THE DMP ~~This plan~~ also provides the format to be used to present the raw data and conclusions of the PHASE I RFI. The DMP is presented in Section 6.0.

1.2 Project Management Plan

Rust has prepared a PjMP that discusses the PHASE I RFI's technical approach, and list of personnel. This PjMP describes the qualifications of the personnel performing and directing the PHASE I RFI and includes a description of key subcontracted personnel. The intention of this plan is to present the overall management approach to the PHASE I RFI. The PjMP is presented in Section 7.0.

1.3 Public Involvement Plan and RFI Schedule

1.3.1 Public Involvement Plan

The PIP has been prepared to document the procedures CWM-Vickery will use to incorporate public involvement activities that may be required as part of the PHASE I RFI. These activities may or may not include: preparation of fact sheets, public communication, and maintaining a repository of all information gathered as part of the PHASE I RFI. The PIP is presented in Section 8.0.

1.3.2 PHASE I RFI Schedule

A schedule for the implementation of the PHASE I RFI is located at the back of Section 7.0. This schedule graphically presents the anticipated amount of time to complete each task of the PHASE I RFI. This schedule is only estimated as it is difficult to predict outside influences (i.e., weather, equipment, etc.). However, all efforts will be utilized to maintain the original schedule.

1.4 Health and Safety Plan

A PHASE I RFI HASP has been developed to provide a safe working environment for personnel during the implementation of the PHASE I RFI ~~Work Plan~~. This HASP describes all health and safety measures needed for all of the ACTIVITIES ~~activity~~ planned for the PHASE I RFI. This HASP has been developed in accordance with all applicable regulations and Rust corporate policy. The PHASE I RFI HASP has been developed in CONJUNCTION ~~concert~~ with the CWM-Vickery facility's Emergency Response and Contingency Plan. The PHASE I HASP is presented AT ~~in~~ the END ~~back~~ of the RFI WP.

1.5 Quality Assurance Project Plan

A QAPjP has been prepared to ensure that all information, data, and resulting decisions are technically sound, statistically valid and properly documented. The QAPjP provides all monitoring procedures, sampling, field measurements and sample analyses that will be performed during the PHASE I RFI. ~~All approved~~ U.S. EPA GUIDANCE DOCUMENTATION RELATING TO quality assurance (QA), quality control (QC) and chain-of-custody (COC) procedures by the U.S. EPA were used in the development of THE QAPjP ~~this plan~~. The QAPjP is presented AT ~~in~~ the END ~~back~~ of the PHASE I RFI WP.

SECTION 2
BACKGROUND

2.1 Site Location and History

The CWM-Vickery TREATMENT, STORAGE AND DISPOSAL (TSD) Facility is located in a rural, unincorporated area of Sandusky County in the north-central part of Ohio. The CWM-VICKERY TSD Facility's active area encompasses 98 acres and is located adjacent to State Route 412 near the intersection of State Routes 510 and 412. The CWM-VICKERY TSD Facility is bounded by Highways 412 and 510 on the south and east, and by the Ohio Turnpike on the north. A portion of the property extends to County Road 244 on the west. The geographic coordinates of the facility are north latitude 41° 22' 19" and west longitude 82° 22' 40". The unincorporated community of Vickery lies 2 miles northeast of the site, and the cities of Clyde and Fremont are located approximately 4 miles to the south and 6 miles to the west, respectively. ~~Figure 2-1 presents~~ The location of the CWM-Vickery TSD Facility IS PRESENTED IN FIGURE 2-1.

The CWM-Vickery TSD Facility provides for the treatment, storage and disposal of liquid hazardous waste. Operations ~~at this facility~~ began in 1958. The site began as Don's Oil Service and in 1970 changed its name to Ohio Liquid Disposal (OLD). Waste Management, Inc. (WMI) acquired the facility in 1978 and later transferred it to Chemical Waste Management (a wholly owned subsidiary of WMI).

The facility began operation as an oil recovery service to provide hauling of waste oil from neighboring industries to a central facility and recovery for eventual resale. As time went on the facility started to accept various industrial wastes and stored them in surface impoundments. In 1964 the operators were granted permission by the State of Ohio to accept chemical process waste and more surface impoundments were constructed. As the inventory of wastes increased the operators began searching for a suitable means to dispose of them. In 1972, OLD was granted permission to drill a test hole to evaluate the subsurface conditions for the possible location of an injection well. After a number of years of applying for approval to use the injection well, being denied, and appealing, approval was finally granted to OLD TO inject waste into subsurface wells drilled on the site. A total of 7 injections wells were drilled on-site

throughout the history of the facility (Injection Wells 1, 1A, 2, 3,4, 5 and 6). The locationS of the injection wells are presented in Figure 2-2~~--Existing Facility~~.

During the history of the facility a total of 12 surface impoundments existed. The locationS of the former surface impoundments are presented in Figure 2-3. These surface impoundments were constructed between the years 1964 through 1975. As injection of wastes began, the surface impoundments were closed, and between the years of 1979 to 1992 all of the surface impoundments were closed. Details of these closures can be found in Section 6.0 of the Report on Current Conditions (December 1994, Revised April 1995 ~~1994~~). Injection Wells 1, 1A and 3 were plugged and abandoned due to mechanical and physical failures. Presently, Injection Wells 2, 4, 5 and 6 are active on-site. These injection wells are regulated under four UNDERGROUND INJECTION CONTROL (UIC) permits maintained at the facility. Additional information regarding the injection wells can be found in the Report on Current Conditions.

Additional facilities used at the site to treat, store and dispose of wastes included landfarming activities and an Oil Recovery Facility.

In order to provide for the disposal of the wastes generated during the closure of the surface impoundments and by other treatment facilities, CWM-Vickery was granted an approval to construct a Toxic Substances Control Act (TSCA) closure cell. The closure cell was built between 1986-1988. Waste from a temporary waste pile was finally given approval to be moved into the closure cell in 1990. The waste in the closure cell is comprised of stabilized wastes from the closure of the surface impoundments, and from specific facilities detailed in ~~the~~ A 1984 Consent Decree. A number of the surface impoundments across the site were certified clean-closed (i.e., Ponds 4, 5, 7, 11 and 12) and these closures were approved by the Ohio Environmental Protection Agency (OEPA). APPROVAL LETTERS ARE PRESENTED IN Appendix A. THE CURRENT LAYOUT OF THE CWM-VICKERY TSD FACILITY IS PRESENTED IN FIGURE 2-2. ~~Figure 2-2 presents the layout of the existing facility.~~

2.2 Present Conditions

Presently, CWM Vickery receives a large variety of liquid hazardous wastes. The most common types include: pickle liquors, acid wastes, caustic wastes, neutral wastes, and other aqueous

wastes including landfill leachate. The facility does not accept radioactive wastes, infectious wastes, explosive or shock sensitive wastes, air reactive wastes, compressed gases, reactive wastes that generate dangerous quantities of toxic or explosive gases when acidified, bulk ignitable wastes, bulk wastes containing >5% Volatile Organic Compounds (VOCs), or wastes that the facility deems can not be managed properly.

2.3 RCRA Facility Assessment

In 1990, Jacobs Engineering Group (Jacobs), was subcontracted by the U.S. EPA through Metcalf & Eddy to perform a RCRA Facility Assessment (RFA) at the CWM-Vickery TSD Facility. As part of this RFA ~~RCRA Facility Assessment~~, Jacobs conducted a Visual Site Inspection (VSI) to verify and identify SWMUs and Areas Of Concern(s) (AOC) that were identified during a preliminary review. Jacobs identified 45 SWMUs and 5 AOCs. As part of the RFA Report, a detailed description of each SWMU and AOC was presented.

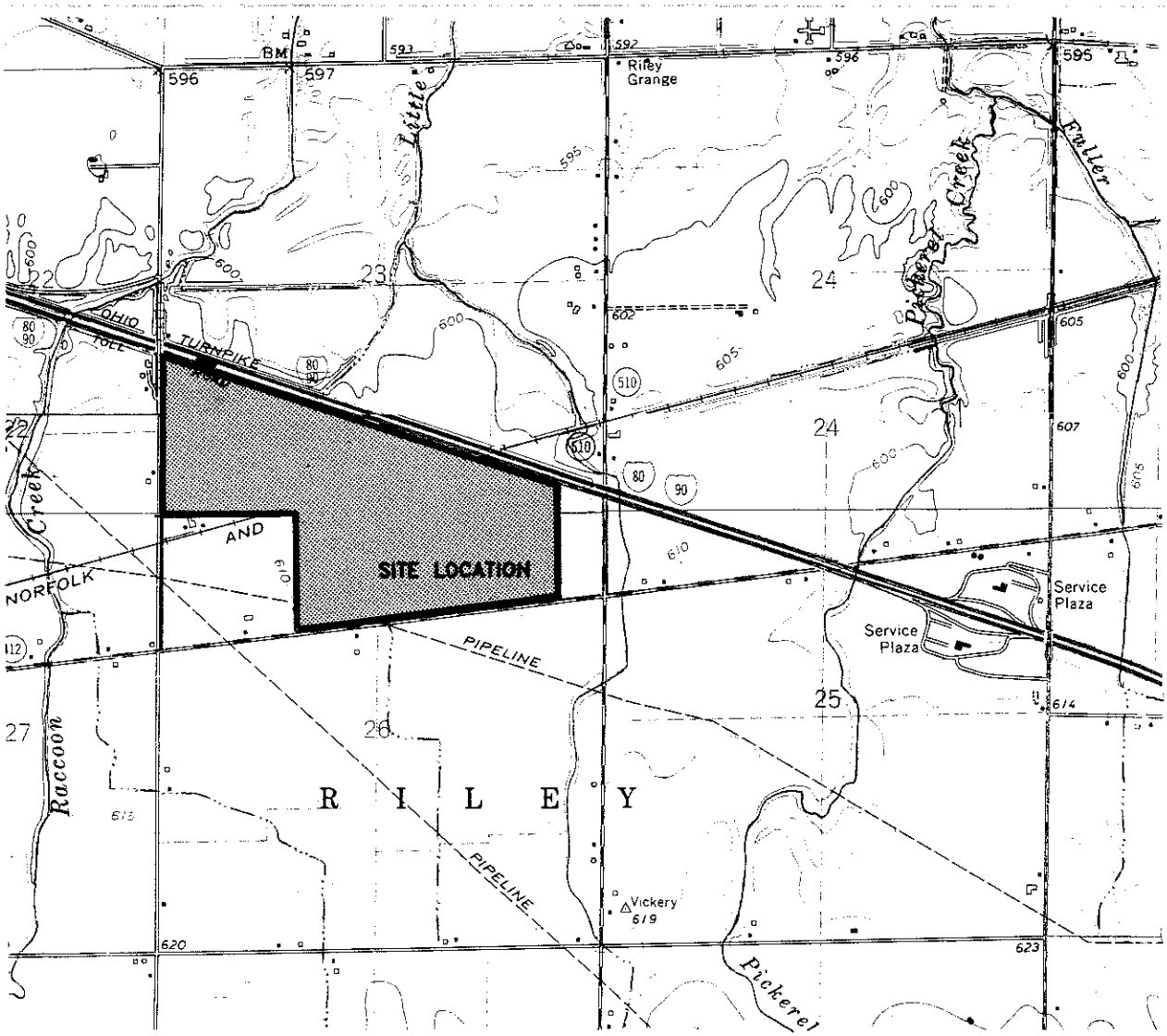
According to the schedule presented in the Part B Permit granted to CWM-Vickery, a Report on Current Conditions was to be submitted in order to update the U.S. EPA on the current conditions at the CWM-VICKERY TSD Facility since the RFA was completed. CWM Vickery submitted a Report on Current Conditions to the U.S. EPA in December 1994 and A revised version in April 1995. This report documented the current conditions at THE CWM-Vickery TSD FACILITY and identified an additional 7 SWMUs and 4 AOCs for a total of 52 SWMUs and 9 AOCs. THE USEPA SUBSEQUENTLY IDENTIFIED THE TSCA CLOSURE CELL AS ANOTHER SWMU. THE TOTAL NUMBER SWMUs IDENTIFIED ON-SITE IS NOW 53. ~~Figure 2-4 and 2-5 presents~~ IN RESPONSE TO THE OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA) CONCERNS REGARDING THE AREA AROUND MONITORING WELL L19, THIS AREA HAS BEEN ADDED AS AN AOC. THE TOTAL NUMBER OF AOCs IS NOW 10. The SWMUs and AOCs identified at the site ARE PRESENTED IN FIGURES 2-4 AND 2-5, respectively.

In the past, all site STORM water were managed by the presence of perimeter dikes. The runoff from the main site area drained to a storm water retention basin ~~ditch~~ south of the railroad where it was retained by a sluice gate. The retained water was discharged to Meyers Ditch through this sluice gate once or twice a year after quality testing and approval by the OEPA. Water retained by the containment dikes north of the railroad tracks around injection wells 5 and 6 ~~were~~ WAS

allowed to pond and evaporate. Water used to pond on the site in many areas. Drainage outside the perimeter diked area flowed to Little Raccoon Creek via the roadside ditches along State Route 510, or into Meyers Ditch. Surface runoff in the extreme northwest corner of the property entered Raccoon Creek via the roadside ditches created for the Ohio Turnpike. Drainage patterns during this time of operation are presented in Figure 2-6.

The site runoff was changed to its present configuration with the construction of the Surface Water Management Plan. Presently the site runoff is controlled by a ditch and flow control gate system. The runoff is either contained or allowed to discharge from the site at selected locations. Drainage outside the site operational perimeter dike system flows into Little Raccoon Creek via roadside ditches along State Route 510, or into Meyers Ditch near the west-central portion of the facility. Meyers Ditch leaves the site at the northern boundary under the Ohio Turnpike. The present drainage plan for the facility is presented in Figure 2-7~~ - Surface Water Management Plan~~.

FIGURES



SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

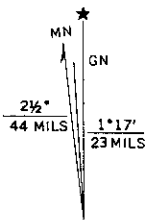
1 .5 0 1 KILOMETER

CONTOUR INTERVAL 5 FEET
DATUM IS MEAN SEA LEVEL

CLYDE, OHIO
SW/4 BELLEVUE 15' QUADRANGLE
N4115—W8252.5/7.5

1969

QUADRANGLE LOCATION



UTM GRID AND 1969 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE	DESCRIPTION	DRN BY	APP BY

DATE: DECEMBER, 1994 | PROJECT NO. 38627 | SCALE: AS SHOWN

DES BY	
DRN BY	JAT
CHK BY	RZ
REV BY	
APP BY	

PROJECT: RCRA FACILITY INVESTIGATION

SHEET TITLE: SITE LOCATION PLAN

CWM-Vickery
Vickery, Ohio

SHEET ____ OF ____

DRAWING NO.

FIGURE 2-1

SECTION 3
SITE DESCRIPTION

3.1 General Information

The topography of the CWM-VICKERY TSD Facility is relatively level with elevations generally ranging from 600 to 616 feet above mean sea level (MSL) with a slight DIP to the north. The CWM-VICKERY TSD FACILITY AND ITS TOPOGRAPHY ~~site~~ has been altered throughout ~~its~~ history with the construction of surface impoundments, closure cells, structures and the closure of the surface impoundments. ~~This construction has redefined the topography.~~ Additionally, non-facility structures such as the abandoned railroad grade and the Ohio Turnpike embankment have altered the natural topography of the area.

3.2 Geology and Soils

3.2.1 Site Bedrock Geology

Bedrock under the CWM-VICKERY TSD Facility is composed of dolomites of the Salina Group. The dolomite is found from 40 to 50 feet below GROUND ~~the~~ surface (bgs) at elevations ranging from 552 to 576 feet above MSL. Boring information available from previous investigations indicate the bedrock surface to be somewhat variable, although for the most part, it is sloping gently downward towards the north. The bedrock surface also indicates an apparent small valley, or, more properly, a gully running approximately north/south through the center of the site. Detailed rock core logs collected during previous investigations conducted at the facility indicated the bedrock here is a mixture of shale, dolomite, gypsum, and anhydrite. The variation of the bedrock type makes correlation of the bedrock across the site difficult. However, a black shale does appear to exist across most of the site. This black shale is interbedded with gypsum layers of varying thickness. The dolomite that is present is very shaley with various amounts of gypsum present. Within the upper 30 FEET of this unit, the dolomite is extensively and variably fractured and jointed, and contains numerous partially filled anhydrite and gypsum-filled voids and solution cavities up to ½ inch in diameter. These discontinuities are persistent throughout the site ~~area~~.

SINCE 1983, bedrock hydraulic conductivity data have been collected from site-specific studies, employing aquifer pumping tests ~~since 1983.~~ Prior to hydrogeologic investigations at the site, the Ohio Department of Natural Resources (ODNR) conducted large-scale aquifer pumping tests within the bedrock, 3 miles to 10 miles south of the site (ODNR, 1970). Reported hydraulic conductivities ranged from 2.0×10^{-2} to 3.2×10^{-2} centimeters per second (cm/sec). For the site, reported hydraulic conductivities for the bedrock aquifer range from 5.5×10^{-3} to 2.0×10^{-4} cm/sec, as referenced in Bowser-Morner (1983), Golder (1983, 1993) and Dames and Moore (1983). The high variability in extent and amount of the discontinuities within the bedrock can easily explain the variation in reported hydraulic conductivities derived from pumping test data. Based upon packer tests, pumping tests and in-situ well tests, Golder (1988) determined an average hydraulic conductivity of 6.0×10^{-3} cm/sec for the bedrock aquifer.

3.2.2 Site Glacial Geology

The overburden which exists on-site consists of two types of glacial deposits. At the surface is a silty clay AND ~~or~~ clayey silt lacustrine deposit, approximately 10 to 20 feet in thickness. The lacustrine material is underlain by a glacial till approximately 30 feet thick, which lies directly on top of the bedrock. These two ~~basic~~ soil deposits, the lacustrine material and the glacial till, can be subdivided even further. A cross section of the site geology is provided in Figure 3-1.

The till unit ~~actually~~ consists of two separate tills: a thin (0 to 10 feet thick) lowermost unit consisting of material derived from the bedrock; and a thick clay-rich upper unit. The lower till contains considerable amounts of sands and gravels, many of which are composed of soft weathered gypsum. This lowermost basal till is not found continuously across the site. It represents an early glaciation and apparently was partially eroded by a subsequent glacial readvance.

The ~~remaining~~ upper till deposit consists of a silty clay with some sand and traces of gravel. From site specific data, hydraulic conductivities within this upper till deposit range from 7.0×10^{-7} to 6.0×10^{-9} cm/sec. The material was derived from lacustrine silts and clays that were deposited in a proglacial lake during a previous retreat of the glacial ice and reworked by a subsequent glacial re-advance. The upper surface of the silty clay till was probably undulating with a probable relief of 5 to 20 feet. The upper few feet of the till material, although texturally identical to the lower portion, appear to be slightly different structurally in that there is a

suggestion of lacustrine lamination. This agrees with geological literature (Forsyth, 1965) that a water modified till is present in several places in northern Ohio, sandwiched between a till and overlying lacustrine material. The water modified till consists of till material that was deposited into or through water and, therefore, can contain some of the characteristics of a lacustrine deposit. Transport distances, however, would be very short, as shown by the lack of sorting.

The lacustrine material overlying the till material can also be subdivided into two groups. Generally the lower 5 feet contains some fine sand and silt layers alternating with clay layers; however, even the fine sand and silt layers contain considerable amounts of clay. The thickness of the layers ranges from very thin up to one-half inch. A composite grain-size analysis of a sample from this unit indicates THAT IT ~~the unit~~ has a composition of 3 percent sand, 55 percent silt, and 42 percent clay. The same sample also is documented as having a horizontal permeability of 8.6×10^{-8} cm/sec. The reported range of hydraulic conductivities based upon in-situ well tests and laboratory tests for this unit is 8.3×10^{-5} to 1.9×10^{-9} cm/sec. Some of these layers are documented as being brown, rather than gray, indicating oxidation has occurred sometime during the postdepositional history of the unit.

This lower stratified portion of the lacustrine material is not found continuously across the facility. However, the lower portion of the lacustrine deposit is documented as appearing to be continuous across the active part of the facility where the lagoons were once located. It most probably represents a time period, shortly after deglaciation, when the proglacial lake was first formed in front of the ice. The varve-like lamina may be caused by seasonal fluctuations in sediment input from the nearby melting ice, or may represent periodic but not seasonal influxes.

The remaining upper lacustrine material consists of an average of 49 percent clay, 46 percent silt, and 5 percent sand, and some of the samples collected across the site contained gravel. The material is very homogeneous with almost no indication of fine sand or silt layers present, although most samples collected WERE ~~are~~ laminated ~~along bedding planes~~.

The dense, fine-grained glacial till, and deposits of glaciolacustrine silt and clay comprise the most common aquitards found in the northern portion of the UNITED STATES the hydraulic conductivity reported for this material is commonly in the range of 1.0×10^{-8} to 1.0×10^{-10} cm/sec (Freeze and Cherry, 1979). The Wisconsin-aged till found beneath the site acts as an aquitard to the bedrock aquifer (Golder, 1988). The reported range of hydraulic conductivity for

the glacial till found beneath the site ranges from 7.0×10^{-7} to 6.0×10^{-9} cm/sec. These values were determined from laboratory tests and from in-situ well tests, as discussed in Bowser-Morner (1983) and Golder (1983, 1988 AND 1993). The laboratory tests produced values ranging from 2.6×10^{-8} to 8.4×10^{-9} cm/sec, while the WELL ~~laboratory~~ tests produced values ranging from 7.0×10^{-7} to 2.0×10^{-8} cm/sec. The in-situ well tests produced values approximately one order of magnitude higher than the laboratory tests.

It has been observed that in some locations in the great plains of the U.S., deposits of clayey or silty till and glaciolacustrine clay have networks of hair-line fractures that are predominately vertical or near vertical. The distances between these fractures varies from centimeters to several meters, and the fractures are commonly infilled with calcite or gypsum. The soil matrix adjacent to the fractures is commonly distinguished by a color change caused by several different degrees of oxidation or reduction (Freeze and Cherry, 1979). Fractures of this type have been recognized in the upper portions of both the glaciolacustrine clays and the upper till beneath the site. None of these fractures were reported open (Golder, 1990).

Many explanations as to the origin of these fractures have been proposed. In areas of glacial till and lacustrine clay, highly fractured zones are common within several meters of the ground surface. Shallow fractures are caused primarily by stress changes resulting from cycles of wetting and drying, and freezing and thawing. Fractures of this nature can produce a secondary porosity within this material (Freeze and Cherry, 1979). The vertical fractures noted at the top of both the glaciolacustrine clay and the upper till beneath the site are suspected of being formed in this manner. Other mechanisms that form fracture systems at depth may be related to glacial unloading, crustal rebound, and volume CHANGES caused by geochemical processes, such as cation exchange (Freeze and Cherry, 1979). No fractures have been noted beneath the site in the middle to lower portions of the glaciolacustrine clay or IN the ~~upper and~~ lower till.

In many glacial till deposits of the northern U.S., the fractures enhance the groundwater flow capacity. The bulk hydraulic conductivity of the fractured till and clay determined by field tests is commonly one to three orders of magnitude larger than values of intergranular hydraulic conductivity determined by laboratory tests on non-fractured samples (Freeze and Cherry, 1979). The effects of the fractures upon the hydraulic conductivity of the glaciolacustrine clay have been noted by Golder (1985). In their study, hydraulic conductivities of the glaciolacustrine clay determined by laboratory methods ranged from 8.6×10^{-8} to 6.1×10^{-9} cm/sec, while in-situ well

tests determined the value to be 1.0 x 10^{-6} cm/sec. Due to the presence of suspected open fractures (with an estimated fracture porosity of 0.001) within the upper portions, the in-situ tests were determined to produce a more representative approximation of hydraulic conductivity, as the wells may have penetrated or may have been affected by these fractures, while the laboratory soil samples may not have included any of these fractures. ~~It is of interest to note that the~~ In-situ tests produced values of two to three orders of magnitude greater than the laboratory tests.

Laboratory tests of glacial till beneath the site produced hydraulic conductivities ranging from 2.6 x 10^{-8} to 8.4 x 10^{-9} cm/sec, while in-situ well tests produced values ranging from 7.0 x 10^{-7} to 2.0 x 10^{-8} cm/sec. The in-situ tests are approximately one order of magnitude greater that the laboratory tests, within the reported one to three orders of magnitude difference between in-situ well tests and laboratory tests discussed by Freeze and Cherry (1979). The hydraulic conductivity of the glacial till, based upon the PRESENCE ~~pressure~~ of fractures, may therefore be more accurately CALCULATED USING THE DATA GENERATED BY ~~produced by the~~ in-situ well tests.

Vertical permeabilities of the upper lacustrine material are on the order of 1 x 10^{-8} to 1 x 10^{-9} cm/sec. Horizontal permeabilities are expected to be similar because of the high clay content and the lack of well-sorted sand lamina. ~~A single, horizontal low permeability on a material that is expected to have a higher permeability would also support this.~~ The upper lacustrine deposit was laid down in relatively quiet water some distance from the ice front. The small amounts of gravel present may have been rafted in on melting ice sheets.

3.2.3 Surface Soils

The surface soils on the site consist of the Del Ray and Lenawee Series. Both soils WERE formed ON ~~in~~ lacustrine deposits. The Lenawee Series contains more clay than the Del Ray Series, but otherwise they are very similar. Both soils contain stratified silts and clays in their lower portions.

3.3 Hydrogeology

3.3.1 Previous Investigations

The site hydrogeology has been thoroughly studied BY ~~through~~ previous investigations performed at the site. The first significant hydrogeologic investigation AT ~~for~~ the CWM-VICKERY TSD Facility was conducted by Bowser-Morner (1983). This study produced information on the hydrogeology of the site and a statistical analysis of the groundwater quality data ~~was performed~~. The majority of site-specific studies that followed the Bowser-Morner investigation were conducted by Golder Associates. These site-specific studies reevaluated the hydrogeologic system based upon additional data and focused on specific issues concerning the hydrogeologic AND ~~or~~ monitoring systems. A listing of site-specific hydrogeologic studies performed at the CWM-VICKERY TSD Facility is included IN ~~as~~ Table 3-1.

3.3.2 Groundwater Flow in the Bedrock

Groundwater flow in the dolomite bedrock under the facility has been interpreted from water level data collected over several years. Regional groundwater flow direction for the site, as interpreted from regional potentiometric data presented in Figure 3-2, is generally to the north and to the northwest, towards Lake Erie. Bowser-Morner identified a radial flow pattern which is produced by pumping the on-site truck wash well. ~~The radius of influence produces by an average of 19,700 gallons per day withdrawal for 1983, ranges from approximately 2,000 feet to 3,000 feet, as interpreted from figure 10 of Bowser-Morner (1983).~~

The bedrock units are quick to respond to pumping stresses at the site. This is typical of a confined aquifer with fracture flow. Under non-pumping condition, these units quickly recover ~~toward~~ the natural gradient conditions, with groundwater flow to the north and northwest.

Based on a review by Golder using collected data and experience with similar geologic materials, the hydraulic conductivity representative of the dolomite aquifer underlying the site is 6×10^{-3} cm/sec or 125 gallons/day/ft^2. The reported range of hydraulic conductivity is 3.2×10^{-2} to 2.0×10^{-4} cm/sec. The major recharge for the dolomite aquifer in this area occurs roughly 3 miles to the southeast of the facility, where the bedrock surface rises to within several feet of the ground surface.

3.3.3 Groundwater Flow in the Surficial Deposits

The potentiometric surface in the lacustrine soils is higher IN ELEVATION than the potentiometric surface of the glacial till, which is higher IN ELEVATION than the potentiometric surface of the dolomite aquifer. The decreasing pressure with depth causes a downward vertical gradient toward the dolomite. However, the amount of flow through the overburden at the site is likely to be inconsequential, due to its low permeability, in relation to the amount of recharge to the aquifer from off-site. Average vertical flow times from lacustrine soils to bedrock, as calculated by Golder (1988), have been estimated to be on the order of 100 years. Apparently, Golder (1988) calculated this composite travel time using a flow rate of 0.025 feet/day in 15 feet of glaciolacustrine clay and a flow rate of 0.001 feet/day through 35 feet of glacial till, producing an estimate of 97.5 years.

Gradient is w/o dimension
remove "feet/foot"

Using an estimated vertical hydraulic cond[illegible] for the overburden materials (glaciolacustrine clay and glacia[illegible] of 50 feet for the overburden, and a groundwater head diffe[illegible] overburden and the bedrock, Golder (1990) calculated a vertica[illegible] T. Using an effective porosity of 0.1, a vertical flow velocity of 0.04 feet/year was estim[illegible]d. For an overburden thickness of 50 feet, travel time from the surface of the overburden material to the bedrock aquifer equates to 1,250 years.

The overall water level elevation data from shallow monitoring wells completed within the overburden materials indicate a trend of decreasing potential to the northwest, which is generally the direction of ground surface slope. The range of hydraulic conductivity of the lacustrine soils and the glacial till is 8.5×10^{-5} to 1.0×10^{-7} cm/sec, and 7.0×10^{-7} to 6.9×10^{-9} cm/sec, respectively.

Based upon in-situ well tests, Golder (1988) calculated hydraulic conductivities of the glaciolacustrine clay ranges from 8.2×10^{-5} to 2.3×10^{-7} cm/sec, with a geometric mean of 1.0×10^{-6} cm/sec. Calculated hydraulic conductivity based upon in-situ well data from the glacial till ranges from 7.0×10^{-7} to 5.2×10^{-8} cm/sec, with a geometric mean of 2.0×10^{-7} cm/sec. In addition, Norris and Fiddler (1971) provide a range for hydraulic conductivities OF ~~in~~ till in north central Ohio as 1.0×10^{-7} to 3.5×10^{-8} cm/sec. Based upon this information, Golder (1988) classifies both the glaciolacustrine clay and the glacial till as aquitards.

Dense, fine-grained glacial till, and deposits of glaciolacustrine silt and clay are the most common aquitards in most of the northern U.S. These deposits have hydraulic conductivities typically in the range of 1.0×10^{-8} to 1.0×10^{-10} cm/sec. Using a hydraulic gradient of 0.5 (which is the upper limit of gradients observed in these aquitards) and a hydraulic conductivity of 1.0×10^{-9} cm/sec, nearly 10,000 years would be required for water to flow through a 10 meter (33 feet) thick non-fractured layer of this material (Freeze and Cherry, 1979).

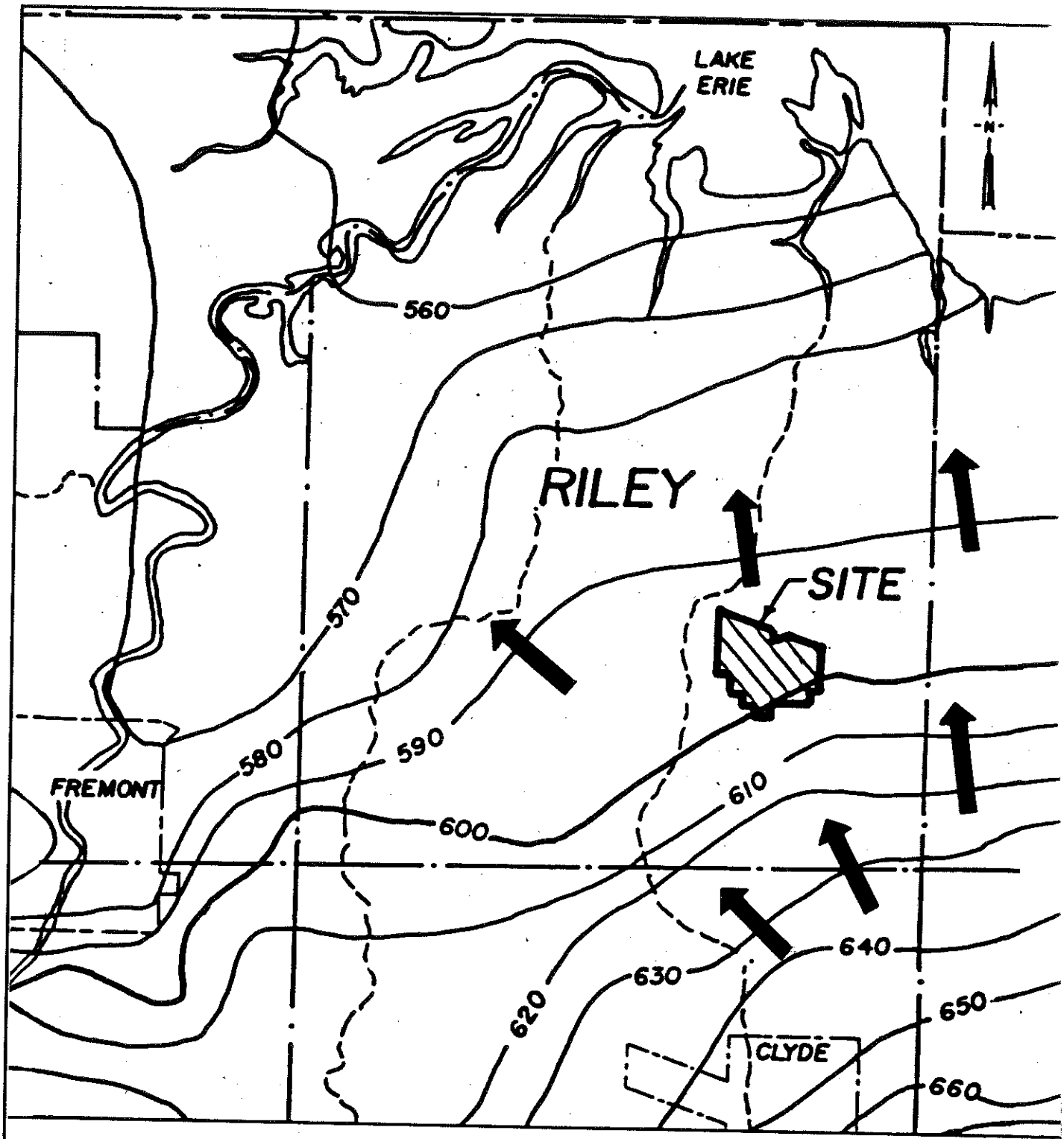
TABLES

TABLE 3-1
PREVIOUS SITE INVESTIGATIONS
(1 of 2)

Document Title	Date	Consultant
Surface Water Management Plan, Vickery Facility	11/8/83	Golder
Overburden Groundwater Testing Program	9/26/84	Golder
Assessment of Perimeter Dike Stability Ponds 5, 7, 11, 12	6/30/93	Golder
Summary and Characterization of Site Hydrogeologic Conditions	9/29/83	Golder
Continuous Overburden Borehole Sampling Results	5/28/85	Golder
Monitoring Well System Analytical Data Evaluation	4/22/88	Golder
Phase I Groundwater Monitoring Program	3/14/86	Golder
Stability Analyses of Interior Dikes Between Lagoons 4/5 and 5/7	3/1/84	Golder
Evaluation of Potential Borrow Areas	3/7/88	Golder
Clean Water, Inc., Site 690 Buried Lines (Draft)	2/14/84	Environmental Testing and Certification, Corp. (ETC)
Monitoring Program Hydrologeological Study	7/31/86	Golder
Closed Lagoons Site 690 Phase VB Final Report	11/1/83	ETC
Overburden Groundwater Testing Program Environmental Testing Certificates	9/1/84	CWM
Closed Lagoons Site 690 Phase VB Final Report	12/6/83	ETC
Buried Lines	11/21/83	CWM
Plugging and Abandonment Disposal Well 1	1/11/88	Texas World Operations (TWO)
Monitoring Program Hydrogeological Study	7/31/86	Golder

TABLE 3-1
PREVIOUS SITE INVESTIGATIONS
(2 of 2)

Document Title	Date	Consultant
Clean Water, Inc., Closed Lagoons Site 690 Phase VB Final Report	11/1/83	ETC
Overburden Groundwater Testing Program	9/26/84	Golder
Investigation at Well L-19	7/1/90	Golder
Sealing of Overburden Wells and Rock Piezometer, Vickery Facility	10/11/90	Golder
Continuous Overburden Sampling Program	2/19/85	Golder
Closure of W-Tanks, CWM, Inc., Vickery, Ohio	2/7/92	Bowser Morner, Inc.
Report on Investigation at Hole SS-10, Vickery, Ohio	1/17/89	Golder
Review of the L-19 Investigation Potential Source of Groundwater Contamination	3/25/92	Golder
Retention Area Soil Sampling Analytical Data for Ponds 4, 5, 7 Appendix J	10/1/92	SEC Donohue
Soil Sampling Analytical Results for Closure of Ponds 11 & 12, Appendix C	10/1/92	SEC Donohue
Geotechnical Report for Closure of Pons 11 & 12, Appendix E, Volume 1	10/1/92	SEC Donohue
Closure of W-Tanks	2/7/92	Bowser Morner, Inc.



— 610 — GROUND WATER SURFACE CONTOUR LINE

SOURCE:
BOWSER-MORNER 1983 HYDROGEOLOGICAL ASSESSMENT. AFTER HOOVER 1982

GROUNDWATER FLOW DIRECTION

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE	DESCRIPTION	DRN BY	APP BY

DATE:	JULY, 1995
DES BY	
DRN BY	JAT
CHK BY	JS
REV BY	
APP BY	

PROJECT NO. 38627J00 SCALE: NOT TO SCALE

PROJECT: RFI WORK PLAN

SHEET TITLE: POTENTIOMETRIC SURFACE MAP OF THE BEDROCK AQUIFER

CWM-Vickery
Vickery, Ohio

SHEET ____ OF ____

DRAWING NO.

FIGURE 3-2

SECTION 4
PROJECT OBJECTIVES

The objective of the PHASE I RFI is to obtain the necessary data to characterize the site and determine potential risks to human health and the environment. The data obtained during the PHASE I RFI should be of sufficient quality and quantity in order to make decisions, recommendations and conclusions to allow the investigation to proceed through TO PHASE II, AND ULTIMATELY the CAP ~~Corrective Action process~~, IF NECESSARY.

Many investigations have been completed at the CWM-Vickery TSD Facility, but none have adequately determined the extent of potential contamination of soils around all of the SWMUs. However, a number of the investigations and studies completed at the site have documented the geology and hydrogeology. The results of these studies and investigations have provided a detailed description of the regional and facility-specific geologic and hydrogeologic characteristics affecting the groundwater flow beneath the facility.

Bowser-Morner's report titled "Hydrogeologic Assessment, Northern Ohio Treatment Facility, Vickery, Ohio" dated May 3, 1983 summarized the results of a hydrogeologic assessment of the facility. The purpose of this work was to prepare a detailed assessment of the hydrogeology and an analysis of the groundwater quality. This assessment was performed in accordance with the special terms and conditions set forth by the Hazardous Waste Facilities Approval Board (HWFAB) in the site permit issued in December, 1981. This report, as well as others (i.e., Golder has also conducted previous studies which summarized hydrogeologic conditions, groundwater quality and flow characteristics and geotechnical conditions at the site), will be used to provide the necessary data to ADEQUATELY CHARACTERIZE ~~detail~~ the hydrogeologic and geologic conditions at the site. ADDITIONAL HYDROGEOLOGIC INFORMATION IS PROVIDED IN APPENDIX C. THIS INFORMATION INCLUDES WATER LEVEL HYDROGRAPHS FOR ALL MONITORING WELLS ON-SITE FROM 1986 TO 1995, MONITORING WELL CONSTRUCTION DETAILS, PRECIPITATION DATA FOR 1995, TWO REPORTS WHICH DISCUSS TRITIUM ANALYSIS, AND HYDROGEOLOGICAL VERTICAL FLOW NETS. THIS INFORMATION WAS PROVIDED TO DR. WAYNE PETTYJOHN TO SUBSTANTIATE VERTICAL FLOW OF GROUNDWATER WITHIN THE LACUSTRINE AND GLACIAL TILL ZONE ON-SITE. Due to the availability of this data, the level of effort planned for this investigation will be limited to the characterization of the soils,

sediment and groundwater which may have been affected by contaminant releases from the identified SWMUs and AOCs. This PHASE I RFI WP therefore, proposes work focusing on identifying indi[illegible]tion if [illegible]

Replace "Pathway" with "media"

Replace "receptors" with "media"

The Ph[illegible]ifically focussed on determining if releases [illegible]rough determining if there are any hazardou[illegible]erlying the identified SWMUs and AOCs, o[illegible] If so, The Phase I RFI report will propose specific and focussed [illegible]gations to assess the extent and risk-impact of those releases, including investigation of groundwater. THE GROUNDWATER PATHWAY AND THE OFF-SITE SURFACE WATER RECEPTORS WILL BE EVALUATED DURING THE PHASE I AND PHASE II RFIs AND THEREFORE WILL ELIMINATE THE NEED FOR A PHASE III. ~~if appropriate~~. ~~If hazardous waste constituents are not identified through this Phase I RFI, there will not be a need to investigate the possible presence of hazardous waste constituents in groundwater or to assess potential impacts to offsite surface water receptors.~~

The characterization of the groundwater in the areas around the SWMUs and AOCs will be initially made by using a combination of the soil sampling proposed in this Phase I WP and by INVESTIGATIVE GROUNDWATER SAMPLING WITHIN FIVE ON-SITE GROUNDWATER MONITORING WELLS, SUPPORTED BY RECENT HISTORICAL GROUNDWATER MONITORING DATA. ~~reviewing all previous groundwater monitoring data collected on the facility to date.~~ The soil sampling data will be used to determine if releases have occurred in certain SWMUs and AOCs. If the soils are found not to contain contaminants, the presence of groundwater contamination remains unlikely. Additionally, the complete review of the groundwater data for validity of where this data may be applied will be completed to identify areas of groundwater concern. The groundwater data evaluation process will include, at a minimum, the following information:

- Laboratory completing the analysis;
- Analytical methods;
- Compounds analyzed;
- Detection and reporting limits;
- Review of sampling plans explaining sampling collection procedures and objectives;
- Type of data (i.e., raw, etc - types of deliverable packages); and,

Must provide 100% validated samples - not "representative"

- ~~V~~ ...ults of DATA validation WHERE APPLICABLE ~~if any~~.

Also SAMPLE COLLECTION PROCEDURES

HISTO... ...ATA V... ...PRESENTED IN TABLES AND REPRE... ...LL BE... ...TION OF DATA WILL CONFO... ...SOP TITLED "DAT... ...ES FOR EPA LEVEL III DATA."

QUALITY CONTROL RESULTS W... ...R HOLDING TIMES, LABORATORY BLANKS, SURROGATE SPIKES ... ...RATORY BLANK OR LABORATORY CONTROL SAMPLES FOR INORGANICS), MATRIX SPIKES (AND MATRIX SPIKE DUPLICATES FOR ORGANICS), FIELD BLANKS AND FIELD DUPLICATES.

THE SOP FOR DATA VALIDATION PROCEDURES IS LOCATED IN APPENDIX A OF THE QAPjP.

EACH SWMU SHALL BE INVESTIGATED FOR GW contamination

AN APPROACH OF THIS NATURE IS I... ...MOST OF THE SWMUs AND AOCS AT THE FACILITY WERE ... ...) FOR THE STORAGE OF LIQUID HAZARDOUS WASTE PR... ...CTION OR FOR THE TREATMENT OF RESIDUALS BY LAN... ...THESE UNITS HAVE BEEN "CLEAN-CLOSED" AND SOME H... ...ALLY CLOSED. THEY ARE UNDERLAIN BY CLAYEY LACUSTRINE AND GLACIAL TILL SOILS WHICH, BASED ON SEVERAL YEARS OF QUARTERLY GROUNDWATER MONITORING, HAVE SUBSTANTIALLY LIMITED THE MIGRATION OF HAZARDOUS WASTE OR ITS CONSTITUENTS INTO THE SUBSURFACE.

A Phase I RFI field investigation will be conducted by collecting soil, sediment, and groundwater samples in specific SWMU groupings and AOCs. The SWMUs have been grouped together using locale, logistics, operational unit similarities and direct interaction with other units within the SWMU group. The SWMU groupings are described in Table 4-1.

The complete RFI process will be conducted in a series of TWO phases to allow for adequate evaluation of data collected in each step and SUPPORT A QUANTITATIVE RISK ASSESSMENT (QRA). ~~to assist in making accurate decisions regarding the path of the CMS~~.

The Phase I RFI ~~investigation~~ will consist of determining if releases have occurred in SWMUs and AOCs ~~which have been~~ identified on-site. THE PHASE II INVESTIGATION WILL DETERMINE THE EXTENT OF CONTAMINATION, IF ANY, BASED ON THE RESULTS OF PHASE I. THE PHASE II INVESTIGATION WILL BE PRECEDED WITH A SPECIFIC PROJECT OBJECTIVE AND DATA QUALITY LEVELS (DQLs) FOR EACH LOCATION WHERE CONTAMINATION IS IDENTIFIED DURING PHASE I. RESULTS FROM PHASE I AND PHASE II WILL BE INCORPORATED INTO A QRA WHICH WILL BE USED TO DETERMINE THE NEED FOR CORRECTION ACTION.

~~An approach of this nature is being taken because most of the SWMUs and AOCs at the facility were land based units used for the storage of liquid hazardous waste prior to deep-well injection or for the treatment of residuals by LAND FARMING. Some of these units have been "clean-closed" and some have been only partially closed. They are underlain by clayey lacustrine and glacial till soils which, based on several years of quarterly groundwater monitoring, have substantially limited the migration of hazardous waste or hazardous waste constituents into the subsurface.~~

The objectives of the data collection during the Phase I RFI will be as follows:

- Characterize the nature of residual materials at those SWMUs and AOCs not "clean-closed" by drilling borings and collecting samples of these materials. ~~Data quality must be sufficient for use in a qualitative risk assessment during the Phase I RFI. The results of this risk assessment would be used to develop action levels (i.e., concentrations that would trigger a Corrective Measures Study (CMS) for the site). The data quality should also be sufficient for use in a quantitative risk assessment should that prove necessary at some future point in the RCRA corrective action process.~~

- Determine through borings and soil sampling if there are hazardous waste constituents in the soils adjacent to and underlying the SWMUs and AOCs, i.e., have hazardous waste constituents been released beyond the boundaries of the SWMUs and into the environment. ~~Depending on the configuration of the individual SWMU or AOC,~~ This ~~could~~ WILL involve the collection of soil samples from beneath residual waste materials, or the collection of surficial soil samples. During this determination, it may be readily apparent from field observations that hazardous waste constituents are present in the soil, and if so, the borings

would be extended to assess the vertical extent of migration. ~~Data quality must be sufficient for use in a qualitative risk assessment during the Phase I RFI. The results of this risk assessment would be used to develop action levels (i.e., concentrations that would trigger a corrective measures study (CMS) for the site. The data quality should also be sufficient for use in a quantitative risk assessment should that prove necessary at some future pint in the RCRA corrective action process.~~

- Characterize the effectiveness of the "clean closure" of former SWMUs now underneath the TSCA closure cell by collecting a sample of ~~ground~~water from the capillary drain layer. This layer has continual inward flow, and the ~~ground~~water flowing into it has traveled through the "clean-closed" soils of the former SWMUs. ~~Data quality must be sufficient for use in a qualitative risk assessment during the Phase I RFI. The results of this risk assessment would be used to develop action levels (i.e., concentrations that would trigger a Corrective Measures Study (CMS) for the site). The data quality should also be sufficient for use in a quantitative risk assessment should that prove necessary at some future point in the RCRA corrective action process.~~

- Characterize residual effects of releases to surface water drainage-ways at the site by collecting samples of sediment at exit points from the site, WHICH HAVE BEEN IMPACTED BY PREVI~~ must be sufficient for use in a qualitative risk assessment ~~esults of this risk assessment would be used to develop action ~~t would trigger a Corrective Action Study (CMS) for the site). ~~e sufficient for use in a quantitative risk assessment should th ~~ture point in the RCRA corrective action process.~~

This is Site-Wide must be SWMU specific

- CHARACTERIZE, THROUGH THE COLLECTION OF GROUNDWATER SAMPLES FROM FIVE ON-SITE GROUNDWATER MONITORING WELLS (ONE UPGRADIENT, FOUR DOWNGRADIENT) AND VALIDATION OF RECENT HISTORICAL GROUNDWATER MONITORING DATA, THE GROUNDWATER DOWNGRADIENT FROM SELECTED SWMUs AND AOCs ON THE SITE.

A Phase I RFI ~~Field Investigation~~ will be implemented in order to attain the above objectives. The field sampling program is described within the Field Sampling Plan (FSP) which is provided

in Section 5.0. The FSP describes the sampling activities and methods to be used during the implementation of the field sampling program.

Phase II of the RFI, ~~if any~~, will be designed to complement the data gathered during Phase I. This may include the collection of additional soil and sediment samples, installation of monitoring wells AND the collection of ADDITIONAL groundwater samples. ~~and the initial development of remedial alternatives for the Corrective Action process.~~ FURTHER EVALUATION OF GROUNDWATER AS A MIGRATION PATHWAY, IF NEEDED, WILL INCLUDE THE ADDITIONAL COLLECTION OF GROUNDWATER SAMPLES AND WILL BE COMPLETED DURING THE PHASE II RFI. The content of the Phase II RFI ~~investigation~~ will be proposed at the completion of the RFI Phase I RFI ~~Investigation~~ report.

A QRA WILL BE PERFORMED USING ALL DATA COLLECTED FROM THE PHASE I AND PHASE II INVESTIGATIONS. IF UNACCEPTABLE RISKS ARE DERIVED FROM THE QRA, A CORRECTIVE MEASURE STUDY WILL BE COMPLETED.

A complete description of the QAPjP objectives are provided in Section 1.0 of the QAPjP.

Replace "AS a Migration Pathway" with "Contamination

TABLES

TABLE 4-1
GROUPING Of SWMUs
(Sheet 1 of 2)

SWMU Group	SWMU's	Rationale for Grouping
Group A	SWMU #1 - Pond 1 SWMU #2 -Pond 2 SWMU #3 - Pond 3 SWMU #8 - Pond 9 and Wet Well SWMU # 16 - Temporary Waste Pile Area	These SWMUs are grouped together due to their inclusion within a larger SWMU (SWMU # 16 sits around the perimeter of the other SWMUs)
Group B	SWMU # 4 - Pond 4 SWMU # 5 - Pond 5 SWMU # 7 - Pond 7 SWMU # 11 - Pond 11 SWMU # 12 - Pond 12 SWMU # 17 - Leachate Retention Pond	These SWMUs are grouped together due to their clean closed status. These units were clean closed by the facility and certified by the OEPA.
Group C	SWMU # 6 - Ponds 6E and 6W SWMU # 9 - Pond 10 SWMU # 19 - Former Drum Storage Area	These SWMUs are grouped together due to the proximity and overlapping of the units. The former ponds were associated with each other in the facility's historical record. As for the former drum storage pad, this unit overlaps each of the ponds.
Group D	SWMU # 12 - North Landfarm SWMU # 13 - East Landfarm SWMU # 14 - South Landfarm	These SWMUs are grouped together due to the similar manner that they were utilized during operation.
Group E	SWMU # 50 - Injection Well 1A SWMU # 51 - Injection Well 1 SWMU # 52 - Injection Well 3	These SWMUs are grouped together due to the similar manner that they were utilized during operation.

SWMU Group	SWMU's	Rationale for Grouping
Group F	SWMU # 31 - Filtered Acid Tank (FAT 2) SWMU # 32 - Pumphouse 2 SWMU # 33 - FAT 6 SWMU # 34 - Pumphouse 6 SWMU # 35 - FAT 5 SWMU # 36 - Pumphouse 5 SWMU # 37 - FAT 4 SWMU # 38 - Pumphouse 4 SWMU # 39 - Old FAT 2 SWMU # 40 - Former Pumphouse 2	These SWMUs are grouped together due to the similar manner that they were utilized during operation.
Group G	SWMU # 21 - Truck Unloading Building SWMU # 22 - Sand Interceptors SWMU # 23 - V-Tanks SWMU # 24 - Caustic Gas Scrubber SWMU # 25 - T-Tanks SWMU # 26 - T-Tank Pumphouse SWMU # 27 - Leaf Filter Press SWMU # 29 - Filter Press Building SWMU # 30 - FAT A and B	These SWMUs are grouped together due to their interaction with each other during the treatment process
Group H	SWMU # 46 - Injection Well 2 SWMU # 47 - Injection Well 4 SWMU # 48 - Injection Well 5 SWMU # 49 - Injection Well 6	These SWMUs are grouped together due to the similar manner of operation.
Group I	SWMU # 15 - Oil Reclamation Facility **SWMU #18 - Former W-Tanks** SWMU # 20 - Lab Waste Tank SWMU # 28 - Sluice Pit SWMU # 41 - PCB Storage Area SWMU # 42 - Maintenance Waste Oil Tanks (Closed) SWMU # 43 - Sanitary Wastewater Treatment Plant SWMU # 44 - Truck Unloading Facility Cesspit SWMU # 45 - Maintenance Building Cesspit	These SWMUs have been grouped together due to their independent operation during facility operations. Each unit will be sampled separately with independent analytical requirements.

SECTION 5
FIELD SAMPLING PLAN

The PHASE I RFI AT ~~of~~ the CWM-Vickery TSD Facility will be conducted to determine and document the presence or absence of residual waste around SWMUs and AOCs. The results of this Phase I RFI will be used to ~~evaluate the necessity for~~ DETERMINE AREAS WHICH REQUIRE ADDITIONAL CHARACTERIZATION. THE INFORMATION FROM BOTH PHASE I AND PHASE II WILL BE USED TO PERFORM A QRA TO DETERMINE THE corrective action at this site, IF NEEDED, and to support the selection and design of remedial alternatives.~~, if required. If contamination is confirmed, public health and ecological risk assessments may be performed to evaluate their impacts.~~ This PHASE I RFI WP presents the objectives, activities and, analytical and field ~~methodology~~ METHODOLOGIES TO BE USED. ~~for the Phase I Field Investigation.~~

The FSP for the CWM-Vickery TSD Facility provides the framework for the implementation of the data gathering tasks associated with the PHASE I RFI WP. The tasks described in the PHASE I RFI WP provide the basis for the types of general activities and sampling locations further delineated in this FSP. As described earlier, the identified SWMUs have been grouped together using locale, logistics, operational unit similarities and direct interaction with other units within the SWMU group. The sampling efforts and the field testing will be specific for the parameters which have been handled in each of these groupings. Specific criteria for sample selection and frequency have been included for each group. A sample collection summary ~~tables~~ for the SWMUs and the AOCs are presented IN ~~as~~ Table 1-1 of the QAPjP.

5.1 Data Quality Objectives

Data Quality Objectives (DQOs) are based on the concept that different data uses may require different data quality. The levels of analytical data quality to be utilized DURING THE PHASE I RFI ~~at the CWM - Vickery Site~~ are described below:

- Field monitoring of VOLATILE ORGANIC COMPOUNDS (VOCs) will be performed for the following purposes: I) General characterization of possible contaminant levels through casual screening of soil cores; II) Selection of samples for laboratory analysis through a specified headspace screening of soil samples; and III) Monitoring of ambient and work-

space atmospheres for worker health and safety. This data collection activity will be performed on-site using A FIELD CALIBRATED PHOTOIONIZATION DEVICE ~~an~~ (i.e., HNu). This data will require a screening level of data quality. This level of data quality requires documentation of instrument calibration in accordance with procedures specified by the manufacturer and at a frequency specified in Section 6 of the QAPjP.

- At two of the SWMU groups (Groups A and C), Where clean closure has not been performed, samples of the residual materials AND SOILS BELOW THE SWMUs will be collected and will be analyzed for Appendix IX parameters using SW-846 methods to characterize the nature of these materials. This data would serve as the basis for reducing the parameter lists for PHASE II ~~future phases~~ of THE RFI ~~work (if such work is needed~~), and ~~might~~ will be used in a QRA. ~~qualitative or quantitative risk assessments.~~ As such, a confirmation level of data quality will be required.

- At eight of the SWMU Groups (Groups A, C, D, E, F, G, H, and I) and four of the AOCS (A, B, C, and F), soil samples will be collected AND ~~will be~~ analyzed for Appendix IX parameters using SW-846 methods to determine whether there has been a release of hazardous waste or hazardous waste constituents into the native soils adjacent to or underlying these locations. Where field observations indicate that contamination is present in the uppermost native soil, additional soil samples will be collected at greater depths to characterize the vertical extent of migration. These data will be used in A QRA ~~qualitative and/or quantitative risk assessments~~. As such, a confirmation level of data quality will be required.

- At one of the SWMU Groups (Group B), a ~~ground~~water sample will be collected from the capillary drainage layer that underlies the TSCA closure cell and analyzed for Appendix IX parameters using SW-846 methods. This cell was built "over" the ~~area that formerly contained~~ "CLEAN-CLOSED" SWMUs #4, 5 and 7. ~~which were clean-closed.~~ There is continual inward flow to the drainage layer, and the ~~ground~~water flowing into it has traveled through the "clean-closed" soils of the former SWMUs. These data will be used in A QRA ~~qualitative and/or quantitative risk assessments~~. As such, a confirmation level of data quality will be required.

- At one AOC (H), sediment samples will be collected ~~along~~ FROM Meyer's ditch and analyzed for Appendix IX parameters using SW-846 methods to characterize residual effects of the single large release of processed acid wastewater that reached this drainage way. These data will be used in a QRA. ~~QUALITATIVE and/or quantitative risk assessments.~~ As such, a confirmation level of data quality will be required.

- At three SWMUs within Group I (#43, 44, and 45), CHLORIDE ~~a Fecal Coliform~~ Samples will be collected and analyzed as an indicator of leakage from the SWMUs. These SWMUs ARE used exclusively for the management of sanitary waste produced at three of the on-site buildings. This data will be obtained at a confirmation level of data quality.

- GROUNDWATER SAMPLES WILL BE COLLECTED FROM ON-SITE MONITORING WELLS MW-24R (UPGRADIENT), MW-15R, MW-14R, MW-20R AND MW-22R (DOWNGRADIENT) AND SUPPORTED BY THE VALIDATION OF RECENT HISTORICAL GROUNDWATER MONITORING DATA. THESE MONITORING WELLS ARE LOCATED WITHIN THE MAIN FACILITY AREA. THE FOUR DOWNGRADIENT MONITORING WELLS ARE DOWNGRADIENT FROM SWMUs 1-11, 13-17, 19-20, 37-40, 43, 47, 52 AND 53 AND AOCs F AND PARTS OF A, H AND I. THE OBJECTIVE TO THE SAMPLING AND VALIDATION OF GROUNDWATER DATA IS TO CHARACTERIZE THE GROUNDWATER ON THE SITE. SWMUs AND AOCs NOT HAVING GROUNDWATER MONITORING WELLS DOWNGRADIENT ARE BELIEVED TO HAVE LIMITED RISK ASSOCIATED AND, THEREFORE, SOILS COLLECTED FOR PROPOSED CONFIRMATIONAL PURPOSES WILL PROVIDE INDICATIONS OF POTENTIAL GROUNDWATER IMPACTS. IF ANALYTICAL SOIL RESULTS INDICATE POTENTIAL GROUNDWATER IMPACTS, THE EXTENT OF THESE IMPACTS WILL BE DETERMINED IN PHASE II.

The confirmation level of analytical quality provides the highest level of data quality and includes, but is not limited to the purposes of risk assessment, evaluation of remedial alternatives and establishing cleanup levels. These analyses require full documentation of SW-846 analytical methods, sample preparation steps, data packages and data validation procedures necessary to provide defensible data. Quality control must be sufficient to define the precision and accuracy of these procedures at every step. The sampling and analysis program is summarized in Table 1-1 of the QAPjP.

5.2 Sample Handling and Analytical Requirements

The Phase I RFI ~~field investigation~~ will be conducted by collecting soil, sediment and groundwater samples in the identified SWMU grouping (TABLE 4-1). Sample locations and collection procedures for each media are described in Sections 5.7 through 5.11 of the PHASE I RFI WP. The sampling and analysis program for the Phase I RFI at THE CWM-Vickery TSD FACILITY is presented in TABLE 1-1 of the QAPjP. These procedures have been developed based upon U.S. EPA guidance. Clean, disposable gloves will be worn by sampling personnel during the collection of all RFI samples. Disposable gloves will also be worn while opening sample containers for sample containerization or preservation. Whenever these gloves become torn or the field team leader judges that the gloves may have been contaminated, they will be replaced with a new set of gloves before continuing sampling activities. Sample handling and COC procedures have also been developed for this project based upon EPA guidance. FIELD CUSTODY ~~These~~ procedures are described in Section 5.2.2.

Approximately 10% of the soil samples will be collected and analyzed for geotechnical and geochemical properties. These properties include: Cation Exchange Capacity, Atterberg Limits, moisture content, grain size distribution, SOIL PH and Total Organic Carbon (TOC). The AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) SPECIFICATIONS AND SOPs for these tests are presented in Section 7.3 of the QAPjP.

5.2.1 Sample Custody

Sample collection and sample custody are designed so that field custody of samples is fully and continuously maintained and documented. These procedures provide complete identification and documentation of the sampling event and the sample COC from shipment of sample bottleware, through sample collection, to receipt of the samples by the subcontracted laboratory. When used in conjunction with the laboratory's custody procedures and the sample bottleware documentation, these data establish full legal custody and allow complete traceability of a sample from preparation and receipt of sample bottleware to sample collection, preservation, and shipping, through laboratory receipt, sample analysis, and data validation. The COC Record Form is PRESENTED IN ~~provided as~~ Figure 5-1.

5.2.1.1 Sample Identification and Documentation

After sample collection, all sample containers will be labeled with an identification number that uniquely identifies the sample. The sample identification number shall be logged in the field notebook, along with the following information:

- Sampling personnel;
- Date and time of collection;
- Field sample location and depth (if appropriate);
- Observations on ambient conditions;
- Type of sampling (composite or grab);
- Method of sampling;
- Sampling matrix or source;
- Results of field screening;
- Intended analyses;
- Preservation method;
- Observations of significant characteristics of the sample; and
- Observations of significant effect to the sampling procedure.

Sample identification is discussed in Section 6.1.3. Samples shipped to the laboratory will have information transcribed to a sample COC form.

5.2.2 Field Custody Procedures

Field custody procedures are described below as two groups: (1) sample collection procedures that document the sample identification, sampling personnel, sample collection procedures, sample preservation, and ambient conditions during sampling activities; and (2) sample shipment procedures that document handling, packing, and shipping of samples to the laboratory. The sample shipment procedures are presented in the QAPjP in Section 5.1.

The persons responsible for sample custody, and a brief description of their duties, are:

- Laboratory Representative or Commercial Supplier: verifies that the bottleware is certified clean; arranges for bottleware shipment to field sampling personnel or our equipment shop;

- Rust Field Sampling Personnel receives samples; verifies samples to sample COC form.

- Rust Equipment Manager: receives and stores bottleware that is shipped from a laboratory or a commercial supplier; relinquishes bottleware to field sampling personnel;

- Rust Field Staff: receive sample bottleware from laboratory or our equipment shop; inspects bottleware for physical integrity; retains bill of lading from shipping courier as documentation of transfer of bottleware; collects and preserves samples; retains bottleware and samples under custody until sample shipment; relinquishes samples to shipping courier or to laboratory representative.

- Rust Project Manager (PM): Verifies reported laboratory analyses to the sample COC form; assures that COC documentation is incorporated into the project file.

5.2.3 Sample Collection

The following procedures WILL BE ~~are~~ conducted during sample collection activities, and WILL BE ~~are~~ recorded in a project field notebook and on the sample chain-of-custody form, as indicated below, and on a field quality control form. The field quality control form is presented IN ~~as~~ Figure 5-2.

5.2.3.1 Field Logbook

Sampling personnel will use a bound field logbook with moisture resistant pages to record pertinent sampling information with waterproof ink. The field logbook identifies project name, project number, project manager and telephone number, and principal street address or geographic location of the site. Daily field activities and sampling information WILL BE ~~are~~ entered in the FIELD logbook on dated, initialed, and serially-numbered pages. Corrections WILL BE ~~are~~ made to entries by initialed and dated line-out deletions. A diagonal line WILL BE ~~is~~ drawn across the remaining blank space of the last page of each day's entry. Each day's entry WILL BE ~~is~~ signed and dated by the author.

5.2.3.2 Sample Identification

A unique identification number will be assigned to each sample. This number WILL BE ~~is~~ typically an alphanumeric sequence or integer that serves as a mnemonic DEVICE or acronym to identify the sample. Specific sample identification procedures are described in the DMP (Section 6.0). All information pertaining to a particular sample WILL BE ~~is~~ referenced by its identification number. THIS NUMBER WILL BE ~~that is~~ recorded on the sample bottleware LABEL, in the field notebook, and on the sample COC form.

Following sample collection, the sample label WILL BE ~~is~~ completed in waterproof ink with the appropriate information as shown. The completed label WILL ~~is~~ then typically BE secured to the sample container with clear, wide tape.

5.2.3.3 Sample Containers

Rust WILL use sample containers furnished by the subcontracted laboratory or a commercial supplier. Rust WILL verify that the laboratory has approved cleaning procedures in their own QAPjP, or that the commercial supplier furnishes laboratory grade, certified clean containers. The source and lot numbers of sample containers used in the sampling event WILL BE ~~are~~ recorded in the project field logbook for each sample collected. The lot number may be used to trace the bottleware preparation and certification of cleanliness when the containers are shipped from our equipment manager. When bottleware is shipped directly from the supplier to the field, a formal COC is not normally initiated. In this instance, the airway bill receipt AND/or packing slip WILL serve as the initiation of COC.

5.2.3.4 Sample Location, Sample Media, and Intended Parameters

The specific sampling location of each sample WILL BE ~~is~~ recorded with each sample identification number in the field logbook and on the sample COC form. Sampling locations WILL BE ~~are typically~~ referenced to a site location map from the FSP. Other ACCEPTABLE location references ARE ~~may be~~ distance and bearing from a prominent landmark.

The type of sample media WILL BE ~~is~~ recorded with the sample identification number in the field logbook and on the COC form.

Laboratory analyses to be conducted on the sample WILL BE ~~are~~ recorded with the sample identification number in the field logbook and on the COC form.

5.2.3.5 Date, Time, Personnel, and Ambient Conditions

The date and time of sampling preparation and collection, and personnel who conducted sampling WILL BE ~~are~~ recorded with the sample identification number in the field LOG~~note~~book and on the chain-of-custody form. The names of visitors and any other persons at the sampling location during sample collection WILL BE ~~are also~~ recorded in the field logbook. Sampling personnel WILL also record in the field logbook the ambient weather conditions, ~~and~~ other conditions at the sampling location that may affect sample collection, the apparent representativeness of the sample, AND ~~or~~ sample analysis.

5.2.3.6 Preliminary Sampling Activities

Sampling personnel will record in the field logbook the preparation activities that may be pertinent to SAMPLE COLLECTING ~~the sampling event~~ at each sampling location. For soil sampling, this documentation may include information on presence of surface staining, water logging or ponding; proximity to roads or waste piles; apparent upgradient physiographic or hydrogeologic features of significance; background volatile vapor concentrations, the sample DEPTH ~~were collected from~~, and the drilling method, equipment, and materials (such as drilling mud) that were used to construct the boring.

5.2.3.7 Sample Collection

Sampling personnel will record in the field logbook the type of equipment used to conduct sampling, the order of sample collection (typically from most sensitive to least sensitive parameter), field screening results measured during sampling collection (such as vapor headspace readings of soil samples), special collection procedures, and aberrations to sampling procedures.

Following collection of the sample, the sample identification number and other information on the sample label will be verified WITH ~~to~~ the entry in the field logbook. Sample identification number, time, and date of collection will be recorded on the COC form.

Following sample labeling verification, the sample will be placed in a cooler with ice packs, and THE COOLER maintained in the sampler's presence or in a secure location for the remainder of the daily sampling activities, or until custody is transferred to another responsible party. A sample is considered to be in a person's custody whenever it is in a person's physical possession, when it is in view of the sampler or responsible party, or when it is in a secure location. Custody of a sample is also maintained when the sample is shipped in a container that is properly sealed against tampering with custody seals.

5.2.4 Quality Control Sample Collection

Information on QC samples WILL BE ~~is also~~ recorded in the field LOG~~note~~book, on the sample bottleware label, and on the COC form. Duplicate samples WILL have the same information recorded as a regular sample. Trip ~~blanks~~ and rinsate blanks WILL have most of this same information recorded, with the exception that sample location and sample screening and preliminary activities are not applicable. The trip blank WILL BE ~~is also~~ referenced to the actual samples that it accompanies in shipment and handling. Rinsate blanks are also referenced to the specific decontaminated sampling equipment that they are obtained from.

5.2.5 Field Quality Control Checks

QC checks in the field will include the collection of field QC samples and QC checks of field screening instruments. These QC checks are described below.

5.2.5.1 Field Quality Control Samples

Field QC samples will include field duplicates, matrix spikes (MS) and matrix spike duplicates (MSD), field blanks, and trip blanks. The following sections define each QC sample and provide the collection frequency and analytical requirements.

5.2.5.1.1 Field Duplicates

Duplicate samples WILL BE collected TO ~~in the field~~ provide precision information for the entire measurement system including sample acquisition, homogeneity, handling, shipping, storage, preparation, and analysis. ~~Samples for~~ Duplicate SAMPLES ~~analyses~~ will be selected at

random by the Sampling and Analysis Task Manager, and submitted blind to the laboratory for analyses. Duplicate analyses will be performed for 1 out of every 10 investigative samples for each matrix. Duplicate samples will be analyzed for the parameters of the primary sample (i.e., the sample which is being duplicated).

5.2.5.1.2 Matrix Spike/Matrix Spike Duplicates/LABORATORY DUPLICATES

MS ~~Matrix spike~~ and MSD ~~matrix spike duplicate~~ samples will be collected in the field during sample acquisition and used to assess analytical precision and accuracy FOR ORGANIC ANALYSES. A LABORATORY DUPLICATE (LD) WILL BE USED IN PLACE OF A MATRIX SPIKE DUPLICATE TO ASSESS ANALYTICAL PRECISION AND ACCURACY FOR INORGANIC ANALYSES. MS ~~Matrix spike~~, MSD ~~matrix spike duplicate~~ AND LD analyses will be performed for 1 out of every 20 investigative samples for each matrix. The MS ~~matrix spike~~ MSD ~~matrix spike duplicate~~ AND LD samples will be analyzed for the parameters of the primary sample (i.e., the sample which is being duplicated).

5.2.5.1.3 Field Blanks

Field blanks are indicative of ambient conditions and/or equipment conditions that may potentially affect the quality of the associated samples. The FIELD BLANK sample WILL BE ~~is~~ obtained by pouring analyte-free or deionized water supplied by the laboratory through sample collection equipment (bailer, etc.) after decontamination, and placing it in appropriate sample containers for analysis. Field blank samples will be collected from all major sampling devices used for the collection of groundwater. ~~water or surface water only.~~ Field blank samples will be collected from the sampling devices to provide a representative indication of the success of field cleaning procedures for the same matrix of the initial sample being collected (i.e., field blanks will not be collected for soil and sediment samples). Field blanks will be submitted at the rate of 1 for every 10 aqueous investigative samples. ~~It is anticipated that the only sample requiring a field blank will be the sample collected from the capillary drain under the TSCA Regulated closure cell. This groundwater sample will be collected as described in Section 5.11.~~

5.2.5.1.4 Trip Blanks

Trip blanks WILL BE ~~are~~ prepared in the laboratory, shipped with the sample containers to the Site, and WILL BE ~~are~~ kept with the investigative samples throughout the sampling event. They are then packaged for shipment with the other samples and submitted for analysis. A trip blank will be included with each SHIPMENT ~~Cooler~~ of GROUNDWATER samples requiring VOC analysis. ~~Of groundwater~~. ~~It is anticipated that the only sample requiring a trip blank will be the sample collected from the capillary drain under the TSCA regulated closure cell.~~

5.2.5.1.5 Blank Water

The blank water used for the rinsate and trip blanks WILL consist of demonstrated analyte-free water provided by the laboratory performing the sample analysis. The source of this water will be the same as that of the method/preparation blank. The blank water will be received in the field within one day of laboratory preparation, be on-site for a maximum of two days, shipped back to the laboratory at the end of the second day and BE received at the laboratory within 24 hours.

5.2.5.2 Quality Control Checks of Field Instruments

Proper measurement of accuracy and precision of field instruments WILL BE ~~is~~ verified by daily instrument calibration and QC checking procedures described in the QAPjP. This information WILL BE ~~is~~ recorded in the field logbook and IN the Daily Quality Control Report. This information is reviewed daily by the RUST FIELD TEAM LEADER ~~Sampling and Analysis Task Manager~~ who audits the accuracy and precision of the field screening instruments. This information WILL ~~is~~ also BE audited weekly by the Rust PM.

5.3 Site Security

The objectives of site security during the field investigation are as follows:

- Control access to the site during the Phase I RFI; AND,
- Prevent vandalism and~~/or~~ theft of equipment

The existing facility operates 24 hours a day, seven days a week. However, it normally is open for receipt of wastes 16 hours (7:00 a.m. to 11:00 p.m.) per day, seven days a week.

5.3.1 Control of Unauthorized Entry

The facility is surrounded by a 6 foot-high chain-link fence topped with three strands of barbed wire. Signs are mounted every 100 TO 150 feet on the perimeter fence. The signs are visible from 25 feet away and carry the message: "Danger-Unauthorized Personnel Keep Out."

During normal administrative hours, all visitors are required to enter the Office Building, sign a visitor's log, and state their business. All non-complying individuals are treated as unauthorized entrants and are asked to leave the facility.

During off-hours, the fence and locked gates control unauthorized entry into the facility and both vehicle gates are monitored around the clock on closed-circuit television.

5.3.2 Control of Authorized Entry

The facility has two gates used for vehicle entry, both accessible off of State Route 412. These gates are referred to as the "receipt control gate" and the "guardhouse gate."

The guardhouse gate is only utilized during times of construction when extensive traffic onto the site is experienced. During normal, non-construction times, only the receipt control gate is utilized for entry to the site.

In the event construction is underway, the guardhouse is manned and the gate is active. It is used by construction and service vehicles and non-waste delivery trucks during daytime hours (6:00 A.M. TO 6:00 P.M.). All non-employees entering this gate must stop at the guardhouse, sign in, obtain an identification badge, and sign out and return their identification badge when leaving. At their destination, the visitors are under the surveillance of facility personnel. This gate is locked from 6:00 p.m. to 6:00 a.m., and no guard is on duty during these hours. During the field investigation, if the AMOUNT OF REQUIRED PERSONNEL IS LARGE, ~~numbers of personnel warrant it~~, they will use the guardhouse gate to gain access to the site. The same procedures will be maintained as explained above to monitor and control access of authorized

personnel. If THE AMOUNT OF REQUIRED PERSONNEL IS SMALL, ~~numbers of personnel are small~~, the receipt control gate will be used.

The receipt control gate is used primarily for waste delivery trucks and all other traffic when the guardhouse gate is closed.

Eleven locked emergency gates are also maintained, four on the west fence-line, two on the east fence-line, and five on the south fence-line.

Contractors, consultants, visitors, and other non-employee personnel authorized to enter the facility are normally accompanied by facility personnel while on the premises. Possible exceptions may occur where an individual has a prolonged or a very specific job to perform in a specific area of the facility (e.g., building construction, subsurface investigation). In these cases, facility personnel familiarize the person with the facility and safety emergency procedures to be followed while on-site. These individuals sign a safety declaration form following the safety briefing. While at the facility these individuals sign in daily so that their presence at the facility can be monitored by facility personnel.

5.4 Potable Water Supply

Potable water will be needed during the field investigations for equipment decontamination, grout preparation, and drilling operations. Potable water will be obtained from the Truck Unloading Facility. This water WILL BE ~~is~~ drawn from the on-site truck well, if capacity is sufficient. If the capacity of the truck wash well is exceeded, water will be hauled FROM AN OUTSIDE SOURCE ~~in~~. Samples of the water will be collected on an as-needed basis, however one sample will be collected prior to using the water for field operations. This sample will be analyzed for the APPENDIX IX PARAMETERS ~~Target Compound List/Target Analyte List~~ using appropriate U.S. EPA methods. If an APPENDIX IX compound IS ~~or compounds are~~ detected, an alternate source (i.e., tanker truck from a municipal supply) will be selected, and an additional sample will be collected and analyzed from this alternate source. If this source is found to be adequate, it will be used for the remainder of the PHASE I RFI. ~~field investigation.~~

5.5 Phase I Decontamination Procedures

5.5.1 Decontamination Area

The equipment decontamination area for the field investigation will be located at the Truck Unloading Facility. This facility has the available containment and access to the treatment facilities needed to manage the liquids generated during the decontamination process. Equipment decontamination will be centralized in this area. Decontamination water will be treated ~~through the facility~~ and ultimately disposed through the deep well system. Personnel decontamination, if required, will be completed in centralized areas where the sampling activities are being conducted. At each of these locations, a bermed decontamination pad will be constructed with plastic sheeting. Portable basins will be used to contain decontamination water during the process. The decontamination water will be poured into a temporary polyethylene tank located near the decontamination area. The decontamination water in the temporary tank will occasionally be pumped out by a tanker truck and disposed through the deep well system.

5.5.2 Decontamination Procedures

Drilling equipment (including drill rods, bits and augers, or any other large pieces of equipment) will be decontaminated using a high pressure steam cleaner prior to the beginning of field activities and between each borehole.

Split spoon samplers and cores tubes, will be decontaminated before use and between boreholes according to the following procedures:

- Wash using laboratory grade glassware detergent and tap water scrub to remove visual contamination;
- Generous tap water rinse; and,
- Distilled and deionized (ASTM TYPE II) water rinse.

If visual contamination persists, or gross contamination is suspected the following procedures will be completed:

- Wash using laboratory grade glassware detergent plus a tap water wash.
- Generous tap water rinse.
- Distilled and deionized (ASTM TYPE II) water rinse.
- 1% nitric acid rinse* (trace metal or higher grade HNO_3 diluted with distilled and deionized (ASTM TYPE II) H_2O)
- Distilled and deionized (ASTM TYPE II) water rinse*
- Isopropyl alcohol (laboratory grade) rinse**
- Total air dry or pure nitrogen blow out**
- Distilled and deionized (ASTM TYPE II) water rinse**

* Only if sample is to be analyzed for metals.
** Only if sample is to be analyzed for organics.

All sampling devices will be wrapped in aluminum foil, after the decontamination process in completed. All decontamination information will be recorded in the field logbook.

All other equipment used during the field activities, such as drilling rigs and auger flights, all present potential sources of interference to environmental samples. These items may come in contact with the materials adjacent to the matrix being sampled or may be attached to actual sampling equipment which has been cleaned in accordance with the above decontamination procedures. Heavy equipment may potentially retain contaminants from other sources such as roadways or storage areas or MAY have soil material from previous job sites that have not been removed.

All heavy equipment will be decontaminated in the truck unloading facility using a combination of pressure/steam cleaning and manual scrubbing. The use of the steam generator will be to remove visible debris. If visible contamination still exists after the steam cleaning is completed,

manual scrubbing of the equipment will be completed followed by another round of steam cleaning.

All drilling rig items such as auger flights, rods, drill bits or any other equipment which comes in contact with soils will be decontaminated between boreholes.

5.5.3 Investigation-Derived Wastes

Investigation-Derived Wastes (IDW), includes soil cuttings, drilling muds, decontamination fluids, disposable sampling equipment and disposable personnel protective equipment.

All soil cuttings will be containerized within 55-gallon drums and consolidated within roll-offs staged in the facility's roll-off storage area. Prior to transport, the material will be sampled TO DETERMINE IF THE MATERIAL IS CLASSIFIED AS HAZARDOUS WASTE OR NON-HAZARDOUS. IF THE MATERIAL IS CLASSIFIED AS NON-HAZARDOUS, IT WILL BE DISPOSED ON-SITE. ~~Based on the results of the sample~~ IF THE MATERIAL IS CONSIDERED HAZARDOUS, the roll-off container will be sent to a proper TSD FACILITY. ~~disposal facility~~.

All decontamination waters generated will be stored and sampled prior to disposal into THE CWM-VICKERY TSD ~~the~~ Facility's deep well INJECTION system. The final DISPOSAL ~~disposition~~ of the decontamination waters will depend on the acceptance or not acceptance ~~of the decontamination waters by the facility's deep well system. This will be~~ AS determined BY ~~using~~ the CWM-VICKERY TSD Facility's waste analysis plan and waste acceptance criteria. IN THE UNLIKELY EVENT THAT THE INJECTION WELL SYSTEM CANNOT ACCEPT THE IDW, IT WILL BE PROPERLY DISPOSED AT AN APPROVED OFF-SITE FACILITY. Disposable sampling equipment and personal protective equipment (PPE) will be double bagged and transported to an appropriate DISPOSAL facility ~~for disposal~~.

5.6 Health and Safety Procedures

Health and safety procedures which will be implemented during the field activities are described in the ~~Health and Safety Plan~~ HASP.

5.7 Soil Sampling Procedures

Sampling procedures for the collection of surface soil, subsurface soil, and sediment samples are provided in the following sections. These procedures will be used to collect the samples, IF REQUIRED. THE DESCRIPTION OF ~~as described in~~ each of the SWMU Groups and AOC SAMPLING PROTOCOL ARE PRESENTED IN THEIR REPRESENTATIVE SECTION (5.9).

5.7.1 Subsurface Soil Sample Collection Procedures

Separate soil sampling procedures will be used to collect subsurface soil samples depending on the sample location. Two sample locations are proposed for the Phase I RFI: ~~investigation~~, soil samples collected at grid node locations and soil samples collected at select locations. THE PROCEDURES DESCRIBED BELOW (IN SECTIONS 5.7.1.1 AND 5.7.1.2) ARE FOR BORINGS DRILLED WITHIN SWMUs THAT WERE PREVIOUSLY USED AS SURFACE IMPOUNDMENTS. SIMILAR SOIL SAMPLING PROCEDURES WILL BE USED WHEN COLLECTING SOIL IN SWMUs THAT WERE NOT SURFACE IMPOUNDMENTS. WHEN THE PROCEDURES ARE MODIFIED AT A SPECIFIC SWMU OR SWMU GROUP, THE MODIFICATIONS WILL BE DISCUSSED IN THE SECTION DESCRIBING THAT SWMU OR SWMU GROUP SAMPLING PLAN. The procedures for collecting these soil samples are described in the following sections. All geological information collected during the drilling of soil borings will be recorded on the borehole log forms as presented in Figure 5-3.

5.7.1.1 Grid Node Location Sampling Procedures

THE PURPOSE OF "GRID NODE" SAMPLING IS TO OBTAIN SAMPLES OF NATURAL SOIL MATERIAL FROM A UNIFORM, SPECIFIC DEPTH (2 TO 4 FEET) BELOW THE BOTTOM OF THE (FORMER) SWMU. THUS, THE FIRST OBJECTIVE DURING DRILLING IS TO DETERMINE THE DEPTH TO THE BOTTOM OF THE (FORMER) SWMU. THE SECOND OBJECTIVE IS TO COLLECT A SOIL SAMPLE FOR LABORATORY ANALYSIS FROM THE NATURAL SOIL APPROXIMATELY 2 TO 4 FEET BELOW THE BOTTOM OF THE (FORMER) SWMU.

THE FIRST OBJECTIVE AT "GRID NODE" LOCATIONS WILL BE ACCOMPLISHED IN THE FOLLOWING MANNER:

- A BOREHOLE WILL BE ADVANCED USING HOLLOW STEM AUGERS (HSA) AND A FIVE-FOOT CONTINUOUS, SPLIT-BARREL CORER WILL BE ADVANCED SIMULTANEOUSLY WITHIN THE HSA TO ALLOW THE FIELD GEOLOGIST TO RECORD A CONTINUOUS VISUAL RECORD OF THE SOILS.

- THE FIRST CORE WILL BE RETRIEVED WHEN THE BORING IS AT A DEPTH OF TWO AND ONE-HALF FEET. SUBSEQUENT CORES WILL BE RETRIEVED AT FIVE-FOOT INTERVALS OR WHEN THE BEHAVIOR OF THE DRILLING RIG SUGGESTS THAT A DIFFERENT MATERIAL HAS BEEN ENCOUNTERED.

- THE FIELD GEOLOGIST WILL NOTE IMPORTANT INTERFACES WITH DEPTH, CHANGES IN LITHOLOGY AND RECORD A DETAILED DESCRIPTION OF THE MATERIAL ENCOUNTERED.

~~A borehole will be advanced using hollow stem augers. A continuous corer will be used and advanced within the hollow stem augers, allowing for a visual geologic record of the soils from the borehole. The first core will be extruded at a depth of 2.5 feet. Additional cores will be extruded at intervals of 5 feet. This will allow for the identification of the fixed waste in the SWMUs which are suspected of having fixed waste associated with them (mainly Group A and C). The field geologist will log the core and make notes regarding the clay fill/in-situ fixed waste interface and the in-situ fixed waste/ natural material interface towards the bottom of the borehole.~~

A Photoionization Detector (PID) will be used to screen the cores as they are removed. This information will be recorded for qualitative purposes and BE used to OBTAIN ~~get~~ background readings on the gross VOC concentrations of the SOIL. ~~fixed waste.~~ The core will be screened using the following procedures:

- The PID will be in-place next to the core and as THE CORE BARREL IS OPENED the PID will measure the gross VOC concentration from the core.

- The readings will be recorded on the borehole log by the field geologist.

- In areas where PID readings are elevated relative to others, the field geologist will split the core with a stainless steel pocket knife and screen the material within the core. These readings will also be recorded on the borehole log. Core information will be recorded on a BOREHOLE ~~rock core~~ log form as presented in Figure 5-3. In order to track daily progress, a summary of daily production of drilling will be recorded. ~~on the~~ A daily production form IS ~~as~~ presented in Figure 5-4.

WHEN THE DEPTH OF BOTTOM OF THE (FORMER) SWMU HAS BEEN DETERMINED, THE HSA AND CORER WILL BE USED TO ADVANCE THE BORING TO A DEPTH TWO FEET BELOW THAT (BOTTOM) DEPTH. A SAMPLE OF NATURAL SOIL WILL THEN BE COLLECTED FOR LABORATORY ANALYSIS USING THE FOLLOWING PROCEDURES:

- A TWO-FOOT LONG, THREE-INCH DIAMETER "CALIFORNIA MODIFIED" SPLIT SPOON SAMPLING DEVICE WITH BRASS SLEEVES WILL BE DRIVEN INTO THE SOIL AT THE APPROPRIATE SAMPLING INTERVAL. THIS SAMPLING INTERVAL WILL BE APPROXIMATELY 2 TO 4 FEET BELOW THE BOTTOM OF THE (FORMER) SWMU. (IF FIXED WASTE IS NOT IDENTIFIED WITHIN THE BOREHOLE DURING CORING, THE SOIL SAMPLE WILL BE COLLECTED AT 2 FEET BELOW THE DEEPEST RECORDED DEPTH OF THE ASSOCIATED SWMU.)

- THE SAMPLING DEVICE WILL BE EQUIPPED WITH 2 SIX-INCH AND 4 THREE-INCH BRASS SLEEVES, WITH THE THREE-INCH SLEEVES "SANDWICHED" BETWEEN THE SIX-INCH SLEEVES. THE UPPERMOST THREE-INCH SLEEVE, COMPLETELY FILLED WITH SOIL, WILL THEN BE CAPPED AND PLACED IN A FIELD COOLER TO AWAIT TRANSPORTATION TO THE LABORATORY FOR APPENDIX IX VOCs.

- ADDITIONAL SOIL WILL BE COLLECTED FROM THE OTHER BRASS SLEEVE SECTIONS FOR THE LABORATORY ANALYSIS OF THE REMAINING APPENDIX IX PARAMETERS AND PLACED INTO LABORATORY PROVIDED SAMPLE JARS.

ALL SAMPLE JARS WILL BE LABELED AND PLACED WITHIN THE FIELD COOLER TO AWAIT TRANSPORTATION TO THE LABORATORY. THE INTERNAL TEMPERATURE WILL BE MAINTAINED AT 4°C. THE BOREHOLE WILL THEN BE ABANDONED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN SECTION 5.8.

~~When the in-situ fixed waste/natural soil interface is identified, a three-inch "California modified" split-spoon sampling device with brass sleeves will be driven into the soil. This sampling interval will be approximately 2 - 4 feet below the bottom of the interface. 2 six-inch and 4 three-inch brass sleeves will be fitted within the "modified" split spoon with the three-inch sleeves "sandwiched" between the six-inch sleeves. The uppermost three-inch sleeve completely filled with soil will be capped and sent to the laboratory for analysis of Appendix IX VOCs. Soil for the laboratory analysis of additional Appendix IX parameters will be collected from the other brass sleeve sections and placed in laboratory clean sample jars. The sample jars will be labeled and placed within a field cooler (with its internal temperature maintained at 4°C.) for transport to the laboratory.~~

5.7.1.2 Selected Location Sampling Procedures

THE PURPOSE OF "SELECTED" SAMPLING IS TO CHARACTERIZE POTENTIAL RESIDUAL CONTAMINANT "SOURCES" WITHIN THE (FORMER) SWMUs. THIS WILL BE ACCOMPLISHED BY CONTINUOUSLY SAMPLING SOILS FROM THE GROUND SURFACE UNTIL BOREHOLE TERMINATION CRITERIA (DESCRIBED BELOW) ARE MET. CONTROLLED HEADSPACE SCREENING OF SOIL SAMPLES WILL BE DONE TO IDENTIFY THE DEPTH INTERVAL CONTAINING THE HIGHEST CONCENTRATIONS OF VOCs. THE SAMPLE FROM THIS DEPTH INTERVAL WILL BE SUBMITTED FOR LABORATORY ANALYSIS. THE BOREHOLE WILL BE ADVANCED USING HSAs AND THE split spoons used will be the same "CALIFORNIA MODIFIED" SAMPLING DEVICES ~~as the ones~~ used during the collection of soil from the grid node locations. Headspace screening will be conducted on all split spoon samples. Headspace screening will be conducted in the following manner:

- The split spoon will be removed from the borehole and the uppermost completely filled THREE-inch sleeve will be capped labeled and placed within a field cooler.

- Soil from the next uppermost brass sleeve section will be placed in a Ziploc® type bag and labeled with the sample identification number then placed within a crock pot filled with hot water.

- The Ziploc® bagged soil sample will be kept within the hot water for approximately 15 minutes.

- After the 15 minutes, a PID will puncture the bag and the headspace reading on the PID will be recorded on the headspace analysis form as presented in Figure 5-6.

- During the 15 minute heating interval, soil for the laboratory analysis of additional Appendix IX parameters will be collected from the other brass sleeve sections and placed into laboratory SUPPLIED SAMPLE ~~clean sampling~~ jars. The sample jars will be labeled and placed within a field cooler with its internal temperature maintained at 4°c for transport to the laboratory.

The soil samples collected from the sampling interval with the highest gross VOC concentrations based on the results of the above headspace analysis method will be sent to the laboratory for analysis.

If gross VOC concentrations are not detected within any of the soil sampling intervals, a sample will be sent to the laboratory for analysis based on visual identification from a combination of the grid node location borings and the borehole being sampled. THE BOREHOLE WILL BE TERMINATED WHEN THE FOLLOWING CRITERIA IS MET:

- HEADSPACE ANALYSIS OF GROSS VOCs ARE NOT DETECTED,

- IDENTIFICATION OF SOILS ENCOUNTERED DO NOT INDICATE VISUAL CONTAMINATION, AND;

- HISTORICAL INFORMATION SUPPORTS THE DECISION (I.E., DEPTH OF TERMINATION IS BELOW RECORDED BOTTOM DEPTH OF SURFACE IMPOUNDMENTS).

BOREHOLE ABANDONMENT PROCEDURES ARE DESCRIBED IN SECTION 5.8.

5.7.2 Surface Soil Sample Collection Procedures

SURFACE SOIL SAMPLES WILL BE COLLECTED IN THE FOLLOWING MANNER:

- A "CALIFORNIA MODIFIED" SPLIT SPOON SAMPLER WITH BRASS SLEEVE SECTIONS WILL BE DRIVEN BETWEEN AN INTERVAL OF 0-2 FEET BGS.

- 2 SIX-INCH AND 4 THREE-INCH BRASS SLEEVES WILL BE FITTED WITHIN THE "CALIFORNIA MODIFIED" SPLIT SPOON WITH THE THREE-INCH SLEEVES "SANDWICHED" BETWEEN THE SIX-INCH SLEEVES.

- THE UPPERMOST THREE-INCH SLEEVE, COMPLETELY FILLED WITH SOIL WILL BE CAPPED AND SENT TO THE LABORATORY FOR ANALYSIS OF APPENDIX IX VOCs.

- ADDITIONAL SURFACE SOIL SAMPLES FOR THE LABORATORY ANALYSIS OF THE REMAINING APPENDIX IX PARAMETERS WILL BE COLLECTED FROM THE OTHER BRASS SLEEVE SECTIONS AND PLACED IN LABORATORY CLEAN JARS. THE SAMPLE JARS WILL THEN BE PLACED WITHIN A FIELD COOLER WITH ITS INTERNAL TEMPERATURE MAINTAINED AT 4°C FOR TRANSPORT TO THE LABORATORY.

THE HOLE LEFT BY THE SAMPLING DEVICE WILL BE FILLED WITH GRANULAR BENTONITE, AND POTABLE WAER WILL BE POURED INTO THE BENTONITE TO HYDRATE IT.

~~Soil samples from areas where surface samples are to be collected will be collected using the same "California modified" split spoon samplers with the brass sleeve sections. Hollow stem augers will drill from the surface to a depth of 2 feet. A split spoon will then be driven between an interval of 0 - 2 feet bgs. below the surface. 2 six-inch and 4 three-inch brass sleeves will be fitted within the "modified" split spoon with the three-inch sleeves "sandwiched" between the~~

~~six-inch sleeves. The uppermost three inch sleeve completely filled with soil will be capped and sent to the laboratory for analysis of Appendix IX VOCs. Soil for the laboratory analysis of additional Appendix IX parameters will be collected from the other brass sleeve sections and placed in laboratory clean sampling jars. The sample jars will be labeled and placed within a field cooler with its internal temperature maintained at 4°C for transport to the laboratory.~~

5.7.3 Sediment Sample Collection Procedures

Because effective sediment sampling requires samples to be collected from depositional areas, field personnel will USE FIELD OBSERVATIONS TO determine ~~in the field~~ the exact sampling site. Typical depositional areas are located downstream of obstructions in the water, or areas of turbulent flow. The specific sampling location will be recorded in the field logbook and located and numbered on the field site map.

Once this sampling site has been determined and recorded, a composite of the streambed sediments at the sampling location will be collected except for the VOC fraction. The VOC fraction of the samples will be a discrete sample from the depositional area. The samples will be collected from the stream bank at water level and/or at the center of the stream. If wading is required to collected the samples, sampling locations will be approached from the downstream direction. A clean, stainless steel spoon or SPATULA ~~grain scoop~~ will be used to collected the sample. Except for the VOC sample, the samples will then be placed in a stainless steel mixing bowl. The sediment will then be gently mixed and quartered. The sample will then be carefully placed in LABORATORY SUPPLIED sample JARS ~~containers~~ using the stainless steel spoon to obtain a spoonful of sample from each quarter in succession until all of the samples jars are completely full or no more sample is available. For VOCs, the sample container will be gently tapped as the sample is placed in the container, and the container will be completely filled to eliminate any headspace.

5.8 Borehole Abandonment Procedures

When sampling in each HSA-DRILLED borehole is completed, the borehole will be abandoned by PUMPING A ~~placing a 94% Portland cement 6% powdered~~ bentonite slurry through the augers using the tremie pipe method. THE BENTONITE SLURRY WILL BE COMPRISED OF 94 POUNDS (LBS) OF PORTLAND CEMENT, 5 LBS OF POWDERED BENTONITE AND

8.3 GALLONS OF POTABLE WATER. The bentonite slurry will be mixed at the surface using ~~potable water,~~ a mixing vessel (clean 55 gallon drum), and a gasoline engine TRASH pump. The TRASH pump will be used in conjunction with flexible hose and one inch diameter PVC tremie pipe to emplace the grout. The lower 2 feet of the tremie pipe will be slotted, with openings at least ½ inch wide, to prevent potential blockages of flow. After THOROUGH MIXING HAS BEEN COMPLETED, ~~the slurry has been mixed completely,~~ the BENTONITE ~~grout~~ slurry will be emplaced through the augers from the bottom of the borehole to the top of the borehole. The augers will then be removed. BECAUSE ~~As~~ the augers occupy some of the borehole volume, extra BENTONITE SLURRY ~~grout~~ will be emplaced to COMPENSATE FOR THE VOLUME. ~~bring the grout to the surface.~~ ABANDONMENT OF ~~Grouting~~ each borehole with the augers still in PLACE ~~the ground~~ will be necessary to prevent borehole collapse. Immediately after each borehole is abandoned, the augers will be steam cleaned to remove grout coating the inside to prevent it from curing within the augers.

5.9 SWMU Soil Sampling Activities

Soil sampling activities will be performed across the site specific to each SWMU Grouping and AOC. The soil sampling activities for each of the SWMU Groupings and AOCs are provided in the following sections.

5.9.1 SWMU Group A

SWMU Group A consists of the following SWMUs:

- SWMU #1 - Surface Impoundment 1;
- SWMU #2 - Surface Impoundment 2;
- SWMU #3 - Surface Impoundment 3;
- SWMU #8 - Surface Impoundment 9 and Wet Well; and,
- SWMU #16 - Temporary Waste Pile Area.

These SWMUs are grouped together due to the inclusion of the SWMUs within a larger SWMU (i.e., SWMU #16 is the SWMU which encompasses the perimeter of the other SWMUs).

These SWMUs are closed surface impoundments which were used to hold waste during their operation. These surface impoundments were closed by fixing the waste and placing clean clay fill over the fixed waste. The temporary waste pile was placed over this area during the construction of the TSCA closure cell. This area was excavated to the depth of the original surface impoundments when the tempora o the TSCA closure cell. ~~Since the fixed waste is still emplaced ng sampling protocol is proposed.~~

By sampling the shallow GW within the SWMU GROUP.

Must investigate impact to shallow GW at this SWMU Group.

SURFACE CONTAINED WASTE OILS, OI C QUORS; AND FIXED SLUDGE LS, RESPECTIVELY. PCBs, D004-D011 METALS, VOCS, P THE POTENTIAL WASTE CONSTITUENTS THAT HAVE L ART OF THIS SWMU GROUP. BASED ON THE HISTORICAL USAGE AND OVE POTENTIAL CONSTITUENTS, SAMPLES WILL BE COLLECTED TO CHARACTERIZE THE IMPACT TO THE SOIL. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI. SINCE THE FIXED WASTE IS STILL EMPLACED IN THESE SWMUS THE FOLLOWING SAMPLING PROTOCOL IS PROPOSED.

BASED ON THE ABOVE, soil samples will be collected from 24 locations based on a systematic sampling grid BASED ON ~~at~~ 150-foot centers. Additionally, TEN soil samples will be collected at selected locations corresponding to the former locations of the surface impoundments which were located using facility records. The soil samples collected at the grid node locations will be collected using the soil sampling procedures outlined in section ~~5.7.1~~5.7.1.1. The soil samples collected at the selected locations will be collected using the soil sampling procedures outlined in Section ~~5.7.2~~ 5.7.1.2. 34 soil samples will be collected for this group. Figure 5-7 presents the proposed soil sampling locations in SWMU Group A.

Soil samples sent for laboratory analysis will be analyzed for the project target parameters described in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included in Tables 1-2 through 1-8 in the QAPjP.

All boreholes will be abandoned upon completion within a 12-hour time period. All Investigate Derived Waste (IDW) accumulated during drilling will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The borehole will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED borehole so an accurate surveyed location can be recorded.

5.9.2 SWMU Group B

SWMU Group B consists of the following SWMUs:

- SWMU #4 - Surface Impoundment 4;
- SWMU #5 - Surface Impoundment 5;
- SWMU #7 - Surface Impoundment 7;
- SWMU #10 - Surface Impoundment 11;
- SWMU #11 - Surface Impoundment 12;
- SWMU #17 - Leachate Retention Pond; AND,
- ~~SWMU #18 - W-Tanks; and,~~
- SWMU #53 - TSCA Closure Cell.

These SWMUs are grouped together due to their clean-closed status and proximity of the TSCA closure CELL being emplaced over the location of former surface impoundments 4, 5, and 7. SURFACE IMPOUNDMENTS 4, 5, 7, 11 AND 12 CONTAINED WASTE OILS, OILY SLUDGES, WASTE ACIDS, CAUSTICS, PICKLE LIQUORS AND PHENOLS. THE LEACHATE RETENTION POND (SWMU #17) CONTAINED SURFACE WATER RUNOFF FROM THE WASTE PILE. THE TSCA CLOSURE CELL (SWMU #53) WAS BUILT OVER THE AREA WHERE SURFACE IMPOUNDMENTS 4, 5, AND 7 WERE LOCATED. PCBS, D004-D011 METALS, VOCS, PAHS, DIOXINS AND PHENOLS ARE THE POTENTIAL WASTE CONSTITUENTS THAT HAVE BEEN IDENTIFIED AS PART OF THIS GROUP. BASED ON HISTORICAL RECORDS AND THE ABOVE POTENTIAL CONSTITUENTS, A WATER SAMPLE WILL BE COLLECTED UNDER THE CLOSURE CELL FROM THE CAPILLARY DRAIN. WATER FROM THIS DRAIN IS IN CONTACT WITH SURROUNDING SOILS AND PROVIDES A MECHANISM TO ASSESS THE SOILS WITHOUT DISTURBING THE INTEGRITY OF THE CLOSURE CELL. ALL DATA

COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI .

These units were certified clean-closed by the facility and approved by the OEPA. The letters of certification approval FROM ~~by~~ the approving agency for each of these clean closures are provided in Appendix A of this Phase I RFI WP. Results of soil sampling activities can be found in each of the closure certification documents for each of the units. ~~Due to the clean-closed status of each of the SWMUs, no soil sampling is proposed for this SWMU grouping.~~ A description of the soil conditions around each of the closed units is provided in the certification documents for each unit.

5.9.3 SWMU Group C

SWMU Group C consists of the following SWMUs:

- SWMU #6 - Surface Impoundments 6E and 6W;
- SWMU #9 - Surface Impoundment 10; and,
- SWMU 19 - Former Drum Storage Area.

These SWMUs are grouped together due to the location and overlapping of the units. The former surface impoundments identified in this grouping were at one time associated with each other as identified in the facility's operational record. SWMU #19, the former drum storage area is located above or adjacent to the surface impoundments in the area and therefore has been included in this grouping.

SURFACE IMPOUNDMENT 6 CONTAINED WASTE ACIDS, ACID SLUDGES, PICKLE LIQUORS, PHENOL WASTES AND SLUDGES FROM SURFACE IMPOUNDMENT 9. SURFACE IMPOUNDMENT 10 CONTAINED AQUEOUS SLUDGES AND PHENOLS WASTES. THE HISTORY OF THE OLD DRUM STORAGE PAD IS UNCERTAIN, BUT IT IS BELIEVED TO HAVE PCBS, PESTICIDES, D004-D011 METALS, VOCS, PAHS, AND PHENOLS ARE THE POTENTIAL WASTE CONSTITUENTS THAT HAVE BEEN IDENTIFIED AS PART OF THIS SWMU GROUP. BASED ON HISTORICAL RECORDS AND THE ABOVE POTENTIAL CONSTITUENTS, SAMPLES WILL BE COLLECTED TO CHARACTERIZE THE IMPACT TO THE SOIL, IF ANY. MONITORING WELL MW-20R

IS LOCATED DOWNGRADIENT OF THE SWMUS IN THIS GROUP. RECENT HISTORICAL DATA GENERATED AS PART OF THE RCRA AND TSCA MONITORING PROGRAMS WILL BE VALIDATED IN THE PHASE I RFI TO ASSESS THE GROUNDWATER QUALITY AROUND THIS SWMU GROUP. A GROUNDWATER SAMPLE WILL BE COLLECTED TO SUPPORT THIS VALIDATION. FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI, IF APPROPRIATE. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

These SWMUs are closed surface impoundments which used to hold waste during their operation. These surface impoundments were closed by fixing the waste and placing clean clay fill over the fixed waste. The former drum storage area was placed above these two surface impoundments after closure. The fixed waste from these two surface impoundments IS ~~were are~~ still emplaced. Since the fixed waste is still emplaced the following sampling protocol is proposed.

Soil samples will be collected from locations based on a systematic sampling grid BASED ON ~~at~~ 100-foot centers. Additionally, soil samples will be collected at FIVE SELECTED ~~random or biased locations~~ ~~These sampling~~ locations ~~will be placed~~ within the former locations of the surface impoundments and~~/or~~ the drum storage pad. The location of these former units are estimated using information obtained from the facility records. The soil samples collected at the grid node locations will be collected using the soil sampling procedures outlined in Section ~~5.7.1~~5.7.1.1. The soil samples collected at the select locations will be collected using the soil sampling procedures outlined in Section ~~5.7.2~~5.7.1.2. based on the above sampling protocol, 23 soil samples will be collected in this SWMU Group. ~~Figure 5-8 presents~~ The proposed soil sampling locations in SWMU Group C ARE PRESENTED IN FIGURE 5-8.

Soil samples sent for laboratory analysis will be analyzed for the project target parameters described in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN Tables 1-2 through 1-4 in the QAPjP.

All boreholes will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all

applicable regulations. All IDW will be handled as described in Section 5.5.3. The borehole will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED borehole so an accurate surveyed location can be recorded.

5.9.4 SWMU Group D

SWMU Group D consists of the following SWMUs:

- SWMU #12 - North Landfarm;
- SWMU #13 - East Landfarm; and
- SWMU #14 - South Landfarm.

These SWMUs are grouped together due to the similar manner in which they were utilized during their operation. It is documented in the facility's operation record that several feet of clay is estimated to have been placed over these excavated areas and the areas were graded to promote runoff of surface water.

THE NORTH, EAST AND SOUTH LANDFARMS CONTAINED OILY AND PLATING SLUDGES. IN ADDITION THE WASTE HISTORY OF THE LANDFARMS INDICATED THAT METAL HYDROXIDE SLUDGES WERE PRESENT AT THE NORTH AND EAST LANDFARMS, BUT ABSENT AT THE SOUTH LANDFARM. PCBS, D004-D011 METALS, VOCS, PAHS AND PHENOLS ARE THE POTENTIAL WASTE CONSTITUENTS THAT HAVE BEEN IDENTIFIED AS PART OF THIS SWMU GROUP. BASED ON HISTORICAL RECORD AND THE ABOVE POTENTIAL CONSTITUENTS, SAMPLES WILL BE COLLECTED TO CONFIRM THE REMOVAL OF RESIDUAL WASTES. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT . IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR THE ADDITIONAL ASSESSMENT OF GROUNDWATER, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

The land farms received sludges from the surface impoundments. These areas were closed by removing soils and backfilling with clean soils from an offsite source and capped with clay. The following soil sampling protocol will be used to confirm the removal of residual wastes in these areas.

Thirty-three soil samples v ns based on a systematic sampling grid BASED ON ~~at~~ 100-foot cer ons are proposed to characterize the soil conditions in SWMU Grou e proposed soil sampling locations for SWMU Group D ARE PRE

must also collect soil samples below the "tilled" depth

The soil samples will be col ~~scribed~~ IN A SIMILAR MANNER AS OUTLINED in Section ~~5.7.2~~ 5.7.1.1. SAMPLES WILL BE COLLECTED AT A DEPTH OF APPROXIMATELY 2.5 TO 4.5 FEET. The sampling depth is based on the approximate "tilled" depth used during the operation of the units.

Soil samples sent for laboratory analysis will be analyzed for the project target parameters described in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included ~~at~~ in Tables 1-2 through 1-4 in the QAPjP.

All boreholes will be ABANDONED upon completion within a 12-hour time period. All IDW accumulated during drilling will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The borehole will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED borehole so an accurate surveyed location can be recorded.

5.9.5 SWMU Group E

SWMU Group E consists of the following SWMUs:

- SWMU #50 - Injection Well 1A;
- SWMU #51 - Injection Well 1; and
- SWMU #52 - Injection Well 3.

These SWMUs are grouped together due to the similar manner in which they were utilized during their operation. These units were all DECOMMISSIONED ~~abandoned~~ due to casing failures at ~~a~~ depths GREATER THAN ~~of~~ 2,000 feet bgs. ~~below ground surface within the injection well casing.~~ These casing failures may have leaked the diesel fluid used in the annulus of the injection well, or ~~the~~ waste into the adjacent rock. ACIDS, D004-D011 METALS, AND VOCS ARE THE POTENTIAL WASTE CONSTITUENTS THAT HAVE BEEN IDENTIFIED AS PART OF THIS SWMU GROUP. BASED ON THE HISTORICAL RECORDS AND THE ABOVE POTENTIAL CONSTITUENTS, SAMPLES WILL BE COLLECTED TO CONFIRM CONTAMINATION DOES NOT EXIST IN THE SURFICIAL SOILS. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR THE ADDITIONAL ASSESSMENT OF GROUNDWATER, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

One surface soil sample will be collected around each of the SWMUs in THE ~~an~~ approximate~~d~~ area ~~of~~ where the SWMU was located. ~~The soil samples will be collected in order to determine if a release to the surface soils occurred during operation of these injection wells.~~ Figure 5-10 presents the proposed soil sampling locations in SWMU Group E. The sampling objective of this group of SWMUs is to determine if there is any indication of surface spills from past operation of these SWMUs. The soil will be collected USING ~~based on~~ the surface sampling procedures described in Section 5.7.2.

The soil will be analyzed for the project parameters described in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 in the QAPjP.

All ~~boreholes~~ SAMPLING HOLES will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The ~~borehole~~ SAMPLE HOLE will then be abandoned as described in Section 5.7.2 ~~8~~. A survey stake marked with a unique identification number will be placed AT ~~in~~ the ABANDONED ~~bore~~hole so an accurate surveyed location can be recorded.

5.9.6 SWMU Group F

SWMU Group F consists of following SWMUs:

- SWMU #31 - Filtered Acid Tank (FAT) 3;
- SWMU #32 - Pumphouse 3;
- SWMU #33 - FAT 6;
- SWMU #34 - Pumphouse 6;
- SWMU #35 - FAT 5;
- SWMU #36 - Pumphouse 5;
- SWMU #37 - FAT 4;
- SWMU #38 - Pumphouse 4;
- SWMU #39 - Old FAT 2; and,
- SWMU #40 - Former Pumphouse 2.

THE FILTERED ACID TANKS AND PUMP HOUSES CONTAIN FILTERED ACIDIC WASTES. ACIDS, D004-D011 METALS, PHENOLS AND VOCS ARE THE POTENTIAL WASTE CONSTITUENTS THAT HAVE BEEN IDENTIFIED AS PART OF THIS SWMU GROUP. BASED ON HISTORICAL RECORDS AND THE ABOVE POTENTIAL CONSTITUENTS, SOIL SAMPLES WILL BE COLLECTED AT SELECTED LOCATIONS TO CONFIRM CONTAMINATION DOES NOT EXIST IN THE SURFICIAL SOILS. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLES INDICATE THE NEED FOR THE ADDITIONAL ASSESSMENT OF GROUNDWATER, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

These SWMUs are grouped together due to the similar manner in which they were utilized during operation. Presently all of the FATs have a reinforced concrete secondary containment system in place to contain any leaks or spills. These secondary containment systems were constructed in the mid-1980s. There are reports of some spills in the historical record around FAT 3 in which approximately 2,000 gallons of acid were released due to mechanical failure.

THE AREAS AROUND SPILLS WERE IMMEDIATELY REMEDIATED UPON KNOWLEDGE OF THEIR OCCURRENCE.

~~Since there remains a possibility for~~ IN ORDER TO CONFIRM SURFICIAL contamination DOES NOT ~~to~~ exist, soil samples will be collected around each of the SWMUs or biased to a location where contamination may HAVE EXISTED ~~exist~~. The surface soil samples will be collected using the procedures described in Section 5.7.2. The intent of this soil sampling is to document if any contamination exists due to the past operation of the units. ~~Figure 5-11 presents~~ The proposed soil sampling locations for SWMU Group F ARE PRESENTED IN FIGURE 5-11. A total of 20 surface soil samples will be collected as part of this grouping.

Soil samples collected within these SWMUs will be analyzed for the project parameters as described in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP.

All ~~boreholes~~ SAMPLING HOLES will be ABANDONED upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The ~~borehole~~ SAMPLING HOLE will then be abandoned as described in Section 5.7.2 ~~8~~. A survey stake marked with a unique identification number will be placed in the ABANDONED ~~bore~~hole so an accurate surveyed location can be recorded.

5.9.7 <u>SWMU Group G</u>

SWMU Group G consists of the following SWMUs:

- SWMU #21 - Truck Unloading Building;
- SWMU #22 - Sand Interceptors;
- SWMU #23 - V-Tanks;
- SWMU #24 - Caustic Gas Scrubber;
- SWMU #25 - T-Tanks;
- SWMU #26 - T-Tank Pump House;
- SWMU #27 - Leaf Filter Press Building;
- SWMU #29 - Filter Press Building; and,

How are the sampling locations selected - what are criteria

- SWMU #30 - Fat A and B.

THESE SWMUS ARE GROUPED TOGETHER BASED ON THEIR ACTIVE STATUS WITHIN THE TREATMENT PROCESS. THESE SWMUS HANDLE PICKLE LIQUORS, ACIDS, AND BRINES. ACIDS, D004-D011 METALS AND VOCS ARE THE POTENTIAL WASTE CONSTITUENTS THAT HAVE BEEN IDENTIFIED WITHIN THIS SWMU GROUP. BASED ON THE HISTORICAL RECORD AND THE ABOVE POTENTIAL CONSTITUENTS, SAMPLES WILL BE COLLECTED AT SELECTED LOCATIONS TO CHARACTERIZE THE IMPACT TO SOIL, IF ANY. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

~~These SWMUs are grouped together due to their connection with the treatment process.~~ Small quantity releases have been documented from some of the above SWMUs in the facility's operational record. UPON THE KNOWLEDGE OF THEIR OCCURRENCE THESE SPILLS WERE REMEDIATED. Soil samples will be collected in areas biased towards spill potential. Figure 5-12 presents the proposed soil sampling locations for SWMU Group G. A description of the soil sampling proposed for each of the SWMUs is provided below:

SWMU #21 - Truck Unloading Building:

~~No samples are proposed around this SWMU.~~ No releases have ever been reported and spill resistant liners are used in each sump. The concrete floors are sloped to these 18-inch deep sumps. NO SAMPLING ~~samples are~~ IS PROPOSED AT ~~around~~ THIS SWMU.

SWMU #22 - Sand Interceptors (Grit Filters):

~~No sampling is proposed around this SWMU.~~ The Grit filters are contained in concrete chambers which serve as secondary containment. No releases to the soil or groundwater are documented. NO SAMPLING IS PROPOSED AT around THIS SWMU.

SWMU #23 - V-Tanks:

Four soil samples will be collected in locations biased near the transfer lines leading to the V-Tank facility. The soil samples will be collected at just below the depth of the concrete vault, which is approximately 13 feet below ground surface. The soil samples will be collected IN A SIMILAR MANNER AS ~~using the procedures~~ outlined in Section 5.7.1.2. PRIOR TO SAMPLING, BOREHOLES WILL BE ADVANCED TO 10 FEET. THEN, CONTINUOUS CORES WILL BE OBTAINED UNTIL BOREHOLE TERMINATION AS DESCRIBED IN SECTION 5.7.1.2. Soil samples collected within this SWMU will be analyzed for the project parameters described in Section 1.4.2. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP.

All ~~boreholes~~ SAMPLING HOLES will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The ~~borehole~~ SAMPLING HOLE will then be abandoned as described in Section 5.7.2 ~~8~~. A survey stake marked with a unique identification number will be placed in the ABANDONED ~~bore~~hole so an accurate surveyed location can be recorded.

SWMU #24 - Caustic Gas Scrubber

Air releases from the scrubber have been documented. However, changes in the management of certain waste streams have been implemented to prevent further releases from occurring. No ~~soil~~ sampling is proposed AT ~~in the area of~~ this SWMU.

SWMU #25 - T-Tanks

This unit was constructed in 1989 with secondary containment. No releases have been associated with this unit. ~~and as a result.~~ No sampling is proposed AT ~~around~~ this SWMU.

SWMU #26 - T-Tank Pump House

This unit was constructed in 1989 and all pumps are housed within a building on a bermed concrete pad. No releases have been associated with this unit. ~~and as a result.~~ No sampling is proposed AT ~~around~~ this SWMU.

SWMU # 27 - Leaf Filter Press Building:

Surface soil sampling will be conducted in areas with potential contamination. ~~As documented within the facility's operational record, this SWMU had a release in 1985, as a pre-coat tank overflowed resulting in a release to the floor. Additional 10 gallon to 30 gallon releases have also been associated with this unit. These releases to the floor resulted in release through floor drains and ultimately to the sluice pit. All wastes which were accumulated within the sluice pit were emptied to Surface Impoundments 11 or 12.~~ Two surface soil samples will be collected around the building according to the procedures described in 5.7.2. Soil samples collected within this SWMU will be analyzed for the project parameters described in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP.

All ~~boreholes~~ SAMPLING HOLES will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The ~~borehole~~ SAMPLING HOLES will then be abandoned as described in Section 5.7.2.~~8.~~ A survey stake marked with a unique identification number will be placed in the ABANDONED ~~bore~~hole so an accurate surveyed location can be recorded.

SWMU # 29 - Plate Filter Press Building:

Surface soil sampling will be conducted in areas near the former underground pipes which led to the sluice pit. All soils associated with these pipes are reported to have been removed; however soil samples will be collected to verify previous INTERIM CORRECTIVE MEASURE activities. Three soil samples ~~collected at a depth of between 0-2 feet below ground surface~~ will be collected around the building. The soil samples will be collected using the procedures outlined in Section 5.7.2. Soil samples collected within this SWMU will be analyzed for the project parameters described in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP.

All ~~boreholes~~ SAMPLING HOLES will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The ~~borehole~~ SAMPLING HOLE will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED ~~bore~~hole so an accurate surveyed location can be recorded.

SWMU # 30 - FAT A & B:

Surface soil samples will be collected in areas with a potential for contamination and outside the containment berm. Three SURFACE soil samples are proposed, one at each accessible direction around the containment. Surface soil samples will be collected using the procedures outlined in Section 5.7.2. Soil samples collected within this SWMU will be analyzed for the project parameters listed in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP.

All ~~boreholes~~ SAMPLING HOLES will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW Will be handled as described in Section 5.5.3. The ~~borehole~~ SAMPLING HOLE will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED ~~bore~~hole so an accurate surveyed location can be recorded.

5.9.8 SWMU Group H

SWMU Group H consists of the following SWMUs:

- SWMU #46 - Injection Well 2;
- SWMU #47 - Injection Well 4;
- SWMU #48 - Injection Well 5; and,
- SWMU #49 - Injection Well 6.

THE INJECTION WELLS THAT COMPRISE THIS SWMU GROUP ARE USED TO INJECT FILTERED ACID WASTES AND BRINES INTO THE MT. SIMON SANDSTONE AT DEPTHS GREATER THAN 2,000 FEET BELOW GROUND SURFACE. ACIDS, D004-D011 METALS, AND VOCS ARE THE POTENTIAL WASTE CONSTITUENTS THAT HAVE BEEN IDENTIFIED AS PART OF THIS SWMU GROUP. BASED ON THE HISTORICAL RECORD AND THE ABOVE POTENTIAL CONSTITUENTS, SAMPLES WILL BE COLLECTED AT SELECTED LOCATIONS TO CHARACTERIZE THE IMPACT TO SOIL, IF ANY. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

~~These SWMUs are grouped together due to the similar manner of operation.~~

Surface soil samples will be collected around each injection well to CONFIRM THAT NO ~~determine if any~~ surface spills have occurred and impacted surface soils around the SWMUs. Figure 5-13 presents the proposed soil sampling locations for SWMU Group H. The soil samples will be located in areas with the potential for contamination. One surface soil samples will be collected at each of the injection wells. Surface soil samples will be collected using the procedures outlined in Section 5.7.2. Soil samples collected within this SWMU will be analyzed for the project parameters described in Section 1.4.2. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP.

All ~~boreholes~~ SAMPLING HOLES will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The ~~borehole~~ SAMPLING HOLE will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED ~~bore~~hole so an accurate surveyed location can be recorded.

5.9.9 SWMU Group I

SWMU Group I consists of the following SWMUs:

- SWMU #15 - Oil Recovery Area;
- SWMU #18 - FORMER W-TANKS;
- SWMU #20 - Lab Waste Tank;
- SWMU #28 - Sluice Pit;
- SWMU #41 - PCB Storage Area;
- SWMU #42 - Maintenance Waste Oil Tank (Closed);
- SWMU #43 - Sanitary Wastewater Treatment Facility;
- SWMU #44 - Truck Unloading Facility Cesspit; and,
- SWMU #45 - Maintenance Building Cesspit.

The above grouping of SWMUs are considered to be independent of each other. Therefore, these SWMUs will be described individually, with separate sampling and analytical procedures as presented in the following sections.

5.9.9.1 SWMU #15 - Oil Recovery Area

The oil recovery area was used to recover oil bearing wastewaters and light oil sludges which were mixed and sent to an oil/water separator. The recovered oil was stored in tanks. CYANIDE, PCBs, D004-D011 METALS, PAHs AND VOCs ARE THE POTENTIAL WASTE CONSTITUENTS THAT HAVE BEEN IDENTIFIED AS PART OF THIS SWMU. The wastewater was transferred to a pretreatment system prior to disposal in the injection wells. The decommissioning of the facility was completed in 1985. The contents of the oil recovery area was either placed in the temporary waste pile or sent offsite for disposal. PCBs were discovered

throughout the oil recovery area and soils were removed. Soil sampling determined that no other contamination existed. Twelve soil samples will be collected within the area of this SWMU based on a systematic grid BASED ON ~~at~~ 100-foot centers. ~~Figure 5-14 presents~~ the proposed soil sampling locations in SWMU #15~~ - Oil Recovery Area~~ ARE PRESENTED IN FIGURE 5-14.

The sampling proposed for this SWMU is based on the fact that remediation activities have been performed and that the soil sampling conducted within this SWMU is with the intent of confirming the remediation activities. The remediation efforts involved the excavation of grossly contaminated soils. However, there remains a possibility that some residual contamination still may exist. If residual contamination does indeed exist in this area, then the most likely location for this is the fill/in-situ soil interface. Soils collected during this phase of sampling will be collected in order to determine if the remediation of soils was adequate. It is also anticipated, due to the well documented geologic and hydrogeologic characteristics of the glacial soils at the site, that the migration of contaminants below 2 feet is highly unlikely (i.e., lacustrine soils with high clay content EXIST). Subsurface soil samples will be collected IN A SIMILAR MANNER AS ~~using the procedures~~ outlined in Section 5.7.1.1 FROM A DEPTH OF 2 TO 4 FEET BGS. Soil samples collected within this SWMU will be analyzed for the project parameters described in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

All boreholes will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The borehole will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED borehole so an accurate surveyed location can be recorded.

5.9.9.2 SWMU #18 - FORMER W-TANKS

THE FORMER W-TANKS WERE "CLEAN-CLOSED" IN 1992 AND USED TO STORE AQUEOUS WASTES, OILY WASTES, ODOROUS WASTES AND PHENOLIC WASTE PRIOR TO TREATMENT. DURING THE "CLEAN-CLOSURE" OF THE UNIT, SAMPLES WERE COLLECTED TO CHARACTERIZE THE SOILS.

SOILS DATA FROM THE "CLEAN-CLOSURE" WILL BE SUBMITTED IN THE PHASE I RFI REPORT. NO SAMPLES ARE PROPOSED.

5.9.9.3 SWMU #20 - Lab Waste Tank

The lab waste tank is a 2,500 gallon capacity polyethylene underground storage tank (UST) which receives lab wastes and unused portions of samples taken from tanker trucks. The tank is regularly pumped out for deep well injection. This tank sits in a concrete vault measuring 9 feet wide by 9 feet long by 9 feet deep. The concrete is 8 inches thick along the walls and the base. THE LAB WASTE TANK IS ACTIVE AND USED TO STORE UNUSED TANKER SAMPLES AND LAB WASTES PRIOR TO DISPOSAL. NO F-SOLVENTS ARE STORED IN THIS TANK. PCBS, PAHS, D004-D011 METALS, PHENOLS AND VOCS ARE THE POTENTIAL WASTE CONSTITUENTS THAT HAVE BEEN IDENTIFIED AS PART OF THIS SWMU. BASED ON THE HISTORICAL RECORD AND THE ABOVE POTENTIAL CONSTITUENTS, A SAMPLE WILL BE COLLECTED TO CONFIRM THERE HAS BEEN NO RELEASE TO THE SOILS. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

One soil sample will be collected just below the base of the concrete vault at an approximate depth of ten feet bgs ~~below ground surface~~ in the downgradient direction of groundwater flow within the lacustrine soils to CONFIRM ~~determine if~~ there HAVE ~~has~~ been NO RELEASES. ~~a release.~~ Soil sampling location may have to modified in the field due to the proximity of other structures in the area of this SWMU. ~~Figure 5-15 presents~~ The proposed soil sampling location for SWMU #20 IS PRESENTED IN FIGURE 5-15. ~~- Lab Waste Tank~~. The soil sample will be

collected IN A SIMILAR MANNER AS ~~using the procedures~~ outlined in Section 5.7.1.2. PRIOR TO SAMPLING THE BOREHOLE WILL BE ADVANCED TO A DEPTH OF 7 FEET. THEN CONTINUOUS CORES WILL BE COLLECTED UNTIL BOREHOLE TERMINATION AS DESCRIBED IN SECTION 5.7.1.2.

Soil samples collected within this SWMU will be analyzed for the project parameters described in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP.

All boreholes will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The borehole will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED borehole so an accurate surveyed location can be recorded.

5.9.9.4 <u>SWMU #28 - Sluice Pit</u>

THE SLUICE PIT IS INACTIVE, BUT IT IS NOT CLOSED. THE SLUICE PIT IS AN UNDERGROUND STORAGE TANK THAT WAS USED TO HOLD THE ACIDIC RINSE WATER DERIVED FROM THE BACKFLUSHING OF THE LEAF FILTERS. VARIOUS ACIDS AND D004-D011 METALS ARE THE POTENTIAL WASTE CONSTITUENTS THAT HAVE BEEN IDENTIFIED AS PART OF THIS SWMU. BASED ON THE HISTORICAL RECORD AND THE ABOVE POTENTIAL CONSTITUENTS, SAMPLES WILL BE COLLECTED TO CHARACTERIZE THE IMPACT TO THE SOILS, IF ANY. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

FOUR subsurface soil samples will be collected in each direction around the unit, below the base of the concrete box associated with the unit. ~~This SWMU was used as a holding tank for waste~~

~~liquid during the back washing of the leaf filters.~~ The potential for migration to the soil exists around this unit due to the fact that the steel berm inside the pit showed signs of corrosion and soils have been documented as stained outside the berm. Subsurface soil samples will be collected IN A SIMILAR MANNER AS ~~using the procedures~~ outlined in Section 5.7.1.2. ~~Figure 5-16 presents~~ The proposed soil sampling locations for SWMU #28 ARE PRESENTED IN FIGURE 5-16. ~~Sluice Pit~~. Soil samples collected within this SWMU will be analyzed for the project parameters described in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP.

All boreholes will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The borehole will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED borehole so an accurate surveyed location can be recorded.

5.9.9.5 SWMU #41 - PCB Storage Area

THE DRUM STORAGE PAD IS ACTIVE AND USED AS A 90 DAY STORAGE AREA. DRUMS OF FILTERS, FILTERED MATERIALS AND SOLIDS ARE STAGED IN THIS AREA TO AWAIT SHIPMENT TO THE OFF-SITE DISPOSAL FACILITY. VARIOUS ACIDS, D004-D011 METALS, PHENOLS AND VOCS ARE THE POTENTIAL WASTE CONSTITUENTS THAT HAVE BEEN IDENTIFIED AS PART OF THIS SWMU. BASED ON THE HISTORICAL RECORD AND THE ABOVE POTENTIAL CONSTITUENTS, SAMPLES WILL BE COLLECTED TO CHARACTERIZE THE IMPACT TO THE SURFACE SOILS, IF ANY. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

THREE surface soil samples will be collected within the SWMU in the direction of surface water run-off. The surface soil sample will be collected using the procedures outlined in Section 5.7.2.

~~Figure 5-17 presents~~ The proposed soil sampling locations for SWMU #41 ARE PRESENTED IN FIGURE 5-17. ~~PCB Storage Area~~. Soil samples collected within this SWMU will be analyzed for Appendix IX PCBs as described in Table 1-4 OF ~~in~~ the QAPjP.

All ~~boreholes~~ SAMPLING HOLED will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The ~~borehole~~ SAMPLING HOLES will then be abandoned as described in Section 5.7.2 ~~8~~. A survey stake marked with a unique identification number will be placed in the ABANDONED ~~bore~~hole so an accurate surveyed location can be recorded.

5.9.9.6 SWMU #42 - Maintenance Waste Oil Tank (Closed)

THE WASTE OIL LUBE TANK HAS BEEN CLOSED AND REMOVED. WHILE IN SERVICE, THE WASTE OIL LUBE TANK RECEIVED WASTE LUBE OIL DERIVED FROM THE ON-SITE MACHINERY. VOCs, SVOCs AND TPH ARE THE POTENTIAL WASTE CONSTITUENTS THAT HAVE BEEN IDENTIFIED AS PART OF THIS SWMU. BASED ON THE HISTORICAL RECORD AND THE ABOVE POTENTIAL CONSTITUENTS, SAMPLES WILL BE COLLECTED. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

TWO soil samples will be collected from THIS ~~one~~ location to confirm that no residual contamination remains in this area. This SWMU was removed in 1992, however no documentation exists on the characterization of the soil under the location of the tank. One soil sample will be collected at the lowest surface elevation in the area of the former tank, and another soil sample will be collected at a depth between 2 - 4 feet below the ground surface. ~~Figure 5-18 presents~~ The proposed soil sampling locations for SWMU #42 ARE PRESENTED IN FIGURE 5-18. ~~Maintenance Waste Oil Tank (Closed)~~. Soil samples will be collected IN A SIMILAR MANNER AS ~~using the procedures~~ outlined in Section 5.7.1.2 AND EXCEPT THAT

ONLY TWO SAMPLES WILL BE COLLECTED. BOTH Soil samples collected within this SWMU will be analyzed for VOCs, SVOCs, ~~BTEX, carcinogenic PAHs,~~ PCBs, ~~and~~ metals.

All boreholes will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The borehole will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED borehole so an accurate surveyed location can be recorded.

5.9.9.7 SWMU #43 - Sanitary Wastewater Treatment Facility

THE WASTEWATER TREATMENT PLANT TREATS SEPTIC WASTES PUMPED OUT OF THE CESSPITS LOCATED AT THE MAINTENANCE BUILDING AND THE TRUCK UNLOADING FACILITY. SEPTIC WASTE IS THE CONSTITUENT THAT HAVE BEEN IDENTIFIED AS PART OF THIS SWMU. BASED ON THE HISTORICAL RECORD AND THE ABOVE POTENTIAL CONSTITUENTS, SAMPLES WILL BE COLLECTED TO CHARACTERIZE THE IMPACT TO THE SURFACE SOILS, IF ANY. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

Two soil samples will be collected beneath the base of the two series of vaults in the downgradient direction of groundwater flow in the lacustrine soils. Figure 5-19 presents the proposed soil sampling location for SWMU #43. Subsurface soil will be collected IN A SIMILAR MANNER AS ~~using the procedures~~ outlined in Section ~~5.7.1.2~~5.7.1.2. The soil samples collected within this SWMU will be sent to the laboratory for the analysis of VOCs, SVOCs, METALS AND CHLORIDE ~~fecal coliform~~ in the soil at the base of the vault. The CHLORIDE ~~fecal coliform~~ analysis will be used as an indicator to CONFIRM ~~determine if~~ the sanitary wastewater treatment facility has NOT leaked.

All boreholes will be abandoned upon completion within a 12-hour time period. All IDW

accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The borehole will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED borehole so an accurate surveyed location can be recorded.

5.9.9.8 SWMU #44 and 45 - Truck Unloading Facility and Maintenance Building Cesspits

THESE CESSPITS ARE LOCATED AT THE MAINTENANCE BUILDING AND THE TRUCK UNLOADING FACILITY. SEPTIC WASTE IS THE CONSTITUENT THAT HAS BEEN IDENTIFIED AS PART OF THIS SWMU. BASED ON THE HISTORICAL RECORD AND THE ABOVE POTENTIAL CONSTITUENT, SAMPLES WILL BE COLLECTED. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

One soil sample will be collected beneath the base each of the Maintenance Building Cesspit and the truck unloading building cesspit. ~~Figure 5-20 presents~~ The proposed soil sampling locations for SWMU #44 and #45 ARE PRESENTED IN FIGURE 5-20. Subsurface soil will be collected IN A SIMILAR MANNER AS ~~using the procedures~~ outlined in Section ~~5.7.1.2~~5.7.1.2. The soil samples collected from within SWMU #44 and 45 will be sent to the laboratory for the analysis of VOCs, SVOCs, CHLORIDE AND METALS ~~fecal coliform~~ within the soil at the base of the pits. The CHLORIDE ~~fecal coliform~~ analysis will be used as an indicator to CONFIRM ~~determine if~~ the cesspits have NOT leaked.

All boreholes will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The borehole will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED borehole so an accurate surveyed location can be recorded.

5.10 AOC Soil Sampling Activities

5.10.1 AOC A - Maintenance Tanks

There are 30 empty emergency tanks located across the facility along the above ground transfer piping. These tanks are between 500 - 1,000 gallons in capacity and in some places they are housed in concrete vaults. The tanks are used TO STORE FILTERED ACIDIC WASTE when the transfer piping needs to be drained in times of emergency power outages or repairs. According to the facility's operational record, none of these tanks have had a release and some have never been used. ACIDS, D004-D011 METALS, AND VOCs ARE THE POTENTIAL WASTE CONSTITUENTS THAT MAY BE ASSOCIATED WITH THIS AOC. In order to characterize these tanks one sample will be collected from the surface soil around each of the tanks. Surface soil samples will be collected using the procedures outlined in Section 5.7.2. Surface soil samples collected within this SWMU will be analyzed for the project parameters described in SECTION 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP. ~~Figure 5-21 presents~~ the locations of the transfer pipeline maintenance tanks ARE PRESENTED IN FIGURE 5-21. ~~and figure 5-26 presents.~~ The locations of the soil sampling locations ARE PRESENTED IN FIGURE 5-26. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI TO RECOMMEND AN APPROPRIATE CMS, IF NECESSARY.

All ~~boreholes~~ SAMPLING HOLES will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The ~~borehole~~ SAMPLING HOLE will then be abandoned as described in Section 5.7.2 ~~8~~. A survey stake marked with a unique identification number will be placed in the ABANDONED ~~bore~~hole so an accurate surveyed location can be recorded.

5.10.2 AOC B - North Parking Lot - Truck Unloading Facility

This area was identified as an AOC during the RFA Visual Site Investigation performed by Jacobs Engineering. They identified seven roll-off boxes located on the soil south of the 90-day Drum Storage Pad. In addition, approximately 100 small drums were found on the pavement at the northwest corner of the parking lot. ACIDS, D004-D011 METALS, PCBs AND VOCs ARE THE POTENTIAL WASTE CONSTITUENTS ASSOCIATED WITH THIS AOC. In order to characterize this AOC, two surface soil samples will be collected in the two areas identified above: the soil south of the 90-day Drum Storage Pad; and on the grassy area in the northwest corner of the parking lot. The sampling locations are based on surface drainage patterns. ~~Figure 5-22 indicates~~ The approximate areas of concern and ~~presents~~ the proposed soil sampling locations in AOC B ARE PRESENTED IN FIGURE 5-22. The surface soil samples will be collected using the procedures outlined in Section 5.7.2. Soil samples collected within this SWMU will be analyzed for the project parameters listed in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

All ~~boreholes~~ SAMPLING HOLES will be abandoned upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The ~~borehole~~ SAMPLING HOLE will then be abandoned as described in Section 5.7.2 ~~8~~. A survey stake marked with a unique identification number will be placed in the ABANDONED ~~bore~~hole so an accurate surveyed location can be recorded.

5.10.3 AOC C - Pug Mill Staging Area (Hay Mill)

The Hay Mill area consists of concrete foundations from a farm house and silos, and is located west of Injection Well 5. This area was identified due to the Pug Mill or sludge fixing equipment ~~is~~ stored at this location. The Pug Mill is documented within the facility's operation record as

being decontaminated. THE PUG MILL WAS USED TO SOLIDIFY AND FIX SLUDGES. In order to characterize this AOC one surface soil sample will be collected under the stored equipment. This sample will be collected at the most potentially contaminated location. ~~Figure 5-23 presents~~ The proposed soil sampling locations in AOC C ARE PRESENTED IN FIGURE 5-23. THE surface soil sample will be collected using the procedures outlined in Section 5.7.2. THE soil samples collected within this SWMU will be analyzed for the project parameters listed in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included ON ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

All boreholes will be ABANDONED upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The borehole will then be abandoned as described in Section 5.8. A survey stake marked with a unique identification number will be placed in the ABANDONED borehole so an accurate surveyed location can be recorded.

5.10.4 AOC D - Borrow Pit #1

Borrow Pit #1 was located to the west of former Surface Impoundment 12. It was created as a borrow pit for soils to be used to increase the height of the dikes for Surface Impoundments 11 and 12. This area was identified due to the previous demolition debris staging area on the north side of the pit. The entire area has been part of the "clean-closure" of Surface Impoundments 11 and 12. Soil samples have been collected as part of this interim remedial activity. ~~and~~ The OEPA approved THE "CLEAN-CLOSURE" OF SURFACE IMPOUNDMENT 11 AND 12. NO SOIL SAMPLES ARE PROPOSED AT THIS AOC. ~~the certification. The soil samples collected as part of the closure activity will be reviewed and the results will be provided as part of the RFI Report. No additional soil samples are proposed for this AOC.~~

5.10.5 AOC E - Borrow Pit #2

Borrow Pit #2 was initially excavated to provide clay and fill material for the closure of Surface Impoundments 4, 5 and 7 in 1985. Clay and fill material from the pit was used for the closure of several other areas as the need for fill continued across the site. The pit was enlarged further

when clay was used for the capping of the TSCA Closure Cell. After the remedial activities were completed, Borrow Pit #2 was allowed to fill with surface water run-off and is now used as a wildlife habitat. Surface water entering this area is from the LARGE ~~big~~ field south of borrow pit #2 and west of the main facility operations area. Flow control gates from the surface water management system prevent releases of waste from entering the borrow pit area. No SAMPLING IS ~~samples are~~ proposed AT ~~for~~ this AOC.

5.10.6 AOC F - Truck Sampling Area and Inspection Bay Collection Tank

This AOC consists of the truck sampling area, the scale, receiving trailer, and an underground storage tank which is housed within a concrete vault, ~~which~~ THAT is used to collect rain and snowmelt from under the covered truck sampling area. The rain and snowmelt collected under the scale is diverted to the ditching system. VARIOUS ACIDS, D004-D011 METALS, PHENOLS AND VOCs ARE POTENTIAL WASTE CONSTITUENTS IN THIS AREA. BASED ON THE HISTORICAL RECORD AND THE ABOVE POTENTIAL CONSTITUENTS, one surface soil sample will be collected at the location where run-off from the scale is diverted to the surface drainage ditch system. This sample will be collected at the most potentially contaminated location. ~~Figure 5-24 presents~~ The proposed soil sampling location in AOC F IS PRESENTED IN FIGURE 5-24. A surface soil SAMPLE ~~samples~~ will be collected using the procedures outlined in Section 5.7.2. A soil SAMPLE ~~samples~~ WILL BE collected within this SWMU ~~will be analyzed~~ for the ANALYSIS OF THE project parameters listed in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP.

SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

All ~~boreholes~~ SAMPLING HOLES will be ABANDONED upon completion within a 12-hour time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section

5.5.3. The ~~borehole~~ SAMPLE HOLE will then be abandoned as described in Section 5.7.2~~-8~~. A survey stake marked with a unique identification number will be placed in the ABANDONED ~~bore~~hole so an accurate surveyed location can be recorded.

5.10.7 AOC G - Roll-Off Staging Pad

This AOC consists of the area where roll-off containers which contain sludge from the filter press building are staged. These roll-offs are removed for off-site disposal. The roll-off pad was built in 1991 with concrete berms to surround the pad. No known releases are documented to have occurred around the roll-off pad. No samples are proposed for this AOC.

5.10.8 AOC H - Facility Aboveground Transfer Piping

Aboveground transfer piping exists across the entire facility. This piping transfers wastes from the T-Tanks to each of the injection wells, through each of the FATs. ACIDS, D004-D011 METALS, PHENOLS AND VOCs ARE POTENTIAL WASTE CONSTITUENTS IN THIS AOC. Five releases have been documented to have occurred along the aboveground transfer piping since 1993. ALL OF THESE RELEASES WERE REMEDIATED AFTER THEIR OCCURRENCES. These incidents are presented on Figure 5-25. Surface soil samples will be collected as described in Section 5.7.2 AND under the above ground piping at each of the release areas as presented on Figure 5-26. Additional sediment samples will be collected IN ~~along~~ Meyer's Ditch ending at the final flow control gate before entering Little Raccoon Creek. Sediment samples will be collected using the procedures outlined in Section 5.7.3.

Soil samples collected within this SWMU will be analyzed for the project parameters described in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

All ~~boreholes~~ SAMPLING HOLES will be ABANDONED upon completion within a 12-hour

time period. All IDW accumulated during drilling, will be containerized, handled and disposed in accordance with all applicable regulations. All IDW will be handled as described in Section 5.5.3. The ~~borehole~~ SAMPLE HOLE will then be abandoned as described in Section 5.7.2.~~8~~. A survey stake marked with a unique identification number will be placed in the ABANDONED ~~bore~~hole so an accurate surveyed location can be recorded.

5.10.9 AOC I - Remaining Underground Piping

A review of the facility records document underground piping located across the facility AT AN APPROXIMATE DEPTH OF 4 FEET BGS. Most of this piping, if not all, is believed to have been removed. In order to document that the underground piping has been removed, a search of facility records which document locations of underground piping will be completed and a pilot test Using Ground Penetrating Radar (GPR) will be conducted. This pilot test will be completed in an area where underground piping is known to exist. This pilot test will be complete in order to determine if the natural soils (CLAYS) have a masking affect on the return echos from the test.

The GPR pilot test area will be west of the truck unloading facility where an abandoned underground pipeline is known to exist. The test area will be set up using an equally spaced grid. Geophysical Survey Systems, Inc. will be retained to conduct the pilot test. Test pits will be excavated to provide a source characterization in the areas where evidence of underground piping exists or once existed, if the GPR does not provide the needed data. The test pits will BE COMPLETED TO A DEPTH OF 6 FEET BGS. THIS WILL allow FOR sampling and direct visual characterization of any residual wastes which may be present and assessment of the condition of the underground piping. ~~, if found. Figure 5-28 presents~~ THE locations of possible underground piping on the site ARE PRESENTED ON FIGURE 5-28. IF RESIDUAL WASTE IS ENCOUNTERED WITHOUT PIPING, SAMPLES WILL BE COLLECTED FROM THE RESIDUAL WASTE AND THE SOILS BELOW.

The tests pits will be excavated with a standard backhoe. The final orientations and dimensions of test pits will be determined in the field based on observed conditions. Minimum test pit dimensions will be approximately 12 feet x 4 feet x 6 feet (length x width x depth).

Two grab SOIL samples will be collected from ~~the soils excavated from~~ each of the test pits

which uncover buried lines. ONE soil SAMPLE will be collected on the walls of the test pit and ANOTHER ONE AT 2 feet below the uncovered underground piping. For sample parameters other than VOCs, the grab samples will be COMPOSITED ~~placed~~ in a stainless steel mixing bowl. ~~to form one sample from each test pit for analysis.~~ The SOIL ~~samples~~ will be MIXED ~~combined by mixing~~ with a stainless steel spoon OR SPATULA until the soil sample is as homogeneous as possible. The sample will then be quartered and the appropriate sample jars will be filled. A discrete VOC sample will be collected from each test pit prior to collecting samples for the other parameters. Soil samples collected within this SWMU will be analyzed for the project parameters described in Section 1.4.2 of the QAPjP. The list of compounds IS ~~are~~ included IN ~~at~~ Tables 1-4 through 1-8 OF ~~in~~ the QAPjP. SOIL SAMPLING WILL ALSO SUPPORT THE GROUNDWATER ASSESSMENT. IF SOIL SAMPLE RESULTS INDICATE THE NEED FOR ADDITIONAL GROUNDWATER ASSESSMENT, FURTHER CHARACTERIZATION OF THE GROUNDWATER WILL BE COMPLETED AS PART OF THE PHASE II RFI. ALL DATA COLLECTED WILL BE USED TO SUPPORT A QUANTITATIVE RISK ASSESSMENT AT THE COMPLETION OF THE PHASE II RFI.

5.10.10 AOC J - AREA AROUND MONITORING WELL L-19

THE AREA AROUND MONITORING WELL L-19 HAS HAD AN HISTORICAL PRESENCE OF 1,2-DICHLOROETHANE IN THE GROUNDWATER WITHIN THE WELL. THIS CONTAMINANT, HOWEVER, HAS NOT MIGRATED FROM THIS LOCATION. INVESTIGATIONS HAVE BEEN COMPLETED TO DOCUMENT AND DETERMINE THE EXTENT OF THIS CONTAMINANT. HISTORICAL SAMPLING DATA WILL BE VALIDATED AND SUBMITTED IN THE PHASE I RFI. NO SAMPLING IS PROPOSED.

5.11 ~~Group B~~ PHASE I RFI Groundwater Sampling

CHARACTERIZATION OF THE GROUNDWATER IN PHASE I WILL BE COMPLETED BY THE VALIDATION OF RECENT HISTORICAL DATA SUPPORTED BY THE COLLECTION OF GROUNDWATER SAMPLES FROM THE FOLLOWING ON-SITE GROUNDWATER MONITORING WELLS:

- MW-24R - UPGRADIENT;
- MW-15R - DOWNGRADIENT;

- MW-14R - DOWNGRADIENT;
- MW-20R - DOWNGRADIENT; AND,
- MW-22R - DOWNGRADIENT.

ADDITIONALLY, a groundwater sample~~s~~ will be collected from the capillary drain which is used as an underdrain for the TSCA closure cell. The intent of collecting this aqueous sample is that the water collected from the capillary drain is groundwater derived from SOILS UNDER the ~~former~~ SPECIFIC SWMUs in ~~this~~ Group B.

The samples ~~will be collected~~ from the capillary drain WILL BE COLLECTED through the capillary drain piping system which discharges into a sump. The sump is located centrally on the north side of the TSCA CLOSURE cell. There are two pipes, one running west to east to the sump and one running east to west to the sump. Volatile organic samples will be filled directly from the two pipes. The other sample bottles will be filled by ~~first~~ collecting the sample in ~~a stainless steel~~ beaker and THEN pouring the contents into the sample bottles.

GROUNDWATER SAMPLES WILL BE COLLECTED USING THE SAMPLING PROCEDURES DESCRIBED IN THE FACILITY GROUNDWATER SAMPLING PLAN (APPENDIX D).

THE GROUNDWATER MONITORING WELLS PROPOSED FOR SAMPLING ARE LOCATED IN AN AREA FAVORABLE TO CHARACTERIZING THE GROUNDWATER WITHIN THE MAIN FACILITY AREA.

The order of sampling will be the same as described in the facility groundwater sampling plan for the Part B Permit (APPENDIX C). ~~Any samples which need filtering will be done so in accordance with the facility's groundwater sampling plan for the Part B Permit (Section 6.5.4).~~ BASED ON PAST GROUNDWATER SAMPLING ACTIVITIES, TOTAL AND DISSOLVED METALS WILL BE COLLECTED AND ANALYZED DUE TO THE BACKGROUND GROUNDWATER QUALITY IN THE VICINITY OF THE CWM VICKERY FACILITY. DISSOLVED METALS WILL BE COLLECTED BY FILTERING THE WATER IN THE SAME MANNER DESCRIBED IN THE FACILITY'S GROUNDWATER MONITORING PLAN (APPENDIX C).

FIGURES

RUST ENVIRONMENT & INFRASTRUCTURE

Chain of Custody Record

Custody Seal #	RUST E&I Cooler #

Project Number	Project Name/Client
Samplers: (Signature)	

Item No.	Sample Description (Field ID Number)	Date	Time	Grab	Comp.	Lab Sample Number	Container Number	Analysis Required														Matrix: Sample Type					Matrix: Sample Container				
1																															
2																															
3																															
4																															
5																															
6																															
7																															
8																															
9																															
10																															
11																															
12																															
13																															
14																															
15																															
16																															
17																															
18																															
19																															
20																															

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Disposed of by: (Signature)	Items:	Date/Time
Relinquished by: (Signature)	Date/Time	Received by: (Signature) (Laboratory)	Disposed of by: (Signature)	Items:	Date/Time

Send Lab Results To:	Remarks:	Check Delivery Method:	Laboratory Receiving Notes:
	Federal Express Airbill No.: Lab:	☐ Samples delivered in person ☐ Common carrier ☐ Mail	Custody Seal Intact? Temp. of Shipping Container: Sample Condition:

Rev. 4/93 White Copy – Lab Yellow Copy – File Pink Copy – Client

P514/Earth Sci

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE		DRN BY	APP BY

DATE: APRIL, 1995		PROJECT NO. 38627	SCALE
DES BY	RSZ	PROJECT: RCRA FACILITY INVESTIGATION	
DRN BY	JAT		
CHK BY	RAL	SHEET TITLE: CHAIN OF CUSTODY RECORD FORM	
REV BY			
APP BY			

Chemical Waste Management, Inc.
Vickery, Ohio

SHEET ___ OF ___

DRAWING NO

FIGURE 5-1

QUALITY CONTROL REPORT

RUST ENVIRONMENT & INFRASTRUCTURE

PAGE ____ of ____

DAILY QUALITY CONTROL REPORT

JOB NUMBER _____ DATE _____ REPORT NUMBER _____

PROJECT & LOCATION _____

WEATHER _____ TEMPERATURE RANGE _____ WIND _____

SEC PERSONNEL ON SITE _____ TIME ON SITE _____

SUMMARY OF SITE ACTIVITIES _____

LEVEL OF HEALTH & SAFETY PROTECTION _____

INSTRUMENTATION USED _____

CALIBRATION(S) PERFORMED _____

INSTRUMENT PROBLEMS/REMEDIES _____

SAMPLES COLLECTED* _____

SAMPLE COLLECTION METHOD(S) _____

QUALITY CONTROL SAMPLES** _____

ADDITIONAL REMARKS _____

* INDICATE SAMPLE MEDIA: GROUND WATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, BLANK; AND SAMPLE I.D. NUMBERS.

SIGNATURE: _____

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE	DESCRIPTION	DRN BY	APP BY

DATE:	APRIL, 1995	PROJECT NO. 38627	SCALE:
DES BY	RSZ	PROJECT: RCRA FACILITY INVESTIGATION	
DRN BY	JAT		
CHK BY	RAL	SHEET TITLE: QUALITY CONTROL REPORT FORM	
REV BY			
APP BY			

Chemical Waste Management, Inc.
Vickery, Ohio

SHEET ____ OF ____

DRAWING NO.

FIGURE 5-2

RUST ENVIRONMENT & INFRASTRUCTURE

BOREHOLE LOG

SITE NAME AND LOCATION:	DRILLING METHOD:	BORING NO.
		SHEET:
	SAMPLING METHOD:	DRILLING
		START / FINISH
	WATER LEVEL	TIME / TIME
	TIME	
	DATE	DATE / DATE
DATUM: ELEVATION:	CASING DEPTH	
DRILL RIG:	SURFACE CONDITIONS:	
ANGLE: BEARING:		
SAMPLE HAMMER WEIGHT:		

DEPTH IN FEET	BLOWS / 6 IN. ON SAMPLER	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	DEPTH IN FEET	RECOVERY	PID READINGS	DESCRIPTION OF OPERATION AND REMARKS
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

DRILLING CONTR: _____

LOGGED BY: _____

DATE: _____ CHK'D BY: _____

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE		DRN BY	APP BY

DATE: APRIL, 1995	PROJECT NO. 38627	SCALE: AS SHOWN	
DES BY RSZ	PROJECT: RCRA FACILITY INVESTIGATION		
DRN BY JAT			
CHK BY RAL	SHEET TITLE: BOREHOLE LOG FORM		
REV BY			
APP BY			

Chemical Waste Management, Inc. Vickery, Ohio

SHEET ____ OF ____

DRAWING NO.

FIGURE 5-3

RUST ENVIRONMENT & INFRASTRUCTURE

FIELD ROCK CORE LOG

BORING NO.

SITE: _____

PROJECT NO. _____

Sheet __ of ___

RIG TYPE/MODEL: _____

DRILLING/METHOD: _____

FOREMAN: _____

ASSISTANT(S): _____

GEOL./ENG'R.: _____

WATER LEVEL READINGS

DATE	TIME	DEPTH	
			W.D.
			B.C.R.
			A.C.R.
			HRS. A.D.
			HRS. A.D.

LOCATION (COORDS.): _____

ELEVATION (APP/SURV): _____

DATE START: _____

DATE COMPLETE: _____

LOG BY: _____

GRAPHIC LOG			CORING DATA						ROCK TYPE CODE	ROCK DESCRIPTION	DRILLING COMMENTS
ROCK TYPE	FRACTURES	DEPTH IN FEET	RUN NO.	LENGTH	MPF	% WATER GAIN/LOSS	% RECOVERY	% REQUIRED			

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE	DESCRIPTION	DRN BY	APP BY

DATE: APRIL, 1995		PROJECT NO. 38627	SCALE:
DES BY	RSZ	PROJECT: RCRA FACILITY INVESTIGATION	
DRN BY	JAT		
CHK BY	RAL	SHEET TITLE: FIELD ROCK CORE LOG FORM	
REV BY			
APP BY			

Chemical Waste Management, Inc.
Vickery, Ohio

SHEET ___ OF ___

DRAWING NO.

FIGURE 5-4

RUST ENVIRONMENT & INFRASTRUCTURE

DAILY PRODUCTION SUMMARY
DRILLING AND WELL INSTALLATION ACTIVITIES

PAGE _____ OF _____

FILE NO. PROJECT LOCATION DATE: _____ TO: _____

BORING NO.	DAILY PRODUCTION FROM:	DAILY PRODUCTION TO:	DATE	MOB./ DEMOB.	HSA FT.	ROTARY FT.	EXTRA S.S.	RISER FT.	SCREEN FT.	COARSE SAND FT.	FINE SAND FT.	PELLETS FT.	GROUT FT.	DECON. HR.	STAND BY HR.	LABOR HR.
PERIODIC SUBTOTALS																
FINAL TOTALS																
UNIT BID PRICES																
$ TOTALS																
EXTENDED TOTAL COST →																

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE	DESCRIPTION	DRN BY	APP BY

DATE:	APRIL, 1995	PROJECT NO. 38627	SCALE:
DES BY	RSZ	PROJECT: RCRA FACILITY INVESTIGATION	
DRN BY	JAT		
CHK BY	RAL	SHEET TITLE: DAILY PRODUCTION SUMMARY DRILLING & WELL INSTALLATION ACTIVITIES FORM	
REV BY			
APP BY			

Chemical Waste Management, Inc.
Vickery, Ohio

SHEET _____ OF _____

DRAWING NO.

FIGURE 5-5

RUST ENVIRONMENT & INFRASTRUCTURE

HEADSPACE ANALYSES

JOB NUMBER _____

PROJECT: _____
CLIENT: _____
LOCATION: _____
INSTRUMENT USED: _____

DATE SAMPLED _____
DATE ANALYZED _____
ANALYST _____

EXPLORATION NUMBER	SAMPLE NUMBER	DEPTH (FT)	SAMPLE TYPE	SAMPLE READING (PPM)*	BACKGROUND READING (PPM)*	AMBIENT AIR TEMP. (F)	REMARKS **

* PPM represents concentration of detectable volatile and gaseous compounds in parts per million of air.

** Indicate time elapsed from sampling or removing samples from cooler.

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE	DESCRIPTION	DRN BY	APP BY

DATE: APRIL, 1995
PROJECT NO. 38627
SCALE:

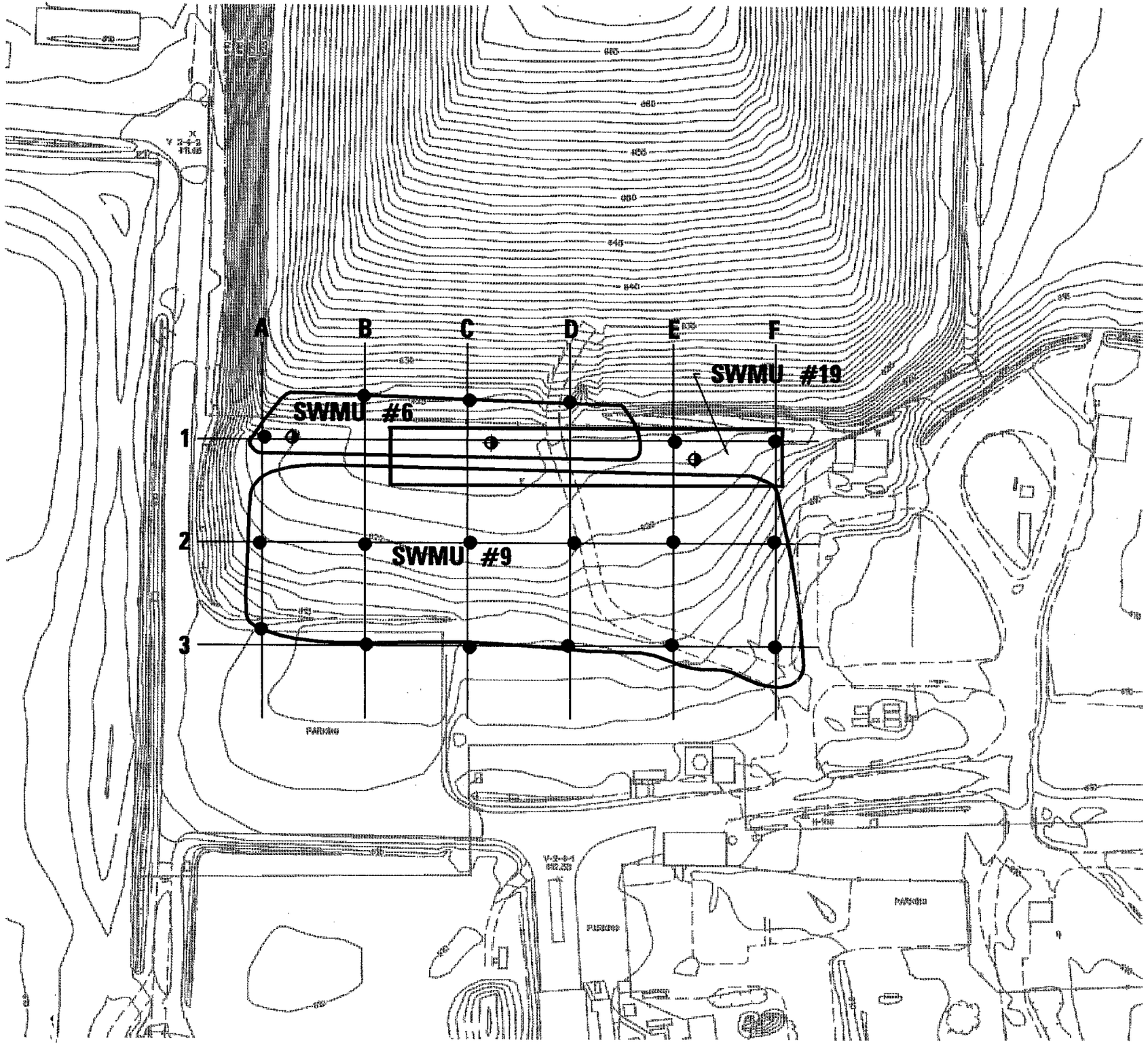
DES BY RSZ
DRN BY JAT
CHK BY RAL
REV BY
APP BY

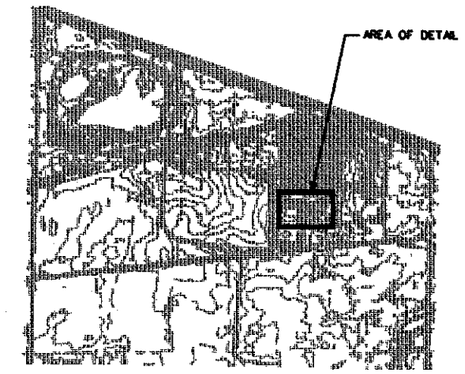
PROJECT: RCRA FACILITY INVESTIGATION

SHEET TITLE: HEADSPACE ANALYSES FORM

Chemical Waste Management, Inc.
Vickery, Ohio

SHEET ____ OF ____
DRAWING NO.
FIGURE 5-6





KEY PLAN

LEGEND

- SOIL SAMPLE LOCATION NODE
- RANDOM SOIL SAMPLE LOCATION

NOTE:

1. TOPOGRAPHIC INFORMATION PREPARED BY AERO-METRIC ENGINEERING, INC.
2. RANDOM SOIL SAMPLE LOCATIONS WILL BE SET IN FIELD.

100' 0 100'

SCALE: 1" = 100'

REV.	DATE		DRN BY	APP BY
1	8/95	REVISED PER USEPA COMMENTS (8/26/95)	JTP	RAL

SIGNATURE

DATE

DATE: APRIL, 1995

DES BY: RSZ
DRN BY: JTP
CHK BY: RAL
REV BY:
APP BY:

PROJECT NO. 38627 SCALE: AS SHOWN

PROJECT: RCRA FACILITY INVESTIGATION

SHEET TITLE: **PROPOSED SOIL SAMPLE LOCATIONS SWMU GROUP C**

CWM Chemical Waste Management, Inc. Vickery, Ohio

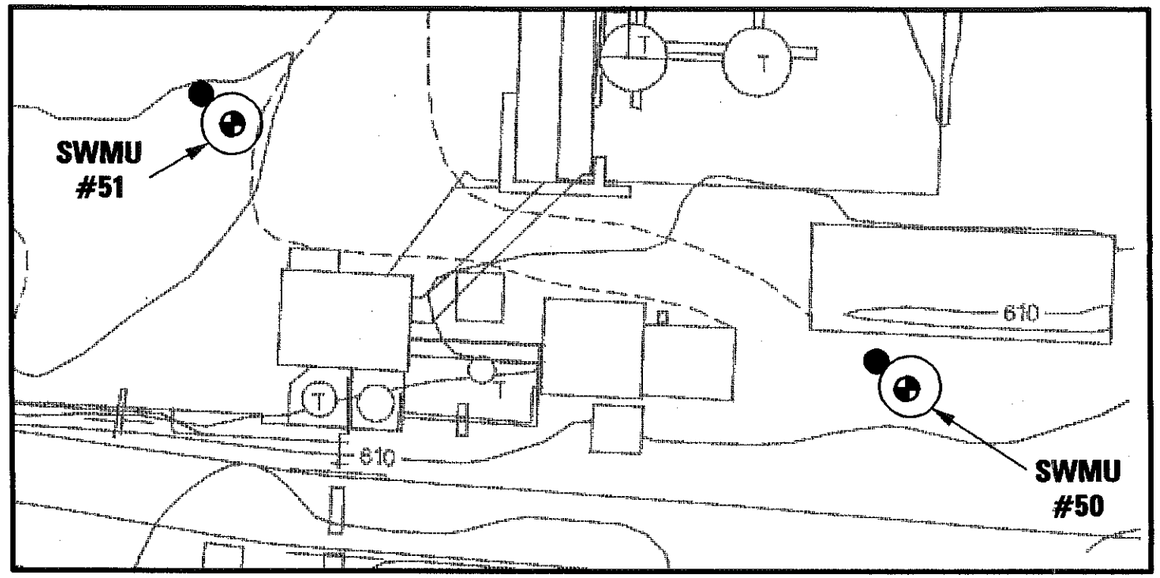
SHEET OF

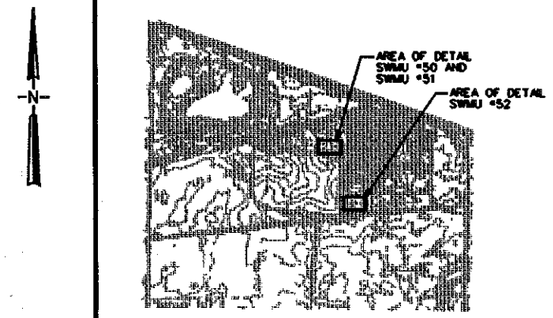
DRAWING NO.

FIGURE 5-8

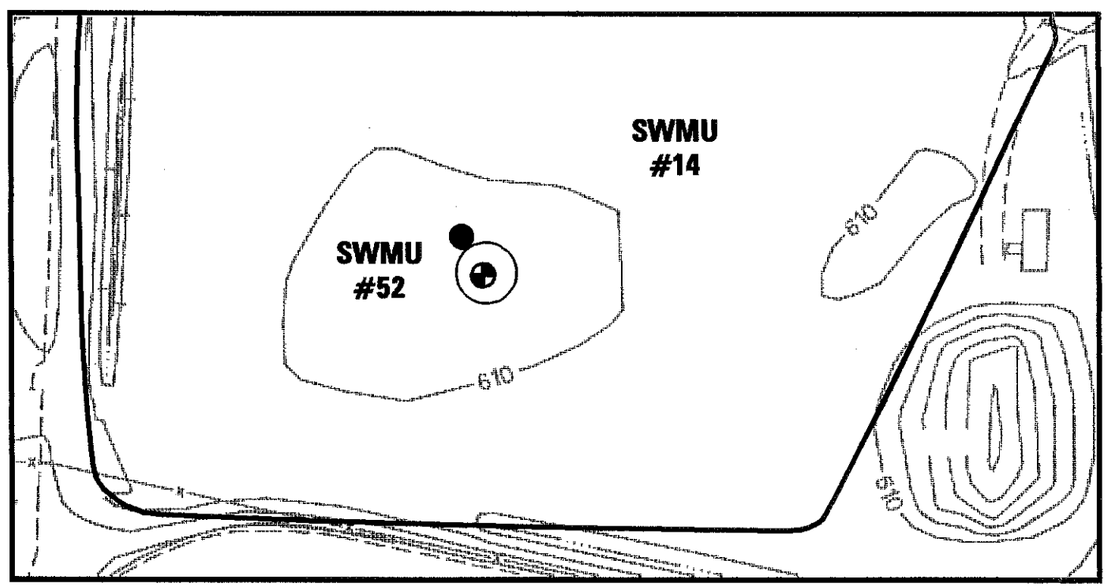
CADD PRODUCED DRAWING

38627S18.DGN





KEY PLAN



LEGEND

- SOIL SAMPLE LOCATION
- APPROX LOCATION OF ABANDONDED INJECTION WELL

NOTE:

1. TOPOGRAPHIC INFORMATION PREPARED BY AERO-METRIC ENGINEERING, INC.
2. SOIL SAMPLE LOCATIONS WILL BE SET IN FIELD.

50' 0 50'

SCALE: 1" = 50'

REV.	DATE		DRN BY	APP BY
1	8/95	REVISED PER USEPA COMMENTS (6/26/95)	JTP	RAL

SIGNATURE

DATE

DATE: APRIL, 1995

PROJECT NO. 38627 SCALE: AS SHOWN

PROJECT: RCRA FACILITY INVESTIGATION

DES BY	RSZ
DRN BY	JTP
CHK BY	RAL
REV BY	
APP BY	

SHEET TITLE: **PROPOSED SOIL SAMPLE LOCATIONS SWMU GROUP E**

CWM
Chemical Waste Management, Inc.
Vickery, Ohio

SHEET OF

DRAWING NO.

FIGURE 5-10

CADD PRODUCED DRAWING

38627e42.DGN

SWMU #41

(SEE FIGURE 5-17)

SWMU #22

SWMU #24

SWMU #26

SWMU #25

SWMU # 21

SWMU # 23

SWMU #51

(SEE FIGURE 5-10)

SWMU #44

(SEE FIGURE 5-20)

SWMU #27

SWMU # 30

SWMU #28

SWMU # 29

SWMU #50

(SEE FIGURE 5-10)

(SEE FIGURE 5-16)

610

N

AREA OF DETAIL

KEY PLAN

LEGEND

SOIL SAMPLE LOCATION

APPROX LOCATION OF ABANDONDED INJECTION WELL

NOTE:

1. TOPOGRAPHIC INFORMATION PREPARED BY AERO-METRIC ENGINEERING, INC.
2. RANDOM SOIL SAMPLE LOCATIONS WILL BE SET IN FIELD.

50' 0 50'

SCALE: 1" = 50'

ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE		DRN BY	APP BY
2	4/96	REVISED PER USEPA COMMENTS (4/28/96)	JTP	RSZ
1	8/95	REVISED PER USEPA COMMENTS (6/26/95)	JTP	RAL

DATE: APRIL, 1995

PROJECT NO. 38627

SCALE: AS SHOWN

PROJECT: RCRA FACILITY INVESTIGATION

DES BY	RSZ
DRN BY	JTP
CHK BY	RAL
REV BY	
APP BY	

SHEET TITLE: **PROPOSED SOIL SAMPLE LOCATIONS SWMU GROUP G**

CWM
Chemical Waste Management, Inc.
Vickery, Ohio

SHEET ___ OF ___

DRAWING NO.

FIGURE 5-12

CADD PRODUCED DRAWING

38627S21.DGN

SWMU #41

(SEE FIGURE 5-17)

SWMU #22

SWMU #24

SWMU #26

SWMU #25

SWMU # 21

SWMU # 23

SWMU #51

(SEE FIGURE 5-10)

SWMU #44

(SEE FIGURE 5-20)

SWMU #27

SWMU # 30

SWMU #28

(SEE FIGURE 5-16)

SWMU # 29

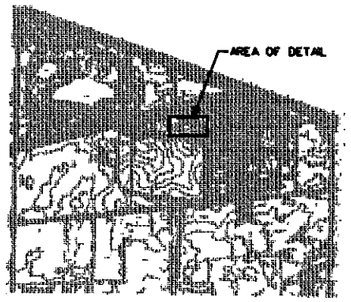
SWMU #50

(SEE FIGURE 5-10)

610

T

N



KEY PLAN

LEGEND

- SOIL SAMPLE LOCATION
- APPROX LOCATION OF ABANDONDED INJECTION WELL

NOTE:

1. TOPOGRAPHIC INFORMATION PREPARED BY AERO-METRIC ENGINEERING, INC.
2. RANDOM SOIL SAMPLE LOCATIONS WILL BE SET IN FIELD.

50' 0 50'

SCALE: 1" = 50'

SIGNATURE

DATE

REV.	DATE		DRN BY	APP BY
1	8/95	REVISED PER USEPA COMMENTS (6/26/95)	JTP	RAL

DATE: APRIL, 1995

DES BY RSZ

DRN BY JTP

CHK BY RAL

REV BY

APP BY

PROJECT NO. 35627 SCALE: AS SHOWN

PROJECT: RCRA FACILITY INVESTIGATION

SHEET TITLE: PROPOSED SOIL SAMPLE LOCATIONS SWMU GROUP G

CWM Chemical Waste Management, Inc. Vickery, Ohio

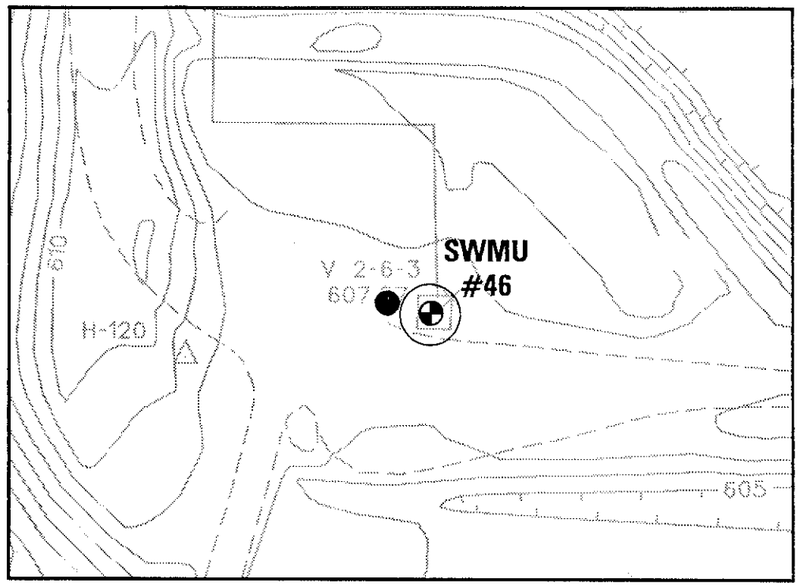
SHEET OF

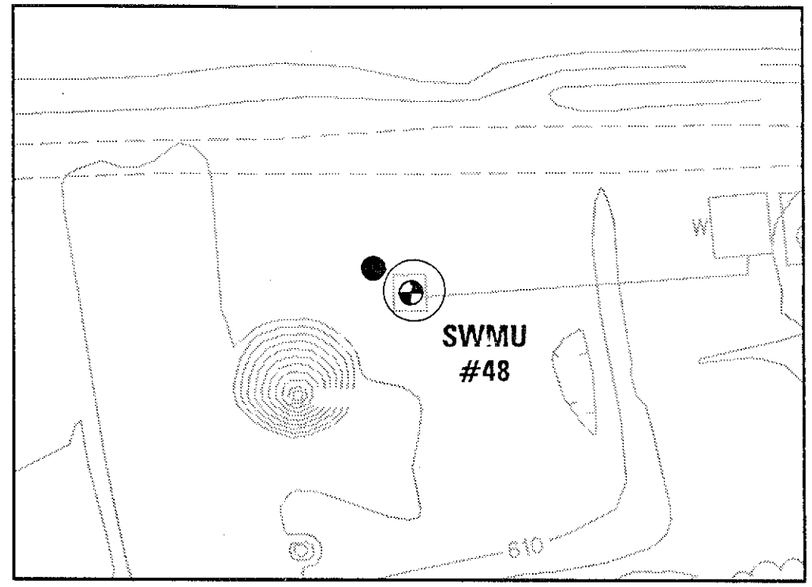
DRAWING NO.

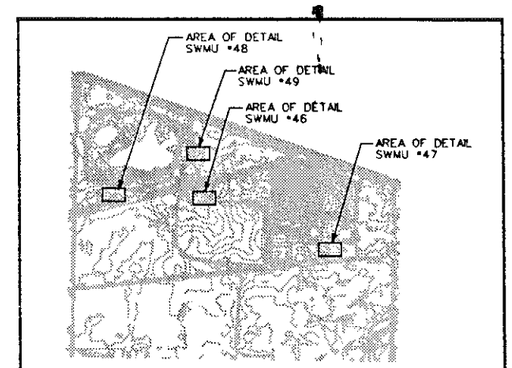
FIGURE 5-12

CADD PRODUCED DRAWING

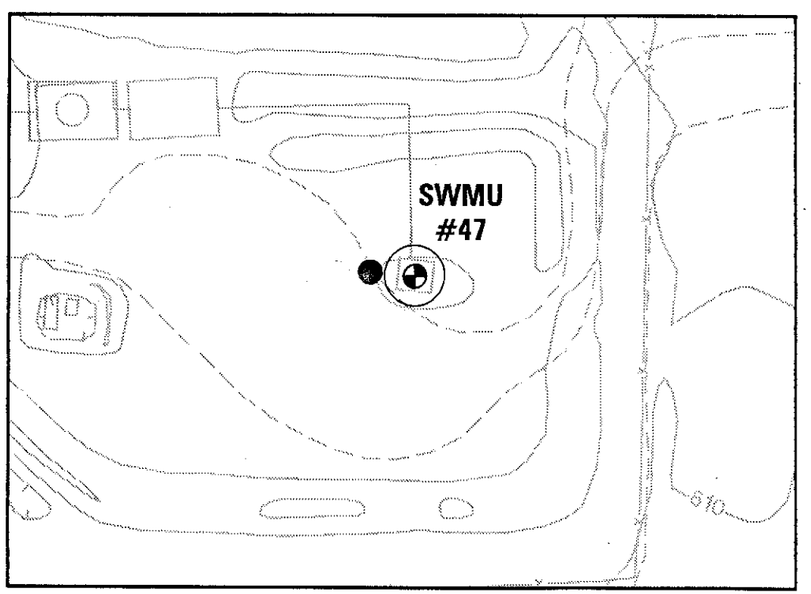
35627521.DGN

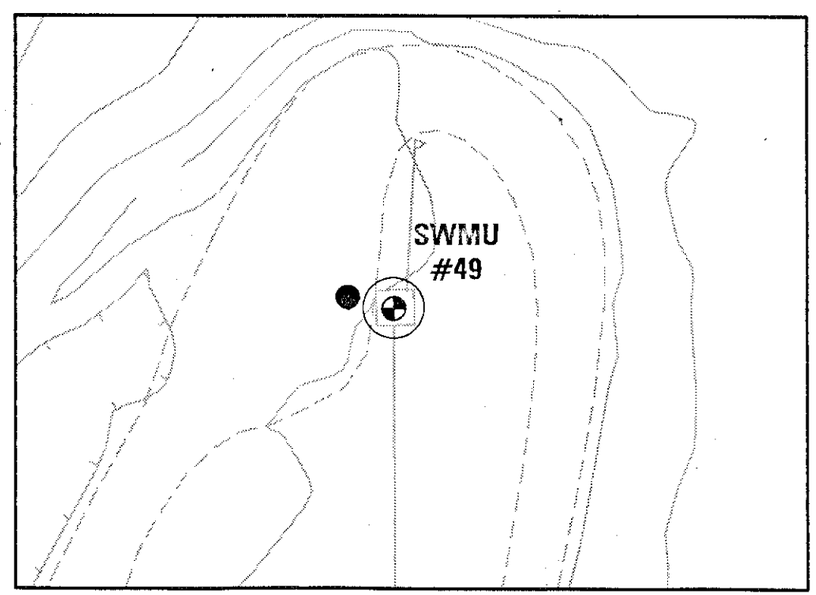






KEY PLAN





LEGEND

SOIL SAMPLE LOCATION

APPROX LOCATION OF ABANDONDED INJECTION WELL

NOTE:

1. TOPOGRAPHIC INFORMATION PREPARED BY AERO-METRIC ENGINEERING, INC.
2. SOIL SAMPLE LOCATIONS WILL BE SET IN FIELD.

50' 0 50'

SCALE: 1" = 50'

ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE		DRN BY	APP BY
1	8/95	REVISED PER USEPA COMMENTS (6/26/95)	JTP	RAL

DATE:	APRIL, 1995
DES BY	RSZ
DRN BY	JTP
CHK BY	RAL
REV BY	
APP BY	

PROJECT NO. 38627 SCALE: AS SHOWN

PROJECT: RCRA FACILITY INVESTIGATION

SHEET TITLE: **PROPOSED SOIL SAMPLE LOCATIONS SWMU GROUP H**

CWM
Chemical Waste Management, Inc.
Vickery, Ohio

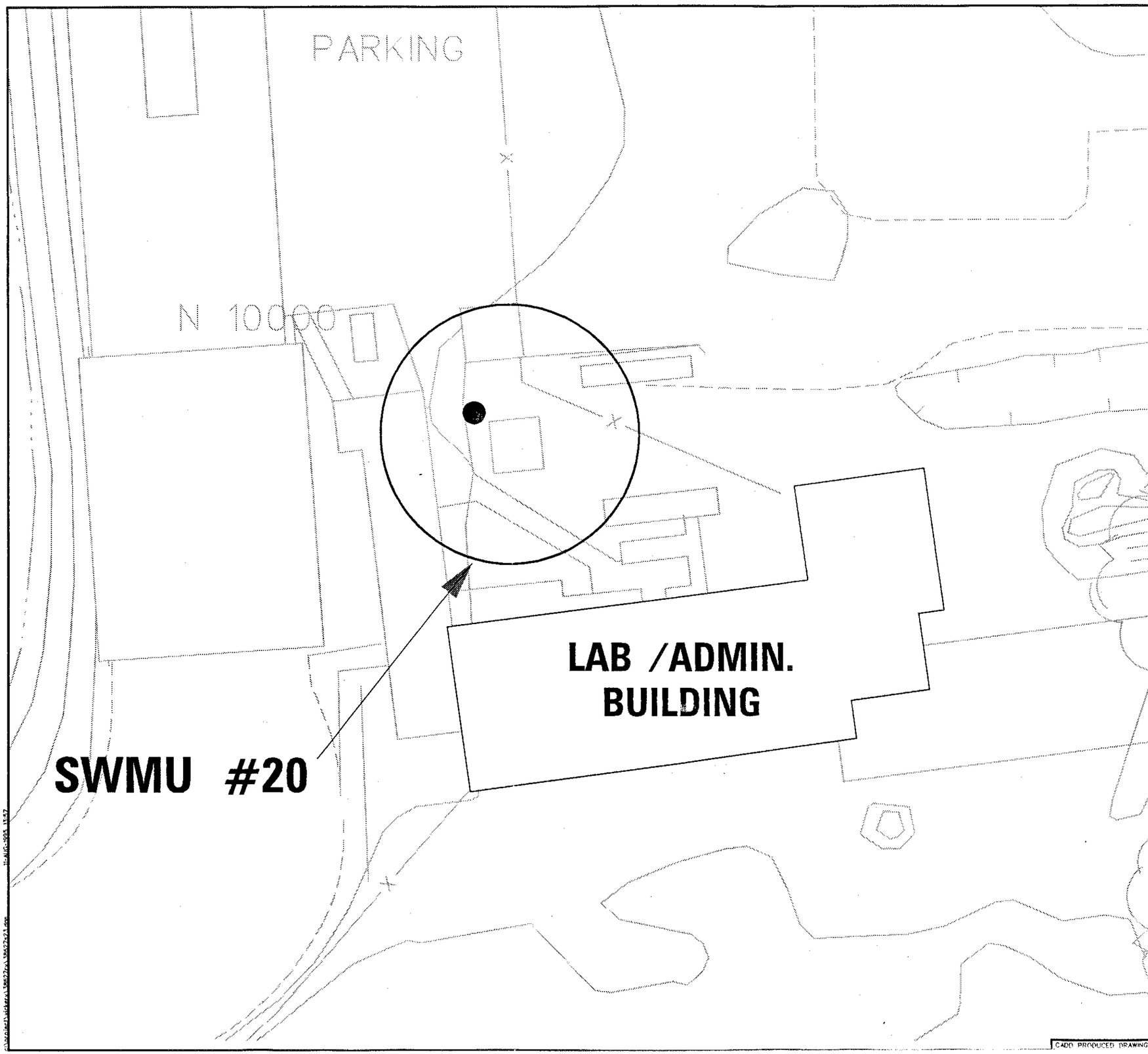
SHEET ____ OF ____

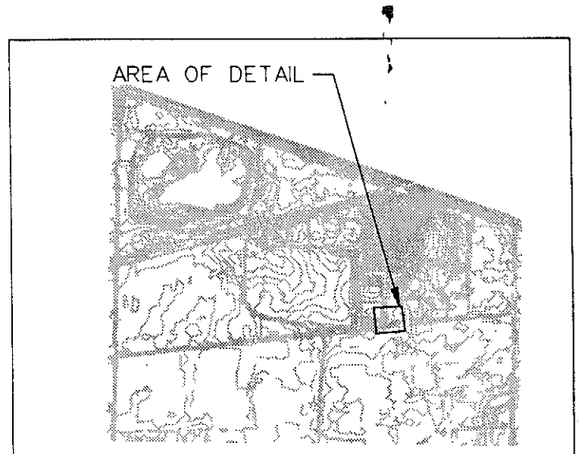
DRAWING NO.

FIGURE 5-13

CADD PRODUCED DRAWING

38627S43.DGN





KEY PLAN

LEGEND

● SOIL SAMPLE LOCATION

NOTE:

1. TOPOGRAPHIC INFORMATION PREPARED BY AERO-METRIC ENGINEERING, INC.

20 0 20

SCALE: 1" = 20'

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE		DRN BY	APP BY
1	8/95	REVISED PER USEPA COMMENTS (6/26/95)	JTP	RAL

DATE: APRIL, 1995

PROJECT NO. 38627

SCALE: AS SHOWN

PROJECT: RCRA FACILITY INVESTIGATION

DES BY	RSZ
DRN BY	JTP
CHK BY	RAL
REV BY	-
APP BY	-

SHEET TITLE: **PROPOSED SOIL SAMPLE LOCATIONS SWMU #20 – LAB WASTE TANK**

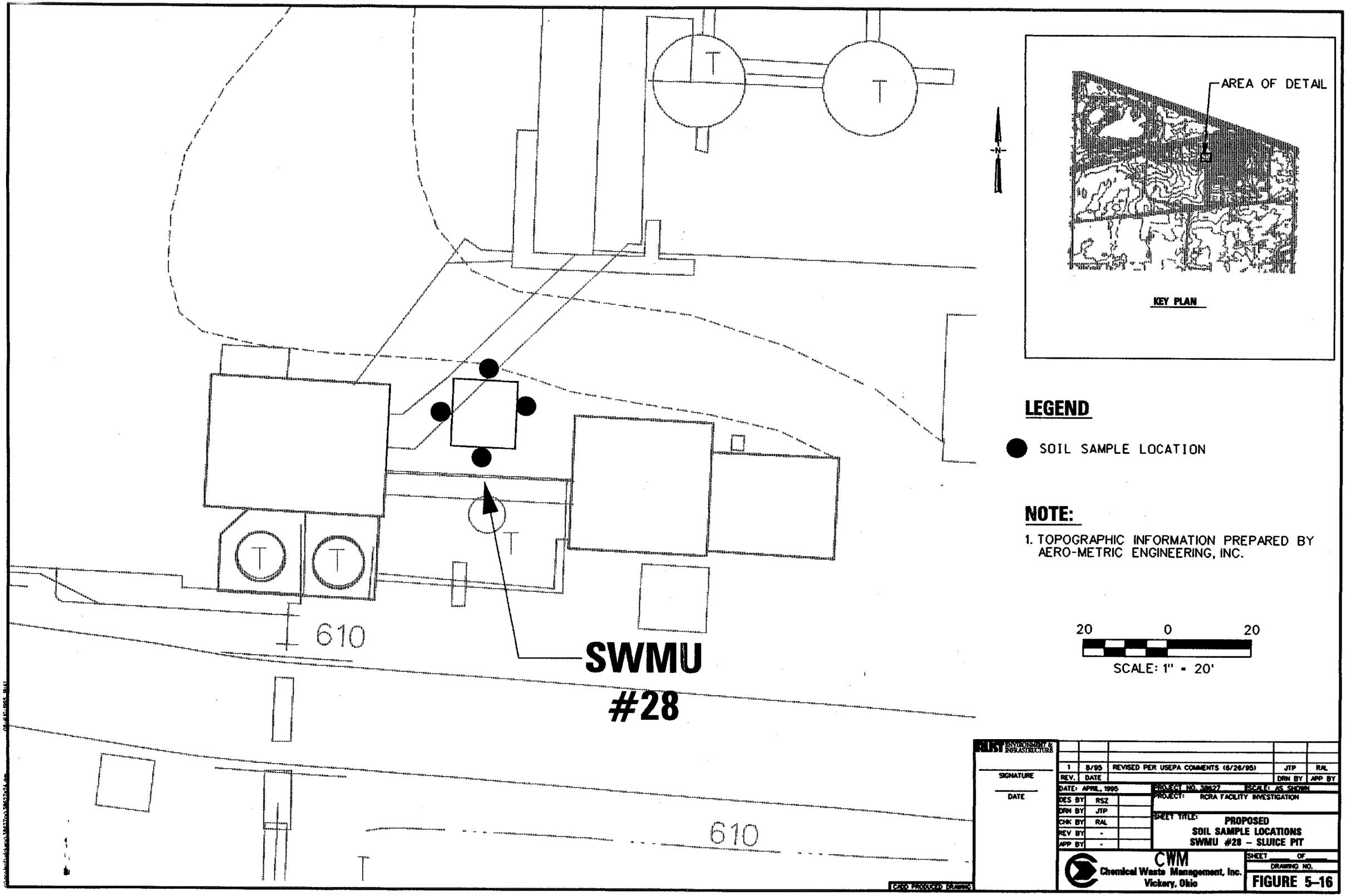
CWM
Chemical Waste Management, Inc.
Vickery, Ohio

SHEET ____ OF ____

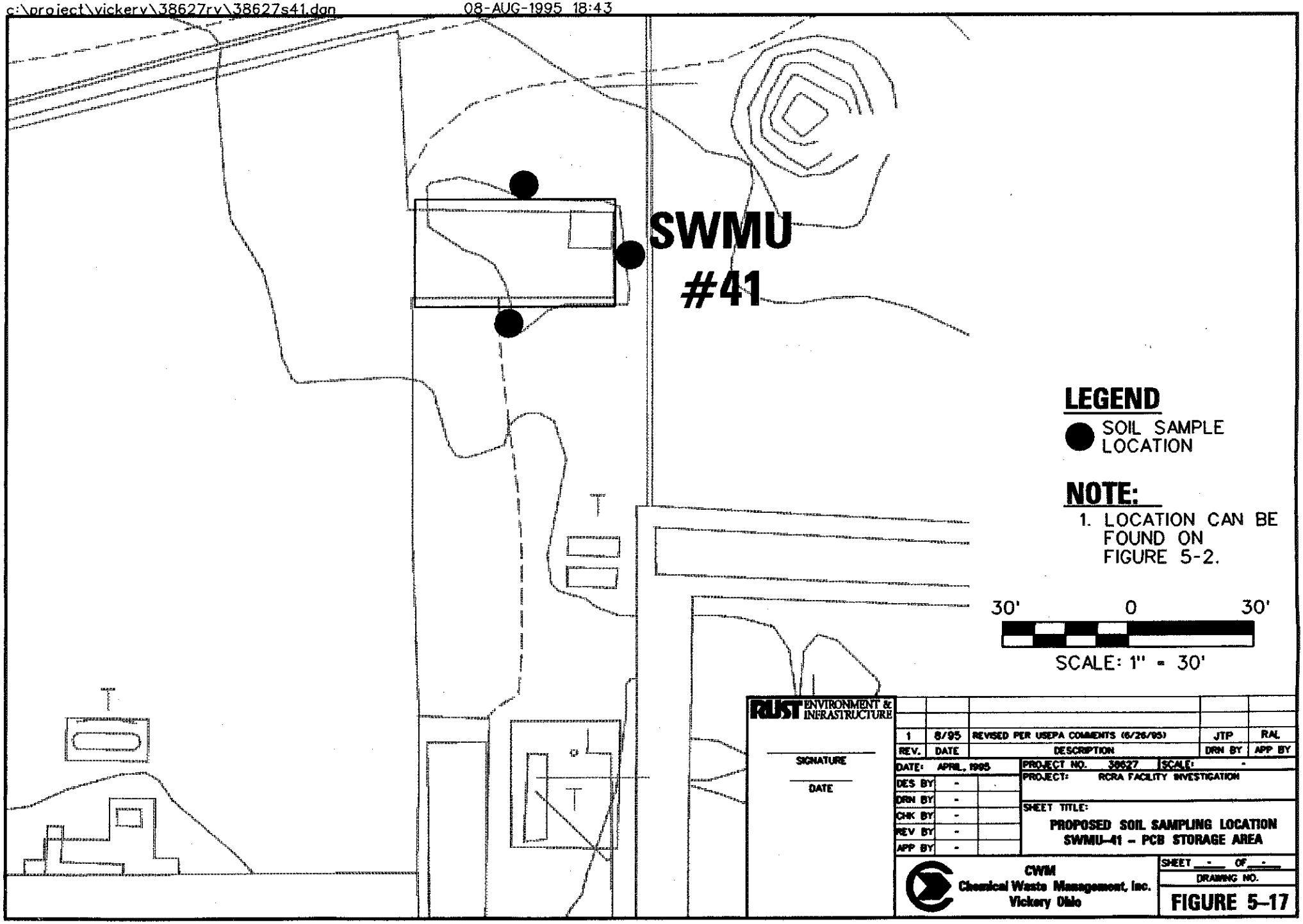
DRAWING NO.

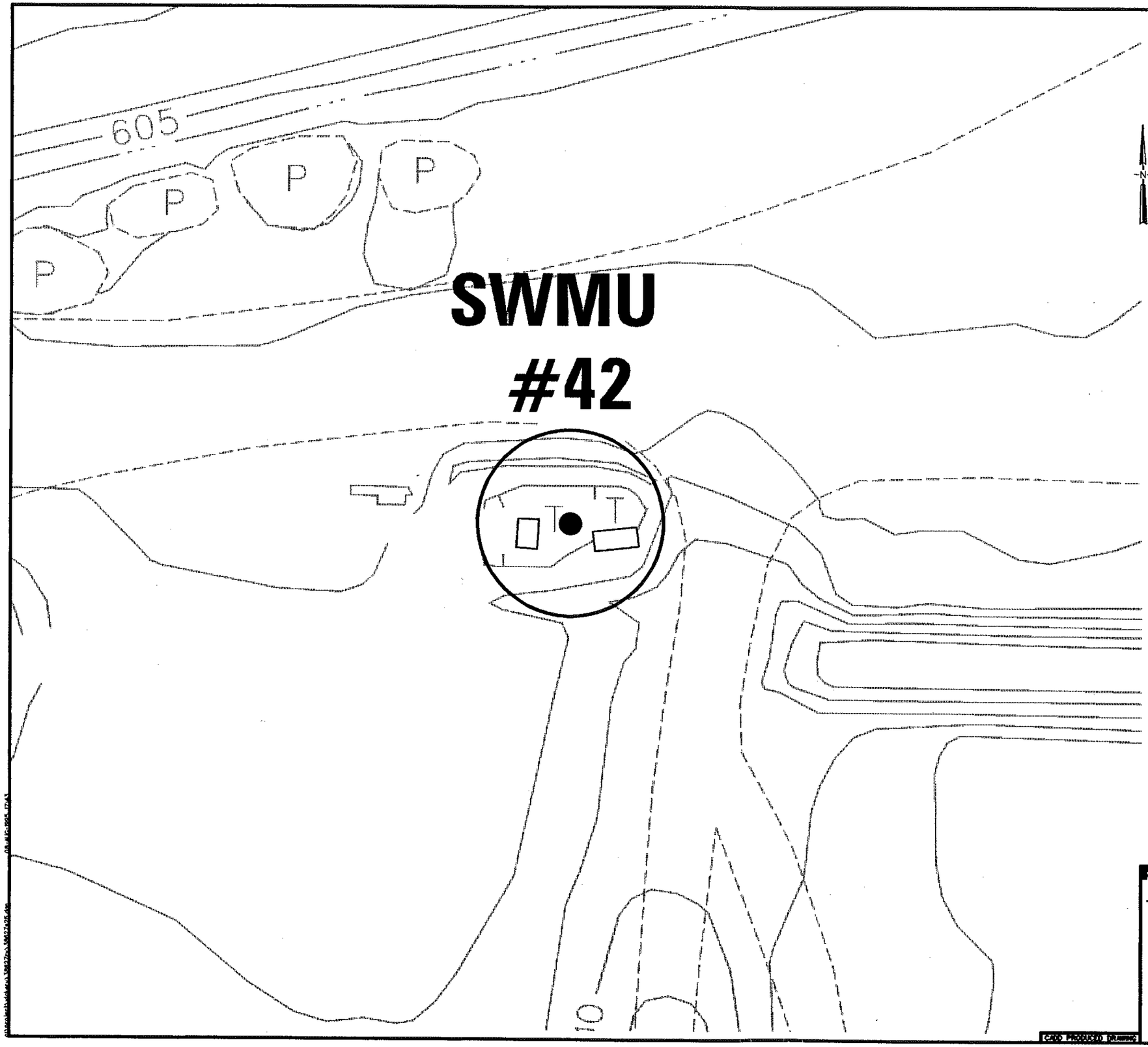
FIGURE 5–15

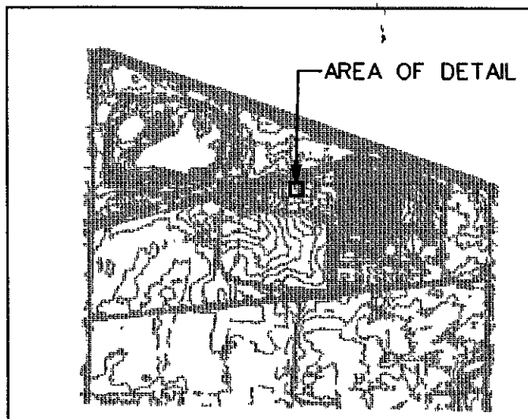
CADD PRODUCED DRAWING


AREA OF DETAIL
KEY PLAN
N
LEGEND
SOIL SAMPLE LOCATION
NOTE:
1. TOPOGRAPHIC INFORMATION PREPARED BY AERO-METRIC ENGINEERING, INC.
20 0 20
SCALE: 1" = 20'
SWMU #28
610
610
SIGNATURE
DATE
1 8/95 REVISED PER USEPA COMMENTS (6/26/95) JTP RAL
REV. DATE DRN BY APP BY
DATE: APRIL, 1995
PROJECT NO. 38627 SCALE: AS SHOWN
PROJECT: RCRA FACILITY INVESTIGATION
DES BY RSZ
DRN BY JTP
CHK BY RAL
REV BY -
APP BY -
SHEET TITLE: PROPOSED SOIL SAMPLE LOCATIONS SWMU #28 – SLUICE PIT
CWM Chemical Waste Management, Inc. Vickery, Ohio
SHEET OF
DRAWING NO.
FIGURE 5–16
CADD PRODUCED DRAWING

c:\project\vickery\38627rv\38627s41.dgn 08-AUG-1995 18:43







KEY PLAN

LEGEND

● SOIL SAMPLE LOCATION

NOTE:

1. TOPOGRAPHIC INFORMATION PREPARED BY AERO-METRIC ENGINEERING, INC.

20 0 20

SCALE: 1" = 20'

REV.	DATE		DRN BY	APP BY
1	8/95	REVISED PER USEPA COMMENTS (6/26/95)	JTP	RAL

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

DATE: APRIL, 1995

PROJECT NO. 38627 SCALE: AS SHOWN

PROJECT: RCRA FACILITY INVESTIGATION

DES BY	RSZ
DRN BY	JTP
CHK BY	RAL
REV BY	-
APP BY	-

SHEET TITLE: PROPOSED SOIL SAMPLE LOCATIONS SWMU #42 – MAINTENANCE WASTE OIL TANK (CLOSED)

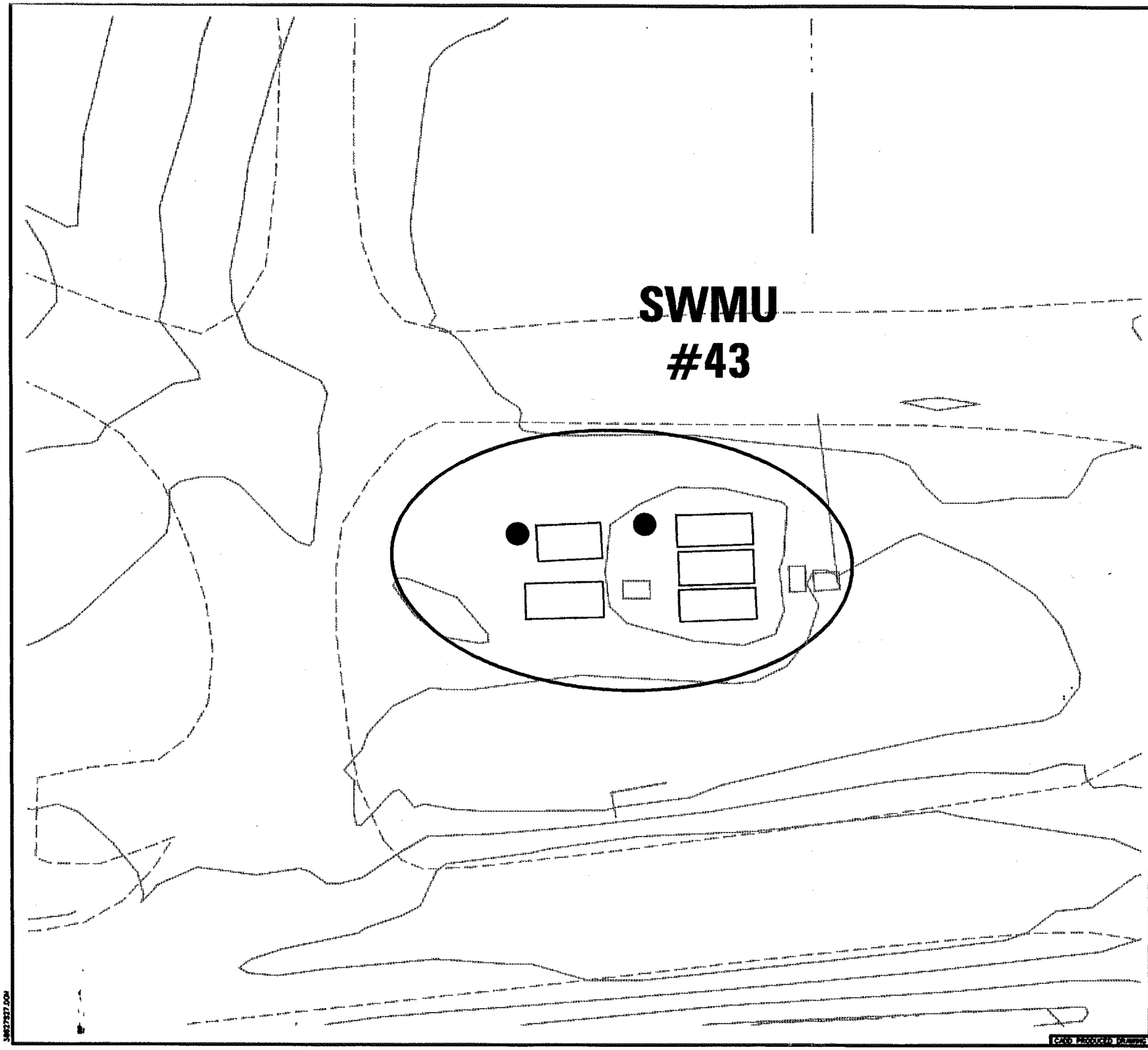
CWM Chemical Waste Management, Inc. Vickery, Ohio

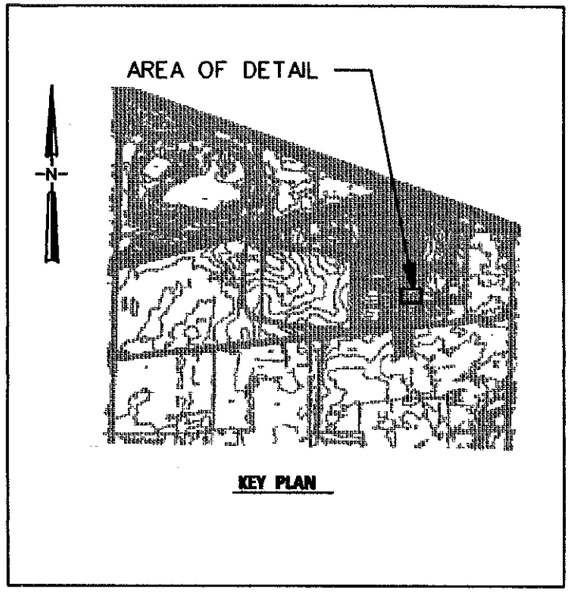
SHEET ___ OF ___

DRAWING NO.

FIGURE 5-18

CADD PRODUCED DRAWING





LEGEND

● SOIL SAMPLE LOCATION

NOTE:

1. TOPOGRAPHIC INFORMATION PREPARED BY AERO-METRIC ENGINEERING, INC.

20' 0 20'

SCALE: 1" = 20'

REV.	DATE		DRN BY	APP BY
1	8/95	REVISED PER USEPA COMMENTS (8/28/95)	JTP	RAL

SIGNATURE

DATE

DATE:	APRIL, 1995
DES BY	RSZ
DRN BY	JTP
CHK BY	RAL
REV BY	
APP BY	

PROJECT NO. 38627 SCALE: AS SHOWN

PROJECT: RCRA FACILITY INVESTIGATION

SHEET TITLE: PROPOSED SOIL SAMPLING LOCATION SWMU #43 – SANITARY WASTEWATER TREATMENT FACILITY

CWM Chemical Waste Management, Inc. Vickery, Ohio

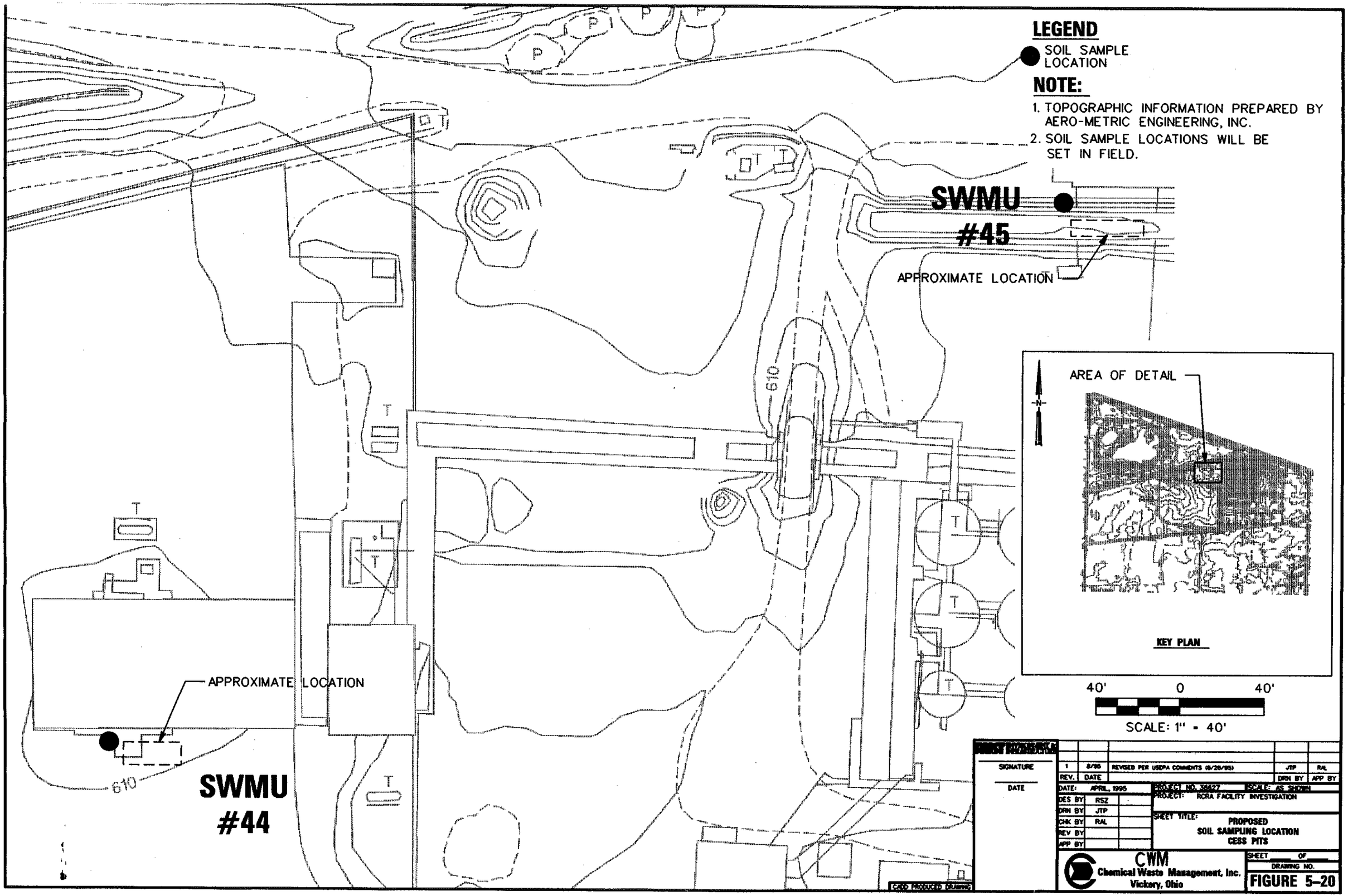
SHEET ___ OF ___

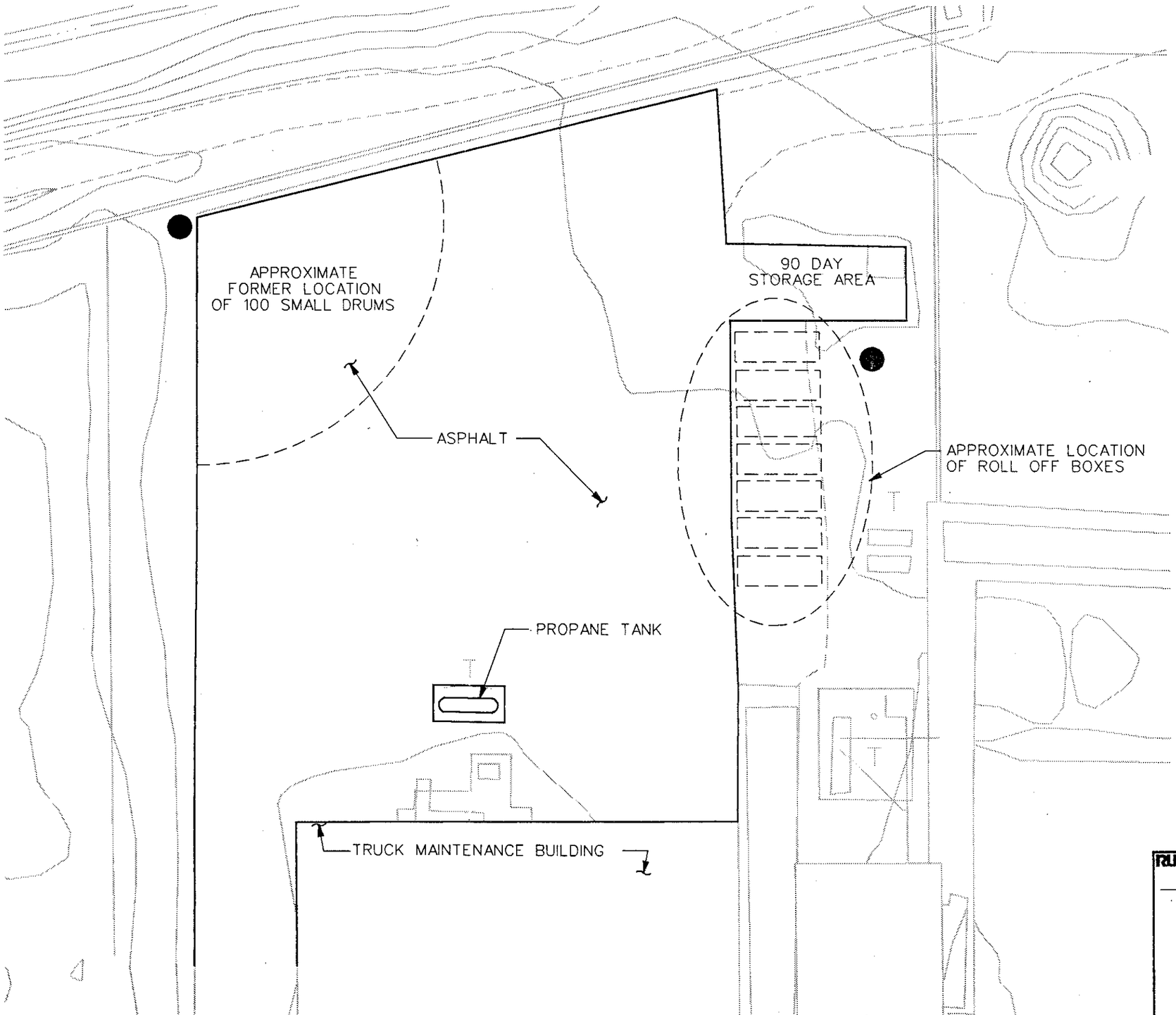
DRAWING NO.

FIGURE 5–19

CADD PRODUCED DRAWING

38627337.DGN


LEGEND
SOIL SAMPLE LOCATION
NOTE:
1. TOPOGRAPHIC INFORMATION PREPARED BY AERO-METRIC ENGINEERING, INC.
2. SOIL SAMPLE LOCATIONS WILL BE SET IN FIELD.
SWMU #45
APPROXIMATE LOCATION
AREA OF DETAIL
N
KEY PLAN
40' 0 40'
SCALE: 1" = 40'
610
APPROXIMATE LOCATION
SWMU #44
SIGNATURE
DATE
1 8/95 REVISED PER USEPA COMMENTS (6/26/95) JTP RAL
REV. DATE DRN BY APP BY
DATE: APRIL, 1995
PROJECT NO. 38627
SCALE: AS SHOWN
PROJECT: RCRA FACILITY INVESTIGATION
DES BY RSZ
DRN BY JTP
CHK BY RAL
REV BY
APP BY
SHEET TITLE: PROPOSED SOIL SAMPLING LOCATION CESS PITS
CWM
Chemical Waste Management, Inc.
Vickery, Ohio
SHEET OF
DRAWING NO.
FIGURE 5-20
CADD PRODUCED DRAWING



LEGEND

● SOIL SAMPLE LOCATION

NOTE:

1. LOCATION CAN BE FOUND ON FIGURE 5-2.

30' 0 30'

SCALE: 1" = 30'

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE		DRN BY	APP BY
1.	8/95	REVISED PER USEPA COMMENTS (6/28/95)	JTP	RAL

DATE: APRIL, 1995

DES BY	RSC
DRN BY	JTP
CHK BY	RAL
REV BY	
APP BY	

PROJECT NO. 38627 SCALE:

PROJECT: RCRA FACILITY INVESTIGATION

SHEET TITLE:

PROPOSED SOIL SAMPLING LOCATION AREA OF CONCERN "B"

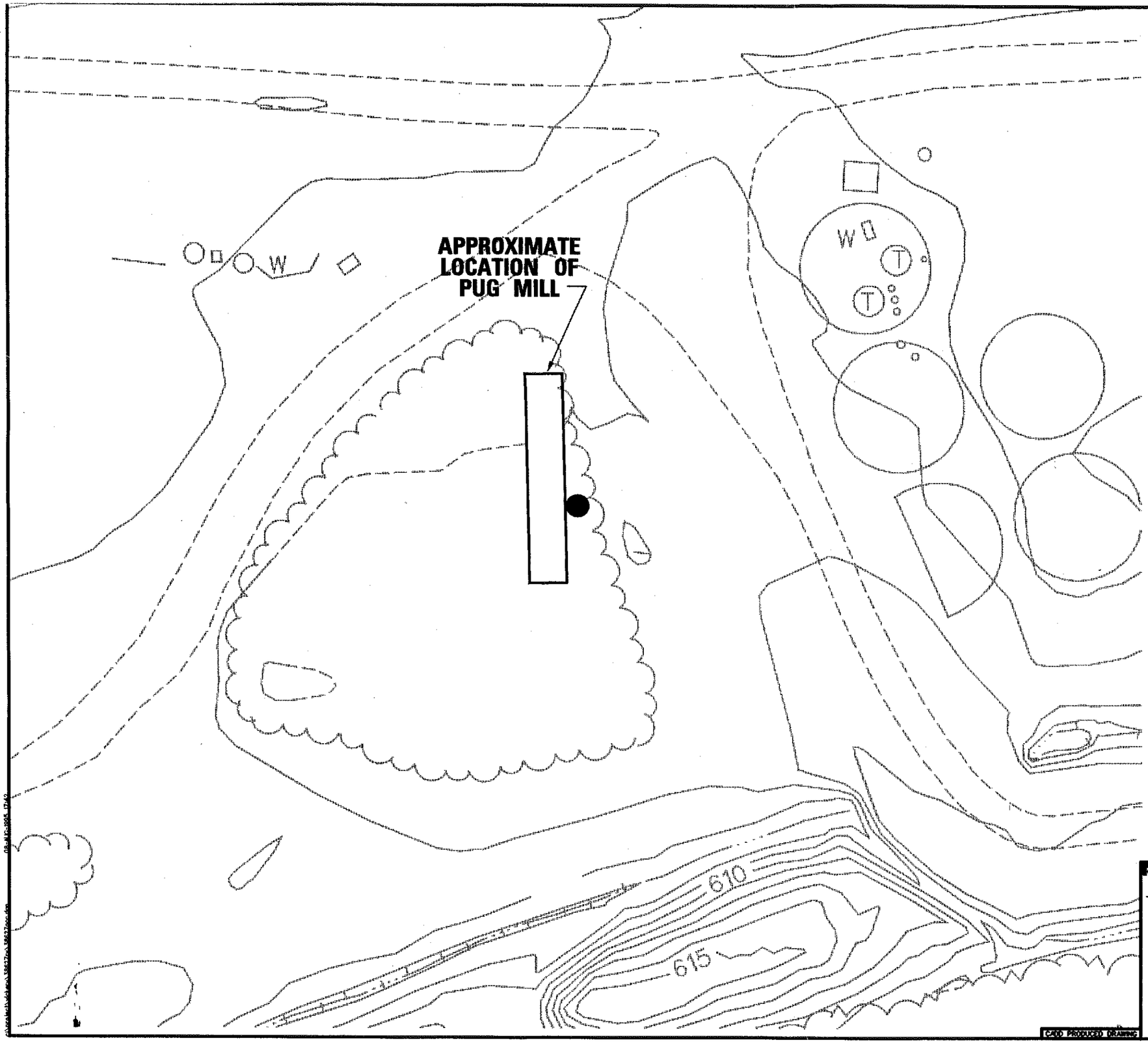
CWM
Chemical Waste Management, Inc.
Vickery, Ohio

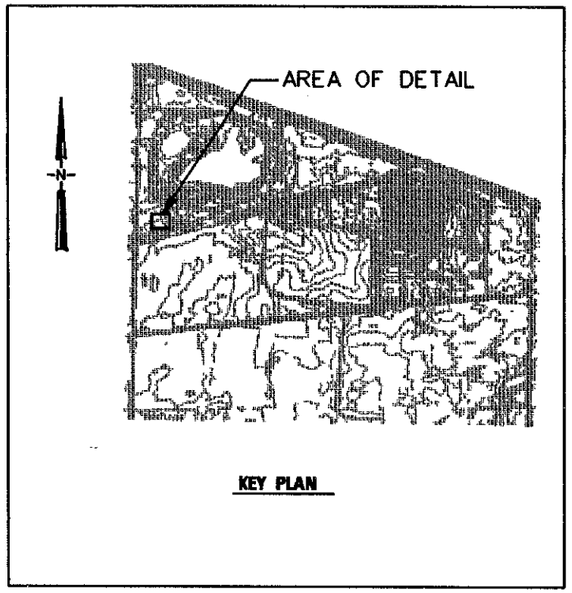
SHEET ____ OF ____

DRAWING NO.

FIGURE 5-22

CADD PRODUCED DRAWING





LEGEND

● SOIL SAMPLE LOCATION

30' 0 30'

SCALE: 1" = 30'

CADD PRODUCED DRAWING

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE		DRN BY	APP BY
1	8/95	REVISED PER USEPA COMMENTS (6/26/95)	JTP	RAL

DATE: APRIL, 1995

DES BY	RSZ
DRN BY	JTP
CHK BY	RAL
REV BY	-
APP BY	-

PROJECT NO. 38627 SCALE: AS SHOWN

PROJECT: RCRA FACILITY INVESTIGATION

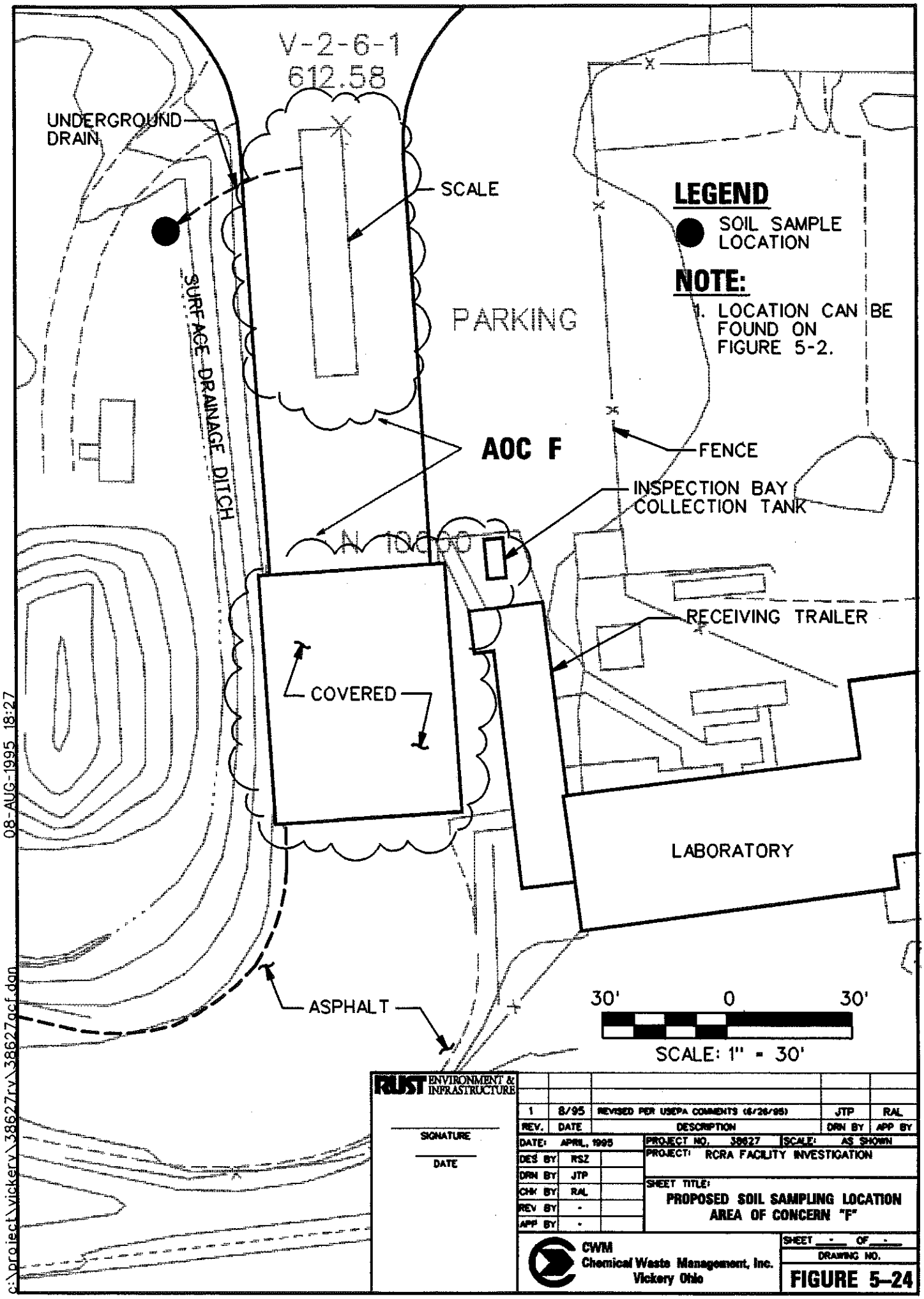
SHEET TITLE:
PROPOSED SOIL SAMPLING LOCATION
AREA OF CONCERN "C"
PUG MILL (HAYMILL)

CWM
Chemical Waste Management, Inc.
Vickery, Ohio

SHEET ___ OF ___

DRAWING NO.

FIGURE 5-23


V-2-6-1
612.58
UNDERGROUND DRAIN
SCALE
LEGEND
SOIL SAMPLE LOCATION
NOTE:
1. LOCATION CAN BE FOUND ON FIGURE 5-2.
PARKING
SURFACE DRAINAGE DITCH
AOC F
FENCE
INSPECTION BAY COLLECTION TANK
N 19000
RECEIVING TRAILER
COVERED
LABORATORY
ASPHALT
30' 0 30'
SCALE: 1" = 30'
RUST ENVIRONMENT & INFRASTRUCTURE
SIGNATURE
DATE
1 8/95 REVISED PER USEPA COMMENTS (6/26/95) JTP RAL
REV. DATE DESCRIPTION DRN BY APP BY
DATE: APRIL, 1995
DES BY RSZ
DRN BY JTP
CHK BY RAL
REV BY -
APP BY -
PROJECT NO. 38627
SCALE: AS SHOWN
PROJECT: RCRA FACILITY INVESTIGATION
SHEET TITLE:
PROPOSED SOIL SAMPLING LOCATION
AREA OF CONCERN "F"
CWM
Chemical Waste Management, Inc.
Vickery Ohio
SHEET - OF -
DRAWING NO.
FIGURE 5-24
08-AUG-1995 18:27
c:\project\vickery\38627rv\38627acf.dgn

TABLES

TABLE 5-1
SOLID WASTE MANAGEMENT UNIT SAMPLING SUMMARY

	Number of Sample Locations					
Group	Systematic	Random	Judgmental	Matrix	# of Samples Per Location	Total
A	24	8	0	soil	1	32
C	10	15	0	soil	1	25
D	32	0	0	soil	1	32
E	0	0	3	soil	1	3
F	0	0	30	soil	1	30
G	0	0	14	soil	1	14
H	0	0	4	soil	1	4
I	12	9	6	soil	1	27
Totals	**78**	**32**	**57**			**167**

TABLE 5-2
AREA OF CONCERN SAMPLING SUMMARY

AOC	Number of Sample Locations			Matrix	# of Samples Per Location	Total
	Systematic	Random	Judgmental			
A	0	0	Unknown	soil	1	0 (SEE NOTE 1)
B	0	0	2	soil	1	2
C	0	0	1	soil	1	1
F	0	0	1	sediment	1	1
H	0	0	Unknown	sediment	1	0 (SEE NOTE 2)
I	0	0	Unknown	soil	2	0 (SEE NOTE 3)

Note 1: The total number of samples collected will be determined on the number of tanks that have been used and not contained in a concrete vault. This will be determined by review of the facilities operational record.

Note 2: The total number of samples collected will be determined on the number of releases under the above ground piping. This will be determined by review of the facilities operational record.

Note 3: The total number of samples collected will be determined on the amount of underground piping uncovered during test pits completed in the areas of suspected underground piping. This will be determined during the Phase I Field Investigation using information from the facilities operational record.

TABLE 5-3
RECOMMENDED CONTAINERS, PRESERVATIVES and HOLDING TIMES

Parameter	Media[1]	Container	Preservation	Maximum Holding Time[2]
Volatile Organics	Water	(2) 40 ml VOA Vials with Teflon lined septum	4 drops HCL, Cool to 4°C	10 days
	Soil	(2) 125 ml VOA Vials with Teflon liner	Cool to 4°C	10 days
Semi-Volatiles, Pesticides, PCBs	Water	(4) 1 L amber glass with Teflon Liner	Cool to 4°C	45 days[3]
Semi-Volatiles	Soil	(2) 4. oz widemouth glass with Teflon liner	Cool to 4°C	50 days[4]
Pesticides/PCBs	Soil	(2) 4. oz widemouth glass with Teflon liner	Cool to 4°C, adjust pH to 5-9 unless extraction within 72 hours of collection	6 months
Metals[5]	Water	1 L polyethylene with polyethylene liner	50 % nitric acid, pH <2, Cool to 4°C	6 moths
	Soil	(2) 4. oz widemouth glass with Teflon liner	Cool to 4°C	6 months
Cyanide	Water	1 L polyethylene with polyethylene liner	NaOH, pH > 12, Cool to 4°C	12 days
	Soil	(2) 4. oz widemouth glass with Teflon liner	Cool to 4°C	12 days

1. Water refers to groundwater or surface water samples. Soil refers to samples from test pits, soil borings and streambed sediments. Liquid and sludge refers to waste collected from tanks.

2. Holding time refers to the number of days following the Validated Time of Sample Receipt by the laboratory.

3. Five days until extraction and analysis within 40 days of extraction.

4. Ten days until extraction and analysis within 40 days of extraction.

5. Mercury has a holding time of 26 days for both liquid and soil samples. Liquid samples will b preserved to pH <2 with 50% nitric acid and cooled to 4°C. Soil samples will be cooled to 4°C.

TABLE 5-4
INITIAL LIST
CONSTITUENTS FOR INITIAL GROUNDWATER PROGRAM
CWM VICKERY FACILITY

CONSTITUENTS

tetrachloroethylene
trichloroethylene
chlorobenzene
methyl ethyl ketone (2-butanone)
methyl chloride (chloromethane)
1,1,2-trichloroethane
benzene
o-dichlorobenzene
m & p cresol (3 & 4 methyl phenol)
p-chloro-m-cresol
naphthalene
aniline
heptachlor
nickel
arsenic
antimony
cyanide, total
methanol
bromoform
chlorodibromomethane
methoxychlor
xylene
sulfate
specific conductance(field)
PCBs (TSCA designated wells only)
methylene chloride
carbon tetrachloride
toluene
chloroform
1,2-dichloroethane
1,1,2,2-tetrachloroethane
bis(chloromethyl)ether
o-cresol (2-methyl phenol)
phenol
2,4-dimethylphenol
2-picoline
m-dichlorobenzene (1,3)
cadmium
lead
mercury
chromium
hexavalent chromium
ethylbenzene
dichlorobromomethane
1,2-dichloropropane
selenium
1,1,1-trichloroethane
chlorides
pH (field)

TABLE 5-5
CLOSURE CELL
POST CLOSURE MONITORING LIST
CWM VICKERY FACILITY

CONSTITUENTS

Group A

Volatile Organic Compounds's

- Benzene
- Chlorobenzene
- Chloroform
- 1,2-Dichloroethane
- Ethyl Benzene
- Methanol
- Methyl Ethyl Ketone
- Methylene Chloride
- Toluene
- Trichloroethylene
- 1,1,1-Trichloroethane

VOC Degradation Products[1]

- Vinyl Chloride
- 1,1-Dichloroethane
- Chloroethane
- Ethanol
- 1,1-Dichloroethene
- Cis-1,2-Dichloroethene
- Trans-1,2-Dichloroethene

Group B

Metal's

- Dissolved Arsenic
- Dissolved Cadmium
- Dissolved Chromium
- Dissolved Lead
- Dissolved Nickel[2]
- Dissolved Zinc

Conventional

- Total Phenols

Field[3]

- Specific Conductance
- pH

Notes:

1 Added to Continuing List April 1993. Potential degradation products of 1,1,1-Trichloroethane and Trichloroethylene.

2 Added to Continuing List April 1993.

3 Field measurements are taken after purging the well to assure sufficient volume has been purged by demonstrating that the pH and specific conductance readings have stabilized.

SECTION 6
DATA MANAGEMENT PLAN

Data management involves maintaining and controlling all data related to this project. The data for this project will come from three sources (1) field data, (2) laboratory data and (3) administrative data. Field data includes items such as field notes and logbooks, soil boring logs, field sampling measurements (pH, temperature, conductivity, etc.,) visual observations, and field equipment calibrations. Laboratory data typically includes all information obtained by the laboratory during analysis of the samples. Administrative data includes internal and external correspondence, meeting minutes, telephone conversation logs, plans and schedules, ~~Quality Assurance~~ reporting and auditing procedures, engineering WP, calculations and contract documents. All data will be maintained in a project file containing the following sections:

- Administrative;
- Engineering;
- Analytical Data;
- Procurement; and,
- Drawings.

The project file will be maintained by control personnel using a documentation log for each section. All project related information will be first routed to the PM who will maintain responsibility for routing the information to the appropriate personnel.

During the field work, a temporary office will be maintained on-site. The office will have duplicate project files that may be pertinent to the field work. This office will be secured when not in use.

6.1 Data Presentation

Data should be presented in a clear and logical format. Tabular, graphical and other visual displays are essential for evaluating data. Tables and graphs are not only useful for expressing results, but are necessary for decision-making during the investigation. Other data such as sample locations coordinates are more effectively shown in graphic form. Table 6-1 contains various methods for data presentation.

6.1.1 Tables

Tabular presentations of both raw and sorted data are useful means of presentation. These are discussed in the following paragraphs.

6.1.1.1 Listed (Raw) Data

Simple lists of data alone are not adequate to illustrate trends or patterns. These lists will be presented however for sample validation and auditing. Each data record will provide at a minimum: (1) a unique sample code, (2) sampling location and sample type, (3) sampling data and time, (4) laboratory analysis identification number, (5) component measured, (6) analytical results, (7) detection limits and (8) reporting units.

Analytical data will be reduced by the laboratory before reporting. All data will be reported, including suspected outliers or samples contaminated due to improper collection, preservation or storage procedures. The rejected data will be marked as such in the tables and explanations of rejected data will be presented in footnotes.

In addition to analytical data, sampling logs will be included. Information on the logs will include at the minimum BUT NOT BE LIMITED TO, THE FOLLOWING: name and address of the sampler(s); purpose of sampling; data and time of sampling; sample type and suspected contaminants; sample location, description and coordinates (including photos); sample method, containers and preservation ~~(if any)~~; sample weight or volume; number of samples taken; sample identification number(s); amount purged ~~(for groundwater)~~; field observations; field measurements ~~(pH, temperature, etc.)~~; weather conditions; and the name and signature of person responsible for observations. Any unusual conditions encountered during the sampling event will be noted on the sample logs.

6.1.1.2 Sorted Summary Tables

Presentation of results grouped according to data categories is one of the simplest formats used to display trend or patterns in data. Sample data for this project will be sorted by medium, sample location and by contaminant.

6.1.1.3 Graphic Presentation of Data

Graphic methods of data presentation will often illustrate trends better than tables. Graphic formats that may be used include bar graphs, line graphs, isopleth plots, cross-sections or three-dimensional data plots.

6.1.2 Data Reduction

Data will be reported according to accepted practices of QA and data validation. All data will be reported. However, treatment of replicate measurements, identification of outliers and reporting of results determined to be below detection limits is discussed in the following paragraphs.

6.1.2.1 Treatment of Replicates

Replicate measurements of a single sample will be averaged prior to further data reduction.

6.1.2.2 Reporting of Outliers

Due to the variability of environmental sampling resulting from field conditions, some data may be outside of the expected range of values. Outlier values may result from a catastrophic occurrence such as a spill; inconsistent sampling or analytical chemistry methodology; errors in the transcription of data values or decimal points or true but extreme concentration measurements. If the cause of the outlier is known or determined to be an error in transcription and the correct values can be obtained, THE affected data will be corrected and documented. If the cause of the outlier is a catastrophic event or a problem in methodology, data values will be reported with clear reference. Documentation and validation of the cause of outliers will accompany any attempt to correct or delete these data values. Outliers will not be omitted from raw data.

6.1.2.3 Reporting Values Below Detection Limits

Analytical values determined to be at or below the detection limit will be reported numerically (e.g., ≤ 0.1 mg/l). The data presentation procedures will cite analytical methods used including appropriate detection limits.

6.1.2.4 Data Deliverables and Reporting

The raw analytical results will be obtained from the laboratory. These results will be transmitted to Rust on diskette deliverables accompanied by the laboratory report packages. The raw analytical data will be sent on a 3.5" floppy diskette in an ASCII file format. The raw analytical data and laboratory report packages will be tailored to meet specific regulatory requirements as needed.

A Rust computer programmer will develop a database file identifying the data fields of the raw analytical data and import the ASCII data file in the database file. This will create a master database file with all of the raw analytical data for the sampling event. The master database file will be manipulated such that the data output will be presented to the U.S. EPA in hard copy, tabular format. An example of the hard copy tabular format is presented in Appendix A. In addition to this table, the master database file, in electronic format and the laboratory report packages will be provided to the U.S. EPA.

6.1.2.5 Data Manipulations

Once the master database has been created the data will be manipulated to perform any calculations required to allow for consistent reporting of units. If there are any inconsistencies in the spelling of parameters, the data will be modified for consistency. The sample date will also be manually modified IF NECESSARY to present the data in proper format.

Upon completion of the data validation process, the Contract Required Quantitation Limit (CRQL), Sample Quantitation Limit (SQL), Contract Required Detection Limit (CRDL), Instrument Detection Limit (IDL) and data qualifiers will be added to the master database file. USING database programs developed by a Rust computer programmer, the master database file will be manipulated to produce several smaller database files. These smaller database files will assist in the preparation of the hard copy table. If the data requires manipulation to take into consideration percent moisture or percent solids, the database programs will perform any necessary calculations to modify the results.

Once all of the validated data has been entered into the master database, the program to produce the hard copy table will be run and a draft printout of the table generated.

6.1.2.6 Quality Assurance/Quality Control Measures

As a quality assurance/quality control measure, the data presented on the hard copy table will be compared to the data from laboratory report package to assure that the data being reported is correct. Any data that was manually entered or modified in the master database will also be confirmed for accuracy.

6.1.3 Sample Identification

All samples will be identified according to their corresponding Solid Waste Management Unit (SWMU) or Area of Concern (AOC) and sampling grid location. For example, a sample collected from grid location A-1 from Pond 1 identified as SWMU #1 will be labeled ***SWMU 1: A-1.*** A random sample from SWMU 1 will be labeled as ***SWMU 1: R-1***. Samples collected from the AOCs will be labeled in a similar manner. Duplicate samples COLLECTED FROM SWMU 1 will be LABELED AS ***SWMU1: A-1D***. ~~identified with a unique sample number.~~ Matrix duplicates COLLECTED FROM SWMU 1 will be LABELED AS ***SWMU 1: A-1MS*** AND ***SWMU 1: A-1MSD***. ~~identified with a *MS/MSD* after the sample identification number.~~ Field blanks and trip blanks will also be with a unique identification number.

SECTION 7
PROJECT MANAGEMENT PLAN

This PjMP is prepared as part of the PHASE I RFI WP. This PjMP presents an overall management approach to the RFI and includes: (1) A discussion of the Technical Approach; (2) a Schedule of Activities; (3) A description of personnel directing the PHASE I RFI, including subcontractors; and, (4) a provision for submittal of periodic progress reports. These items are discussed in the following paragraphs.

7.1 Project Objectives

The Hazardous and Solid Waste Amendments of 1984 (HSWA) require that releases from SWMUs be evaluated for all ~~Resource Conservation and Recovery Act (~~RCRA~~)~~ Facilities seeking a permit. The evaluation of releases helps to establish the need for corrective action at RCRA Facilities. The evaluation of releases has been formalized in the procedures of the RFA. The RFA is typically composed of a Preliminary Review (PR), a VSI and where appropriate, a Sampling Visit (SV).

Jacobs was contracted by the U.S. EPA, Region 5, through Metcalf & Eddy to perform the RFA at the CWM-Vickery TSD Facility. The U.S. EPA directed Jacobs to report on all SWMUs at the facility with the exception of the hazardous waste (Class 2) injection wells. The injection wells are regulated under a separate authority. Jacobs conducted the VSI during May, 1990 and identified 45 SWMUs and 5 areas of concern. An additional 8 SWMUs and 4 Areas of Concern have been identified since the RFA by Jacobs. The SWMUs have been grouped together for the PHASE I RFI. Table 4-1 (presented at the end of Section 4.0) summarizes the groupings and rationale behind each grouping. A detailed discussion on the groupings is contained in Section 5.0.

~~The purpose of the PHASE I RFI is to characterize the site and determine potential risks to human health and the environment. The objectives of the PHASE I RFI are:~~

- ~~DETERMINE well construction and well integrity;~~
- ~~Determine the nature and extent of soil contamination, if any;~~
- ~~Determine the nature and extent of groundwater contamination, if any;~~

~~• Determine the potential mechanisms for off-site transportation of contamination;~~
~~• Identify potential receptors and analyze the predicted impact of contamination on off-site receptors; and;~~
~~• Identify potential areas for remediation.~~

~~The facility currently monitors groundwater and surface water on a quarterly basis. This data will be utilized for the investigation. and therefore no additional groundwater or surface water sampling will be performed.~~

THE PHASE I RFI AT CWM-VICKERY TSD FACILITY IS SPECIFICALLY FOCUSSED ON DETERMINING IF RELEASES HAVE ACTUALLY OCCURRED. THIS WILL BE DONE THROUGH DETERMINING IF THERE ARE ANY HAZARDOUS WASTE CONSTITUENTS IN THE SOILS ADJACENT TO AND UNDERLYING THE IDENTIFIED SWMUS AND AOCS, OR IN THE SEDIMENTS OF SURFACE STREAMS DRAINING THE SITE. IF SO, THE PHASE I RFI REPORT WILL PROPOSE SPECIFIC AND FOCUSSED INVESTIGATIONS TO ASSESS THE EXTENT AND RISK-IMPACT OF THOSE RELEASES, INCLUDING INVESTIGATION OF GROUNDWATER. THE GROUNDWATER PATHWAY AND THE OFF-SITE SURFACE WATER RECEPTORS WILL BE EVALUATED DURING THE PHASE I AND PHASE II RFIS AND THEREFORE WILL ELIMINATE THE NEED FOR A PHASE III.

THE CHARACTERIZATION OF THE GROUNDWATER IN THE AREAS AROUND THE SWMUS AND AOCS WILL BE INITIALLY MADE BY USING A COMBINATION OF THE SOIL SAMPLING PROPOSED IN THIS PHASE I WP AND BY INVESTIGATIVE GROUNDWATER SAMPLING WITHIN FIVE ON-SITE GROUNDWATER MONITORING WELLS, SUPPORTED BY RECENT HISTORICAL GROUNDWATER MONITORING DATA. THE SOIL SAMPLING DATA WILL BE USED TO DETERMINE IF RELEASES HAVE OCCURRED IN CERTAIN SWMUS AND AOCS. IF THE SOILS ARE FOUND NOT TO CONTAIN CONTAMINANTS, THE PRESENCE OF GROUNDWATER CONTAMINATION REMAINS UNLIKELY. ADDITIONALLY, THE COMPLETE REVIEW OF THE GROUNDWATER DATA FOR VALIDITY OF WHERE THIS DATA MAY BE APPLIED WILL BE COMPLETED TO IDENTIFY AREAS OF GROUNDWATER CONCERN.

7.2 Technical Approach

In order to characterize the site and determine the potential risks to human health and the environment each of the 53 SWMUs and ~~9~~ 10 AOCs must be characterized. The objectives for this PHASE I ~~of the~~ RFI is provided in Section 4.0 of this WP. The technical approach for sampling at each of the group's of SWMUs and AOCs is provided in Section 5.0.

7.3 Project Schedule

Table 7-1 contains the estimated schedule for completion of the PHASE I RFI. This schedule has been based on the effective date of the RCRA permit and ~~assumed an~~ INCLUDES THE U.S. EPA review periodS. Implementation of the PHASE I RFI has been divided into discrete PHASES AND tasks to indicate the coordination of parallel and consecutive elements through completion of the project. Descriptions of each task is provided in the PHASE I RFI WP.

7.4 Project Organization

The overall project management organization for this PHASE I RFI is shown on Figure 7-1. Overall responsibility for completion of the PHASE I RFI is centered around the Rust PM. The PHASE I RFI project supervisors will be directly responsible for the coordination and implementation of these respective elements of the project. Resumes of key project personnel are contained in Appendix B.

GP Environmental Services, Inc. will be the primary analytical contractor for this project. Analysis will be performed at the Gaithersburg, MD facility CORE LABORATORIES, Edison NJ, will be retained by GP Environmental to perform the dioxinS/FURANS analysis required for the SOILS, SEDIMENT AND groundwater SAMPLES. ~~sample in SWMU Group B from the capillary drain.~~. All geotechnical samples will be performed at Rust's CINCINNATI, OHIO ~~Albany, NY~~ Geotechnical Laboratory.

The CWM Project Manager will be Michael Curry. Mr. Curry will act as the contact between regulatory agencies, CWM and the subcontractors.

*Richard Zweig, P.G. will serve as the Rust PM and will be responsible for all technical

elements of the effort as well as project costs. The project manager:

- Reviews and approves field operating procedures;
- Provides senior technical oversight and coordination of the overall project;
- Assures that approved procedures meet QA/QC objectives of the project; and,
- Responsible for implementation of recommendations made by the QA/QC manager.

*PETE RASOR will serve a QA/QC manager and be responsible for all procedures and tasks pertaining to quality assurance on this project. The QA/QC Manager's responsibilities include:

- Monitoring project activities to verify compliance with QA/QC Plans;
- Implementing routine QA/QC audits for all technical deliverables; and,
- Preparation and review of all corporate QA/QC guidance documents that pertain to the PHASE I RFI.

*Bryan Kline will serve as Project Health and Safety Coordinator and play a primary role in the development of the HASP along with coordinating required training and safety documentation.

*Jay Smerekanicz, M.S. will serve as the field team leader. He will coordinate all daily field activities performed by the field sampling team, drilling subcontractor, and GPR Subcontractor. Mr. Smerekanicz will also be responsible for sample collection and shipment of samples to the laboratory and the preparation of daily reports. Mr. Smerekanicz will report directly to the Rust PM.

*Dinesh Patel will serve as the data validator for this project. Data validation will be performed following U.S. EPA contract laboratory program, national functional guidelines for organic data review (EPA 540/R-941012, February 1994) and U.S. EPA contract laboratory program, AND national functional guidelines for inorganic data review (U.S. EPA 540/R-94013, February 1994). All organic and inorganic data will be evaluated and validated ACCORDING TO EPA

REGION 5 DATA VALIDATION CRITERIA.

** Subject to change based on personnel changes*

GP Environmental Services, Inc. will provide analytical services for the implementation of this WP. GP Environmental Services is a participant in the U.S. EPA Contract Laboratory Program (CLP).

CORE LABORATORIES, INC. WILL PROVIDE ANALYTICAL SERVICES FOR THE ANALYSIS OF DIOXINS/FURANS.

RUST ENVIRONMENT & INFRASTRUCTURE, INC., CINCINNATI, OHIO GEOTECH LAB WILL PROVIDE THE GEOTECHNICAL ANALYTICAL SERVICES DURING THE RFI.

Geophysical Survey System, Inc. (GSSI) will perform ~~all work as the~~ ground penetrating radar SERVICES subcontractor. GSSI is a designer and manufacturer of ground penetrating radar systems and offers field survey services.

Bowser-Morner, Inc will be retained as the drilling subcontractor. Bowser-Morner, Inc. has provided drilling services on several projects at THE CWM-Vickery TSD FACILITY and is familiar with all site requirements. The drilling subcontractor will be responsible for providing all drilling equipment, sampling equipment and decontamination of the drilling and sampling equipment.

7.5 Site Management

The Field Team Leader will manage field operations and is responsible for implementation of health and safety procedures, restricting site access during the course of the work, and utility clearances. The field team leader will report directly to the RUST ~~RFI~~ PM and interact directly with the project health and safety coordinator. The field team leader will generally be the project field GEOLOGIST/hydrogeologist who will also be directly responsible for data collection activities. The field team leader will be familiar with all aspects of the WP and will confirm sampling activities and locations with the RUST ~~RFI~~ PM. All daily site activities will be

recorded on a daily report form. ~~(Figure 7-2).~~ THE DAILY REPORT FORM IS PRESENTED ON FIGURE 7-2.

Experienced technicians will be utilized for support activities including equipment decontamination and field INSTRUMENT calibration, operation of field screening instrumentation, sample packaging and shipment, and assistance with documentation of field activities.

A temporary office will be established on-site during THE PHASE I RFI. ~~field investigation activities.~~ The office will house project files, field equipment, and samples awaiting transport to the analytical laboratory. The office will be locked during any absence by field personnel. The office will provide communications. Capabilities for on-site personnel and will allow more effective management of THE RFI ~~field investigation activities~~ by helping office PMs ~~managers~~ expedite equipment and personnel to the site. The office will be especially valuable as a Health/Safety staging area prior to site entry or after complete decontamination during field activities and will provide immediate emergency communication capabilities.

7.6 Progress Reports

During the ~~implementation of~~ the PHASE I RFI, the Rust PM will prepare and submit status reports to the CWM PM on a monthly basis. The CWM PM ~~project manager~~ will submit these reports to the U.S. EPA Project Manager on a monthly basis. These reports will contain, at a minimum:

- A description and estimate of the percentage of the PHASE I RFI completed;
- Summaries of all findings;
- Summaries of all changes made in the PHASE I RFI during the reporting period;
- Summaries of all contacts with the public regarding the PHASE I RFI;
- Summaries of all problems or potential problems encountered during the reporting period;
- Actions being taken to rectify problems;
- Changes in personnel during the reporting period;
- Project work for the next reporting period; and,
- Copies of daily reports, inspection reports, laboratory and monitoring data, etc.

FIGURES

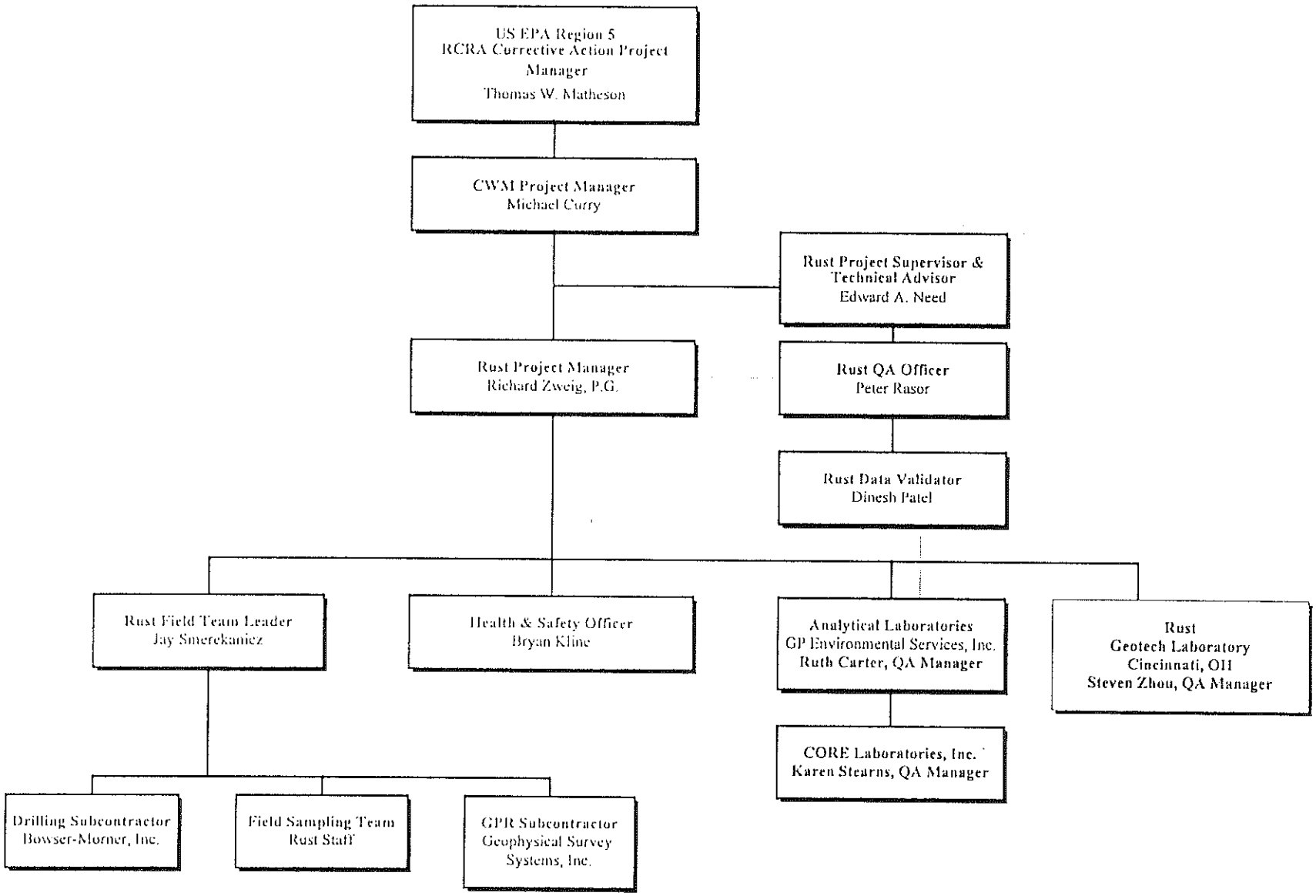


FIGURE 7-1
RFI PROJECT ORGANIZATION CHART
RFI PHASE I WORKPLAN
CWM-VICKERY

RUST ENVIRONMENT & INFRASTRUCTURE

Daily Field Report

Owner: _____ Report No.: _____

Project: _____ Page _____ of _____

Date: _____

Project No.: _____ Weather: A.M. _____ P.M. _____

Temp.(°F): High _____ Low _____ Rain _____

Contractor(s) _____

Contractor Super(s) _____

Number and Function of Contractors' Personnel, Hours Worked (Identify Subcontractors Separately)

Contractor	No. of People

Major Constr. Equip. Description	Size/Capacity	No.	No. in Use

Visitors	Representing

Daily Notations: _____

Signature: _____

White Copy - Library File Yellow Copy - Owner Pink Copy - Employee's Field File

Rev. 3/93

F201/CRS

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

REV.	DATE	DESCRIPTION	DRN BY	APP BY

DATE: AUGUST, 1995

DES BY RSZ

DRN BY JAT

CHK BY RAL

REV BY

APP BY

PROJECT NO. 38627.100 SCALE: NONE

PROJECT: RCRA FACILITY INVESTIGATION

SHEET TITLE: DAILY FIELD REPORT

Chemical Waste Management, Inc. Vickery, Ohio

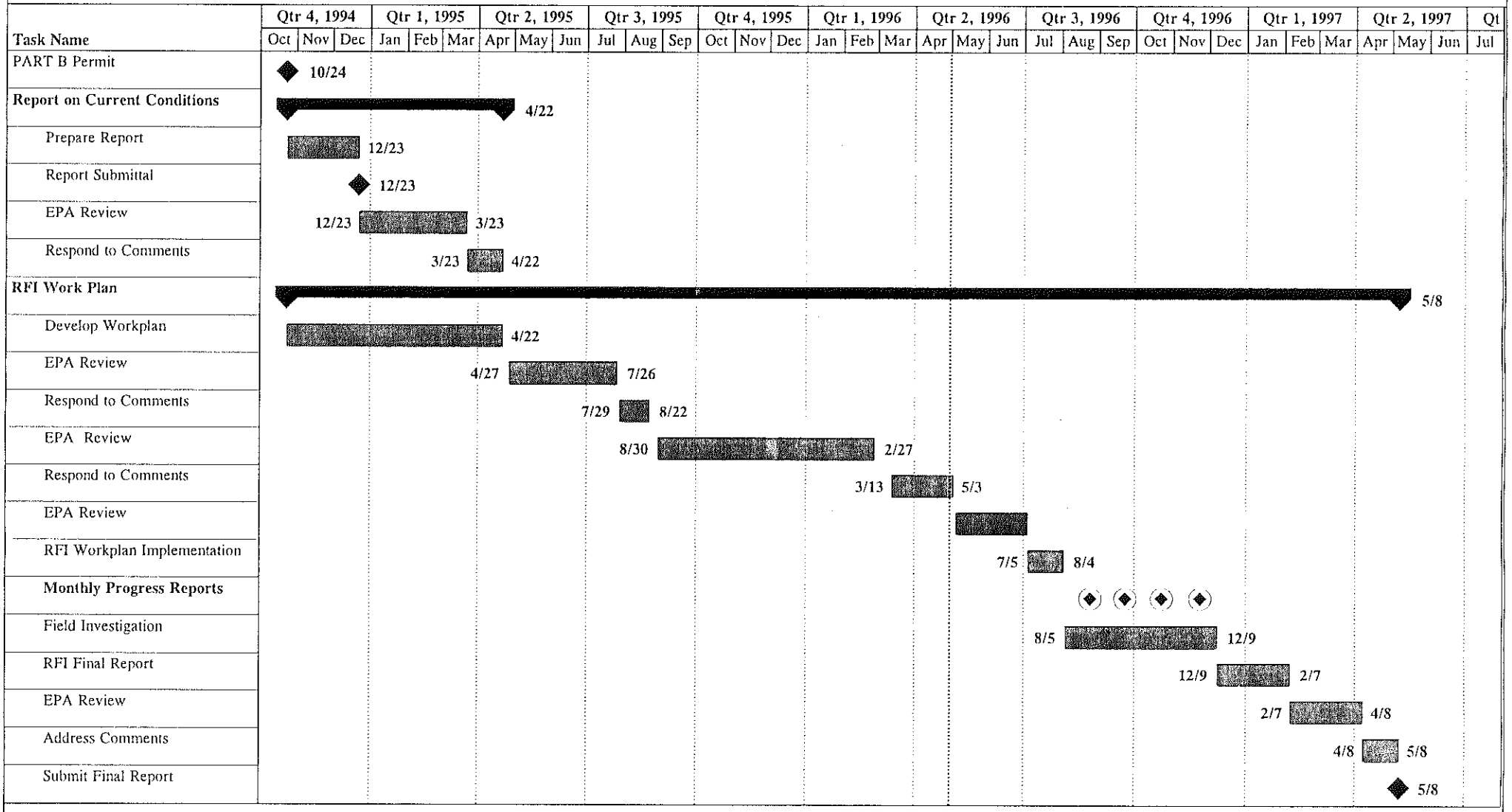
SHEET ____ OF ____

DRAWING NO.

FIGURE 7-2

TABLES

Table 7-1
RFI SCHEDULE OF ACTIVITIES
CWM-VICKERY, INC.



Project #: 38627
N:\ENV\PROJECTS\38627\TECH\MI
Date: Tue 4/30/96

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

SECTION 8
PUBLIC INVOLVEMENT PLAN

Involving the public is an important aspect of the RFI process. THE PIP ~~Public involvement serves to~~ keeps the community informed of PHASE I RFI activities at the site and helps the agency anticipate and respond to community concerns. The PIP ~~Public Involvement Plan~~ will include the following:

- Communicating effectively with people through the public Information Committee;
- Preparation of fact sheets summarizing current or proposed PHASE I RFI activities; and,
- Maintaining an easily accessible repository of information including the order of permit, and reports.

These items are discussed in the following paragraphs.

8.1 Public Information Committee

Communication will be maintained with the public through the meetings of the Public Information Committee (PIC). This committee has been established and includes members of the OEPA, members of the Sandusky Board of Health and three private citizens. The PIC ~~public information committee~~ will meet not more than on a monthly basis to review the project status and progress. The committee will be responsible for disseminating information to the public.

8.2 Fact Sheets

Fact Sheets, as necessary, will be prepared by CWM-Vickery and made available to the PIC. ~~public information committee.~~ These sheets will also be available at the Fremont Public Library. These fact sheets will be prepared periodically throughout the PHASE I RFI and reviewed by the prior to distribution.

8.3 Repository of Information

The Fremont Public Library will be the repository for all reports pertaining to the RFI. This includes: all draft and final reports and copies of news releases and clippings. CWM-Vickery

will provide the repository with revised information when applicable. CWM-VICKERY. contact for the repository will be Steve Lonneman.

SECTION 9
RFI REPORT

The information gathered as part of the RFI will be used to develop a report that documents the characterization of the nature and extent of contamination around the SWMUs and AOCs. Information collected will be used to supplement and verify the existing information on the environmental setting at the facility. Detailed hydrogeological and geological investigations and assessments have been performed at the facility and additional work is not proposed as part of this Work Plan to gather information about the hydrogeology and geology. However, during the RFI and drilling of soil borings, soil boring logs and other pertinent information concerning the environmental setting of the site will be collected for confirmational purposes. This information will be presented in the RFI report.

9.1 Presentation of Data

The laboratory analytical results will be summarized in tabular form and all supporting data will be properly referenced. Any other pertinent support data, including graphs, equations, references raw data, etc., will be included. Data presentation is presented in Section 6.0, the Data Management Plan.

The following information will be provided as part of the RFI report:

- A discussion of the regional and site specific geologic and hydrogeologic characteristics will be summarized using existing information and any other additional information obtained during the RFI.

- An analysis of any topographic features that might influence the groundwater flow system at the site. This analysis will be completed in conjunction with the review of existing groundwater quality data.

- A characterization of each SWMU and AOC will be provided. This will include which areas are potentially affected by contaminant releases, IF ANY. Information will be provided on the nature and horizontal and vertical extent of contamination to soil, groundwater, and sediment. The report will also identify the impacts to potential receptors.

The following drawings, at a minimum, will be provided as part of the PHASE I RFI report:

- Site Map;
- Sample Location Map(s);
- Soil Sample Concentration Map(s); and,
- Geologic Cross Sections.

The PHASE I RFI report will discuss the contaminants identified, IF ANY, ~~as part of the RFI~~ and THEIR ~~present the~~ behavior, stability, mobility and other relevant characteristics that may affect THEIR ~~contaminant~~ migration. IF NECESSARY, ~~A~~ recommendations for RFI ~~additional field~~ activities (soil, sediment, groundwater and surface water) will be provided based on the results of the Phase I RFI. ~~Investigation.~~

9.0 RFI REPORT

The information gathered as part of the RFI will be used to develop a report that documents the characterization of the nature and extent of contamination around the SWMUs and AOCs. Information collected will be used to supplement and verify the existing information on the environmental setting at the facility. Detailed hydrogeological and geological investigations and assessments have been performed at the facility and additional work is not proposed as part of this Work Plan to gather information about the hydrogeology and geology. However, during the RFI and drilling of soil borings, soil boring logs and other pertinent information concerning the environmental setting of the site will be collected for confirmational purposes. This information will be presented in the RFI report.

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The following information will be provided as part of the RFI report:

- A discussion of the regional and site specific geologic and hydrogeologic characteristics will be summarized using existing information and any other additional information obtained during the RFI.

- An analysis of any topographic features that might influence the groundwater flow system at the site. This analysis will be completed in conjunction with the review of existing groundwater quality data.

- A characterization of each SWMU and AOC will be provided. This will include which areas are potentially affected by contaminant releases. Information will be provided on the nature and horizontal and vertical extent OF CONTAMINATION TO SOIL, GROUNDWATER, AND SEDIMENT. THE REPORT WILL ALSO IDENTIFY THE IMPACTS TO POTENTIAL RECEPTORS.

The following drawings, at a minimum, will be provided as part of the RFI report:

- Site Map
- Sample Location Map(s)
- Soil Sample Concentration Map(s)
- Geologic Cross Sections

The RFI report will discuss the contaminants identified as part of the RFI and present the behavior, stability, mobility and other relevant characteristics that may affect contaminant migration. A recommendation for additional field activities (soil, sediment, groundwater and surface water) will be provided based on the results of the Phase I Investigation.

APPENDIX A

OhioEPA
State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020
FAX (614) 644-2329

George V. Voinovich
Governor

Donald R. Schregardus
Director

September 3, 1993

Re: U.S. EPA ID No. OHD020273819
Ohio ID No. 03 72 0191
Completion of Partial
Closure Plans
Ponds 4, 5, 7, 11 & 12

Chemical Waste Management
Attn: Fred Nicar
3956 State Route 412
Vickery, Ohio 43464

Dear Mr. Nicar:

According to Ohio EPA records, the Director approved closure plans for Ponds 4, 5 & 7 on December 27, 1984 and on March 20, 1987. The closure plan for Ponds 11 & 12 was approved on March 31, 1988. Certification reports for all of the ponds have also been received by the Ohio EPA. Ohio EPA District Office staff completed a certification of closure inspection and a review of documents pertaining to the ponds on July 30, 1993. Based on this inspection and review, the Ohio EPA has determined that Ponds 4, 5, 7, 11 & 12 have been closed in accordance with the approved closure plans and in accordance with Rules 3745-66-12 through 3745-66-15 of the Ohio Administrative Code (OAC). Chemical Waste Management will maintain the status of a treatment, storage & disposal facility (TSDF) of hazardous waste.

Due to full clean closure of ponds 11 & 12, these specific units will no longer be subject to the financial assurance requirements of OAC Rules 3745-66-43. In accordance with OAC Rule 3745-66-45, Chemical Waste Management will be responsible for maintaining cost estimates and financial assurance for post-closure activities associated with Ponds 4, 5 & 7.

Please note that this letter does not relieve Chemical Waste Management of any corrective action responsibilities that may be required.

If you have any questions concerning the closure procedure or your current status, please contact the Ohio EPA, Northwest District Office, Attn: Jeff Steers, RCRA Group Leader, 347 North Dunbridge Road, Bowling Green, Ohio 43402, tel: 419-352-8461.

Sincerely yours,

Thomas E. Crepeau

Thomas E. Crepeau, Manager
Data Management Section
Division of Hazardous Waste Management

RECEIVED
SEP 8 1993
VICKERY

Printed on recycled paper

cc. Harriet Croke, U.S. EPA, Region 5
Hazardous Waste Facility Board
Randy Meyer, RCRA TAS, DHWM
Laurie Stevenson, RES
Beth Barrett, DHWM
Jeff Steers, NWDO

OhioEPA
State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020
FAX (614) 644-2329

George V. Voinovich
Governor

Donald R. Schregardus
Director

May 21, 1993

Re: Chemical Waste Management
US EPA ID No.: OHD020273819
Ohio ID No.: 03-72-0191
Completion of Partial Closure
W-Tanks

Chemical Waste Management
Attn: Mr. Fred Nicar
3956 State Route 412
Vickery, Ohio 43464

RECEIVED
MAY 25 1993
VICKERY

Dear Mr. Nicar:

According to our records, on July 19, 1988, the Director of Ohio EPA approved a closure plan submitted by Chemical Waste Management for their hazardous waste W-Tanks (W-3, W-4, W-5, W-7) located at 3956 State Route 412, Vickery, Ohio 43464. On February 27, 1992, Chemical Waste Management submitted to the Director certification documents stating that the hazardous waste W-Tanks had been closed according to the specifications in the approved closure plan. Ohio EPA District Office personnel completed a certification of closure inspection and a review of documents pertaining to the hazardous waste W-Tanks on July 13, 1992. Based on this inspection and review, the Ohio EPA has determined that the hazardous waste W-Tanks have been closed in accordance with the approved closure plan and Rules 3745-66-12 through 3745-66-15 of the Ohio Administrative Code (OAC) and Chemical Waste Management will maintain the status of a treatment, storage, and disposal facility (TSDF) of hazardous waste at their Vickery facility.

You should continue to use the identification number assigned to you for purposes of Ohio EPA manifest, recordkeeping, and reporting requirements as appropriate.

If you have any questions concerning your current status, please contact the Ohio EPA, Northwest District Office, Attn: Brent Kuenzli, 347 North Dunbridge Road, Bowling Green, Ohio 43402, telephone number (419) 352-8461.

Please note that this letter does not relieve you of any corrective action responsibilities that may be required.

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Should you have any questions concerning this procedure, please contact Randy Sheldon, Division of Hazardous Waste Management, Data Management Section at the letterhead address or by telephone at (614) 644-2977.

Very truly yours,

Thomas E. Crepeau

Thomas E. Crepeau, Manager
Data Management Section
Division of Hazardous Waste Management

TEC/RS/ds

cc: Kevin Pierard, US EPA, Region V
Harriet Croke, US EPA, Region V
Hazardous Waste Facility Board
Randy Meyer, RCRA TAS, DHWM
Laurie Stevenson, HW ES, DHWM
Mike Rath, DMS, DHWM
Brent Kuenzli, NWDO, DHWM

APPENDIX B

Richard S. Zweig
Project Hydrogeologist

Education

B.S., Geology, State University College of New York, Oneonta, New York, 1986

Areas of Expertise

Government Regulated Reports and Investigations
Hydrogeologic Field Investigations
RI/FS Associated Studies

Mr. Zweig's experience includes project management of hydrogeologic investigations and the evaluation of remedial investigations under federal and state regulatory requirements. His project assignments range from the direction of field activities to the writing of proposals, data analysis and preparation of reports. In addition, Mr. Zweig is responsible for training and advising other staff members in field procedures.

Government Related Reports & Investigations

General Administration Services, Belle Mead, New Jersey. Performed various field tasks associated with a detailed hydrogeologic assessment of the GSA depot under supervision of the U.S. Corps of Engineers as part of government contract. Duties included soil, surface water and sludge sampling and monitoring well development.

CWM Chemical Services, Model City, New York. Performed data review and report preparation activities to update the facilities annual reports. The updated reports include the 1990 and 1991 Spill Prevention Control and Countermeasure Plan, 1990 and 1991 Water Budget Summary Report for Closed Secure Landfills and the Groundwater Level Interpretation Report. These reports are updated annually for the facility.

Chemical Waste Management, Newark, New Jersey. Developed an underground storage tank closure plan and investigation. The investigation included site supervision of field personnel and subcontractors, tank content sampling, installation of soil borings, abandonment of the tank and preparation of all required documentation for state agencies.

Hydrogeologic Field Investigations

Beltsville Agricultural Research Center - Beltsville, Maryland. Developed a well decommissioning plan for the center in accordance to the state regulations. The well decommissioning plan was used to facilitate the closure of unnecessary monitoring wells which were in areas which were to be excavated.

Confidential Client. Supervised the removal of numerous underground storage facilities as part of a nationwide contract for a major lawncare corporation. The activities included the direction

of subcontractors, soil sampling, and completion of a closure report. Additional activities at certain sites include the drilling of monitoring wells and the preparation of closure plans.

CWM - Vickery, Vickery, Ohio. Project Manager for the preparation of the site specific environmental monitoring plan for the facility. This also includes annual updates on an as needed basis. Additional work performed at the facility include; the semi-annual groundwater sampling for the facility and supervision and management of the Phase II groundwater monitoring well installation project which included the installation and development of seven groundwater monitoring wells around the Closure Cell.

S.V. Farming Corporation, Quinton Twp., New Jersey. Supervised the installation of piezometers, conducting of a pumping test, groundwater sampling, and other field tasks associated with collecting data which will assist in the efforts to develop a wetland mitigation and restoration design.

Waste Management North America, Hamilton Twp., New Jersey. Preparation of a major hydrogeologic investigation of a closed municipal landfill. The investigation included the installation of groundwater monitoring wells completed within distinct strata of interest, aquifer tests; soil, groundwater, sediment and surface water sampling, data analysis and the preparation of a complete site assessment report.

CWM of Pennsylvania/Delaware Container, Coatesville, Pennsylvania. Supervised the installation of monitoring wells, conducted soil sampling and other field tasks associated with the investigation of a chemical waste facility during transfer of ownership.

RI/FS Associated Studies

Macon-Dockery Superfund Site, Richmond County, North Carolina. Performed hydrogeologic and geologic studies for a Phase II RI. Duties included the installation of groundwater monitoring and groundwater sampling.

Chemical Waste Management - Gaess Site. This project is an on-going Phase II RI/FS. Duties included the preparation of a RI/FS Work Plan, the supervision of field investigations, hydrogeologic studies and groundwater sampling.

Chemical Waste Management, Newark, New Jersey. Provided assistance in the preparation of a RI/FS Work Plan for the facility. Duties included the review of existing geologic information and the review of area data for inclusion in the Work Plan.

Additional Training

8-Hours Supervisor Training at Hazardous Waste Sites
8-Hours of Level "B" Training
CEU's granted for the successful completion of courses below:
Treatment Technology in Contaminated Groundwater
IBM PC Applications in Groundwater Pollution and Hydrology

Professional Memberships

Association of Groundwater Scientists and Engineers

Employment History

1990 to present	Rust Environment & Infrastructure
1989 to 1990	Klepp Environmental Services, Inc.
1988 to 1989	TRC Environmental Consultants, Inc.
1986 to 1988	Lawler, Matusky & Skelly Engineers and Environmental Consultants

Roy C. Peterson, P.E.
Section Manager

Education

M.S., Civil Engineering, Villanova University, Villanova, Pennsylvania, 1989
B.S., Civil Engineering, Drexel University, Philadelphia, Pennsylvania, 1980

Professional Registration

Professional Engineer, Pennsylvania, 1986; Maryland 1993

Areas of Expertise

RCRA TSD Permitting/Design/Operation
Environmental Audits/Site Assessments
RI/FS/Remediation Design & Construction
Solid/Residual Waste Management
Radioactive Waste Management
Medical Waste Management
Surface Water Management

Experience

Mr. Peterson is responsible for managing the environmental engineering group which handles projects related to waste, wastewater, air, solid and hazardous waste management. Projects involve investigative studies, audits, assessments, feasibility studies, permitting and conceptual and detailed designs of facilities (treatment, storage and disposal).

Solid/Residual Waste Management

Waste Management of Maryland, Inc., Solid Waste Transfer Station, Rockville, Maryland. Project supervisor responsible for design and permitting of a Solid Waste Transfer Station to handle 600 tons per day of municipal trash and recyclables. Project work included investigation for site conditions, layout of facility structures, access roads and scales, design of transfer building and operations and preparation of permit document. Also prepared stormwater management plan and wetlands mitigation plan.

Archbald Power Corporation, Archbald, Pennsylvania. Project manager responsible for preparation of an ash fill permit for a cogeneration facility located in Northeast Pennsylvania at a old coal strip mining operation. Project work included design of five ash fill areas ranging in size from 15.8 acres to 33.5 acres and preparation of document to permit these areas. Designed stormwater management systems (channels, culverts, basins) to handle runoff from ash fill areas.

Waste Management, Inc., Lakeview Landfill, Erie, Pennsylvania. Project supervisor responsible for design and permitting of a borrow area and a landfill expansion area. Project

work included a subsurface investigation, wetlands delineation and mitigation and preparation of the borrow and expansion major modification permit application package.

Medical Waste Management

Waste Management, Inc., Medical Waste Treatment Facility, Hudson, New Hampshire. Project manager responsible for design and permitting of a medical waste treatment facility. Project work included preparation of a design to upgrade an existing warehouse building to accommodate the medical waste storage, handling and autoclaving equipment and preparation of facility permit document.

RCRA TSD Permitting/Design/Operation

Chemical Waste Management, Vickery, Ohio. Project manager responsible for upgrading and revising RCRA Part A and B permits to include drum storage and rolloff handling facility. Project included conceptual design of drum storage and rolloff handling facilities.

Chemical Waste Management of PA, Inc., Hazardous Waste Treatment, Storage and Recycling Facility, Coatesville, Pennsylvania. Project manager responsible for providing engineering support during acquisition of an existing hazardous waste treatment, storage and recycling facility. Work included Due Diligence site investigation to characterize impacts to site from ongoing hazardous waste management activities. Prepared submittal to subdivide property which addressed all local ordinance conditions and proposed site upgrades. Attended meetings with local authority to present subdivision plan. Prepared closure plans for existing hazardous waste management units and negotiated cleanup levels for subsurface soils with PADER. Provided construction management during closure and prepared closure certification document which received clean closure of each unit. Prepared design for civil site upgrades and performed construction management during upgrades. Revised Part A and B documents to include revised fuels blending, containers handling, physical/chemical treatment and bulk waste stabilization units. Prepared NPDES stormwater discharge permit.

Chemical Waste Management, CHEM MATRIX Hazardous Waste Stabilization Facility, Model City, New York. Project manager responsible for design, construction and permitting of a major expansion to the. Prepared drawings and specifications for building, which contained two subsurface hazardous waste stabilization pits, an overhead bridge crane, a pneumatic stabilization material handling system, drum handling equipment, drum shredding equipment and a high volume dust removal system with three baghouses. Prepared air permits for building boiler and baghouses. Provided engineering consulting during construction and prepared as-built drawings for engineering certification report.

Chemical Waste Management, Drum Handling Facility, Newark, New Jersey. Project manager responsible for design, construction and permitting of a drum handling facility. Prepared

drawings and specifications to upgrade existing warehouse to provide segregated storage areas with spill, climate and fire controls. Responsible for construction management during implementation of upgrade design.

Envirosafe Services, Inc., Various Sites, Valley Forge, Pennsylvania. Corporate environmental engineer responsible for providing engineering support for hazardous waste disposal facilities located throughout the United States. These facilities included TSCA and hazardous waste landfills, a TSCA equipment draining and flushing facility, a hazardous waste stabilization facility and an acid waste treatment facility. Support activities involved facility design, permitting and construction management as well as facility environmental compliance including facility auditing and maintenance of groundwater monitoring data bases.

Chemical Waste Management, Model City Landfill, Model City, New York. Project supervisor responsible for development of Response Action Plans (RAP) for a series of hazardous waste landfill expansions. Project work included calculation of maximum infiltration rates for secondary leak detection layer from landfill and subsurface soils/groundwater. Prepared RAP which explained methods and results of calculations and provided response levels and action plans.

Federal Government Projects

NAVFACENGCOM, Alexandria, Virginia. Project manager responsible for evaluation of hazardous waste management operations at four Naval bases. Developed hazardous waste management plans for these facilities and prepared conceptual design for hazardous waste drum storage buildings.

U.S. Army Armament, Monitors and Chemical Compound, McGuire Air Force Base, Wrightstown , New Jersey. Project Manager responsible for characterization of the extent of radioactive contamination at a BOMARC Missile Site bunker. Responsible for developing the Site Characterization and Health and Safety Plans retaining and coordinating site investigation subcontractors and preparing the site characterization Report. Also interacted with public and regulatory personnel to explain and defend the proposal characterization work and procedures.

RI/FS/Remediation Design & Construction

Chemical Waste Management, Gaess Site, Harriman, New York. Project manager responsible for investigation and remediation of an inactive hazardous waste management facility. Project work included soil and groundwater investigation using soil vapor extraction and hydropunch technologies. Based on results of investigation prepared design for groundwater pump and treatment system with air stripping as contaminant removal technology. Provided construction management during implementation of remedial design.

Waste Management of Maryland, Inc., Phoenix Recycling, Finksburg, Maryland. Project supervisor responsible for investigation and remediation of an acquisition property that had been an industrial facility. Industry related facilities at the site included above and underground ground storage tanks, ash landfilled areas, a scrap yard area and a large warehouse structure which contained asbestos materials. Project work included soil and groundwater investigation, lead paint and asbestos sampling and above ground storage tank sampling. Based on results of investigation prepared drawings and specifications for remediation of above ground storage tanks, ash landfilled areas and structures containing asbestos. Acted as general contractor to complete remediation with subcontractors hired to perform specific remedial work. Provided construction management during all remedial work and prepared construction certification document.

Confidential Client, Superfund Site, Rhode Island. Project manager responsible for preparation of a feasibility study for a confidential client acting as the lead PRP for an old sand and gravel operation which had been backfilled with various hazardous wastes. Project work involved evaluation of site investigation results to determine if capped hazardous waste disposal area continued to act as a source of contaminants for groundwater. Project work also involved groundwater modeling to determine the feasibility of various pump and treatment strategies. The feasibility study recommended natural attenuation for the groundwater remediation measure and the EPA endorsed this strategy.

Lehigh Electric Superfund Site, Old Forge, Pennsylvania. Project engineer responsible for site investigation, preparation of feasibility study and remediation design and construction management. The site contained PCB transformers that were stored and drained for recovery of copper windings. Site investigation work included sampling of all transformers and sampling of draining soil and groundwater. Prepared remedial design which included onsite draining and offsite disposal of transformers, and contaminated soil excavation and offsite disposal. Received letter from EPA regional manager commending project team members for highly successful project.

Wade Superfund Site, Chester Pennsylvania. Project engineer responsible for preparation of a remedial design to cleanup contaminated soils resulting from illegal storage and dumping of drums containing hazardous wastes.

Enterprise Avenue Superfund Site, Philadelphia, Pennsylvania. Project engineer responsible for developing remedial alternatives for stockpiled contaminated soils. Also assisted in preparing remedial design.

Westinghouse Electric Corporation ECRA Site, Hillside, New Jersey. Project manager responsible for preparation of a cleanup plan under the New Jersey ECRA program. Project work include sampling of soil and groundwater and development of strategies to cleanup PCB contaminated soils and structures.

General Electric Corporation ECRA Sites, Camden, Mercer County, New Jersey. Project engineer responsible for characterization and removal of a number of leaking underground storage tanks (UST). Project included preparation of cleanup plan and design of new UST systems. Also responsible for construction management during cleanup and system installation.

Radioactive Waste Management

Rockwell International, Radioactive Waste Reservation, Hanford, Washington. Project engineer for environmental engineering group which was responsible for management of radioactive waste sites located throughout the Hanford Energy Reservation. Assisted in preparation of remedial design for leaking high level radioactive waste underground storage tanks.

Confidential Client, Radioactive Waste Site, Cannonsburg, Pennsylvania. Project engineer responsible for design of landfill cell to dispose of site radioactive materials and soils at an onsite location.

Surface Water Management

Chemical Waste Management, S.V. Farming, Princeton, New Jersey. Project manager responsible for preparation of an erosion and sedimentation control plan and NPDES discharge permit for this clay mine site.

Exxon Petroleum Distribution Center, Philadelphia, Pennsylvania. Project supervisor responsible for preparation of NPDES stormwater discharge permit.

Environmental Audits/Site Assessments

Chemical Waste Management, Various Sites, Princeton, New Jersey. Project supervisor responsible for conducting audits of facilities located throughout the United States which CWM or its subsidiaries used for treatment or disposal of waste material. Audit work included site inspections and regulatory agency file reviews and preparation of an audit report.

Chemical Waste Management, Confidential Site, Princeton, New Jersey. Project manager responsible for performance of a Due Diligence audit to establish environmental conditions at permitted hazardous waste warehouse facility in Springfield, Massachusetts. Project work included collection of soil, groundwater and soil vapor samples and preparation of isoconcentration drawings to depict extent of contamination. Performed limited groundwater modeling to predict feasibility of cleanup of DNAPL contamination. Prepared cost estimates for site cleanup. Based on site assessment, environmental liabilities were too high to justify purchase.

Professional Association

American Society of Civil Engineers

Special Training

40-Hour Hazardous Waste Health and Safety Training
8-Hour Hazardous Waste Supervisor Training
Geotextile Materials and Applications Seminar

Employment History

1990 to Present	Rust Environment & Infrastructure
1987 to 1990	BCM Engineers, Inc.
1985 to 1987	Envirosafe Services, Inc.
1981 to 1985	Roy F. Weston, Inc.
1980 to 1981	Rockwell International

Bryan R. Kline
Safety and Health Specialist

Education

B.S. Occupational Safety and Industrial Hygiene Management, Millersville University, PA 1993

Areas of Expertise

Airborne Contaminant Sampling
Noise Monitoring
VOC sampling
Confined Space Entry
Hazard Communication
Respiratory Protection
First Aid and Emergency Response
Lockout/Tagout
Line/Pump Entry
MSDS

Experience

Mr. Kline is responsible for recognizing, evaluating and controlling chemical and physical work place hazards, performing airborne contaminant sampling and industrial noise monitoring surveys, Safety and Health training, plan preparation, and inspections.

Conrail Enola Yard, Enola, Pennsylvania. Performed industrial hygiene monitoring using personal, high and low flow, sampling pumps and direct reading tubes. Sampled for NO, NO_2, respirable particulates and coaltar pitch volatiles. Performed all field calibrations of instruments and sampling strategies. Also performed area noise monitoring to determine the need for a comprehensive noise survey.

Chemical Waste Management, Sandy Hill Landfill, Bowie, Maryland. Performed landfill gas sampling.
Sampled for: Total non-methane organic compounds, EPA method 25C, fixed gas % nitrogen, % oxygen, % CO_2 in methane ASTM D1946 and volatiles TO-14.
Coordinated lab analysis and participated in report writing.

Alumax Mill Products, Lancaster, Pennsylvania. Assisted in performing VOC stack testing for cold Rolling Mills. Coordinated stack test program with production personnel. Stack testing was conducted in accordance with EPA methods and modified with PADER methodology.

BOMARC Missile Site, Mc Guire AFB, Ocean County, New Jersey. Site safety and health specialist responsible for reviewing and implementing site safety & and health plan. Performed site safety audits of environmental conditions and work procedures.

Chemical Waste Management, Vickery, Ohio. Safety and Health specialist responsible for preparing a Health and Safety Plan for RCRA facility investigations.

Cinnaminson Groundwater Contamination Site, Burlington County, New Jersey. Safety and Health Specialist responsible for preparing a Health and Safety Plan for construction of a hazardous waste treatment facility.

Confidential Client, Tacoma, Washington. Organized and disseminated historic documents regarding water pollution and water treatment to determine proportionate responsibility for sediment pollution of a major waterway.

King George County Landfill & Recycling Facility, King George County, Virginia. Prepared field quality assurance/quality control (QA/QC) plan for a Part B Permit Application.

Chemical Waste Management (CWM), Newark, New Jersey. Project Manager responsible for preparing the hazardous waste treatment, storage and disposal facilities annual hazardous waste report.

Wheelabrator Falls, Inc., Morrisville, Pennsylvania. Provided database organization for the Resource Recovery Facilities Quarterly Hydrogeologic Monitoring Report.

I.P.S. Compost Facility, Burlington County, New Jersey. Performed indoor air quality calculation analysis for a proposed composting facility. Determined ventilation rate to meet OSHA standards. Performed required calculations for Co and No_x contaminants to ensure that the concentrations will be below OSHA permissible exposure limits.

Affiliations

American Society of Safety Engineers (ASSE)
American Industrial Hygiene Association (AIHA)

Special Training

40-Hour Hazardous Waste Health and Safety Training

Employment History

1995 to Present	RUST Environment and Infrastructure
1993 to 1994	Lonza, Inc.

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Dinesh B. Patel
Environmental Compliance Specialist

Education

M.S., Chemistry, Sardar Patel University, India
B.S., Chemistry, Sardar Patel University, India
Advanced Courses in Chemistry at Post-Graduate Level, Saint Joseph's University, Philadelphia, Pennsylvania

Experience

Mr. Patel is the Senior Environmental Compliance Specialist for RUST E&I's East Region with over 23 years total experience. Mr. Patel has technical expertise, practical experience, and thorough knowledge in the following areas: Environmental auditing and compliance; identification, listing and management of hazardous waste; laboratory management; quality control; quality assurance; EPA analytical methodologies; waste water treatment processes for chemical and electroplating industries; management of air, water, solid waste; and, risk assessment studies. Mr. Patel is thoroughly familiar with DOT, RCRA, TSCA, NPDES, OSHA, CERCLA, waste minimization, lab packing and land ban regulations.

Rohm & Haas Delaware Valley, Inc., Philadelphia, Pennsylvania. Mr. Patel served as an in plant compliance consultant for hazardous waste management at an organic chemical and ion exchange resin production facility. His duties included RCRA inspections, preparing and submitting quarterly and annual reports, vendor contacts, and resolution of day to day issues on waste generation, storage, accumulation, on site management in BIF unit, and off site shipments to TSDR facilities.

Chemical Waste Management of New Jersey, Inc., Newark, New Jersey. Technical Manager whose major responsibilities included total evaluation, characterization and treatment of various types of industrial waste (hazardous and non-hazardous liquids and solids) and ensuring their safe and proper disposal within the guidelines of state and EPA regulations. Reviewed analytical data of all prospective waste streams for acceptance or rejection. For those streams accepted, he provided necessary data for pricing.

Performed daily RCRA inspections and escorted state inspector on weekly site visits. Implemented computerized waste tracking system. Played strategic role in plant wide compliance assurance and reporting system (CARS), and contributed major responses during seven annual internal environmental audits.

Responsible for preparation of annual RCRA Hazardous Waste Reports. Retained Signatory authority on manifests and Land Ban Certification forms.

Hired, managed and trained personnel in laboratory procedures/techniques and ensured the quality of work performed. Rendered technical advice to the plant and external customers. Interfaced with local, state and federal agencies. Prepared and reviewed various technical reports, traveled to other CWM sites and rendered technical support and analytical guidance.

Achievements:

- Developed and implemented process control and formal laboratory procedures which resulted in an increased productivity of 60%;

- Reduced disposal cost of D Coded filtercake (sludge) by finding a delisting alternative for non-hazardous disposal which resulted in saving approximately $150,000 annually. Developed close working relationship with PADER;

- Developed and implemented an oxidation treatment process to handle cyanide, sulfide and phenols utilizing hydrogen peroxide to increase business. This resulted in increased productivity, in addition to generating $50,000 extra revenue during the first year;

- Introduced new methods to improve quality of discharge, resulting in lower sewer discharge cost and saving approximately $90,000 annually;

- Initiated, developed and implemented procedures for safe decanting and bulking of liquid waste in drums. This resulted in a 50% increase in productivity, more available warehouse space and a cost savings of $30,000 annually. Drafted standard procedure for combining drummed waste on the basis of compatibility.

Chem-Clear of Baltimore, Inc, Baltimore, Maryland. Chief Chemist with total management responsibility for the laboratory of a hazardous waste treatment facility along with providing technical support to the operation and customer service groups. Prepared monthly variable cost report for plant, quarterly discharge report for state and local sewer authority and annual reports for EPA. Advised and informed customers and waste haulers about new state, DOT and EPA regulations. Managed the plant by taking full responsibility for environmental compliance and operations in the absence of the plant manager.

Achievements:

- Established an excellent relationships with customers and vendors;

- Coordinated and handled first superfund job in October 1981 which resulted in a $25,000 revenue. Established excellent rapport with the state and EPA; and,

- Contributed toward successful procurement of RCRA Part "B" permit.

Ivory Company, Inc., Philadelphia, Pennsylvania. Chief Chemist with total management responsibility of electroplating and electropolishing departments. This entailed rendering technical advice, devising solutions for technical problems, analyzing compounds to determine their chemical and physical properties, and preparing standards and specifications for products.

Achievements:

- Successfully increased productivity by 100% in plating and electropolishing department.

Atul Products Limited. Bulsar, India. Production chemist with total management responsibility of manufacturing of various dyes, pigments, fast color bases, and intermediates. This entailed total quality control, rendering technical advice, devising solutions for technical problems.

Special Training

40-Hour Hazardous Waste Health and Safety Training OSHA 1910.120
Computerized AS 400 Waste Profile Lab and Assist Training
Computerized Service Assist Training for Incoming/Outgoing Loads

Employment History

1995 to Present	RUST Environment & Infrastructure
1986 to 1994	Chemical Waste Management of New Jersey, Inc.
1978 to 1986	Chem-Clear of Baltimore, Inc.
1971 to 1978	Ivory Company, Inc.
1969 to 1970	Atul Products Limited

John R. Smerekanicz
Project Geologist

Education

B.S., Geology, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, 1988
M.S., Geology, Old Dominion University, Norfolk, Virginia, 1992

Areas of Expertise

Hydrogeologic Field Investigations
Government Regulated Reports and Investigations
UST Investigations
Mineral Exploration Investigations

Experience

Mr. Smerekanicz's experience includes geologic and hydrogeologic investigations concerning several sites and regions. His project tasks include: coordinating field investigation activities, writing and preparing reports, performing research, data analysis and verification, and proposal writing. In addition, Mr. Smerekanicz is responsible for training and advising other staff members in field procedures and in computer applications.

Hydrogeologic Field Investigations

Modern Trash Removal of York, York, Pennsylvania. Performed 72-hour aquifer pumping test performed to establish hydrogeologic parameters characteristic to the landfill's Southwest Expansion area. Duties included borehole geologic logging, supervising pumping well and piezometer construction, coordinating testing procedures, data collection and subsequent analysis, and report preparation and writing.

SCA Services of Pennsylvania, Elizabethtown, Pennsylvania. Performed data analysis, and report preparation concerning an 80-hour aquifer pumping test performed to establish hydrogeologic parameters and subsurface flow regimes in relation to a proposed groundwater extraction system at Elizabethtown Landfill.

Waste Disposal Inc., Howell Township, New Jersey. Collected groundwater elevation data (manual and automated) for monthly analysis at the closed WDI landfill. Data generated were used to construct potentiometric maps characterizing groundwater flow in relation to the active groundwater extraction system.

Wheelabrator Falls Facility, Fairless, PA. Performed quarterly groundwater and sediment sampling involved with facility monitoring of the cogeneration plant. Tasks included coordinating field activities, groundwater and sediment field sampling, data analysis, and report preparation and writing.

John R. Smerekanicz
Project Geologist

Lake View Landfill, Erie, Pennsylvania. Responsible for construction of groundwater contour maps characterizing groundwater elevations for redesign of the Cell 5 South footprint.

Waste Management of New Jersey, Trenton, New Jersey. Performed monitoring well construction supervision at the Patterson Avenue landfill site. Tasks included monitoring well and borehole log preparation.

Government Related Reports and Investigations

Lake View Landfill, Erie, Pennsylvania. Performed subsurface investigation and exploration of subsurface geologic conditions at the Zwilling and Fuhrman Borrow Areas for PADER permit application purposes. Tasks included corehole and borehole logging, soil and rock sampling, rock joint measurement, supervision of monitoring well and piezometer construction, coordinating field activities, field groundwater sampling and analysis, test pit logging and sampling, and report preparation and writing.

Waste Management of Pennsylvania, Morrisville, Pennsylvania. Responsible for investigation and report preparation concerning the geology and hydrogeology of a large area covering southeastern Pennsylvania and adjacent west-central New Jersey. This study involved evaluation of the area's geology and hydrogeologic conditions in relation to the G.R.O.W.S. and T.R.R.F. facilities. Duties included thorough background research, analysis of over 700 boring and well logs, supervision and coordination of well survey tasks, construction of computer-aided structural contour maps and cross sections, and report preparation and writing.

Lukens Steel, Coatesville, Pennsylvania. Performed site geological and shallow subsurface investigations of existing landfill in relation to PADER permitting activities. Tasks included coordination of test pit activities, geological research and field mapping, soil sampling and logging, and report preparation and writing.

Virginia Department of Environmental Quality, Richmond, Virginia. Responsible for construction and evaluation of a procedural guidance document utilizing risk-based computer modelling programs to calculate environmental clean-up levels for hazardous waste sites in Virginia using specific data pertaining to site conditions. Tasks included research into other states' clean-up level determination processes, attendance in USEPA sponsored courses and workshops, evaluation of computer-aided groundwater, surface water, soil and air contaminant migration models, and report preparation and writing. This work was part of an ongoing USEPA funded study concerning a reevaluation of VDEQ's mitigation policies.

UST Investigations

ATEC Environmental, Inc., Norfolk, Virginia. Performed subsurface investigations concerning UST removal and monitoring involved with Phase I and II Environmental Site Assessments. Tasks included coordinating subsurface investigations involving drilling and magnetometer surveys, supervision of well construction, soil and groundwater sampling, geochemical mapping, data

analysis, preparation of groundwater potentiometric elevation maps, and report preparation and writing.

Mineral Exploration Investigations

Chemstar Lime, Inc., Henderson, Nevada. Performed geological and geochemical field exploration in large regions of Idaho, Wyoming, Nevada and Utah for high-calcium limestone for evaluation of potential lime production mining operations. Tasks included geological research, coordination of field activities, geological mapping and sampling in hazardous terrain, data analysis, and report preparation and analysis.

Additional Training

40-hour OSHA Hazardous Waste Site Worker Course
8-hour OSHA Update Course
Risk Assessment Guidance for Superfund, USEPA Training Course
Risk Assessment and Communication, USEPA Workshop
Exposure Factors Handbook, USEPA Workshop
Environmental Monitoring Laboratories, Inc., Short Course on Groundwater Sampling
Short Course on Fluid Inclusions

Publications

Smerekanicz, J.R., Dudás, F.Ö. and Baltzely, W.D., 1991, Strengite, a new mineral from the Morefield Pegmatite Mine, Amelia County, Virginia: Virginia Minerals, vol. 37, p. 31-32.

Smerekanicz, J.R. and Dudás, F.Ö., 1992 (abstract), Fluid inclusion studies of the Morefield Pegmatite, Amelia County, Virginia: 41st Annual Meeting, Southeastern Section, 1992 Abstracts with Programs, Geological Society of America, March 18-20, vol. 24, p. 65.

Smerekanicz, J.R., 1992, Fluid Inclusion Studies of the Morefield Pegmatite, Amelia County, Virginia: unpublished M.S. thesis, Old Dominion University, 179 p.

Harlow, V.H., Alden, R.W. III, Caravas, K., Hansen, S.T., Kaufman, D.G., McCaul, N.P., Rogan, P.T., Rule, J.H., **Smerekanicz, J.R.**, Sterling, D.A., Whittecar, G.R., and Winfield, J.G., 1993, Literature Review for Development of Procedural Guidance Document for the Cleanup and Closure of Sites Contaminated with Hazardous Substances: Applied Marine Research

Laboratory Technical Report No. 929, submitted to the Virginia Department of Environmental Quality, Waste Division, 145 p.

Edward A. Need, CPG
Senior Project Manager, Hydrogeologist

Education

M.S., 1981, Water Resources Management, University of Wisconsin, Madison, Wisconsin
M.S., 1980, Geology, University of Wisconsin, Madison, Wisconsin
B.A., 1978, Geology, Williams College

Professional Registrations

Professional Geologist - American Institute of Professional Geologists, 1985
Indiana, 1985
North Carolina, 1986
South Carolina, 1987
Tennessee, 1993
Kentucky, 1993

Areas of Expertise

Project Management
Litigation/Claims Support
Agency Negotiations
Groundwater Remediation
Vadose Zone Monitoring
RCRA Part B Groundwater
Groundwater Monitoring
Underground Storage Tanks
CERCLA RI/FS
Hydrogeologic Investigations
Environmental Audits
Site Characterization

Experience

Mr. Need serves as a Senior Project Manager and Hydrogeologist on environmental projects covering a wide range of technical and regulatory issues. Mr. Need's RCRA work includes preparation of Part B permit applications; development, installation, and data assessment of groundwater and vadose zone monitoring systems; planning and management of RCRA Facility Investigations; and negotiation and design of groundwater remediation systems. Under CERCLA he has negotiated and prepared work plans, sampling plans, and quality assurance plans; performed and directed field investigations, data evaluation and report preparation; managed risk assessments and feasibility studies; and represented PRP Groups in public comment support, IRM planning and implementation, and negotiation of remedial design Statements of Work.

Project Management

Total Environmental Restoration Contract, KI Sawyer AFB, Marquette, MI. Technical Manager for delivery order covering six separate RI/FS and RA projects at Air Force Base being closed un BRAC program. Responsible for developing work breakdown structure and detailed cost estimates, and for negotiating estimated costs and scope with US Army Corps of Engineers. Upon award representing $4 million, responsible for coordinating technical approaches and methods across the six projects -- RI/FS at four closed landfills, RI/FS at two leaking underground storage tank sites, RI/FS for characterization of base-wide groundwater conditions, RI/FS for mixed TCE and BTEX plume with four separate sources, RA at "lime pit" used for nuetralization of automotive battery acid, and RA for recovery of free-phase JP-4 from water table at depth of 50 feet. Through leadership and management of these efforts, work plans were prepared, negotiated and approved by Michigan DNR and USEPA, and a 12-person field crew and subcontractors were mobilized to the field in 7 weeks. This allowed field work to be completed bedfore winter set in, saving a full six months of project schedule. Also serve as Project Manager for the RI/FS project at the four landfills.

Technical Support to PRP Group, Skinner Landfill Site, West Chester, OH. Project Manager for technical support to PRP Group during Public Comment, IRM planning and implementation, negotiations concerning the Remedial Design Statement of Work, and peformance of pre-design investigations at a CERCLA site in southwestern Ohio. The project involved technical review of USEPA reports, preparation of technical comments, agency negotiation, development of work plans and specifications, and presentation to community groups. Effort contributed to USEPA's modification of the selected remedy from on-site incineration to a containment and monitoring alternative and the use of phased, performance-oriented approach to the ROD and RD SOW, thus representing a significant costs-savings to the PRPs.

Installation Restoration Program Investigations, Selfridge ANG Base, Mt. Clemens, MI. Project Manager for IRP investigations at eight sites on an Air National Guard Base in the upper Midwest. Planned and supervised execution of field programs at three landfills, two fire training areas, two aircraft ramps, and a coal storage pile. Scope of field work included 61 monitor wells, 109 groundwater and surface water sampler, and 93 soil samples. Laboratory analyses were performed for volatile organics, semi-volatile organics, petroleum indicators, and metals. Data compilation utilized computerized data bases and multiple maps and cross-sections. Report preparation encompassed several months of effort by up to six individuals, producing a comprehensive 650-page document.

Litigation/Claims Support

Environmental Liability Insurance Litigation, Confidential Project. Project Manager and Lead Technical Advisor to law firm representing major solid waste management company in litigation of insurance claims for coverage of environmental liabilities under comprehensive general liability insurance policies. The litigation involved Superfund costs incurred by the company as owner/operator or as generator/transporter at hundreds of landfill and chemical waste disposal sites throughout the U.S. Responsibilities included establishing the chronology of remediation events, linking these events to costs comprising the claim, and analyzing the technical facts for each site with respect to key insurance coverage issues -- whether damage was expected or intended, whether release was sudden and accidental, and whether third-party or off-site damages occurred -- within the context of differing State laws and Court rulings. Performed research on national and State-specific landfill and waste disposal practices to characterize the "state-of-the-art" as part of assessing whether damages were or could have been expected or intended.

Construction Claims Arbitration, City of Fort Atkinson, WI. Project Geologist to law firm representing municipality in formal arbitration proceedings for construction claims related to installation of sanitary sewers and appurtenant structures. Contractor claimed differing subsurface conditions, particularly with respect to dewatering requirements. Analysis of soil conditions using boring logs provided to the Contractor, comparison of progress rates along various segments of the sewer alignment, and examination of dewatering methods and operation supported a ruling in favor of the municipality. Particularly useful insights were obtained through detailed analysis of electrical costs from power drops installed specifically for pumps in a deep-well dewatering system.

Agency Negotiations

RCRA Deferral from Superfund, Confidential Project. Lead Technical Negotiator on combined legal-technical team that successfully obtained a RCRA deferral from CERCLA for a groundwater contamination problem. The plume, which contained moderate to low levels of chlorinated solvents, and the site geology were well-defined, having been previously studied by the client and a State Geological Survey. Because a public water supply had already been installed for a subdivision affected by the plume, there were no risks to public health or the environment, and the only remedial action necessary was a simple pump and treatment system. By keeping the site off the Superfund list, the client was able to avoid a redundant and potentially lengthy and expensive RI/FS process and proceed directly to the design phase of Corrective Action.

RCRA Waiver of Minimum Technology Standard, Confidential Project. Project Manager and Lead Technical Negotiator on combined legal-technician team that successfully obtained a waiver of the RCRA/HSWA minimum technology standard requiring double liners for RCRA surface impoundments. Detailed physical and hydrogeologic characterization of thick, fine-grained, glacial-lake sediments that comprised the vadose zone beneath the impoundments, and saturated/unsaturated computer modeling using finite elements computer codes demonstrated that leakage from the impoundments would not saturate soils more than 15 feet below the impoundments prior to their planned closure date. Negotiation focused on how to incorporate these findings into conditions for the waiver that established a monitoring system for the impoundments to provide continuing verification of the performance described in the computer model. Not having previously granted a waiver, the Regional USEPA staff were concerned about setting precedents; nevertheless, through negotiations, a practicable monitoring program was developed that satisfied the Agency and had a reasonable cost to the client.

Groundwater Remediation

Groundwater Pump & Treat Design, Warner Electric Brake & Clutch Co., Roscoe, IL. Project Management for design of groundwater pump and treat system to intercept plume of volatile organic compounds discharging to a major river in north central Illinois. Project involved extensive support of negotiations with regulatory agencies regarding conditions and requirements of an administrative consent order. Design features included a single recovery well capable of pumping 300 gpm, air stripping and activated carbon filtering of both air and treated water effluents. An additional complexity was the need to fit the treatment system in a structure similar to the one- and two-story houses in the surrounding subdivision.

Vadose Zone Monitoring

Design and Installation of Vadose Zone Monitoring System, Confidential Project. Project Manager for implementation of innovative monitoring system beneath existing surface impoundments. Design features included multiple lysimeter and tensiometer in each borehole and boreholes drilled at angles of 72 degrees from vertical. Installation achievements included drilling crossing boreholes and co-termination of paired boreholes within five feet beneath former leak location without damaging monitoring equipment.

RCRA Part B Groundwater

RCRA Part B Permit Application, Allied-Signal, Inc., Metropolis, IL. Project Hydrogeologist for preparation of groundwater monitoring section of RCRA Part B permit application at uranium hexafluoride processing facility adjacent to a major river in southern Illinois. In addition to the standard requirements (defining the site geology, the site groundwater conditions, and the background water quality; specifying the location, depth, and construction of

the monitoring wells; and detailing procedures for the sampling and analysis program), this project involved issues of monitoring seasonally perched water tables and the effects of temporary groundwater flow reversals (caused by flood stages in the river) on performance of the groundwater monitoring system.

Temporal Trend Analysis of RCRA Groundwater Monitoring Data, Confidential Project. Project Manager and Project Hydrogeologist for evaluation of RCRA groundwater monitoring data to assess possibility of false positives in statistical analysis of routine quarterly monitoring results. Trend analysis of five years of quarterly monitoring data for five indicator parameters determined that all five data sets showed either long-term, excursionary, or seasonal forms of temporal variation. The evaluation concluded that a false positive had occurred (i.e., the regulated unit was not affecting groundwater quality) for two main reasons: 1) strikingly similar trends without any time-lags were observed in both up- and down-gradient wells, and 2) presence of decreasing long-term trends for two of the indicator parameters was inconsistent with leakage from the disposal unit because the waste material had high values of these constituents.

Groundwater Monitoring

RCRA Groundwater Monitoring, The Sherwin-Williams Co., Coffeyville, KS. Project Manager and Project Hydrogeologist for RCRA hydrogeologic characterization and groundwater monitoring program at former pigment manufacturing facility in southeastern Kansas. Concluded monitoring not needed due to lack of on-site recharge, attenuative capacity of soil, and upward gradient from uppermost confined aquifer.

Landfill Groundwater Monitoring Program, Chestnut Landfill, Glenview, IL. Project Manager and Project Hydrogeologist for retrofitting of groundwater monitoring program at site of construction and demolition debris landfill. Involved negotiation with State Attorney General's office regarding scope, location and analytical requirements. A complicating factor in this effort was the potential for opening Superfund liability because the (client's) landfill was located on top of an old municipal solid waste landfill that may have received industrial wastes.

Underground Storage Tanks

Fueling System Removal & Replacement, Village of Glen Ellyn, IL. Project Manager for removal and replacement of vehicle fueling system for a municipality in northeastern Illinois, involving excavation of six (6) UST's, excavation and landfill disposal of several hundred cubic yards of contaminated soil, engineering design of the new tank system, preparation of plans and specifications for bidding, and limited inspection of new tank installation.

CERCLA RI/FS

Remedial Investigation, Pristine, Inc. Site, Reading, OH. Project Hydrogeologist and Principal Investigator for RI at closed liquid waste treatment and incineration facility in southwestern Ohio involving complex glacial stratigraphy and multiple perched groundwater system, and on-site management of five-person field investigation team performing a wide range of environmental sampling activities.

Remedial Investigation, Belvidere, Municipal, Landfill No. 2, Belvidere, IL. Project Hydrogeologists and Principal Investigator for RI at abandoned municipal landfill adjacent to major river in north central Illinois utilizing geophysics, landfill gas surveys, monitoring wells and environmental sampling.

Hydrogeologic Investigations

Investigation of Fertilizer Release, Cargill, Inc., Forest City MO. Project Manager and Hydrogeologist for investigation of possible groundwater contamination of major alluvial aquifer from uncontrolled release of concentrated liquid fertilizer, including setup of a small on-site laboratory and training of plant staff in laboratory operations and groundwater sampling.

Investigation of Site Contamination, Northwestern States Portland Cement Co; Mason City, IA. Project Hydrogeologist for investigation of surface and groundwater contamination resulting from disposal of cement kiln dust in an abandoned, waterfilled quarry.

Investigation of PAH Contamination, Onan-Medtronix Site, Fridley, MN. Project Hydrogeologist for comprehensive study of soil and groundwater contamination at site of former wood-treating operation, including investigation, feasibility study and remedial action design.

Environmental Audits

Pre-Acquisition Compliance Audits, Private Investment Group, IN and KS. Project Hydrogeologist on multidisciplinary team for inspection of two cellophane manufacturing facilities which documented compliance with existing regulations, but also a relatively high potential for future groundwater contamination due to inadequate spill control structures in organic and inorganic chemical bulk storage areas.

Site Characterization

Soil Heaving Investigation, Dow Chemical Co., Plaquemine, LA. Project Geologist for investigation of heaving problems caused by interaction of clay soils and spilled caustic soda at major chemical manufacturing facility.

Geologic Characterization of Subsurface Soils, Milwaukee Water Pollution Abatement Program, Milwaukee, WI. Project Geologist in multifirm geotechnical engineering team, responsible for evaluating glacial and post-glacial soil material with respect to feasibility of CSO sewer construction and WWTP lake fill expansion.

Professional Memberships

Association of Ground Water Scientists and Engineers (NGWA)
Geological Society of America
Illinois Groundwater Association
American Quaternary Association

Publications

Need, E.A., "Temporal Trend Analysis of RCRA Groundwater Monitoring Data." Geological Society of America Abstracts, Vol. 26, No. 5, pg. 56, 1994.

Need, E.A. and W.L. Niemann, "Design and Installation of a Soil Liner Leak Detection System Under Existing RCRA-Regulated Storage Impoundments." Geological Society of America Abstracts, Vol. 23, No. 3, 1991.

Need E.A., "Pleistocene Geology of Brown County, Wisconsin." Information Circular No. 48, Wisconsin Geological and Natural History Survey, 19 p., map. 1985.

Schneider, A.F. and E.A. Need, "Lake Milwaukee: An `Early' Proglacial Lake in the Lake Michigan Basin." in Quaternary Evolution of the Great Lakes, Karrow, P.F., and Calkin, P.E., eds., Geological Association of Canada Special paper 30, pp. 55-62, 1985.

Need, E.A. and M.D., Johnson, "Stratigraphy and History of Glacial Deposits along Wisconsin's Lake Superior Shoreline - Wisconsin Point to Back Bay." Geoscience Wisconsin, Vol. 9, pp. 21-51, 1984.

Need, E.A. and M.J. Costello, "Hydrogeologic Aspects of Slurry Wall Isolation Systems in Areas of High Downward Gradients." Proceedings of the Fourth National Symposium and Exposition on Aquifer Restoration and Groundwater Monitoring, National Water Well Association, Columbus, Ohio, 1984.

Schneider, A.F. and E.A. Need, "Lithologic and Stratigraphic Evidence for a Late Mid-Woodfordian Proglacial Lake in the Lake Michigan Basin," Geological Society of America Abstracts, Vol. 15, No. 6, p. 680, 1983.

Need, E.A., "The Quaternary Stratigraphy of the Lower Milwaukee and Menomonee River Valleys, Milwaukee, Wisconsin," in Late Pleistocene History of Southeastern Wisconsin, Mickelson, D.M. and L. Clayton, Eds., Geoscience Wisconsin, Vol. 7, pp. 24-42, 1983.

Costello, M.J., D. Scherzer, and E.A. Need, "Foundry Waste and its Reuse for Construction," Sixth Annual Madison Conference of Applied Research and Practice on Municipal and Industrial Waste, Engineering and Applied Science, University of Wisconsin Extension, Madison, Wisconsin, 1983.

Need, E.A., M.D. Johnson, and D.M. Mickelson, "Till Stratigraphy and Glacial History Along the Western Shoreline of Wisconsin's Bayfield Peninsula." Geological Society of America Abstracts, Vol. 13, No. 6, p. 311, 1981.

Richard C. F. King
Senior Hydrogeologist

Education

B.S., Honors, Engineering Geology and Geotechnics, Portsmouth, Polytechnic, 1972

Registrations

Registered Professional Engineer, Ontario

Responsibilities

Mr. King serves as Senior Hydrogeologist, Senior Consultant for Site Assessment/ Hydrogeology. He is directly responsible for all technical elements of all hydrogeologic and contamination investigations, remedial investigations, feasibility studies and corrective measures studies. Mr. King has been responsible for the technical management of over 300 environmental projects from initial investigation through implementation of remedial designs.

Bell Aerospace Textron, Neutralization Pond CAMU, Niagara, New York. This project involved the investigation of releases of chlorinated solvents, PCBs and coal tar derivatives from a rocket fuel spill neutralization pond at a large industrial facility. The work was completed between 1986 and 1993 and included RCRA facility investigation, the corrective measures study, and the corrective measures implementation plans for on site control of DNAPLs and control of groundwater containing dissolved phase chlorinated solvents on site and off site. The dissolved phase plume was quite extensive (5,000 feet long and 4,000 feet wide and located within fractured bedrock). The DNAPL plume was much more restricted and will be controlled by manipulation of hydraulic gradients. The remedial systems were installed in 1993. All submissions to the NYSDEC were accepted with virtually no revisions. Mr. King was responsible for all aspects of the technical and project management of the RFI, CMS and CMI plans.

Mountain View Landfill Permit Application, Pennsylvania. Project director for this permit application. The application involved completing the Phase I permit application. The bedrock at the site is highly deformed Martinsburg shale. The hydrogeologic assessment determined the structural geology, hydrogeology and developed an acceptable monitoring program. The permit application was successful.

Valley Landfill 126 Acre Expansion Area, Pennsylvania. Technical director for this very large landfill expansion in Southwestern Pennsylvania. The application, which was successful, requested a waiver on siting the landfill below the potentiometric surface of the underlying sandstone on the basis that detailed, but relatively inexpensive, electronically monitored packer testing (shut-in and long term injection testing) indicated that the bedrock has very low hydraulic conductivity. In addition, the exclusion criteria for setting a landfill on a limestone stratum was waived because the stratum was shown to be a calcareous siltstone rather than a limestone as quoted in literature. This allowed an extra 30 feet of air space to be gained over the area of the landfill footprint.

Northwest Landfill Application, Pennsylvania. This site was a former open pit mine which had been used for mine spoil and municipal waste disposal. Working with the client's regional hydrogeologist, the groundwater conditions at the site were reevaluated and approximately 35 feet of additional air space defined. The project involved exhuming the mine waste and trash, lining the site, and using select mine waste as daily cover in lined cells. The additional air space obtained increased the cost effectiveness of the project which is now under construction.

Modern Landfill, Pennsylvania. Involvement in this project is as follows:

- Landfill Northern Expansion. Project manager and technical director for the successful Part 1 Permit Application of this 17 acre double lined municipal waste landfill. The program involved evaluations of the three-dimensional geology and hydrogeology, completion of the permit application documents and response to one round of comments from the Pennsylvania Department of Environmental Resources.
- Southwestern Expansion. Outside technical reviewer for the permit application by another consulting company and project director for completion of the detailed pumping test in the fractured bedrock environment. This latter phase of the project included the use of VLF electromagnetic geophysics and structural geology analyses to determine the location of a narrow subvertical flow zone beneath the site and completion of a low rate pumping test to determine fracture and intact bedrock aquifer parameters.
- Public Hearings. Prepared rebuttal documents and provided expert testimony for the environmental court action brought against Modern Landfill and the Pennsylvania Department of Environmental Resources by the local municipality.
- Remedial Investigation/Feasibility Study. Project manager of the RI and was responsible for technical review of the FS. The project included geologic and hydrogeologic investigation of the bedrock aquifer at the site (Harpers and Antietam formations), potential impact of a 66-acre unlined landfill, groundwater quality and assessment of the effectiveness of existing extraction system. The project involved the re-analysis of several pumping tests previously undertaken by others and an extensive packer testing program in angled coreholes. Sampling programs of groundwater, surface water, soils and stream sediments in conjunction with the understanding of site geology and fractured flow hydrogeology, allowed the definition of the nature and extent of groundwater degradation. The assessment of the existing extraction system and the FS concluded that the feasible remedy for the site was enhancement of the existing extraction system with monitoring of groundwater and surface water quality.

Sandy Hill Landfill, Maryland. Involvement in this project is as follows:

- Permit Application. Project director for this permit application which involved determining the impact of constructing a landfill below the water table in the upper aquifer. The design concept utilized a slurry wall and passive gravity drainage blanket to control leachate. In addition, the impact of manipulating the groundwater regime on

nearby residences was assessed by completing pumping tests and 30 groundwater modeling.

- Landfill Groundwater Control System. Project manager of hydrogeology studies to determine the potential consolidation impacts of altering groundwater flow regimes by installation of a slurry wall around a landfill and construction of a passive gravity leachate drainage system. Project involved completion of pumping tests, groundwater flow modeling, soils consolidation testing and development of detailed designs.

Lyncott Landfill, Pennsylvania/New York Boarder. Technical reviewer. This closed landfill was the site of a RCRA corrective action. This multiple-bedrock aquifer site situated on a ridge top was characterized in three-dimensions and the aquifer monitoring program revised to allow rational monitoring of the individual aquifers. After statistical analysis of geochemistry data, this site is close to final closure.

Cinnaminson, New Jersey, Groundwater Contamination Superfund Site RD/RA. Project director and technical manager for this project. Provided oversight of the completion of the RD/RA Work Plan. Presently acting as technical reviewer for the project. The ROD required a Contingency Action Plan for contaminants found migrating off site towards the regional public water supply well field. A probabilistic approach was developed for the CAP which allowed for a reasonable time frame for development of remedial action for the CAP.

General Electric, Pittsfield, Massachusetts. Project director for site investigation and remedial design. An infilled river meander had been used for disposal of LNAPLs and DNAPLs. Seepage of LNAPL into the adjacent river required design of a single well groundwater control system rather than the cut-off wall and passive skimming system previously envisioned. The system was installed in an existing well and rapidly stopped seepage of oil and dissolved phase contaminants to the river. Future work will involve definition of the final remedy.

Tabernacle Drum Dump Site, New Jersey. Project director and technical manager for this CERCLA RD/RA. Though the Record of Decision required the installation of a groundwater extraction system, treatment plant and reinjection system, the location of the dissolved phase TCA plume had not been determined by USEPA. The schedule called for completion of the design in six months. This was achieved on budget and to the satisfaction of the client, USEPA and NJDEPE.

ISRT Superfund Site, Woburn, Massachusetts. The ISRT site was number five on the National Priorities List. Member of the technical review team which provided guidance and peer review of the RD/RA for the site. The design for the site incorporated innovative, alternative and less costly cap designs, wetlands mitigation in areas of the site underlain by contaminated materials rather than in areas with high real estate values, groundwater

extraction system designs and gas venting systems for the off gas from 60 foot high piles of rotting cow hides covering 20 acres.

Elizabethtown Landfill RI/FS, Pennsylvania. Project director responsible for technical review. The project included geologic and hydrogeologic investigation of the Triassic Basin sediments and definition of the nature and extent of contamination. The field program included corehole drilling, packer testing, slug testing, pumping tests and sampling of surface water, groundwater, soils and stream sediments. The RI field investigation allowed the development of the geologic/hydrogeologic model and provided site specific data for the FS.

Pottstown Landfill, Pennsylvania. Project manager for this hydrogeologic assessment and remedial design of an area of groundwater degradation. The geology at Pottstown Landfill includes the Brunswick Formation shale and Lockatong Formation sandstone overlapping the Stockton Formation. The main aquifer at the site is developed within the deeper section of the Brunswick Formation and the weathered portion of the bedrock acts locally as a semi-confining unit. Fracture trace analysis, corehole drilling, multi-level piezometer and monitoring well installation and chemical analysis results were integrated to produce the geologic/hydrogeologic and contaminant migration model of the site. The use of simple three-dimensional numerical groundwater flow modeling allowed the design of an effective extraction system with an optimum configuration.

Cyprus Foote Minerals, Virginia. Responsible for investigation and remedial designs for the remediation of lithium hydroxide contaminated water in a Karst groundwater system. Work involved geologic mapping, development of an understanding of a karst flow system, identification of the impact of potential sources of lithium and design of remedial alternatives, analysis of cost effectiveness and prioritization of remedial actions.

Dupont Pompton Lakes Explosives Research Facility RI, New Jersey. Completion of fractured bedrock hydrogeology studies and geophysics studies for delineation of buried valleys. Site problems included buried ordinance, chlorinated solvents and mercury releases.

Mr. King was also project manager and technical director for the following landfill permit applications, several of which were greenfield sites.

G.R.O.W.S. Landfill Permit Application
Tullytown Landfill Permit Application
Middle Peninsula Permit Application (Coastal Plain, Virginia)
Pottstown Landfill Permit Application (Triassic sediments)
Y & S Landfill Permit Application (Carboniferous sediments)
Lakeview Landfill Permit Application (Ordovician sediments)

Professional Affiliations

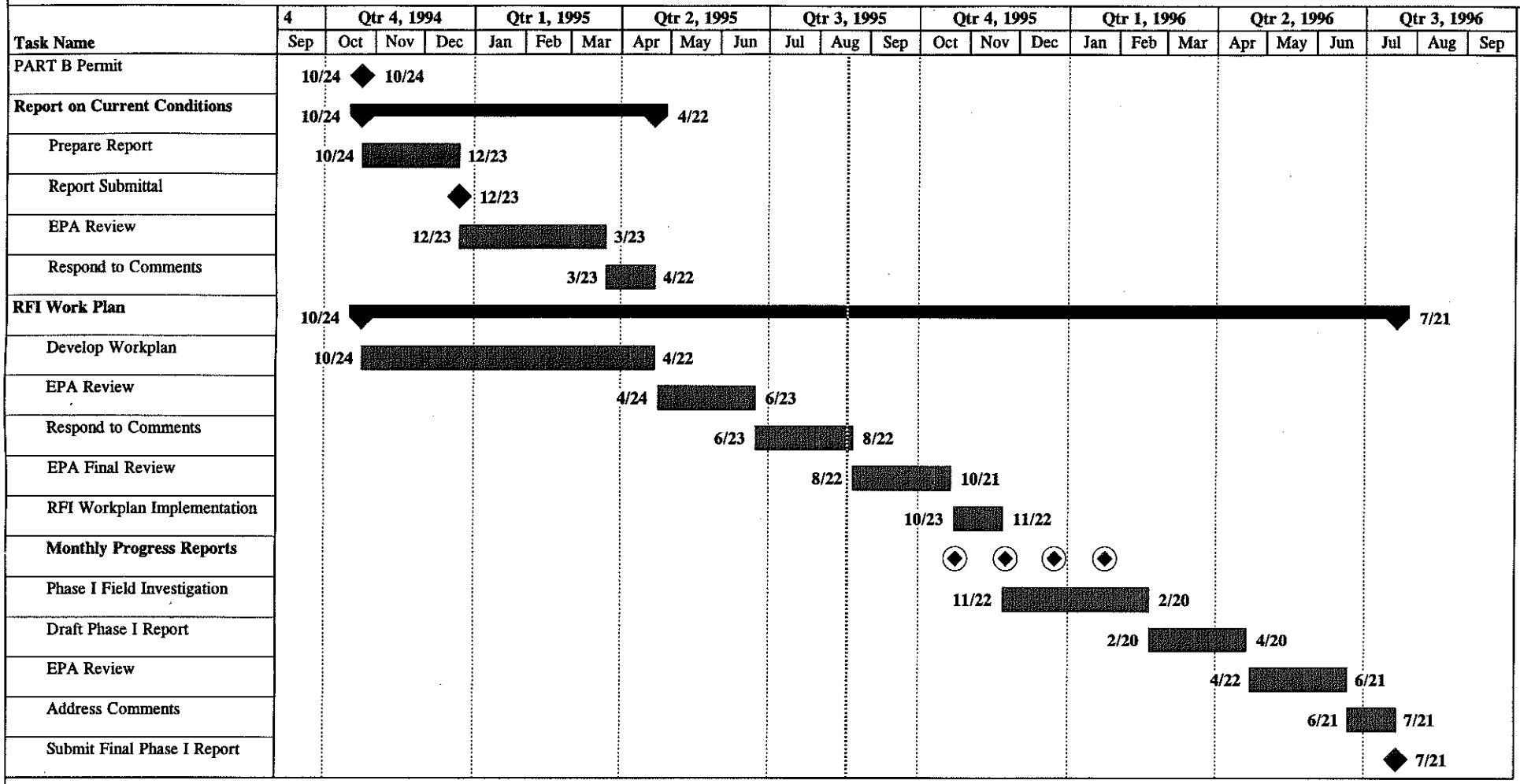
Member, Canadian Institute of Mining and Metallurgy.

Employment History

1993 - Present	RUST Environment & Infrastructure
1987 - 1992	Golder Associates Inc.
1979 - 1987	Golder Associates Ltd.
1978 - 1979	Ministry of Natural Resources
1976 - 1978	Morton Dodds and Partners Ltd.
1972 - 1976	Wimpey Laboratories

3/31/94

TABLE 7-1
CWM VICKERY
RFI WORKPLAN SCHEDULE OF ACTIVIITES



Project #: 38627
C:\RAL\38627\SCHED.MPP
Date: 8/18/95

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

RCRA Facility Investigation (RFI)
RFI Workplan

Health and Safety Plan

Chemical Waste Management
Vickery, Ohio
U.S. EPA ID No. OHD 020 273 819

QUALITY
INTEGRITY
CREATIVITY
RESPONSIVENESS

Prepared for:

CWM - Vickery, Inc.
April 1995

RUST ENVIRONMENT & INFRASTRUCTURE

Health and Safety Plan
38627.100
Review Sheet
Please sign and date.

Prepared By:

Martha A. Costello for
Sherman Woodson, CIH, REHSM

CIH/REHSM Review By:

HSO Review By:

Roy Peterson

Quality Control Review By:

Pre-Site Briefing

Rust Contractor(s)

Chemical Waste Management, Inc.
Vickery Facility
Health and Safety Plan

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1.0 INTRODUCTION

1.1 OBJECTIVES OF PLAN

This document defines the Health, Safety and Environmental considerations for the investigation activities to be conducted by Rust Environment & Infrastructure (Rust) personnel and contractors at CWM-Vickery, Vickery, Ohio facility. This document is required by Rust policies and procedures and Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120. The basic requirements for the health and safety of the project workers are delineated in the Division Health and Safety procedures. All on-site personnel will be informed about the pertinent sections of this Health and Safety Plan (HASP).

1.2 PLAN DEVELOPMENT

Rust is responsible for all site health and safety concerns associated with hazardous and toxic materials as defined in 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response Standard) and health hazards as defined by 29 CFR 1910.1200 (Hazard Communication Standard). All contractors performing construction-related services must comply with 29 CFR 1926 (OSHA Construction Standard).

The Project Manager must not allow work to begin at a hazardous waste site until a Site-Specific HASP has been provided to all field personnel. Before visiting the work site, all personnel must attend a site-specific briefing session, to be conducted by the **Site Health and Safety Officer(HSO)**, on the potential site hazards and specific requirements of the HASP . **In addition to the site briefing, all site personnel and authorized visitors must sign an entry/exit log and provide current documentation of medical clearance, OSHA training, and respirator fit-test. If any documentation is not available or out-of-date, the HSO will escort the non-authorized individual(s) from the work area.** The overall responsibility for the health and safety of project personnel lies with the Project Manager. The HSO will be responsible for ensuring that the Site-Specific HASP is complied with during site sampling operations. **The HSO shall be certified in**

first aid/CPR/Bloodborne Pathogens and be continuously present during site operations. If there is any question whether an unplanned occurrence on-site may compromise health and safety, the HSO has the authority to interrupt operations and to remove all personnel from the area. If practical, the Project Manager and REHSM should be consulted before any operation is interrupted. If work is stopped due to any health and safety concern, immediate attention should be given by health and safety personnel, working cooperatively with the Project Manager, to identify and correct the cause of concern as quickly as possible. Any such incident should be fully documented by the Site HSO in a report to the REHSM and Project Manager. In the event of a work stoppage, the client must be notified as soon as possible, and kept apprised of progress in resolving the incident until normal operations are resumed.

1.3 PROJECT BACKGROUND

The Chemical Waste Management, Inc. (CWM) Vickery Facility received its renewed facility operating permit on 10/29/95. The site is located in rural Sandusky County and is surrounded by active farms. The facility encompasses 98 acres and located adjacent to Route 412 near intersection of State Route 510 and 412.

1.4 SCOPE OF WORK

Draft permits from the United States Environmental Protection agency (USEPA) and the Ohio Environmental Protection Agency have been issued. Accordingly it will be necessary to perform any corrective action activities that are necessary to perform a RCRA Facility Investigations (RFI) to evaluate the nature and extent of any releases of hazardous substances from solid waste units (SWMU) at the facility. Anticipated procedures are drilling, test excavations and sampling activities.

2.0 ORGANIZATION AND RESPONSIBILITIES

2.1 PROJECT TEAM ORGANIZATION

The project team organization is shown on Table 2.1

Title	Name	Phone
Project Manager	Richard S. Zweig	(215) 633-4500
Health and Safety Officer	Bryan R. Kline	(215) 633-4570
REHSM	Sherman Woodson	(803) 234-2297
Equipment Manager	Bryan R. Kline	(215) 633-4570
Medical Director	David L. Barnes, M.D.	(800) 229-3674

2.2 PROJECT TEAM RESPONSIBILITIES

This section lists specific personnel who will be assigned on-site for control of project activities and assurance of health and safety.

- Project Manager - The Project Manager is the senior contractor representative on-site and reports to upper level management and the Contracting Officer. Assigned responsibilities include the authority to direct daily site work activities, respond to emergency situations and assume total control over all site activities. The Project Manager is responsible for the preparation, organization and review of the project including the HASP, and the Work Plan and is responsible for the selection, assignment, and conduct of the site organization. The Project Manager obtains the necessary site access authorizations, ensures that the appropriate plans are in place to support site work activities, briefs field team members, coordinates with appropriate regulatory officials, serves as liaison with the Contracting Officer, coordinates all activities of site personnel and coordinates preparation of any final reports and supporting documentation.

- Site Health and Safety Officer - This individual reports to the REHSM/Project Manager and is responsible for all aspects of health and safety on the job site. He/she has the authority and responsibility for stopping site work should activities jeopardize the health and safety of workers or the public. The site HSO will conduct and document daily safety meetings while on site. Additional responsibilities include selection of protective equipment and apparel, maintenance of protective equipment and clothing, control of entry and egress from

the work area, coordination of the project health and safety program with advisory personnel, confirmation of workers' suitability for performance of activities, monitoring of workers for adverse effects of hazardous contaminants, overview of site work hazards, enforcement of the requirements of the HASP, inspection of the work site on a periodic basis to assure compliance with the Health and safety requirements, conduct of emergency response activities and coordination of medical care.

- Other Project Personnel - All other personnel assigned as site workers, laborers, technicians, equipment operators or other classifications shall be selected based upon the specific project requirements as defined by the Work Plan. Project personnel are responsible for the conduct of all assigned tasks in a safe manner which complies with the HASP and are responsible for notification of the Project Manager, the Site HSO or other responsible personnel in the event of unsafe conditions.

3.0 EMPLOYEE HEALTH AND SAFETY TRAINING

3.1 TRAINING PROGRAM

To remain in compliance with OSHA regulations, all personnel whose duties include participation in job-related activities on hazardous waste sites must be able to document "a minimum of 40 hours of initial instruction off the site and a minimum of three days of actual field experience under the direct supervision of a trained, experienced supervisor."

Prior to arrival on-site, it shall be verified that all employees meet the requirements of 40-hour pre-assignment training in accordance with 29 CFR 1910.120 (e). Documentation will be included in project records for each employee certifying dates of 40-hour OSHA training attendance or equivalent, and any subsequent annual eight hour refresher training. All HSO personnel will have an additional 8 hours of hazardous materials supervisory training.

Site-specific training shall be carried out by the site HSO prior to site entry. This shall consist of a review of the specific hazards of concern, risks, symptoms of exposure and an overview of the HASP to include delineation of work zones, access, decontamination protocols, safety procedures and emergency contacts. Any personnel not initially cleared for site entry will be provided a similar briefing at the site by the HSO before admittance into the Exclusion Zone is permitted.

3.2 MEDICAL SURVEILLANCE

Rust personnel and subcontractors who are required to work in areas where the potential for toxic exposure exists and who may have to wear personal protective clothing and equipment shall have passed a pre-assignment and/or period medical examination as required in 29 CFR 1910.120(f).

Additional medical testing may be required by the CHSM in consultation with the company physician if an overexposure or sign and symptoms of exposure occur.

Contractors shall maintain the medical records for their own employees, but shall provide the HSO with written documentation certifying that each employee at the site ha met the requirements of the Medical Surveillance Program. This documentation will be provided before the first day of work for each employee assigned to the site. The pre-assignment and annual examinations are essentially the same in content and will include:

- An updated medical and occupational history
- A physical examination
- Blood and urine tests
- Chest x-ray
- Electrocardiogram
- Pulmonary function test
- Audiometry
- Visual acuity test

3.3 JOB EXPOSURE REPORT

The HSO shall complete a Supervisor Incident Report Form (Appendix A) and deliver it to the Rust REHSM at the termination of field activities on the site, in the event of assignment of a new HSO at an intermediate point during site activities, or at the ends of discrete phases of prolonged field activities. The intent of Job Exposure Reports is to provide documentation of actual and/or suspected job-related exposures for use by the Rust Medical Director in making decisions on appropriate periodic examination procedures.

In addition, all Job Exposure Reports are reviewed by the Rust REHSM to ensure that any actual exposures are adequately defined to provide appropriate guidance to the Rust Medical Director.

3.4 DOCUMENTATION

Rust shall maintain logs and reports sufficient to document the implementation and execution of the

personnel protection program. This documentation shall consist of medical surveillance files, training files, daily logs and accident reports.

Medical Surveillance

Confidential medical surveillance files are maintained by the Rust Medical Director. These files document employee participation in the medical surveillance program and fitness to work on hazardous sites. Access to these files and records is controlled by the REHSM.

Training

Documentation of employee training is maintained in Rust Health and Safety files under the direction of the Rust REHSM. These files document employee attendance, level of training and follow-up or refresher instruction.

Work Logs

Daily work logs shall be maintained by the site HSO. Copies of daily logs shall be forwarded to the Contracting Officer on request. The daily log shall contain:

- Date,
- Area(s) or site(s) worked,
- List of employees by area and hours exposed,
- Personal protective equipment utilized by employees,
- Results of monitoring tests, including equipment calibration logs.
- Waste materials removed from work area(s),
- List of equipment decontaminated,

- Description of special or unusual events or incidents, including all first aid treatments not otherwise reportable (For First Aid Log See Appendix C).

Daily work logs shall be checked and approved by the site HSO. Any incident resulting in a work stoppage shall be fully documented in a report prepared by the site HSO and submitted to the REHSM.

Accident Reporting

In addition to descriptions in the daily log and work stoppage reports, any accident and/or chemical exposure incident shall be investigated, analyzed and documented in an accident investigation report submitted to the Rust REHSM. This process shall be applicable to both Rust and all contractors. These reports, prepared by the site HSO in consultation with the Rust REHSM, shall contain a full description and analysis of the incident, including exposure work-hours and a log of occupational injuries and illnesses (OSHA Form 200 or equivalent as prescribed by 29 CFR 1904).

Formal accident reports shall be prepared for any diagnosed illness or injuries that result in a lost work day or fatality. The accident report shall identify all contributing causes and recommend future hazard control measures to reduce the risk of recurrence.

4.0 POTENTIAL ENVIRONMENTAL HAZARDS

4.1 CHEMICALS OF CONCERN(COC)

Site history indicates the possibility of exposure to several different chemical hazards including; PCB's, Arsenic, Barium, Cadmium, Chromium, lead, mercury, silver, selenium, acids, phenols, PESTICIDES, VOC's, sanitary wastes, Polyaromatic Hydrocarbons (PAHs), Cyanide, Total Petroleum Hydrocarbons (TPH), and some unknowns. The existence and concentrations of these hazards is dependent on area of concern conditions. The localized work areas are identified as Solid Waste Management Units (SWMU), and Area of Concern (AOC) by the march 1991, RFA by Jacobs Engineering, and an updated description of current conditions. Table 4.1.1 shows the COCs, and areas that they are known to exist. Table 4.1.2 shows COCs and their threshold limit values as a time-weighted average.

The American Conference of Governmental Industrial Hygienists (ACGIH 1993-1994) Threshold Limit Values (TLV) for the work environment are given for volatile chemicals. The Threshold Limit Value-Time Weighted Average (TWA) is the time-weighted average concentration for a normal eight hour work day and a 40-hour work week to which nearly all workers may be repeatedly exposed, day after day, without adverse health effects. The Short-Term Exposure Limit (STEL) is the concentration to which workers can be exposed continuously for a short period of time without suffering from 1) irritation, 2) chronic or irreversible tissue damage, or 3) narcosis of sufficient degree to increase the likelihood of accidental injury, impairment of self-rescue or materially reduce work efficiency, and provided that the daily TLV-TWA is not exceeded. It is not a separate and independent exposure limit but rather supplements the TLV-TWA where there are recognized acute effects from a substance whose toxic effects are primarily of a chromic nature. A STEL is set only when there are recognized toxic effects from acute overexposures in either humans or animals. The STEL is a 15 minute TWA which should not be exceeded at any time during a workday even if the eight hour TWA is not exceeded. Exposures above the TWA up to the STEL should not be longer than 15 minutes, should not occur more than four times a day and there should be at least 60 minutes between exposures in this range. The TLV "Ceiling" is the

concentration that cannot be exceeded during any part of the working exposure. Also presented is the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL). The PEL values are presented either as an eight hour TWA, 15-minute STEL, or Ceiling (Ceil) limit. The Immediately Dangerous to Life and Health (IDLH) value represents a maximum concentration from which one could escape within 30 minutes without any escape-impairing symptoms or any irreversible health effects.

4.2 POTENTIAL IMPACT ON HUMAN HEALTH

The Chemicals of concern which may be present at the site present potential adverse health effects that require considerable caution. Several chemicals known to exist on site are carcinogens or suspect carcinogens, ie: PCBs, Arsenic, Chromium, Cadmium, Lead, and Mercury. The primary routes of exposure for these chemicals will be ingestion, absorption and inhalation. It is most important to avoid contact with all possibly contaminated sources. Personal Protective Equipment should be properly worn, this will be discussed in section 6.1. The other chemicals of major concern will be the Volatile Organic Compounds (VOCs). Exposure to VOCs can cause irritated eyes, skin, nose and throat, choking, chest pain, headache, asphyxiation, and possibly death. Although it is unlikely that concentrations will be high enough to cause symptoms as severe as asphyxiation and death, Monitoring for VOCs will be performed continuously.

Acids, Phenols, and other COCs present similar adverse health effects as VOC's and possible carcinogens. By following safe work practices and wearing prescribed P.P.E. employees will be adequately protected against the COC with highest potential impact on human health, therefore protected against contamination from COCs or equal or lesser concern.

TABLE 4.1.1		
Chemical of Concern	**SWMU**	**ADC**
Acids	21-24, 46-52	A, B, F, G, H, I
Arsenic	1-3, 6-23, 25-41, 46 and 52	A, B, F, G, H, I
Barium	1-3, 6-23, 25-41, 46 and 52	A, B, F, G, H, I
Cadmium	1-3, 6-23, 25-41, 46 and 52	A, B, F, G, H, I
Chromium	1-3, 6-23, 25-41, 46 and 52	A, B, F, G, H, I
Lead	1-3, 6-23, 25-41, 46 and 52	A, B, F, G, H, I
Mercury	1-3, 6-23, 25-41, 46 and 52	A, B, F, G, H, I
Selenium	1-3, 6-23, 25-41, 46 and 52	A, B, F, G, H, I
Silver	1-3, 6-23, 25-41, 46 and 52	A, B, F, G, H, I
Phenol	9-14, 16-20, 24-42, 46-52	B, F, G, H, I
VOC's	1-3, 6-20, 24-42, 46-52	A, B, F, G, H, I
PCB's	1-3, 6-20	B
PAH's	1-3, 6-17, 19, 20	----
1,2 dichloroethane	1, 7	----
TPH	42	----
Cyanide	15	----
Unknowns	1-3, 6-20, 31-41	C, D, E, F, G, I

TABLE 4.1.2			
Chemical of Concern	**Threshold Limit Value-Time Weighted Average**	**IDLH**	**Carcinogen**
Acids	*	*	*
Arsenic	.002 mg/m^3 15 min ceiling	5 mg/m^3	Yes
Barium	.5 mg/m^3	50 mg/m^3	----
Cadmium	.005 mg/m^3	9 mg/m^3	Yes
Chromium	.5 mg/m^3	25 mg/m^3	(CRVI) Yes
Lead	.050 mg/m^3	100 mg/m^3	Yes
Mercury	.1 mg/m^3 .05 mg/m^3 (Vapor)	10 mg/m^3	----
Selenium	.2 mg/m^3	1 mg/m^3	----
Phenol	19 mg/m^3	977 mg/m^3	----
Silver	.01 mg/m^3	10 mg/m^3	
VOC's	*	*	*
Chlorodiphenyl PCB's	.001 mg/m^3	5 mg/m^3	Yes
Polyaromatic Hydrocarbons	*	*	**
2, 3, 7, 8-Tetrachlorodibenzo-P-dioxin	*	Not yet determined.	Yes
Cyanide	5 mg/m^3	25 mg/m^3 (As CN)	
Sanitary Wastes	*	*	*
Unknowns	*	*	*
Total Petroleum Hydrocarbons	*	*	*
* ***Substance not defined.***			

4.3 HEAT STRESS/COLD STRESS

a. Heat Exposure

When the body temperature rises, the body seeks to dissipate the excess heat. The disorders due to heat stress are heat cramps, heat exhaustion, and heat stroke. Heat cramps are painful spasms which occur in the muscles of workers who sweat profusely in the heat and drink large quantities of water, but fail to replace the body's lost salts and electrolytes.

Heat exhaustion is characterized by extreme weakness or fatigue, dizziness, nausea, and headache. In serious cases, a worker may vomit or lose consciousness. The skin is clammy and moist, complexion pale or flushed, and the body temperature can be normal or slightly higher than normal. Treatment consists of rest in a cool place and replacement of body water lost by perspiration. Mild cases may recover spontaneously with this treatment. Severe cases may require care for several days. There are no permanent effects.

Heat stroke is caused by the breakdown of the body's heat regulating mechanism. The skin is very dry and hot with a red or bluish appearance. Unconsciousness, mental confusion, or convulsions may occur. Without quick and adequate treatment, the result can be death or permanent brain damage. Medical assistance should be given quickly. The person should be moved to a cool place. Body heat should be reduced artificially by soaking the person's clothes with water and fanning them. The following steps can be taken to reduce heat stress:

- Acclimate the body.
- Drink more liquids to replace body water lost during sweating.
- Increase salt consumption (salt tablets are not recommended) by drinking fluids such as "Gatorade".
- Wear personal cooling devices.
- Wear supplied air suits or respirators equipped with a vortex tube that cools the air being

supplied

- Count pulse rate during a 30-second period as early as possible in the rest break. If the heart rate exceeds 110 beats per minute at the beginning of the rest break, shorten the next work cycle by one-third and keep the rest break the same. If the heart rate still exceeds 110 beats per minute at the next rest break, shorten the following work cycle by one-third.

b. <u>Cold Exposure</u>

The human body is designed to function at a certain internal temperature. When the body temperature falls, the body compensates for the heat loss by increasing its rate of metabolism. Fatal exposures to cold among workers have almost always resulted from exposures involving failure to escape from low environmental air temperatures or from immersion in low temperature water. The single most important aspect of life-threatening hypothermia is the fall in the deep core temperature of the body. The deep core temperature should not fall below 96.8°F. Lower body temperatures will likely result in reduced mental alertness, reduction in rational decision-making capability, loss of consciousness, or death.

Mild to severe pain in the extremities may be the first early warning of cold exposure. During exposure to cold, maximum severe shivering develops when the body core temperature has fallen to 95°F. Useful physical and mental work is limited when severe shivering occurs. Since prolonged cold exposure at temperatures well above freezing can lead to dangerous hypothermia, whole body protection must be provided. If work activities are performed in temperatures below 40°F, adequate insulating clothing to maintain core temperature must be worn by all workers. All workers should be aware of the effect of wind chill on exposed skin. The higher the wind speed, the lower the perceived air temperature in the work area.

The Following is symptoms and treatment for Frostbite and Hypothermia.

- ***Frostbite***

  Symptoms:

- Lack of feeling in affected area;
- Skin appears waxy;
- Skin is cold to the touch; and,
- Skin is discolored (flushed, white, yellow or blue).

Treatment:

- Handle area gently, **Never rub affected area**;
- Warm area gently by soaking affected part in warm water no warmer than 105°;
- Keep affected area in water until it look red and is warm to the touch;
- Loosely bandage the area with dry sterile dressing;
- If fingers or toes are frostbitten, place cotton or gauge between them;
- Do not break blisters; and,
- Get professional medical attention as soon as possible.

- ***Hypothermia***

Symptoms:

- Shivering;
- Numbness;
- Glassy Stare;
- Apathy; and,
- Loss of Consciousness.

Treatment:

- Care for any life threatening problems;
- Call 911;
- Make victim comfortable;
- Remove any wet clothing;
- Dry the victim;
- Warm the body gradually by wrapping the victim in blankets or putting on dry clothing;
- Move victim to warm place if possible;
- If victim is alert provide warm liquids;
- Handle victim gently; and,
- Do not warm victim to quickly such as immersing in hot water.

In case of severe hypothermia the victim may be unconscious, breathing might have slowed or stopped. The pulse may be slow or stopped. Call for an ambulance, keep checking breathing and pulse. Give rescue breathing is necessary.

4.4 TRENCHING/CONFINED SPACE

For all trenching and excavation activities, the contractor will meet OSHA's Trenching and Excavation Standard 1926.650 - 652, including Appendix A - F of 1926.656 - 652. A competent person provided by the contractor will inspect all trenches and excavations to determine compliance with the standard.

4.5 DRILLING SAFETY - GAS EXTRACTION WELLS

Drilling safety is the responsibility of each member of the drilling crew. Standard operating safety procedures shall comply with guidelines/recommendations specified in the Drilling Safety Guide (National Drilling Federation), the Manual of Recommended Safe Operating Procedures and Guidelines for Water Well Contractors and Pump Installers (National Water Well Association) or other recognized drilling industry safety guidelines.

5.0 GENERAL WORK RULES

The following general operating procedures will be followed by all field personnel. These operating procedures are designed to reduce the risks of inadvertent or accidental chemical exposure or injury during field operations.

Personal Precautions

- Be familiar with all standard operating safety procedures and adhere to all instructions and requirements in the site-specific HASP;
- Know and follow plant emergency response procedures and contingency plan (Appendix D);
- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in the Exclusion and Contamination Reduction Zones. However, a supply of cold water and disposable cups will be located in the decontamination area such that employees will have access to water with only removal of gloves, hat, and respirator where used. After leaving the Site, employees will wash their face and hands before eating or drinking anything;
- Contact lenses will not be worn in the Exclusion and Contamination Reduction Zones;
- Hands and face must be thoroughly washed upon leaving the work area. Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garment is removed;
- No facial hair which interferes with a satisfactory respirator fit of the mask-to-face-seal is allowed on personnel required to wear respirators;
- Avoid contact with contaminated or suspected contaminated surfaces. Whenever possible, avoid wading through puddles, pools, mud, etc. Avoid kneeling or sitting on the ground, equipment or drums;
- Personal articles are prohibited in the Exclusion and Contamination Reduction Zones;
- Medicine and alcohol can exacerbate the effects from exposure to toxic chemicals. Alcoholic beverage intake should be minimized or avoided during off-work hours during field operations where the potential for absorption, inhalation, or ingestion of toxic substances exists unless specifically approved by a qualified physician. Do not work when ill; and,

Operational Requirements

- All personnel going on the site will be adequately trained and thoroughly briefed on anticipated hazards, equipment to be worn, safety practices to be followed, emergency procedures, and communications;

- Respiratory protective devices and/or protective clothing appropriate to the designated levels of protection will be worn by all personnel going into areas designated for wearing protective equipment;

- Personnel on the site will use the buddy system when wearing respiratory protective equipment;

- Visual and/or voice contact will be maintained between paired individuals working at the site. Entry team members will remain close together to assist each other during emergencies;

- During continuous operations, workers on the site will act as safety backup to each other. Personnel off the site will provide emergency assistance; and,

- Personnel should practice new or unfamiliar operations prior to performing the actual procedure.

6.0 STANDARD OPERATING PROCEDURES

6.1 PERSONAL PROTECTIVE EQUIPMENT

For all AOCs Level D PPE will be required, **except** SWMU sites 1-3,6-20 and AOC B, where PCBs are known to exist level C is required. Re-evaluation of PPE will be made by the HSO after the exposure if any is determined. For AOCs with VOC exposure above trigger levels a chemical cartridge respirator with proper organic vapor cartridge in combination with a dust and mist filter is required. It is the responsibility of the HSO to record the level of PPE used by employees (See Appendix E).

Non-Respiratory PPE

During noisy conditions, the site HSO will collect sound level measurements. If sound level measurements exceed 90 dBA, appropriate hearing protection must be worn within a 50 foot radius of the noise source. A hard hat must be worn during drilling operations occurring within 50 feet of the drill platform or whenever overhead hazards exist.

The following is a list of PPE and levels of protection. Utilize the proper PPE as the HSO designates. The equipment should be in adequate supply on site, as to perform tasks safely.

Required at all times:
- Hard Hat
- Safety Boots (Steel Shank and Toe)
- Safety Glasses or chemical splash goggles

Level A
- Positive pressure, full facepiece SCBA or Positive pressure supplied air respirator.
- Totally-encapsulating chemical protective suit.
- Gloves, outer, chemical-resistant
- Gloves, inner, chemical-resistant
- Boots, chemical-resistant, steel-toe and shank.
- Disposable suit, gloves and boots (depending on construction may be worn over totally encapsulating suit).

Level B

Positive pressure, full facepiece self-contained SCBA or positive pressure supplied air respirator.
Hooded Saranex suits
Gloves, outer, chemical resistant
Glove, inner, chemical resistant
Boots, chemical resistant, Steel-toe and shank

Level C

Full-face or Half -mask air purifying respirators(NIOSH approved)
Hooded Saranex or coated tyvek suits
Gloves, outer, chemical resistant
Gloves, inner, chemical resistant
Boots, chemical resistant, steel-toe and shank

Level D

Long Sleeve Shirt, Pants
Boots, chemical resistant, steel-toe and shank
Safety Glasses or chemical splash goggles

The following is equipment to have on hand:

- Work Gloves
- Ear Plugs or appropriate hearing protection
- Fire Extinguisher
- Decon Sprayers
- Drink Cooler
- Eyewash Stations(15 Minute capacity)
- Goggles (Dusty Conditions)
- First-Aid Kit(s)
- Bloodborne Pathogen Kit(s)

6.2 ENVIRONMENTAL MONITORING

During site sampling operations, the HSO will perform continuous monitoring of environmental conditions for organic vapors with a direct reading instrument. At a maintained reading of 1 ppm or greater in the breathing zone, all personnel within the exclusion zone must wear respiratory protection. This will provide the highest level of protection practical for unknown contaminants. For breathing zone concentrations of 1 to 10 ppm, full-face air-purifying respirators equipped with the appropriate cartridges must be worn. If splash conditions exist, full-face respirators are mandatory.

Flammables

At a Lower Explosive Limit (LEL) concentration of 10%, as measured with the explosimeter, site activity will be postponed and all personnel will evacuate the work area due to flammability concerns. After 15 minutes, the site HSO will return for additional readings. Screening will occur from the exclusion zone boundary to the source. If readings are below 10% LEL, site activity may resume at this location. If elevated concentrations are still present, the site HSO will notify the Rust REHSM and site activities will be directed to another sampling location.

Airborne Dusts

During visibly dusty or windy conditions, the HSO may require that employees use a respirator.

6.3 SITE ACCESS CONTROL

All personnel and visitors entering the project site must sign and date the project log upon each entry and exit. In addition, all personnel and visitors must read and comply with the provisions of the HASP.

In the event that an individual does not adhere to the provisions of the health and safety plan, he or

she will be requested to leave the work area. All non-compliance incidents will be recorded in the project log and retained in project files.

6.4 FIELD AUDITS

The Rust Site HSO is responsible for performing routine field audits to assure compliance with all health and safety requirements. Field audits will be performed at least once daily. The HSO also has the authority and responsibility to stop site work and request that personnel and visitors involved in non-compliance activities leave the site.

7.0 WORK ZONES

Site work zones may be established to reduce the accidental spread of hazardous substances by workers or equipment, however, such conditions are not anticipated on this project. If zones become necessary, the flow of personnel and equipment among these zones shall be controlled through designated access and egress points by the Site Health and Safety Officer. Control zones shall be delineated on a site map. The Control Zone map must be posted at the Site.

7.1 SITE ORGANIZATION AND CONTROL

Site organization and control will be established and maintained according to the recommendations set forth in EPA's "Standard Operating Safety Guide," November 1984, and the NIOSH/OSHA/USCG/EPA "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," October 1985. Three general areas of operation shall be established to reduce the risk of personnel exposure to hazardous substances. The three areas are:

- Exclusion Zone (Zone A)
- Contamination Reduction Zone (Zone B)
- Support Zone (Zone C)

The dimensions of each area and the safe working distances between each area shall be balanced against practical work considerations and existing field conditions.

7.2 EXCLUSION ZONE

The Exclusion Zone (Zone A) shall consist of the work site location until further delineation is made by the HSO. Since this area shall be considered contaminated, all personnel within the area must use the prescribed levels of personal protection. A checkpoint shall be established at the periphery of the Exclusion Zone to regulate the flow of personnel and equipment in and out of the area. The

initial Exclusion Zone boundary (hotline) is based upon the actual presence of wastes or spilled materials. The boundary shall be readjusted based on subsequent observations and/or measurements. Any change in the protection level specified by the original safety and health plan shall be approved by the Rust REHSM and the client's contracting officer before being initiated. The hotline shall be well-defined by geographical or physical boundaries and shall be physically secure.

As defined in this health and safety plan, there may be some areas where the use of respiratory protection is not required during normal work activities. However, should a potential hazard become evident, respirators should be immediately available for use. These areas are identified by the following characteristics:

- No known airborne hazards are present and there is little or no potential for release of hazardous airborne contaminants,
- Work operations preclude splashing of hazardous materials.

Hard hats are required in the exclusion zone. Any item taken in the Exclusion Zone shall be considered to be contaminated until carefully inspected by the site HSO and/or decontaminated. All vehicles, equipment, instruments and materials taken into the Exclusion Zone shall remain in the zone until no longer needed.

7.3 CONTAMINATION REDUCTION ZONE

The Contamination Reduction Zone (Zone B) shall serve as a buffer between the Exclusion Zone and the Support Zone, and is intended to prevent the spread of contaminants from work areas. All decontamination procedures shall be conducted within this area, along a defined corridor.

The boundary between the Support Zone and Contamination Reduction Zone is the contamination control line. This boundary separates the area of possible contamination from clean areas. Entry into the Contamination Reduction Zone from the Support Zone will be through a controlled access

point. Personnel entering this area shall be wearing the prescribed personal protective equipment. Exit from the Contamination Reduction Zone requires the removal of any suspected or known contaminants through compliance with established decontamination procedures.

7.4 SUPPORT ZONE

The Support Zone (Zone C) shall consist of a staging area in a non-contaminated or clean area. It shall contain the command post for field operations, a first aid station, and other elements necessary to support site activities. Normal work clothes and safety shoes are worn in this area. Location of access points and the command post shall be based upon favorable wind direction, topography and site accessibility, when conditions allow.

- Wind direction - Preferably, the command post should be located upwind of the site Exclusion Zone. However, wind direction shift and other conditions may be such that the ideal location based upon wind direction does not exist.
- Topography - The terrain, i.e., woods, water or hills, and available space may limit selection of command post sites.

7.5 MODIFICATIONS TO SITE CONTROL

The use of the three-area designation with access/exit control points coupled with established decontamination procedures provides reasonable assurance against the translocation of contaminants. This system of control is based on a "worst case" situation.

Less stringent site control and decontamination procedures may be utilized based upon field activities and results of monitoring data. Any modification shall be authorized by the Rust REHSM and authorized by the site HSO.

8.0 DECONTAMINATION

Decontamination shall be performed under the supervision of the site HSO. Personnel and portable field equipment decontamination shall be carried out in the contamination reduction corridor. When working in the Exclusion Zone, care should be taken to avoid contamination of equipment (particularly instruments) whenever possible. Drill rigs, other heavy equipment and ancillary tools will be cleaned at the heavy equipment decontamination area within the Exclusion Zone and adjacent to the hotline. Critical zones and areas shall be variously identified and delineated with surveyor's tape.

For all exit from the Exclusion Zone, decontamination stations shall consist of:

1. Equipment drop
2. Boot, glove and respirator wash
3. Boot, glove, and respirator rinse
4. Protective clothing disposal (into 55-gallon drum or other suitable container)
5. Respirator wash and rinse
6. Hand and face wash and rinse

NOTE: All persons subject to decontamination should shower daily as soon as practical after their work shift.

Monitoring instruments and protective equipment shall be decontaminated if the equipment has been in contact with the ground or splashed with contaminated water, mud or other material. Decontamination solution shall consist of detergent and water. Rinse solution shall be potable water. Decontamination and rinse solutions shall be disposed on site under the supervision of the site HSO.

Decontamination of drill rigs, vehicles, equipment and ancillary tools and sampling devices shall

consist of removal of contaminated soil and mud, and steam cleaning. All vehicles and equipment shall be cleaned before relocation to and use at any other sampling site or work area.

9.0 EMERGENCY PROCEDURES

9.1 FIRST-AID

First-aid kits shall be maintained at the control access point between the decontamination and support zones and in all support vehicles. If the victim cannot be safely moved from the contaminated area, first-aid necessary to stabilize the victim for safe transport shall be administered at the accident location. Appropriate decontamination of all clothing and equipment shall be followed upon leaving the contaminated area. The Site HSO is responsible for administering first-aid.

9.2 EMERGENCY RESPONSE

9.2.1 Pre-Emergency Planning

During the site briefings held at least daily, all employees will be trained in and reminded of provisions of the Emergency Response Procedures and Contingency Plan (Appendix D), communication systems and evacuation routes.

The plan will be reviewed and revised, if necessary, on a regular basis. This will ensure that the plan is adequate and consistent with prevailing site conditions.

9.2.2 Lines of Authority

As the administrator of the project, the Project Manager has primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measures to ensure the safety of site personnel and the public. Possible actions may involve evacuation of personnel from the site area. The Project Manager is additionally responsible for ensuring that corrective measures have been implemented, appropriate authorities notified and follow-up reports completed. All project personnel are responsible for assisting the Project Manager in responding to emergency

situations within the capabilities of their skills, equipment and training.

9.2.3 Emergency Equipment/Facilities

All individuals shall be familiar with the site and be able to identify the locations of the following emergency equipment:

- Alarm and Communication Systems;
- First-Aid/Bloodborne Pathogen Kit(s);
- Fire Extinguisher(s), Type ABC, one located at each working area;
- Eye Wash;
- Stretcher;
- Telephone;
- Two-way Radio;
- PPE; and,
- Portable Decon Sprayer.

9.2.4 Medical Emergencies

Any person who becomes ill or injured in the Exclusion Zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination will be completed. If the patient's condition is serious, partial decontamination will be completed. As a minimum, outer garments will be removed and clean coveralls or a blanket will be used to cover the victim. First-aid should be administered by the Site HSO while awaiting an ambulance or paramedics.

In the event of an injury on-site, all activities will be immediately terminated and resources will be diverted until it can be ensured that decontamination procedures are adequate and that proper

assistance has been provided to ambulance and/or hospital staff responsible for treating the injury.

All injuries and illnesses must be immediately reported to the Project Manager or the Site Health and Safety Officer who will then notify appropriate off-site personnel and organizations as necessary.

For ambulance, fire or police contacts, give the name of the road and the nearest intersection.

Notify the client contact and the Rust REHSM after primary emergency contacts have been made. The Equipment Manager should be contacted if unforeseen circumstances require the immediate procurement of additional personnel protective equipment.

Attending emergency physicians should be given the telephone number of the Rust Medical Director to obtain immediate access to an employee's medical records and for consultation purposes.

9.2.5 Emergency Contact/Notification Listing

FOR ALL EMERGENCY SITUATIONS
CALL 911

Project Manager: Shift/Supervisor Emergency Coordinator:	Richard S. Zweig	(215) 633-4500

<u>Secondary Contacts</u>

Sherman Woodson Rust REHSM	(803) 234-2297
Bryan Kline Rust Equipment Manager	(215) 633-4570
Dr. David L. Barnes Rust Medical Director	(800) 229-3674

Hospital Directions

Freemont Memorial Hospital (419) 334-6621
715 South Taft Avenue
Freemont, Ohio

Take State Route 412 West to U.S. 20 West (Bypass)
U.S. 20 West Exit onto Oak Harbor Road (also known as Stone St.)
Follow Stone St. South to Hospital (will also follow signs to R.B. Hayes Presidential Library)

9.2.6 General Emergency Procedures

- In the event that any member of the field crew experiences any adverse effects or symptoms of exposure while on the scene, the entire field crew shall immediately halt work and act according to the instructions provided by the Site HSO;
- The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated, shall result in the evacuation of the field team and re-evaluation of the hazard and the level of protection required; and,
- In the event that an accident occurs, the Site HSO is to complete an Accident Report. Follow-up action shall be taken to correct the situation that caused the accident.

9.2.7 Personal Injury

The Site HSO is trained in American Red Cross first aid procedures and shall administer appropriate first-aid treatment, including CPR, in emergency situations. The following general emergency procedures shall be carried out in the event of injury:

1. Notify the Site Health and Safety Officer (HSO) of the incident.
2. If the victim can be moved safely, remove from the contaminated zone to the decontamination zone using established control points.
3. Administer first-aid.
4. Call for ambulance transport, or transport victim to nearest hospital or emergency medical center, as appropriate.

NOTE: The Site HSO shall direct the removal of injured personnel from the contaminated zone and shall approve any necessary deviation from established decontamination procedures. Such deviation shall be based upon the severity or life threatening nature of the injury.

5. Notify the Project Manager and Rust REHSM of the incident and describe the emergency response actions taken.

9.2.8 Chemical Exposure

Before entering the contaminated zone, all site personnel shall be thoroughly acquainted with the types of toxic/hazardous chemicals present on site and their potential concentrations. The following general procedures shall be followed for chemical exposure emergencies:

1. Move the victim from the immediate area of exposure or contamination, taking precautions to prevent additional exposure of other individuals.

2. Notify the Site Health and Safety Officer (HSO) of the exposure incident.

3. If the victim can be moved safely, proceed to the decontamination zone through established control points.

4. Decontaminate clothing or remove if safe to do so.

   - For skin or eye contact, thoroughly wash affected areas with water (eyes should be flushed for at least 15 minutes).

   - For inhalation exposure, ensure that victim has adequate fresh air.

5. Administer additional first aid treatment as appropriate.

6. Call for ambulance transport, or transport victim to nearest hospital or emergency medical center, as appropriate.

7. Notify the Project Manager and REHSM of the incident and describe the emergency response actions taken.

NOTE: The Site HSO shall direct the removal of injured personnel from the contaminated zone and shall approve any necessary deviation from established decontamination procedures. Such deviation shall be based upon the security or life threatening nature of the injury.

9.2.9 Fire or Explosion

In the event of a fire or explosion:

1. Immediately evacuate injured personnel and leave the area,
2. Administer first aid as appropriate,
3. Notify emergency services,
4. Notify the Project Manager and Rust REHSM.

9.3 EVACUATION ROUTES AND PROCEDURES

Evacuation routes and procedures are provided in Appendix D Emergency Response Procedures and Contingency Plan.

APPENDIX A

SUPERVISOR"S INCIDENT REPORT FORM

WORK ZONE ENTRY/EXIT LOG

SITE SAFETY MEETING

HASP FIELD MODIFICATION FORM

JOB EXPSOURE REPORT

RUST ENVIRONMENT & INFRASTRUCTURE

Supervisor's Incident Report

Date of this report: ____/____/____

Fax this report within 24 hours to RUST International Inc.: 708-947-3781 *Telephone: 708-947-3525*
Attention: Claims Management Department

Group: G01 (RUST E&I) **Region:** _____ **Office/Division:** _____

TYPE OF INCIDENT: Inspection:____ Accident:____ Injury:____ Spill:____ Fire:____ Other:____
Agency: _____ Inspector's Name: _____ Type Inspection: _____
Agency Address: _____ Phone: _____

EMPLOYEE INFORMATION:
Employee's Name: _____ Social Security No: _____
Address: _____ Phone: _____
Date of Birth: _____ Number of Minor Dependents:____ Marital Status: Single ____ Widowed ____ Married ____ Divorced ____
Date of Hire: _____ Wage Rate: $_____ Hourly: ____ Annually: ____ Job No.: _____
Employee Hours on Date of Incident: ____ Employee Hrs. on Project: ____ Days/Wk.:____ Hrs./Day: ____
Employees Occupation When Incident Occurred?: _____ Years of Experience in This Occupation?: _____

INCIDENT INFORMATION:
Date of Incident: _____ Time:_____ Witness(s): _____
Date Reported to Supervisor: _____ Was Incident Believed to be Result of Employment?: Yes ____ No ____
If on Job Site, Name of Job: _____ Location on Job Site Where Incident Occurred: _____
Address Where Incident Occurred: _____
If First Aid Applied, by Whom: _____
Type of Injury and Part of Body Affected?: _____
Name/Address Medical Provider: _____
Brief Description of Incident: _____

Employee Activity at Time of Incident: _____

Description of Property Damaged: _____

OSHA 200 LOG INFORMATION:

Is incident OSHA recordable?: Yes ☐ No ☐
Does incident involve fatality?: Yes ☐ No ☐
Does incident involve lost time/restricted activity?: Yes ☐ No ☐
Does incident involve medical treatment?: Yes ☐ No ☐
Does incident involve first aid only?: Yes ☐ No ☐
Current Status: _____

Employee's Supervisor: _____ **Project Manager:** _____

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F036/Markelz

RUST ENVIRONMENT & INFRASTRUCTURE

Work Zone Entry And Exit Log

Note: Complete this form when action levels are exceeded in the Breathing Zone (BZ).

Project: _____
Project No.: _____
Site Safety Officer: _____
Date: _____

Time In	Time Out	Name/Firm	Site Location	HNU/OVA Readings (In Breathing Zone)	Level PPE (D/C/B)

Note: This form is to be completed on a daily basis by all on–site personnel working within a work zone when action levels are exceeded in the BZ.
Submit this log to your Regional Health and Safety Specialist on a weekly basis.

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F026/Markelz

RUST ENVIRONMENT & INFRASTRUCTURE

Site Safety Meeting

Page _____ of _____

Project: _____ Date: _____

Project Number: _____ Time: _____

Meeting Conducted By: _____ _____

Name Signature

Summary Of Items Discussed: _____

Personnel Present

	Name	Representing	Signature
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

NOTE: Place in project files.

RUST ENVIRONMENT & INFRASTRUCTURE

Health and Safety Plan
Field Modification Form

Page No. _____ of _____

Project: _____

Project Location: _____

Project No.: _____

Site Safety Officer: _____

Field Modification To HASP: _____

Prepared By: _____
Site Safety Officer — Date

Accepted By: _____
RUST Environment & Infrastructure Field Manager — Date

Accepted By: _____
Contractor Representative (If Applicable) — Date

Approved By: _____
RUST Environment & Infrastructure Regional Health and Safety Specialist or Alternate HASP Reviewer — Date

NOTE: Field Modifications to HASP's must be discussed with the RUST Environment & Infrastructure RHSS or CHSM with subsequent written approval. Secure approval through fax.

APPENDIX B

FIRST AID LOG

KUST ENVIRONMENT & INFRASTRUCTURE

First Aid Log

Site/Division Location: _____

Date	Employee Name	Injury	Treatment	Care Provider

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RUST ENVIRONMENT & INFRASTRUCTURE

Job Exposure Report

Instructions: This report is to be completed by the Site Safety Officer at the end of each Rust E&I Employee's participation in site activities. A copy of this report must be submitted to the REHSM for placement in the employee's medical file.

Employee Name: _____

Social Security Number: _____

Project Name: _____

Project Number: _____

Location: _____

Site Function: _____

Level of Protection: _____

Dates of Site Participation: _____

1. Were action levels exceeded in the work area (breathing zone)? Yes _____ No _____

2. If yes, list type of monitoring and readings: _____

3. List known or suspected contaminants on-site (list from HASP):

4. Personal exposure monitoring data attached? Yes ____ No____ N/A ____

SSO Name (Print): _____

SSO Signature: _____

Date: _____

APPENDIX C

CONFINED SPACE ENTRY PROCEDURES

CONFINED SPACE ENTRY PROGRAM

1 INTRODUCTION

1.1 Purpose - This Standard establishes uniform procedures for entering confined spaces and other areas where safe air quality may not exist. (This Standard was formerly titled, "Safety Procedures For Entering Confined Spaces and Other Areas Where Safe Air Quality May Not Exist").

1.2 Application

1.2.1 This Standard applies to all projects where entry is required to confined spaces and other areas where safe air quality may not exist.

1.2.2 Underlined text in this Standard is Policy.

- If a heading is underlined, the whole section, including subsections, is a policy. This paragraph is an example of policy since the controlling paragraph heading is underlined.

- Deviation from policy shall be allowed only in accordance with Technical Standard T.00.006 - *Policy for Deviation or Waivers from Technical Standards.*

1.2.3 Remaining (not underlined) text is guideline. Any deviation from guidelines requires approval from the Corporate Environmental, Health and Safety Director.

1.3 Effective Date - This Standard supersedes health and safety procedures from all of the firms that make up Rust E&I and shall be effective on the date listed as the Origin Date. (Revisions to this Standard shall be effective on the Revision Date.)

1.4 Authority - The interpreting authority of this Standard is the Rust E&I Corporate Environmental, Health and Safety Director (CEHSD).

1.5 Distribution - Holders of General Health and Safety Standards Binder - Volume 00C.

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1.6 Glossary

1.6.1 Corporate Environmental, Health and Safety Director (CEHSD) - Prepares and reviews corporate health and safety policies and procedures, and assists each division in specific safety needs and training. The CEHSD, in conjunction with Region, Division, and Department Management, will coordinate, maintain, and enforce the Corporate Environmental, Health & Safety Program.

1.6.2 Region Environmental, Health and Safety Manager (REHSM) - Assists region and division management and the CEHSD to implement Corporate Health and Safety Policies and Standards within their assigned region related to project work and Corporate Environmental, Health and Safety Programs.

1.6.3 Division/Office Safety Representative (SR) - Assists their Division Manager and the REHSM to implement Corporate Health and Safety Policies and Standards related to project work and Corporate Health and Safety Programs within their assigned division/office locations.

1.6.4 Confined Space - A space which has the following characteristics: large enough for an employee to enter, limited openings for entry and exit, unfavorable natural ventilation, and/or not designed for continuous worker occupancy.

1.6.5 Hazardous Atmosphere - Involves air quality which has any of the following:

- An oxygen content below 19.5% or above 23.5%;
- A hydrogen sulfide content of greater than 10 parts per million;
- A combustible gas content greater than 10% of the lower explosive limit (L.E.L.); and
- An exposure level, for any toxic substance determined or suspected to be present, which is above the threshold limit values - short term exposure limit for any substance specified by the American Conference of Governmental Industrial Hygienists in the publication entitled "Chemical Substances in the Work Environment", or OSHA PEL's.

1.6.6 Permit-Required Confined Space - A confined space which contains or has the potential to contain any of the following hazards: hazardous atmosphere, material that could engulf an entrant, converging walls/floors that could entrap entrant, or other recognized safety hazards.

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1.6.7 Non-Permit Confined Space - A confined space that does not contain or have the potential to contain any hazard capable of causing death or serious physical harm. Note: For Rust E&I employees, the only situation in which entry into a confined space without a permit is allowed is if the space has previously been evaluated and tested by the owner/client and declared a non-permit confined space in their written confined space entry program.

1.6.8 Entry - The action by which a person passes through an opening into a permit-required confined space. Entry includes any work activities performed in that space, and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

1.6.9 Attendant: An individual stationed outside the confined space who monitors the entrants.

1.6.10 Entrant: An employee who is authorized to enter a permit space.

1.6.11 Supervisor: The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, authorizing entry, and overseeing entry operations. The person is typically the lead person on the crew.

1.6.12 Entry Permit - A standardized form through which an employee evaluates conditions to help assure safe entry into a confined space. Refer to Appendix A for Rust E&I's Confined Space Entry (CSE) Permit.

1.6.13 Level I - A Level I space is a confined space that does not contain a hazardous atmosphere (specified in Section 1.6.5) and the only source of contamination expected or likely to affect the atmosphere is the employee's presence or the employee's activities.

1.6.14 Level II - A Level II space is a confined space with a hazardous atmosphere (specified in Section 1.6.5).

1.6.15 Site-Specific Health and Safety Plan (HASP) - A written plan which establishes policies and procedures to protect employees who must enter Level II confined spaces. Without a final HASP approved by the REHSM, Level II confined space entry activities shall not be allowed to begin.

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2 REQUIREMENTS

2.1 Any Rust E&I employee who has need to enter an area on a project site which is defined as, or can be considered as a confined space or other area where safe air quality may not exist (i.e. hazardous atmosphere as defined in Section 1.6.5) is required to comply with the procedures presented in this Standard.

3 RESPONSIBILITIES

3.1 The CEHSD is responsible for coordinating, maintaining and communicating confined space entry procedures throughout the company and for reviewing the program annually and revising as necessary.

3.2 Working with the Division Manager, the REHSM will develop division-specific training programs for confined space entry activities. When required, the REHSM shall develop and/or review and approve project site-specific Health and Safety Plans (HASPs) for Level II confined space entry activities. The REHSM shall coordinate the effort to maintain and provide calibrated air quality monitoring equipment to project staff requesting such equipment.

3.3 Division Managers are responsible for communicating and supporting the company policy associated with implementation of confined space entry procedures for projects managed by respective division; for training of their staff in confined space entry procedures; for assigning an equipment technician for their office responsible for maintaining needed equipment; and for assigning only personnel trained in these procedures to projects involving confined space entry activities as defined by this Standard.

3.4 The Equipment Technician assigned to a division office shall be responsible for providing equipment to project staff needed for confined space entry activities. This includes maintaining, cleaning, and calibrating such equipment to keep it in working condition and to provide training of project staff in the correct operation of gas detectors. The Equipment Technician shall coordinate these activities through the REHSM.

3.5 Project Staff are responsible for complying with the procedures in this Standard. This includes utilizing their training, identifying confined spaces and other areas where safe air quality may not exist (i.e. hazardous atmosphere), whether a space has safe air quality, entering only areas with safe air quality, using all personal protective clothing and equipment dictated by the exposure level, and reporting to their supervisor any space that does not have safe air quality.

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3.6 Entrant Supervisors (crew leader) duties and responsibilities include knowing the hazards and verifying permit conditions exist, terminating the entry when necessary, verifying rescue services are available and that they can be summoned, assisting in transfer of responsibility when employees change during shift changes.

3.7 Attendant duties and responsibilities include knowing hazards, maintaining record of entrants, remaining outside the space until relieved by another attendant, communicating with entrants and ordering evacuation if required, summoning rescue services or performing non-entry rescue and keeping unauthorized persons away from the space.

3.8 Entrant duties and responsibilities include knowing the hazards and using required equipment, communicating with attendant and alerting the attendant as needed, exiting whenever the attendant orders, entrant recognizes warning signs, entrant detects prohibited condition, or when an evacuation signal is given.

4 PROCEDURES

4.1 Obtain training in confined space entry procedures prior to working on a project that will require entry into a confined space or other areas where safe air quality may not exist. Training on required site-specific equipment (retrieval devices, PPE, etc.) must be conducted prior to equipment use by an instructor experienced in the proper use of the equipment. This training may be conducted at the job site if the equipment is rented or purchased for specific projects. The outline of the training program for confined space entry is presented in Appendix B.

4.2 Before you go to the project site, determine what kind of space will be entered, the type of work to be performed, and the protective equipment and clothing that will be required. Consider the potential for low oxygen or the presence of hydrogen sulfide, combustible gases, or toxic substances. A listing of confined spaces and other areas where safe air quality may not exist is presented in Appendix C. Protective equipment and clothing appropriate for each area is also listed in Appendix C. Appendix C presents areas most commonly entered. The listing should not be considered all-inclusive of the areas that may be encountered.

4.3 Depending on your project location, check the confined space entry Standards specific to the state and owner you will be working in or for. Consult with the Client/Owner for specific hazards and required procedures as to whether de-activation of process or electrical lines within the space is required prior to entry, etc. Isolate as required. See Appendix D, Section "Isolation" for examples of ways to isolate confined spaces.

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4.4 Obtain protective equipment and clothing before you go to the project site. Obtain calibrated air monitoring equipment from the Equipment Technician assigned to your office location or Division Safety Representative.

4.5 Entry Procedures for Confined Spaces and Other Areas Where Safe Air Quality May Not Exist

4.5.1 Prior to entry, the atmosphere throughout the space shall be monitored for combustible gases, hydrogen sulfide, and oxygen deficiency. If toxic substances are expected, the atmosphere within the space shall also be monitored for toxic air quality. Use the permit presented in Appendix A to record the atmospheric concentrations.

4.5.2 Based on monitoring, if concentration levels are within safe air quality limits specified in Section 1.6.5 of this Standard and on the permit, entry may proceed. See Section 4.7 for additional confined space entry procedures.

4.5.3 If air quality falls outside any of the limits specified in Section 1.6.5, DO NOT ENTER the space. Contact your supervisor immediately for further direction. The Supervisor, before giving directions, shall contact the REHSM.

4.5.4 While in a space, if the air quality falls outside any of the limits specified in Section 1.6.5, exit the space immediately and contact your supervisor for further direction. DO NOT RE-ENTER the space.

4.5.5 Prior to entry into a confined space, a "Danger - Permit Required Confined Space" sign must be posted at the location entrance.

4.5.6 Conditions making it unsafe to remove an entrance cover to a confined space shall be eliminated before the cover is removed.

4.5.7 When personnel are finished with their work at the confined space location, the permit may be terminated. Permits shall be retained for at least one year. Any problems encountered during an entry operation shall be noted on the permit so that appropriate revisions to the permit program can be considered. The original shall be submitted to the project file with a copy to the Project Manager and a copy to the REHSM. The REHSM, using copies of the permits, shall review the permit program and recommend changes, if any, to the CEHSD.

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4.6 Entry Procedures for Level II Confined Spaces and Other Areas Where Safe Air Quality Does Not Exist

4.6.1 If entering Level II confined spaces and other areas where safe air quality does not exist, a site-specific HASP for entry procedures must be prepared and implemented. HASPs shall be approved by the REHSM.

4.7 Additional Entry Procedures for Confined Spaces

4.7.1 The following is a list of additional procedures to be observed by Rust E&I employees when entering Level I confined spaces including manholes.

4.7.1.1 Before uncovering a manhole, place safety cones around the manhole and the inspection vehicle if the manhole is in the street right-of-way. These cones should be placed in such a manner as to channel traffic away from the work area and be visible to all traffic in all directions. If a vehicle is used, it should be placed to give additional protection to the field crew. Flasher lights on the vehicle should be activated and the vehicle should be equipped with a flashing yellow beacon if the vehicle is in the street right-of-way. Yellow beacons operating off cigarette lighters can be obtained from the employees respective office. "Men Working" or "Survey Party" signs are to be placed at a sufficient distance from the manhole to warn oncoming traffic. One or more flagperson, as the situation warrants, shall direct traffic.

- If the manhole is not located in the street, sufficient warning devices must be employed to alert any individuals in the area of the open manhole.

4.7.1.2 Only tools designed for removing the cover in a safe manner should be used. In no case shall items such as sticks, jack handles, or fingers be used to open manholes. If you have difficulty opening a manhole, contact the Owner and request assistance.

4.7.1.3 Never enter a confined space without having a trained Attendant assisting and observing your activities outside of the confined space. The Attendant should handle the safety line, pass down and retrieve equipment and tools, observe traffic and react to any emergency situations.

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4.7.1.4 Before entering a manhole, check to see the steps are safe and the manhole condition is such as to provide a safe entrance and exit. If the steps are unsafe or non-existent, a ladder designed for manhole entry should be employed to gain access to the bottom of the manhole.

4.7.1.5 An employee entering vertically into a confined space of any depth shall wear a full body harness secured to a lifeline. The lifeline shall be secured in such a manner that if a rescue must be made, non-entry rescue can be made by the attendant. For entries into confined spaces greater than five feet in depth, a mechanical device to assist the attendant in a non-entry rescue must be available outside the confined space.

- In case of confined space entries where a lifeline itself may pose a danger and/or hamper egress activities (ie. stairways, equipment, etc.), a lifeline and harness are not required.

4.7.1.6 Safety glasses and/or goggles, steel toe work shoes, and a hardhat are required when working in manholes to protect from splashes and from dropping debris. When working inside a manhole confined space, a 5-minute escape pack is required. The observer will wear steel toe work shoes.

4.7.1.7 Do not enter any manhole if you have open sores or cuts which are unprotected. You may be entering a highly infectious environment and extreme caution should be taken. Do not rub your eyes, nose, mouth, or ears until you have cleaned yourself with strong soap and water. Water alone is not enough.

- If you should cut yourself in a manhole, wash the wound immediately and apply an antiseptic bandage. If you should show signs of infection, contact your physician immediately. If it is a major wound, contact your physician as soon as possible after leaving the manhole. Every company vehicle involved in field operations shall be equipped with a first aid kit. It is recommended that employees using personal vehicles maintain their own first aid kit.

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4.7.1.8 Never enter a manhole you consider unsafe. If the weather is bad or visibility is poor, or if the traffic is such as to provide hazardous conditions to your crew or the drivers themselves, work in the manhole should be held in abeyance until the situation improves.

4.7.1.9 Never leave a manhole open and unattended. If a manhole has to be left open overnight, barricades with flashers should be placed over the opening in sufficient number to be visible from all oncoming vehicular or pedestrian traffic.

4.7.1.10 Reflective safety vests shall be worn at all times when working in or near a roadway.

4.7.1.11 An Attendant should not, under any circumstances, enter a confined space in an attempt to extract an unconscious person from a confined space. The Attendant shall contact the local emergency response authority to help remove the person and then attempt non-entry rescue. This is the only situation under which the person may be left unattended in a confined space.

4.7.1.12 Excavations (i.e. trenches, open pits, etc.) greater than 4 feet in depth are considered to be confined spaces and therefore confined space entry procedures must be implemented. (Reference: OSHA 29 CFR 1926.651, Subpart P, Excavations 1992)

4.7.1.13 When the Contractor is responsible for an excavation and subsequently creates a confined space situation, the Contractor must monitor the air quality and determine whether it is safe for entry. Rust E&I shall document on the permit form that the Contractor has tested and approved the air quality before entering the space for observation purposes. In this situation, the Contractor's personnel can serve as an Attendant while Rust E&I personnel conduct observation activities within the excavation.

If the Contractor is finished with their work at the excavation and moves on to other tasks, or leaves for the day and Rust E&I personnel remain to finish their activities, Rust E&I personnel shall take over the responsibility to monitor the air quality of the space, provide an Attendant, and document on the Rust E&I Permit.

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4.7.1.14 If an individual is outside of a confined space and intends to look into the space, this is considered an "entry" by OSHA once the person's hand, leg or face crosses the plane of the space. Therefore, the OSHA standard requires atmospheric testing be conducted to ensure the space is safe to "enter". The reasoning is: a confined space with bad air quality could "overcome" an individual causing the individual acute overexposure with adverse health effects. Rust E&I safety procedure requires that air monitoring be conducted and that the permit form be used to document the data. While the procedure also calls for other equipment use such as harness and rope and a 5-minute escape pack, it must be the decision of the field team to utilize such equipment depending on the situation they are dealing with, i.e. if there is a danger of falling into the confined space (especially if overcome by bad air quality) then it must be used. If the potential for this does not exist, then the field crew need not use this equipment.

4.7.1.15 While OSHA's final ruling on confined space entry specifically states that it does not apply to the construction industry, Contractors must implement confined space entry procedures as applicable and as specified in OSHA Construction Standards 29 CFR 1926.651, Subpart P, Excavations.

4.8 General Health and Safety Procedures

4.8.1 Do not smoke within 10 feet of a confined space or other areas where safe air quality may not exist.

4.8.2 Openings to confined spaces shall be kept clear of hand tools and debris.

4.8.3 The company vehicle parked near a confined space such as a manhole, shall be parked in a downwind location to prevent vehicle exhaust from entering the space. If possible, turn the engine off.

4.8.4 Safety equipment selected for specific entries shall be used/worn by employees entering the confined space.

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5 REFERENCE DOCUMENT

5.1 Rust E&I Reference Documents

- T.00.006 - Policy for Deviations or Waivers from Technical Standards
- T.00.020 - Hazardous Waste Safety Training
- T.00.021 - Employee Medical Surveillance Program
- T.00.022 - Preparation and Implementation of Site-Specific Health & Safety Plans (HASPs)
- T.11.100 - Construction Site Safety
- T.11.825 - Safety Concerns During Environmental Construction Projects
- Immunization Program - Employee Handbook Safety Section

5.2 Other Reference Documents

- NIOSH Booklet - *A Guide to Safety in Confined Spaces*, Publication No. 87-113
- OSHA 1910.146 - Final Standard, *Permit Required Confined Spaces*, January 14, 1993
- ANSI Standard, Confined Spaces, Z117.1 - 1989

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HS/T.00_023 E: 12/01/94

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RUST ENVIRONMENT & INFRASTRUCTURE

Confined Space Entry Permit

A.1 PROJECT INFORMATION

Project Name _____

Project Number _____

LOCATION and DESCRIPTION of confined Space _____ Date _____

PURPOSE of Entry _____ Time _____ M

DEPARTMENT _____ Expiration _____ M

Attendant _____ Entrants _____

Supervisor's Authorization (Lead Person) _____ Entrants _____

A.2 EQUIPMENT AND MONITORING

A.2.1 Equipment

Item (s)	Yes	No	Item(s)	Yes	No
Traffic Safety Equipment			Calibrated Monitoring Equipment		
Entry Tools			Escape Pack		
Hardhat			Ventilator/Blower		
Safety Glasses/Goggles			Communications		
Steel-Toe Shoes			CSE Sign		
Harness/Rope			Specify other Per Appendix B T.00.023		

A.2.2 Monitoring

Test(s) to be taken ① Test(s) conducted by:		Acceptable Entry	Not Acceptable Go To Item 3	Multiple Locations					
Test	P.E.I.	Yes	No	Site: Date:	Site: Date:	Site: Date:	Site: Date:	Site: Date:	Site: Date:
% of Oxygen	19.5%-23.5%								
% of L.E.L.	Less than 10%								
Hydrogen Sulfide	Less than 10 ppm								
Toxics ②									
Other ③									

A.3 LEVEL II PROCEDURES

A.3.1 A confined space with an atmosphere which is not within all of the limits (PELs) specified above may be ventilated and may be entered when sampling indicates an atmosphere within the specified PELs.

- Regardless if atmosphere has been rendered safe in this situation prior to entry, the local emergency response authority must be notified.

*****OR*****

A.3.2 In the event an atmosphere cannot be brought within the limits specified above for oxygen, hydrogen sulfide, toxic substances or combustible gases, DO NOT enter. Halt work activities. Re-evaluation of the work task is required. Immediately contact supervisor and REHSM. Entry at a later date may be allowed provided the entry team is properly trained and equipped.

A.4 EMERGENCY RESPONSE

Local Emergency Response (Phone) _____

Ambulance (Phone) _____

Fire (Phone) _____

Police (Phone) _____

NOTES: P.E.L. - Permissible Exposure Limit

L.E.L. - Lower Explosive Limit

① - Monitoring shall be continuous and throughout confined space.

② - Any toxic substances suspected or known prior to entry may require specific detection equipment (i.e. HNU, detector tubes).

③ - Other I.e., Dust that obscures vision at distance of 5 ft. or less, etc.

COMMENTS: _____

RUST ENVIRONMENT & INFRASTRUCTURE

Equipment Checklist For Entry To Confined Spaces And Other Areas Where Safe Air Quality May Not Exist

Type of Entry With Subcategory (If Applicable)	Traffic Safety				Entry Access Tools		Air Monitoring			Vent. Equip.	Personal Protective Equipment							Entry Equipment					Communications	Supplies				Other
	Safety Vests	Safety Cones	Safety Signs	Vehicle w/Beacons	Manhole Hook, Pick	Sledge Hammer, Wrench, (Bolted Cover)	Gas Detector	% Oxygen	H2S % LEL	Blower w/ Accessories	Hardhat	Safety Glasses/Goggles	Steel Toe Shoes	Gloves	Hip Boots (Steel Toe)	Rain Suit	Coveralls	Ladder (Chain and/or Rope)	Harness	Rope (Lanyard)	Escape Pac	Explosionproof Flashlight	FM Radio or Cellular Phone	First Aid Kit	Hand Cleaner	Paper Towels	Fire Extinq.	No Entry!
C.1. Manhole Inspection																												
C.1.1. Sanitary Sewer	R	R	R	R	R	S		R		R	R	R	R	S	S		S	S	R	R	R	R	R	R	S	S	S	
C.1.2. Storm Sewer	R	R	R	R	R	S		R		R	R	R	R	S	S		S	S	R	R	R	R	R	R	S	S	S	
C.1.3. Telephone & Electrical	R	R	R	R	R	S		R		R	R	R	R	S	S		S	S	R	R	R	R	R	R	S	S	S	
C.1.4. Lift Station/Wet Well	R	R	R	R	R	S		R		R	R	R	R	S	S		S	S	R	R	R	R	R	R	S	S	S	
C.2. Pumping & Treatment Facilities: Water, Wastewater, Municipal, Industrial, Hazardous																												
C.2.1. Wet Wells																												
• Without Ventilation					S			R		R	R	R	S	S	S		S	S	R	R	R	S	R	S	S	S	S	
• With Ventilation								R			R	R	S	S							S	S		S	S	S	S	
C.2.2. Valve & Meter Pits/Manholes																												
• Without Ventilation					S			R		S	R	R	R	S	S		S	S	R	R	R	S	R	S	S	S	S	
• With Ventilation					S			R			R	R	R	S				S			S	S		S	S	S	S	
C.2.3. Equipment Rooms																												
• "Wet" Rooms (Note 1)								R			S	S	S	S	S						S	S		S	S	S	S	
• "Dry" Rooms (Note 2)								S			S	S	S	S	S									S	S	S	S	
C.2.4. Tank Inspection																												
• Closed Tank (Note 3)								R		R	S	S	S	S	S		S	S	R	R	R	R	R	S	S	S	S	
• Open Tank (Note 4)								R			S	S	S	S	S		S	S	S	S	S			S	S	S	S	
C.3. Landfills																												
C.3.1. Excavations (Note 7)		S						R			R	R	R	S										S	S	S	S	R
C.3.2. Leachate Manhole Collection		S						R			R	R	R	S										S	S	S	S	R
C.4. Tunnels																												
C.4.1. Type A (Note 5)	R	R	R	R	R			R		R	R	R	R	S	S		S	S			R	R	R	S	S	S	S	
C.4.2. Type B (Note 6)								S			S	S	S	S	S		S				S	S		S	S	S	S	
C.5. Investigations, Study or Design Projects																												
C.5.1. Underground Silo								R			R	R	R	S	S		S	S	S	S	R			S	S	S	S	
C.5.2. Test Pits		S						R			R	R	R	S										S			S	R

R = REQUIRED for entry.
S = SUGGESTED for entry. Employer to determine need based on work to be performed.

Note 1: Rooms exposed to wastewater or sludge or rooms considered to be NEC rated, Class I, Division I or II.
Examples: Centrifuge and screening rooms, belt press rooms, enclosed activated sludge units, digester rooms.

Note 2: Rooms not exposed to wastewater or sludge and not considered to be NEC rated Class I, Division I or II.
Examples: Pump rooms, blower rooms, control rooms, electrical rooms.

Note 3: Examples: Anaerobic digesters, covered storage tanks.

Note 4: Examples: Uncovered clarifiers, uncovered aeration basins.

Note 5: Tunnel without mechanical ventilation, permanent lighting, stairwell access or clearance for quick exit.
Examples: Utility and steam tunnels under city streets.

Note 6: Tunnel with mechanical ventilation, permanent lighting, stairwell access and clearance for quick exit.
Examples: Utility, piping, and access tunnels (galleries) between buildings at treatment facilities.

Note 7: R means no entry into trench unless shored or trench box in use.

F233/CF/conf. Space Matrix

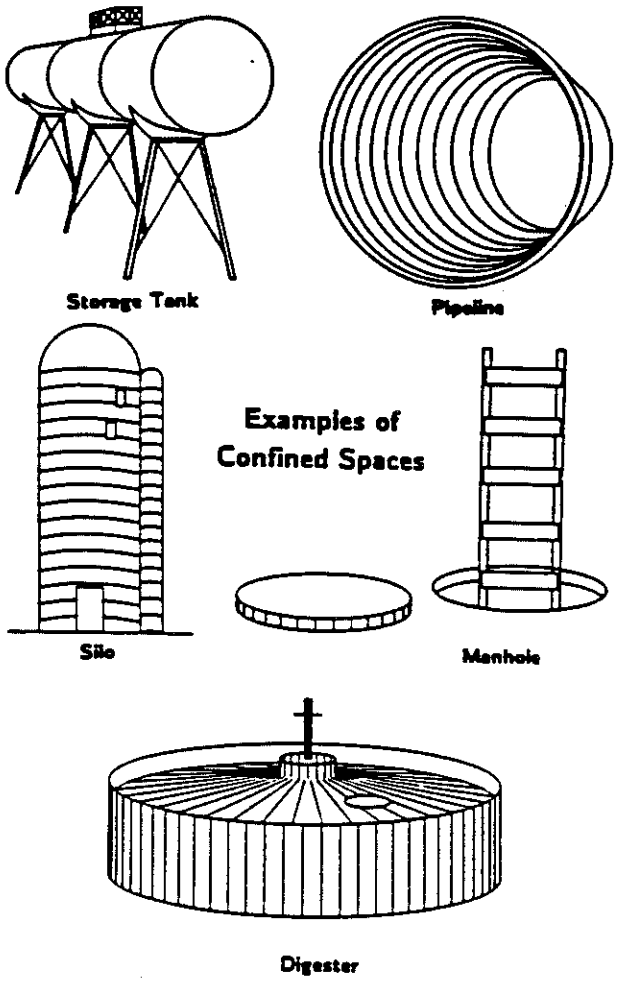
Appendix C

Rev. 12/94

A Guide To Safety In Confined Spaces

Introduction

Are you required to construct or work in any of the following: BOILER, CUPOLA, DEGREASER, FURNACE, PIPELINE, PIT, PUMPING STATION, REACTION OR PROCESS VESSEL, SEPTIC TANK, SEWAGE DIGESTER, SEWER, SILO, STORAGE TANK, SHIP'S HOLD, UTILITY VAULT, VAT, or similar type enclosure? Then you are working in a confined space (see illustrated examples).



How can you identify a confined space? It has any one or more of the following characteristics:

- Limited openings for entry and exit
- Unfavorable natural ventilation
- Not designed for continuous worker occupancy

Limited openings for entry and exit:
Confined space openings are limited primarily by size or location. Openings are usually small, sometimes just 18 inches in diameter, and are difficult to move through. Small openings can also make it very difficult to get needed equipment in or out of the spaces, especially protective equipment such as respirators used to enter spaces with hazardous atmospheres or life-saving equipment.

However, some openings are very large, especially open-topped spaces such as pits, degreasers, excavations, and ships' holds. Access to open-topped spaces may require the use of ladders, hoists or other devices. Escape from such areas may be very difficult in emergency situations.

Unfavorable natural ventilation:
When the design of a confined space does not allow air to pass freely through it, the atmosphere inside may become very different from the atmosphere outside. Deadly gases may be trapped inside, particularly if the space is used to store or process chemicals or organic substances that decompose. There may not be enough oxygen inside the confined space to support life, or the air could be so oxygen-rich that it increases the chance of fire or explosion if a source of ignition is present.

Not designed for continuous worker occupancy:
Most confined spaces are not designed for workers to routinely enter and work in. They

are meant to store a product, enclose material and processes, or transport products or substances. Therefore, occasional worker entry for inspection, maintenance, repair, cleanup, or similar tasks is often difficult and dangerous due to chemical or physical hazards within the space.

A workplace with a confined space that combines any of these three characteristics can complicate work efforts as well as rescue operations during emergencies. If a survey of your working area identifies one or more work spaces with the characteristics listed above—READ THE FOLLOWING INFORMATION. SOMEDAY IT MAY SAVE YOUR LIFE, OR THE LIFE OF A COWORKER.

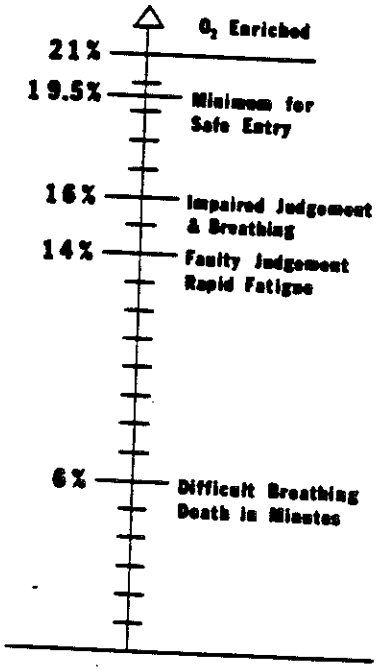
What are the hazards involved in entering and working in confined spaces?

Hazardous Atmospheres

As mentioned, the atmosphere in a confined space may be extremely hazardous because of the lack of natural air movement. This can result in 1) oxygen-deficient atmospheres, 2) flammable atmospheres, and 3) toxic atmospheres.

1. Oxygen-Deficient Atmospheres

   An oxygen-deficient atmosphere has less than 19.5% available oxygen (O_2). Any atmosphere with less than 19.5% oxygen should *not* be entered without an approved self-contained breathing apparatus (SCBA).



Oxygen Scale

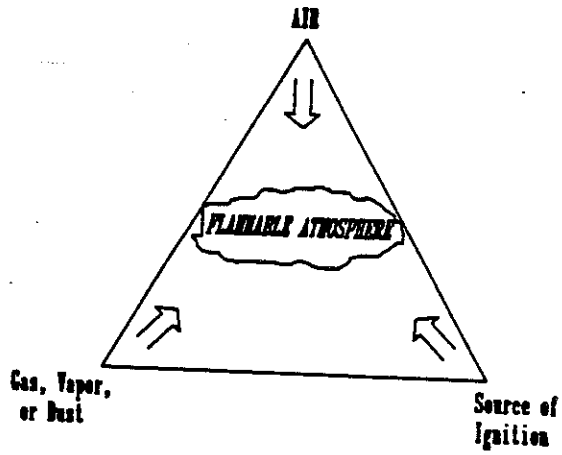
The oxygen level in a confined space can decrease because of the type of work being done, such as welding, cutting or brazing; or, it can be decreased by certain chemical reactions (rusting) or through bacterial action (fermentation).

The oxygen level is also decreased if oxygen is displaced by another gas, such as carbon dioxide or nitrogen. Total or large displacement of oxygen by another gas, such as carbon dioxide, will result in unconsciousness, followed by death.

2. Flammable Atmospheres

   Two things make an atmosphere flammable: 1) the oxygen in the air and 2) a flammable gas, vapor or dust in the proper mixture. Different gases have different flammable ranges. If a source of ignition (e.g., a sparking or electrical tool) is introduced into a space containing a flammable atmosphere, an explosion will result.

   An oxygen-enriched atmosphere (above 21%) will cause flammable materials, such as clothing and hair, to burn violently when ignited. Therefore, *never use pure oxygen to ventilate a confined space.* Ventilate with normal air.



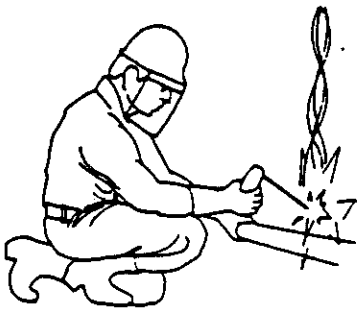
The Ignition Triangle

3. Toxic Atmospheres

Most substances (liquids, vapors, gases, mists, solid materials and dusts) should be considered hazardous in a confined space. Toxic substances can emanate from the following:

a) The product stored in the space. A product can be absorbed into the walls and release toxic gases when removed. Also, when cleaning out the residue of a stored product, toxic gases can be given off. For example, when sludge is removed from a tank, the decomposed material can emit deadly hydrogen sulfide gas.

b) The work being performed in a confined space, such as welding, cutting, brazing, painting, scraping, sanding, degreasing, etc. Toxic atmospheres are generated in various processes. For example, cleaning solvents are used in many industries for cleaning/degreasing. The vapors from these solvents are very toxic in a confined space.

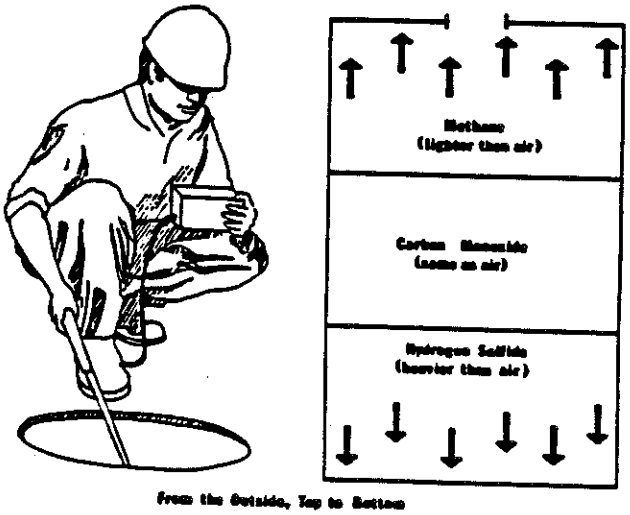


c) Areas adjacent to the confined space. Toxicants produced by work performed in the *area* of confined spaces can enter and accumulate in confined spaces.

Testing The Atmosphere

It is important to understand that some gases are heavier than air and will settle to the bottom of a confined space. Also, some gases are *lighter* than air and will be found around the top of the confined space. Therefore, it is necessary to test all areas (top, middle, bottom) of a confined space with properly calibrated testing instruments to determine what gases are present. If testing reveals oxygen-deficiency or the presence of toxic gases or vapors, the space must be ventilated and re-tested before workers enter. If ventilation is not possible and entry is necessary (e.g., for emergency rescue), workers must have appropriate respiratory protection.

NEVER TRUST YOUR SENSES TO DETERMINE IF THE AIR IN A CONFINED SPACE IS SAFE! YOU *CANNOT* SEE OR SMELL MANY TOXIC GASES AND VAPORS, NOR CAN YOU DETERMINE THE LEVEL OF OXYGEN PRESENT.



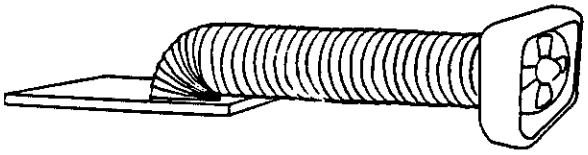
From the Outside, Top to Bottom

Ventilation

Ventilation by a blower or fan may be necessary to remove harmful gases and vapors from a confined space. There are several methods for ventilating a confined space. The method and equipment chosen are dependent upon the size of the confined space openings, the gases to be exhausted (e.g., are they flammable?), and the source of makeup air.

Under certain conditions where flammable gases or vapors have displaced the oxygen level, but are too rich to burn, forced air ventilation may dilute them until they are within the explosive range. Also, if inert gases (e.g., carbon dioxide, nitrogen, argon) are used in the confined space, the space should be well ventilated and re-tested before a worker may enter.

A common method of ventilation requires a large hose, one end attached to a fan and the other lowered into a manhole or opening. For example, a manhole would have the ventilating hose run to the bottom to blow out all harmful gases and vapors (see diagram). The air intake should be placed in an area that will draw in fresh air only. Ventilation should be continuous where possible, because in many confined spaces the hazardous atmosphere will form again when the flow of air is stopped.

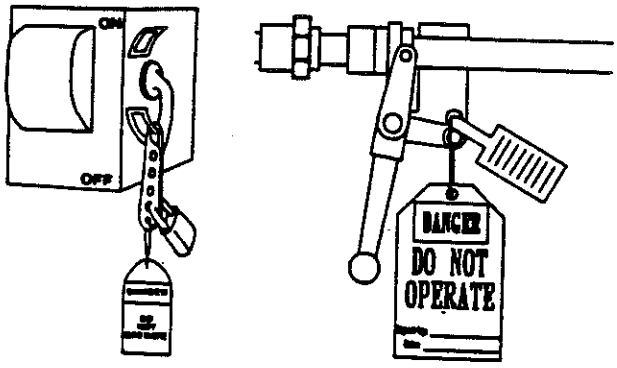


Ventilating with Fan and Trunk Hose

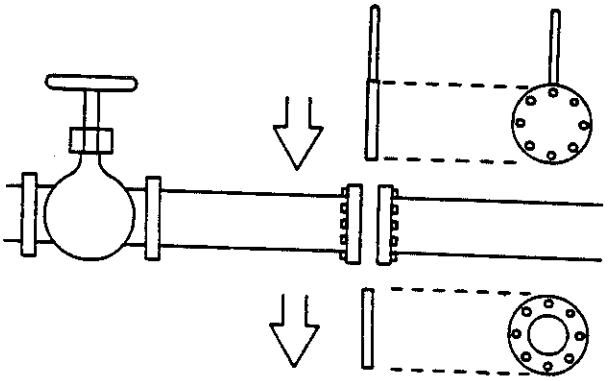
Isolation

Isolation of a confined space is a process whereby the space is removed from service with the following measures:

- locking out electrical sources, preferably at disconnect switches remote from the equipment
- blanking and bleeding pneumatic and hydraulic lines
- disconnecting belt and chain drives, and mechanical linkages on shaft-driven equipment where possible
- securing mechanical moving parts within confined spaces with latches, chains, chocks, blocks or other devices



Examples of Lockout



Method of Blanking Hydraulic/Pneumatic Lines

Respirators

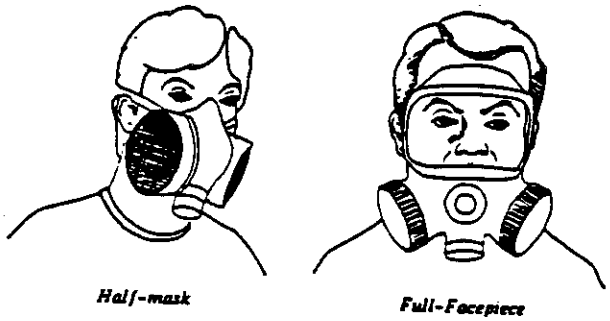
Respirators are devices that can allow workers to safely breathe without inhaling toxic gases or particles. Two basic types include *air-purifying respirators*, which filter dangerous substances from the air, and *air-supplying respirators*, which deliver a supply of safe breathing air from a tank or an uncontaminated area nearby.

ONLY AIR-SUPPLYING RESPIRATORS SHOULD BE USED IN CONFINED SPACES WHERE THERE IS NOT ENOUGH OXYGEN.

Selecting the proper respirator for the job, hazard and person is very important, as is thorough training in the use and limitations of respirators. Questions regarding the proper selection and use of respirators should be addressed to a certified industrial hygienist, or to the NIOSH Division of Safety Research, 944 Chestnut Ridge Road, Morgantown, West Virginia 26505.

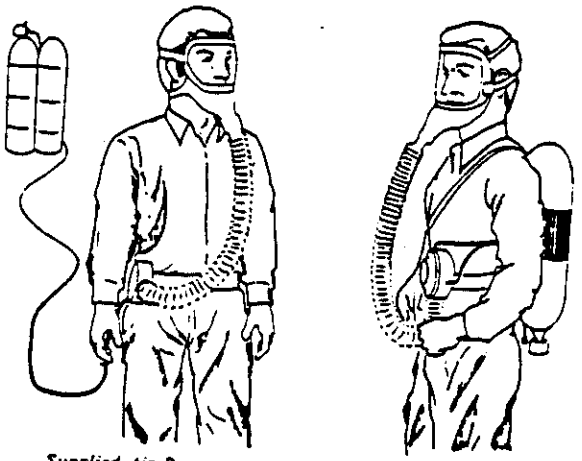
Air-Purifying Respirators

(Do Not Use in Oxygen-Deficient Atmosphere)



Half-mask *Full-Facepiece*

Air-Supplying Respirators



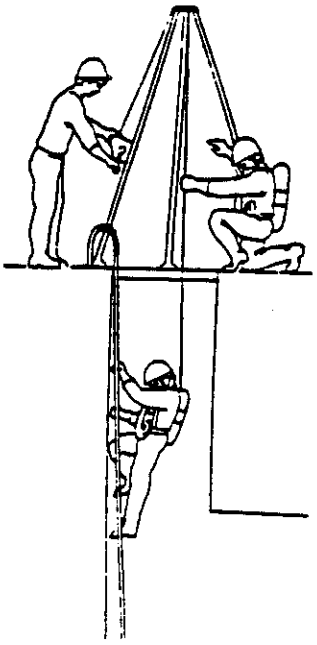
Supplied Air Respirator with Auxiliary, Escape-only SCBA *Self-contained Breathing Apparatus (SCBA)*

Standby/Rescue

A standby should be assigned to remain on the outside of the confined space and be in constant contact (visual or speech) with the workers inside. The standby, who should not have any other duties but to serve as a standby, must know who should be notified in case of emergency. Standby personnel should not enter a confined space until help arrives, and then only with proper protective equipment, lifelines and respirators.

Over 50% of the workers who die in confined spaces are those attempting to rescue other workers. Rescuers must be trained in and follow established emergency procedures and use appropriate equipment and techniques (lifelines, respiratory protection, standby, etc.). Steps for safe rescue should be included in all confined space entry procedures. Rescue efforts should be well planned and drills should be frequently conducted on emergency procedures. An unplanned rescue, such as when someone instinctively rushes in to help a downed co-worker, can easily result in a double fatality, or even multiple fatalities when there are more than one would-be rescuers.

REMEMBER: AN UNPLANNED RESCUE WILL PROBABLY BE YOUR *LAST*.



Entry with Hoist and Standby Personnel

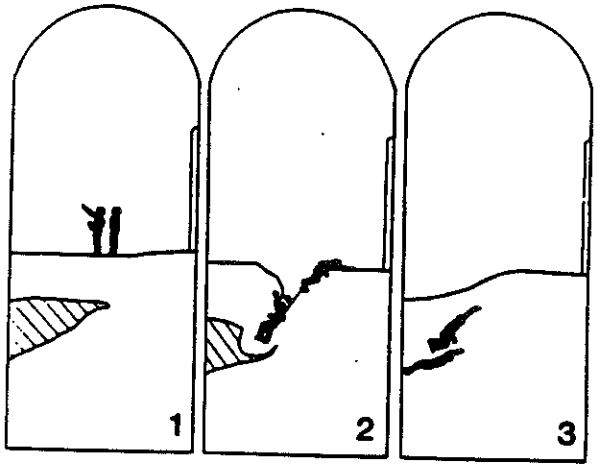
General Physical Hazards

1. **Temperature Extremes**

   Extremely hot or cold temperatures can present problems for workers. For example, if the space has been steamed, it should be allowed to cool before any entry is made.

2. **Engulfment Hazards**

   Loose, granular material stored in bins and hoppers, such as grain, sand, coal or similar material, can engulf and suffocate a worker. The loose material can crust or bridge over in a bin and break loose under the weight of a worker.



The Hazard of Engulfment in Unstable Material

3. Noise

   Noise within a confined space can be amplified because of the design and acoustic properties of the space. Excessive noise can not only damage hearing, but can also affect communication, such as causing a shouted warning to go unheard.

4. Slick-Wet Surfaces

   Slips and falls can occur on a wet surface causing injury or death to workers. Also, a wet surface will increase the likelihood and effect of electric shock in areas where electrical circuits, equipment and tools are used.

5. Falling Objects

   Workers in confined spaces should be mindful of the possibility of falling objects, particularly in spaces which have topside openings for entry, and where work is being conducted above the worker.

Recommendations for Safe Entry: A Checklist

Use the following checklist to evaluate the confined space.

DO *NOT* ENTER A CONFINED SPACE UNTIL YOU HAVE CONSIDERED EVERY QUESTION, AND HAVE DETERMINED THE SPACE TO BE SAFE.

Yes	No	
☐	☐	Is entry necessary?
		Testing
☐	☐	Are the instruments used in atmospheric testing properly calibrated?
☐	☐	Was the atmosphere in the confined space tested?
☐	☐	Was oxygen at least 19.5% – not more than 21%?
		– Hydrogen sulfide
		– Carbon monoxide
		– Methane
		– Carbon dioxide
		– Other (list) _____
		_____
		Monitoring
☐	☐	Will the atmosphere in the space be monitored while work is going on?
☐	☐	Continuously?
☐	☐	Periodically? (If yes, give interval: _____)
		REMEMBER – ATMOSPHERIC CHANGES OCCUR DUE TO THE WORK PROCEDURE OR THE PRODUCT STORED. THE ATMOSPHERE MAY BE SAFE WHEN YOU ENTER, BUT CAN CHANGE VERY QUICKLY.
		Cleaning
☐	☐	Has the space been cleaned before entry is made?
☐	☐	Was the space steamed?
☐	☐	If so, was it allowed to cool?

Yes	No	Ventilation
☐	☐	Has the space been ventilated before entry?
☐	☐	Will ventilation be continued during entry?
☐	☐	Is the air intake for the ventilation system located in an area that is free of combustible dusts and vapors and toxic substances?
☐	☐	If atmosphere was found unacceptable and then ventilated, was it retested before entry?
		Isolation
☐	☐	Has the space been isolated from other systems?
☐	☐	Has electrical equipment been locked out?
☐	☐	Have disconnects been used where possible?
☐	☐	Has mechanical equipment been blocked, chocked and disengaged where necessary?
		Clothing/Equipment
☐	☐	Is special clothing required (boots, chemical suits, glasses, etc.)? (If so, specify: _____)
☐	☐	Is special equipment required (e.g., rescue equipment, communications equipment, etc.)? (If so, specify: _____)
☐	☐	Are special tools required (e.g., sparkproof)? (If so, specify: _____)
		Respiratory Protection
☐	☐	Are MSHA/NIOSH-approved respirators of the type required available at the worksite?
☐	☐	Is respiratory protection required (e.g., air-purifying, supplied air, self-contained breathing apparatus, etc.)? (If so, specify type: _____)
☐	☐	Can you get through the opening with a respirator on? If you don't know, find out before you try to enter.

Yes	No	Training
☐	☐	Have you been trained in proper use of a respirator?
☐	☐	Have you received first aid/CPR training?
☐	☐	Have you been trained in confined space entry and do you know what to look for?
		Standby/Rescue
☐	☐	Will there be a standby on the outside in constant visual or auditory communication with the person on the inside?
☐	☐	Will the standby be able to see and/or hear the person inside at all times?
☐	☐	Has the standby been trained in rescue procedures?
☐	☐	Will safety lines and harness be required to remove a person?
☐	☐	Are company rescue procedures available to be followed in the event of an emergency?
☐	☐	Are you familiar with emergency rescue procedures?
☐	☐	Do you know who to notify and how in the event of an emergency?
		Permit
		(The permit is an authorization in writing that states: 1) the space has been tested by a qualified person; 2) the space is safe for entry; 3) what precautions, equipment, etc. are required; and 4) what work is to be done.)
☐	☐	Has a confined space entry permit been issued?
☐	☐	Does the permit include a list of emergency telephone numbers?

APPENDIX D

EMERGENCY RESPONSE PROCEDURES AND CONTINGENCY PLAN

VICKERY FACILITY

EMERGENCY RESPONSE PROCEDURES
AND
CONTINGENCY PLAN

CHEMICAL WASTE MANAGEMENT, INC.
VICKERY, OHIO FACILITY

Rev 11/94

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PREFACE

This document is the Emergency Response Procedure and Contingency Plan, herein after referred to as the Contingency Plan or Plan, that will be activated in the event of a release of hazardous waste or other emergency at the Vickery Facility which poses a threat to human health or the environment. Pursuant to the requirements of 40 CFR 265.51 and OAC 3745-65-51, the facility will maintain this Plan which details procedures to "minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous wastes or hazardous waste constituents to air, soil, or surface water." A current copy of this Plan will be kept at the facility.

This Plan provides a description of the response procedures to be implemented in an emergency situation which will protect the public, personnel at the facility, and the environment. Various structural and operational measures are in place which are designed to minimize the possibility of such an emergency occurring. The following sections present the procedures and details for implementation of the Plan.

The implementation of response procedures described in Section 2 reflect the requirements of Attachment B in the Consent Decree and Final Order between CWM and the United States Environmental Protection Agency entered on April 4, 1985.

This document\plan will be maintained and administered by the Site Safety Manager. In his absence, the responsibility for the maintenance and administration of this document\plan will be that of the Site Environmental Manager.

Department Managers and Supervisory Personnel shall assist in the development and the administration of the emergency program within their areas of responsibility and training.

NOTIFICATION ACTION SUMMARY

ON-SITE NOTIFICATION:

Report all emergencies to the Emergency Coordinator or his Alternate.

Communication Systems

Two-Way Radios:

Base Station	Main Office Building
	Truck Wash/Unloading Building (Control Room)
Mobile Units	Maintenance Department Vehicle(s)
	Operations Vehicles
Portable Units (10)	

Telephones for external communication (419) 547-7791 and internal communication can be found at the following locations:

Truck Wash/Unloading Building

Administrative Office Building

Receipt Control

Maintenance Shop

Guard House

Pump Houses 1, 2, 3, and 5

T-Tank Pump House

Filter Buildings 1 and 2

Lunchroom/Change Room

Control Room

Main Laboratory

Emergency Coordinators (EC) and Communications Coordinators (CC) and Their Alternates

See the attached table for the names, telephone numbers, addresses, and paging device numbers of the Emergency Coordinators, Communications Coordinators, and their Alternates.

INCIDENT TELEPHONE CONTACT LIST

EMERGENCY COORDINATORS

OPERATIONS
Shift Supervisor On-Duty

John Moneghan
711 Chestnut St.
Fremont, OH 43420
Home #(419)332-0115

Kennard Franks
1709 Emmett Dr.
Fremont, OH 43420
Home #(419)334-2771

Dennis McClure
3795 S.R. 53 North
Fremont, OH 43420
Home #(419)334-3528

Kevin Adams
623 Morrison Street
Fremont, OH 43420
Home #(419)332-4994

Robert A. Baumer
1655 E. State Street
Fremont, OH 43420
Home #(419)332-9208

Greg Burr
1103 W. Cole Road
Fremont, OH 43420
Home #(419)334-2386

Dan Durbin
1703 Tiffin Road
Fremont, OH 43420
Home #(419)334-4533

Vince Sidoti
101 Thomas Drive; Apt. A
Bellevue, OH 44811
Home #(419)483-1765

REGULATORY/TECHNICAL

Fred Nicar
3955 St. Rt. 412
Vickery, OH 43464
Home #(419)547-6431

Paul Anteau
413 Erie St.
Woodville, OH 43469
Home #(419)849-2929

Steve Lonneman
4369 E. Stonehenge
Port Clinton, OH 43452
Home #(419)797-6385

Fred Lear
7215 N. St. Rt. 101
Clyde, OH 43410
Home #(419)639-3419

Mike Curry
2127 Buckland Ave.
Fremont, OH 43420
Home #(419)332-2145

Carolyn Golamb
1230 S. Sandusky C.R. 198
Fremont, OH 43420
Home #(419)334-7075

Phil Randolph
103 N. Main St.
Lindsey, OH 43442
Home #(419)665-2444

Sandy Clark
2059 Victor St.
Fremont, OH 43420
Home #(419)334-4958

COMMUNICATIONS COORDINATOR (CC)

Fred Nicar (primary)
(419) 547-6431

Steve Lonneman (alternate)
(419) 797-6385

NOTE: The EC will notify the General Manager (Fred Nicar at (419) 547-6431) as soon as possible following an incident.

NOTE: Regulatory/Technical Personnel share paging devices. The phone number for the paging device is (419) 627-6551.

External Reporting Requirements

The EC or his designee is required to notify the following agencies if a "reportable quantity"[1] of hazardous waste has been released to the environment within the facility boundaries:

1. National Response Center..... (800) 424-8802
2. Ohio EPA Emergency Response..... (800) 282-9378
3. Ohio EPA Northwest District Office.... (419) 352-8461

The following additional agencies must be notified of any release of hazardous waste to an off-site waterway or off-site.

1. USEPA Region V Office..... (312) 353-2197
2. US Coast Guard..... (216) 522-3983
3. Sandusky County Sheriff ..... (419) 332-2613 or 911

[1]The reportable quantity of hazardous waste for the site is one pound (which is equivalent to one (1) pint) to the environment or to the pavement if it is raining, or 10 gallons to the pavement if it is not raining unless otherwise specified by Section 311 of the Clean Water Act - or in Section 302.4 of CERCLA.

1.0 GENERAL FACILITY DESCRIPTION

The Vickery Facility is located on State Route 412, 2 miles west of Vickery, Ohio. It is permitted for the storage, treatment and disposal of liquid hazardous waste.

1.1 FACILITY IDENTIFICATION, LOCATION AND SITE PLAN

Name: Chemical Waste Management, Inc., Vickery Facility

Location: The facility is at the corner of State Route 412 and State Route 510.

Facility Owner:

Chemical Waste Management Holdings, Inc.
3003 Butterfield Road
Oak Brook, Illinois 60521
708-572-8800

Facility Operator and Mailing Address:

Chemical Waste Management, Inc.
3003 Butterfield Road
Oak Brook, Illinois 60521
708-572-8800

Figure 1-1 provides a location and vicinity map for the facility. Figure 1-2 shows the layout of the existing facility.

1.2 FACILITY OPERATIONS

The treatment/storage tanks are used to handle wastes generated off-site and on-site. Wastes are blended, filtered and then disposed of by

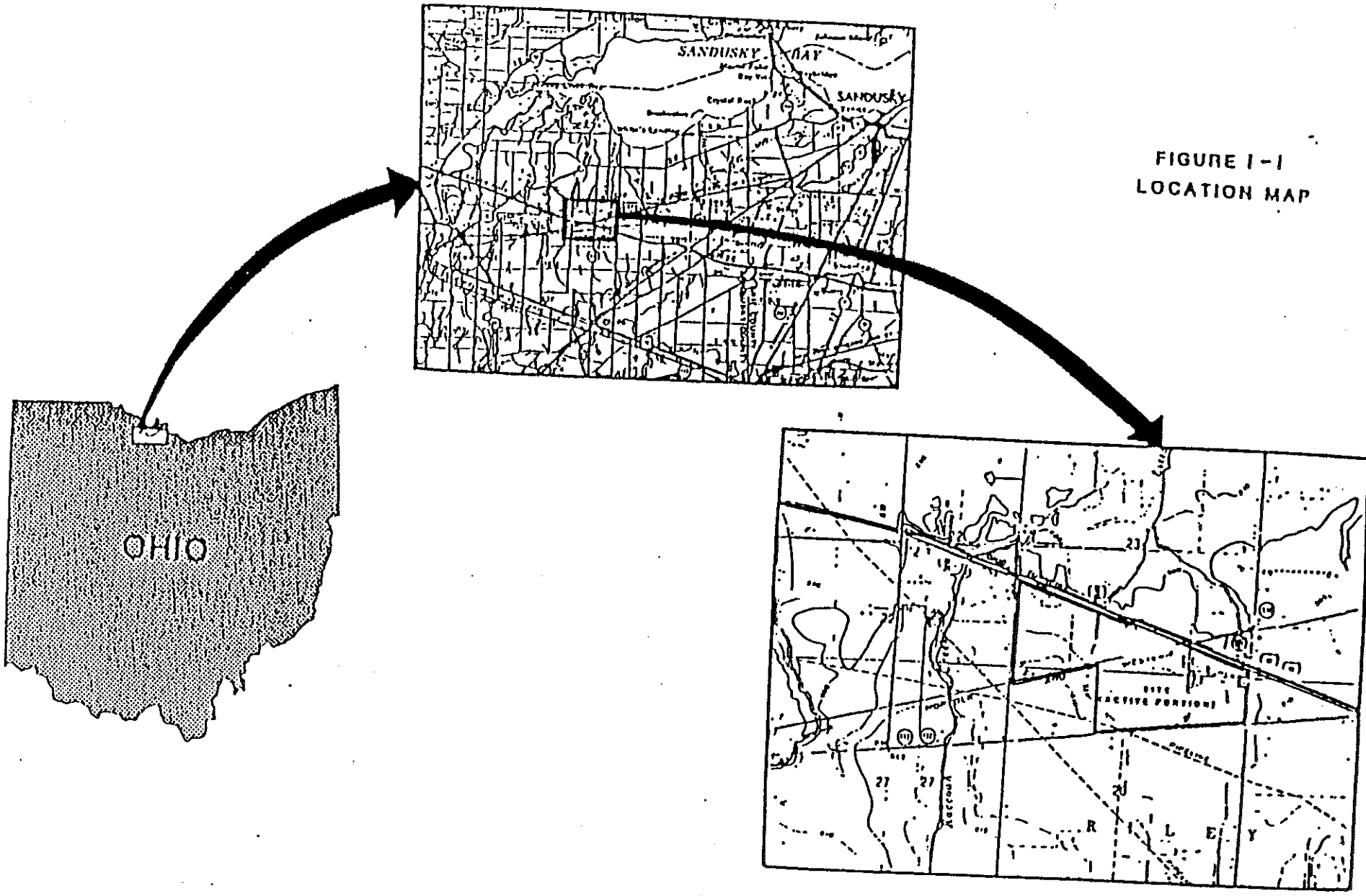
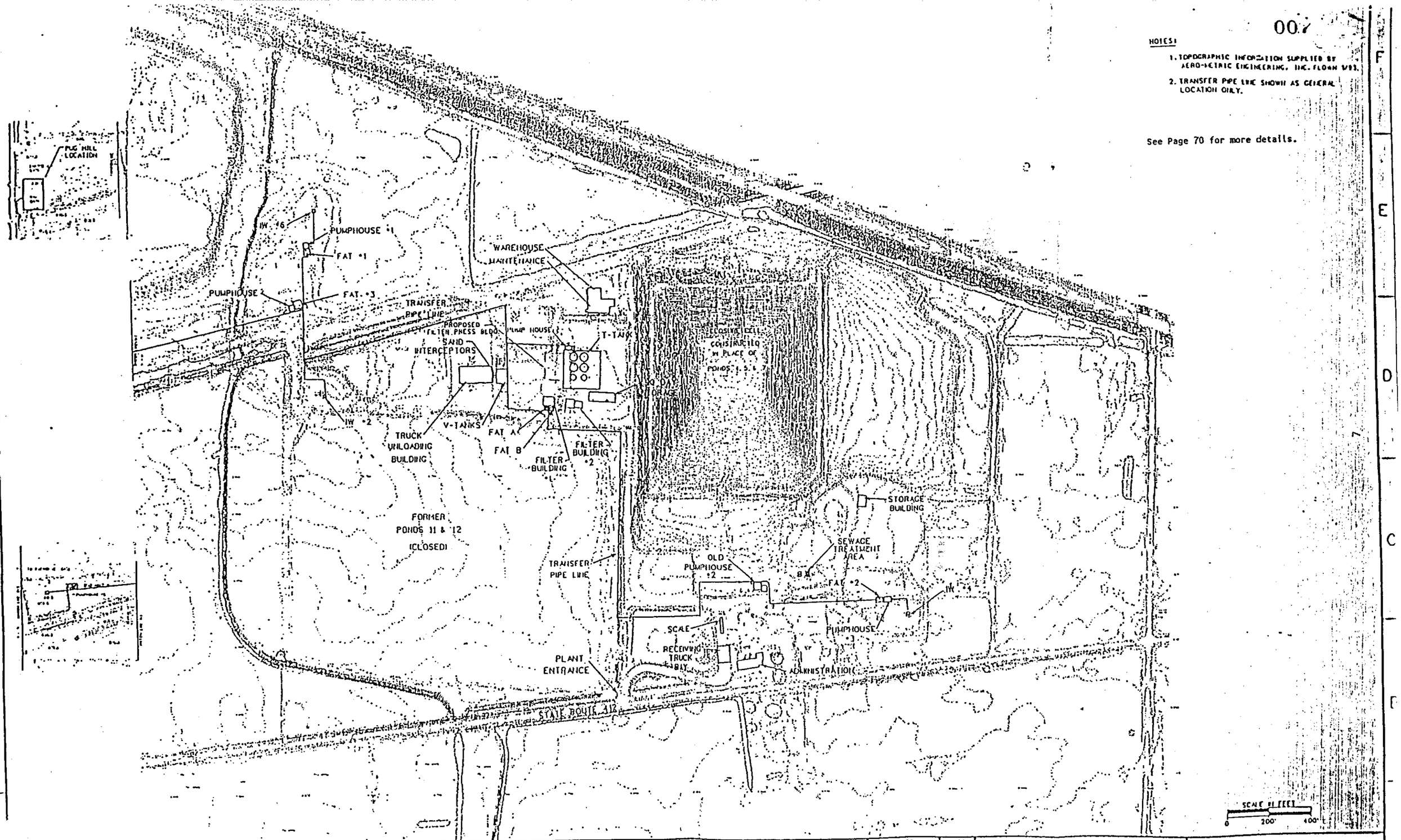


FIGURE I-1
LOCATION MAP

NOTES:

1. TOPOGRAPHIC INFORMATION SUPPLIED BY AERO-METRIC ENGINEERING, INC. FLOWN 1/93.
2. TRANSFER PIPE LINE SHOWN AS GENERAL LOCATION ONLY.

See Page 70 for more details.



NO	REVISIONS	MADE	CHK	DATE
0	ISSUED FOR CLIENT REVIEW	JTP	RAL	7/02/93

CWM Chemical Waste Management, Inc.

NAMES		DATE
DRAWN	J.T.P.	6/21/93
DESIGN	R.A.L.	6/21/93
CHECKED		
PE		
APP'D		
APP'D		
APP'D		

FIGURE 1-2
GENERAL SITE PLAN

CHEMICAL WASTE MANAGEMENT, INC.
VICKERY, OHIO

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 83797.000 DATE

SEED DWG NUMBER 83797P01

CLIENT DWG NUMBER

FAT NUMBER

SHEET NUMBER

deepwell injection.

Wastes are received and unloaded in the Truck Unloading Facility. After unloading, wastes are pumped to the storage/treatment tanks. After blending to the desired pH, the waste is pumped through a primary filter to remove solids. Filtered waste is then pumped through polishing filters and is finally pumped to a disposal well. Solids removed from the treated wastes are collected and shipped to permitted off-site disposal facilities. The facility is operated 24 hours a day, 7 days a week.

The roll off/bulk trailer storage area will handle hazardous wastes generated onsite and provide storage for commercial wastes prior to disposal at an offsite facility.

1.3 HAZARDOUS WASTES RECEIVED AT FACILITY

Section 11.1 details the types of wastes that typically are received and will be received at the facility.

1.4 TYPES OF POTENTIAL EMERGENCIES

The potential for an emergency may exist at this facility due to its operational activities and the type of materials it handles. Additionally, natural events ("Acts of God") could create an emergency situation at the facility that would have to be appropriately and effectively managed. These are addressed below as events which could potentially trigger implementation of the Contingency Plan.

1.4.1 Emergencies Inherent to Facility Operations

Potential emergencies which could result from facility operations and the types of materials processed for disposal include:

deepwell injection.

Wastes are received and unloaded in the Truck Unloading Facility. After unloading, wastes are pumped to the storage/treatment tanks. After blending to the desired pH, the waste is pumped through a primary filter to remove solids. Filtered waste is then pumped through polishing filters and is finally pumped to a disposal well. Solids removed from the treated wastes are collected and shipped to permitted off-site disposal facilities. The facility is operated 24 hours a day, 7 days a week.

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1.4.1 Emergencies Inherent to Facility Operations

Potential emergencies which could result from facility operations and the types of materials processed for disposal include:

- Fire
  - Could cause the release of toxic/caustic fumes.
  - Could spread and possibly ignite materials at other locations on site, or cause heat-induced explosions.
  - May produce contaminated run-off from fighting fire with water or chemical fire suppressant.
- Explosion
  - Could cause a safety hazard from flying fragments or shock waves.
  - Could ignite other hazardous waste at the facility.
  - Could result in release of toxic/caustic material.
- Spills or Material Releases
  - Could result in release of flammable liquids or vapors capable of causing a fire or gas explosion hazards.
  - Could cause the release of toxic/caustic liquids or fumes.
  - Could result in contamination of off-site surface water.
- Accident (vehicle or equipment)
  - Could cause a fire, explosion or spill, as described above.
  - Could result in mixing of incompatible chemicals.
  - Could cause surface contamination through release of toxic/caustic liquids.
  - Could cause air contamination through release of fumes.
- Injury\Illness
  - Could require the administration of first aid\CPR by site personnel or outside medical help.

1.4.2 Natural Events

There are potential facility emergencies which could result from "Acts of God", including major climatological, geophysical, or other natural events such as:

1.4.2.1 Heavy rainstorms, including lightning strikes and hail.

1. Policy

The policy of this facility is to act conservatively and to have all employees seek cover during a thunderstorm if there is a threat of a lightning strike to an employee or equipment. The shift supervisor's are responsible for protecting their employees from the threat of lightning strike. All supervisors have the authority to have their employees temporarily cease operations and seek cover inside if local atmospheric conditions are threatening. Before the operating employees seek cover they may need to secure their areas. This means they may need to shut off all pumps, close valves and secure any trucks or open containers they are working on at the time of the storm.

2. Notification

Notification that a storm is impending may be made to either the Emergency Coordinator, the Operations Manager, or the shift Supervisor, by any employee monitoring a local radio station. Additional clues that a severe storm may be impending may be rapidly darkening skies, the sound of thunder in the distance, sudden downpours, etc.

3. Preparatory Actions

Since thunderstorms develop quickly and their severity is very unpredictable, it is note worthy that work activities in open areas and elevated locations may

cease when thunderstorms or other adverse weather conditions threaten.

IF LIGHTNING SHOULD STRIKE ANYWHERE IN THE PROCESS AREA AND START GREATER THAN AN INCIPIENT STAGE FIRE, THE FIRE DEPARTMENT WILL BE CALLED.

4. Post Incident Actions

Supervisors are to account for all employees. Once complete, an inspection of the facility should be undertaken to ensure that no damage was suffered. If damage is noted, the Emergency Coordinator must be notified.

All electrical equipment involved in the incident must be inspected prior to restarting operations.

1.4.2.2 B. Tornados

1. Policy

In the event of a tornado sighting priority will be given to notify personnel. Personnel will be directed to areas of refuge or to the most structurally sound areas of the closest site building.

2. Notifications

Notification will be made by the person sighting the tornado from a place of refuge. The person shall issue a general warning to all personnel by dialing 70 and saying "Tornado sighted, take cover immediately, I

repeat, tornado sighted, take cover immediately." He will then call specific extensions (322 Control Room, 0 - Operator) near the refuge areas to make sure the general warning was heard and people are responding to it. The person will then dial 911 and notify the community emergency response personnel of the sighting.

Areas of Refuge

a. Administration Building
   Basement

b. Employee Lunch Room (Operations)
   Interior Hallway

c. Receiving Building
   1st floor Restroom

3. Preparatory Actions

Tornado Watch or Tornado Warning

If a tornado watch or warning is issued by the National Weather Service the Emergency Coordinator shall be notified.

The Emergency Coordinator shall keep updated on the weather by using local media as a resource and by keeping watch on the sky in immediate area (e.g. WFRO FM 99.1 or AM 900).

The Emergency Coordinator shall make sure all personnel are notified of the warnings issued by the National Weather Service.

The Emergency Coordinator has the authority to order facility personnel to shut-down the facility.

4. Post Incident Actions

Supervisors are to account for all employees. If safe to do so, an inspection of the facility should be undertaken to ensure that no damage was suffered. If damage is noted, the Emergency Coordinator must be notified.

Notifications must be made to the Region office as soon as possible.

1.4.2.3 C. Severe cold and snowstorms

1. Policy

The facility has potential to experience problems from cold weather and/or snow. The periods of the severe weather are usually limited to no more than a week at a time. These breaks in the weather generally allow the facility to recover from the freezing problems created by the extreme cold.

The types of problems that the facility may experience are frozen pipes, ice on walking areas, accumulation of ice in containment areas, frozen valves and cold stress experienced by the employees.

2. Notification

No specific notification needed. The Operations Manager shall notify all supervisors that cold weather is expected, who in turn shall notify the appropriate facility personnel. Facility personnel should be reminded of the dangers of cold stress.

Supervisors and operating personnel need to take precautions to prevent problems from the cold weather. Supervisors will need to check on their employees and make sure they are properly dressed for the weather. The operating personnel will have to prepare for cold weather by having additional clothing available during extremely cold periods.

3. Preparatory Actions

The facility's response to cold weather must be pro-active. Maintenance or contractor personnel will remove snow and ice from key roads, sidewalks and parking lots as soon as they can. Salt may be applied liberally to melt residual snow and ice and to provide better traction.

Operations personnel will be responsible for the active areas of the facility. The two biggest concerns are freezing pipes and slipping hazards caused by the ice and snow. Operations shall be proactive. Operations personnel are to make visual inspections of the active areas to detect and remediate discovered problems. Ice and snow are to be removed as quickly as possible to reduce the chance of someone slipping and hurting

themselves. Personnel can use materials such as salt and sand to increase traction. As ice and snow melt in containment areas it must be pumped up to a storage tank.

Extreme cold might require that additional breaks be given to personnel to allow them to come inside and warm-up. All personnel should be aware of the dangers of coming in to a warm-up and starting to sweat. If sweating occurs the employee could experience accelerated hypothermia due to the moisture near his skin. Therefore, all employees should consider changing clothing before returning to the cold environment to reduce the increased chance of hypothermia due to the wet clothes. It is important that this change of clothing include the socks since the feet are one of the most susceptible areas of the body to the effects of cold weather.

4. Post Incident Actions

All melted snow or ice must be cleaned up as soon as possible to prevent further freezing during another cold event. All pipes, flanges, valves, etc. should be visually inspected to prevent releases or spills due to weather-caused cracks or splits in these pieces of equipment.

1.4.2.4 D. Earthquake

1. Policy

The site is not located on a seismic fault and is not considered to be any more prone to an earthquake than any other area. Response activities after the occurrence will be similar to any other emergency incident.

2. Notification

No prior notification will be possible.

3. Preparatory Actions

Due to the nature of an earthquake, no prior preparatory actions are possible.

4. Post Incident Actions

Supervisors are to account for all employees. If safe to do so, an inspection of the facility should be undertaken to ensure that no damage was suffered. If damage is noted, the Emergency Coordinator must be notified.

Notifications must be made to the Region office as soon as possible.

1.4.2.5 E. Flood

1. Policy

The site in not located in a flood plain. Therefore, the facility does not expect to be flooded due to rising waters from local rivers and streams.

2. Notification

None needed.

3. Preparatory Actions

If a flood is imminent, the facility shall attempt to obtain sand bags to utilize as a dam. If this is not possible, the yard tractor may be utilized to build earthen dams.

All paperwork considered vital shall be removed to an area of higher, dry ground or a secure off-site location which will remain dry.

If the water level appears to be rising and rises over any dams, all of the operating units shall be shut down. All of the boilers on the site shall be shut down. All pneumatic tank valves shall be closed. Electrical supply shall be eliminated where possible. All equipment stored or placed on the floor shall be moved onto table tops when possible. Attempt to remove any vital paperwork to areas which may remain dry.

4. Post Incident Actions

Being cautious of water/electricity hazards, the facility shall be inspected in order to ensure that water damage will not adversely affect start-up of the facility.

1.4.3 Bomb Threats

- Any bomb threats received by the site shall be referred to the Emergency Coordinator if possible.
- All individuals communicating with the caller shall utilize the Bomb Threat Call Checklist located in Appendix CP-2.
- It is critical in the event of a bomb threat that the person receiving the call be calm and courteous. The receiver needs to try to keep the caller on the line as long as possible. By pretending to have difficulty hearing it is possible to keep them on the line longer.
- After the receiver has completed the above information they are to immediately contact the General Manager or his designee, the Operations Manager and the Security Manager. These people will get together and coordinate the facility's response to the bomb threat.

Items that need to be done by the above three people

- Call Sandusky County Sheriff's Department at 911 or 332-2613.
- Determine whether site needs to be evacuated.
- Call CWM Corporate Security at (708) 218-1725.

2.0 IMPLEMENTATION OF EMERGENCY RESPONSE PROCEDURES

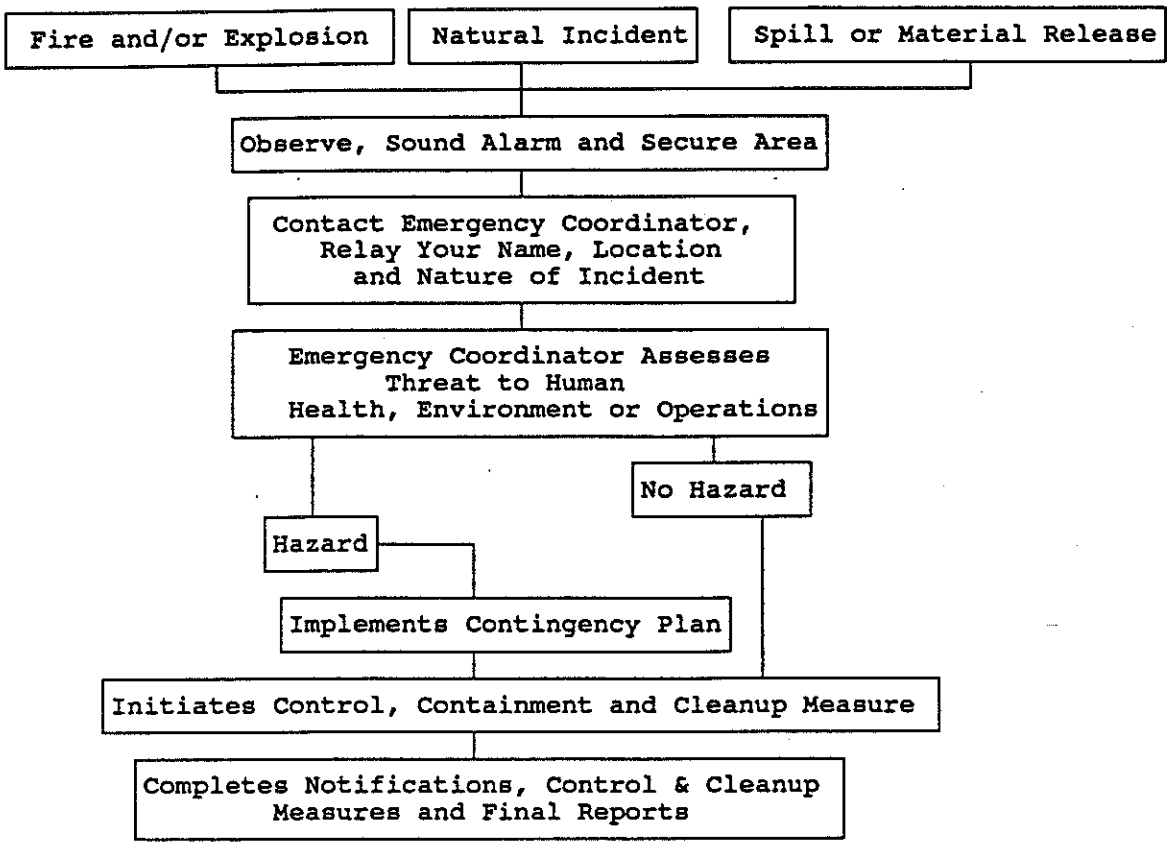
In the event of an emergency which results in fire, explosion or accidental materials release, emergency response activities will be initiated accordingly, following discovery of the event. An assessment of the situation will be performed immediately by the on-duty Emergency Coordinator (E.C.) (Shift Supervisors). A logic diagram of emergency response activities is shown in Figure 2-1. In the event of an imminent or actual emergency, the person discovering the incident will implement the following procedures:

1. Notify the Shift Supervisor/Emergency Coordinator and secure the area. The Shift Supervisor can be directly notified by phone or radio or he may be notified through the control room operator. The control room is manned 24 hours a day, seven days a week and is reachable by phone (extension 322 or 363) or radio.

2. The Shift Supervisor (emergency coordinator) is responsible for all emergency response actions. The first step for the Shift Supervisor is to make a preliminary assessment of the situation based on visual observation, verbal communication, or any available data. The emergency will be evaluated using the following criteria and the criteria outlined in Table 2-1.

   If the event can be controlled and contained on-site using on-site personnel and equipment and, if the event presents no potential hazard to human health, or the environment, the Emergency Coordinator will proceed with emergency response procedures detailed herein without activating the Contingency Plan. Post-emergency (cleanup) procedures will be implemented and the necessary reporting will be completed.

FIGURE 2-1
RESPONSE ACTIVITIES
CHEMICAL WASTE MANAGEMENT, INC.



If the event cannot be controlled using only on-site personnel and equipment (i.e., if the help of outside "emergency response" agencies is needed) or if the event poses a threat to off-site human health, or the off-site environment, the Emergency Coordinator will contact the appropriate "emergency response" agency(ies) thereby implementing the Contingency Plan. (See Emergency Contact List Table 2-3).

3. Invoking the Contingency Plan

The Contingency Plan will be enacted whenever the Emergency Coordinator determines that there is a threat to human health or the environment. Since CWM employees are trained to handle spills, have personnel protective equipment to work in hazardous environments, the potential for threat to human health to employees on site is controllable. The Emergency Coordinator will evaluate the incident's potential to threaten human health if a release has the potential to leave the site line. For potential threat to the environment, the Emergency Coordinator will assess the incident based on the potential of the release to leave the property or if outside assistance is needed to remediate the release. Since a large portion of the materials that the Vickery facility handles are aqueous streams, the greatest potential for a threat to the environment involves a release that would threaten the waterways. The soil for the Vickery facility is comprised of mostly clay and migration into the soil is minimal. The Vickery facility has a series of Surface Water management gate that would be closed in the event a spill took place in that surface water management area. In addition, the Vickery facility is equipped with secondary containment to control any release that might occur from tank farms. The Emergency Coordinator will evaluate whether or not the engineered controls have removed the potential for the release to leave the property or to enter Meyers ditch. The E.C. will enact the contingency plan if:

a. The release has left the property line.

b. The release has entered Meyers ditch.

c. The release requires additional Non-CWM services to control or remediate the release and the release is a threat to human health or the environment.

d. The E.C. determines that the release has the potential to leave the property, or cause ground or surface water contamination.

4. The next step is to implement all necessary control measures and ensure that the appropriate Regulatory/Technical personnel, the gate attendant, and other appropriate personnel and response agencies are contacted as necessary (as described in Section 2.1). Contacted individuals or agencies will receive the following information:

a. Name of person reporting the incident;

b. Location;

c. Nature and extent of the incident; and

d. Actions taken and/or recommended.

2.1 NOTIFICATION OF EMERGENCY COORDINATOR(S)

On or before the first of every calendar month, the General Manager or his designee will post an on-call schedule for the month. The schedule will identify the on-call Technical\Regulatory Personnel for the month. There is one (1) Emergency Coordinators on duty at all times, the Shift Supervisor. The Technical Regulatory Personnel are available to assist the EC. The Emergency Coordinator is the Shift Supervisor and the Technical\Regulatory Personnel are managers, supervisors and other qualified personnel.

Should an emergency occur, the Shift Supervisor\Emergency Coordinator will reference the on-call schedule and immediately notify the technical\ regulatory personnel on duty if necessary. The Technical\Regulatory Personnel are responsible for assisting the Shift Supervisor and providing operational, technical and regulatory guidance.

The Emergency Coordinator on duty is accessible by phone and\or paging device and is capable of responding immediately. If the event warrants the appearance of the Technical\Regulatory Personnel at the site after normal working hours, they will inform the Shift Supervisor or Emergency Coordinator of their estimated arrival time and actions to be taken until their arrival. If their arrival time is likely to be greater than 30 minutes, they will direct the caller to contact another designated Technical\Regulatory Personnel and ask him\her to respond until he\she can arrive. In the meantime, the Shift Supervisor will continue implementing emergency response procedures without awaiting the arrival of the Technical\Regulatory Personnel.

2.2 REPORTING REQUIREMENTS

The following external contacts are made in the event of a release to the environment of a reportable quantity of hazardous waste:

1. National Response Center.....(800/424/8802)
2. Ohio EPA Emergency Response.....(800/282-9378)
3. Ohio EPA - NWDO.....(419/352-8461)
4. * U.S. EPA Region V Office.....(312/353-2197)
5. * U.S. Coast Guard.....(216/522-3983)
6. * Sandusky County Sheriff's Dept. (419/332-2613) or 911

WELL SHUTDOWN - (FOR POTENTIAL DOWNHOLE PROBLEMS ONLY!)

1. OEPA-NWDO (419)352-8461 (Hazardous Waste Manager)

2. OEPA-Central Off. (614)481-7200 or (800)282-9378

3. Sandusky Co. Board of Health (419)334-6377(Ken Kerik) or (419)332-5420 (Home #)

* These agencies must be notified of any release to off-site or to a waterway.

2.2.1 In the event of a release to the environment of a reportable quantity of hazardous waste, the Technical/Regulatory Personnel will ensure that:

- Applicable Incident Report Forms shall be completed.

2.2.2 Internal Notifications and Responsibilities

Any employee discovering a fire or hazardous materials release must immediately notify the Shift Supervisor/Emergency Coordinator and personnel in the immediate area who may be in danger. The names, addresses and phone numbers of the Emergency Coordinator and Regulatory/Technical personnel are provided in Table 2-2. Table 2-2 also lists the names of persons whom the Emergency Coordinator must notify.

2.2.3 Additional Contacts to be Made

A list of additional contacts that may be required during an emergency is listed in Table 2-3.

2.2.4 General Responsibilities

The Emergency Coordinator (E.C.) is responsible for coordinating all emergency response measures during an emergency. He acts as the chief of the emergency crew during each operating shift and has complete and total control of all activities during the incident.

He has the authority to designate other employees to assist him in the event of an emergency. The E.C. has been granted full corporate authority to expend all pertinent resources to deal with the situation.

The E.C.'s comprehensive training in emergency response includes:

- Emergency preparedness (Contingency Plan)
- Knowledge of site Evacuation Plan (Section 6.0)
- Incident Response Guidelines
- CPR (optional)
- First Aid (optional)
- Use of fire extinguishers

If the Contingency Plan must be implemented, the E.C. will develop and maintain lines of communication with key community emergency services including fire and police agencies, medical facilities and emergency response units. Section 8.0 delineates the arrangements which will be made with such organizations to assure their availability and assistance in emergency situations.

The E.C. is authorized to activate emergency response procedures by assembling equipment and determining its application. Section 4.0 describes the emergency equipment available to the E.C., both from on-site and off-site resources.

The E.C. will determine the need to report to CWM and/or outside agencies. In the event of a spill or hazardous waste release (of a reportable quantity to the environment), a report to OEPA will be made within two (2) hours. The person making such notification will give the following information:

- Name and telephone number

- Name and address of facility
- Time and type of incident (e.g., release, fire)
- Name and quantity of material(s) involved, to the extent known
- Extent of injuries, if any
- Possible hazards to the environment and human health outside the facility

2.2.5 Identification of Material and Hazard Assessment

As soon as possible the E.C. will determine the character, source and extent of any released materials by visual inspection and reference to manifests, sample analyses, Waste Material Profile Sheets and other available sources of information.

Initial assessment includes the following parameters:

- Source of the release
- Condition of the source: e.g., repairable leak, uncontrollable leak, easily moved, unmovable
- Container identification; e.g., label or placard information, type and size of individual containers
- Physical state and nature of the material; e.g., solid (powder, pellet, granular), liquid or gas
- Odor, if noticed; e.g., a pleasant smell (almond, ammonia, benzene, vinegar) or an unpleasant smell (sulfur, skunk, onion, sharp, biting, cleaning fluid, or paint)
- Noticeable reaction; e.g., fuming, flaming or gas evolution.

After the materials have been identified to the fullest extent possible, the E.C. must assess possible hazards, both direct and indirect, to human health or the environment and notify the appropriate site personnel and authorities.

The E.C.'s hazard assessment will include information gathered from other site personnel. The Casualty Control officer (CCO) will access the status of all on-site personnel. The CCO will relay information concerning injuries or casualties and, if necessary, notify the casualty control agencies listed in Table 2-3.

Based on his knowledge of the existing conditions, the E.C. will determine the following:

- Can facility personnel control the emergency? If not, he will immediately involve and notify the appropriate local, state, and federal agencies identified in Table 2-3.
- Is site evacuation necessary? If so, he will activate the Evacuation Plan (Section 6.0). If partial evacuation is required, the location of the on-site regrouping area will be designated.
- Is evacuation of local area advisable? If so, he will communicate necessary information to the Sandusky County Sheriff.

2.3 CONTINGENCY PLAN IMPLEMENTATION

Sections 1.4.1, 2.0, and Table 2-1 identify situations which might potentially require implementation of the Contingency Plan. The following is to clarify what it means to "implement the Contingency Plan". The Contingency Plan has been implemented if one (or both) of the conditions below exists or is imminent:

1. An outside "emergency response" agency must be enlisted to control the emergency, i.e., the situation cannot be controlled using site personnel and equipment and which is a threat to human health or the environment. This includes but is not limited to seeking the assistance of a fire department, (as described in Section 1.4.1),

hazardous waste spill response group or the sheriff's department (as in the case of an off-site evacuation of local residents). The types of emergencies, as discussed in the aforementioned sections, include but aren't limited to, fires, (as described in Section 1.4.1), explosions, toxic/caustic gas clouds, spills to off-site waterways, or "Acts of God".

2. A spill to a waterway that has or will result in contamination of an off-site waterway. If this occurs, the USEPA Region V Office, (312)353-2197, and the US Coast Guard, (216)522-3983, must be notified in accordance with Section 311 of the Clean Water Act and Section 302.4 of CERCLA.

2.3.1 Cleanup After Contingency Plan Implementation
(Per OAC 3745-65-56/40 CFR 265.56)

After implementation of the Contingency Plan and after the incident is under control, the E.C. must ensure that, in the affected area(s) of the facility:

- No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and
- All emergency equipment listed in the Contingency Plan is cleaned and fit for its intended use before operations are resumed.

The owner or operator must notify the Director of OEPA and/or the Regional Administrator, and other appropriate State and local authorities that the facility is in compliance with this section, 2.3.1 (or paragraph (H) of OAC 3745-65-56/paragraph (h) of 40 CFR 265.56), before operations are resumed in the affected areas(s) of the facility.

2.3.2 Report to the OEPA Director/Regional Administrator [OAC 3745-65-56 (J)/40 CFR 265.56(j)]

The incident will be noted in the operating record including the time, date, and details of the incident that required implementation of the Contingency Plan.

Within 15 days after the incident, a written report must be submitted to the Director of OEPA and/or the Regional Administrator.

The report must include:

- Name, address, and telephone number of the owner or operator;
- Name, address, and telephone number of the facility;
- Date, time, and the type of incident (e.g., fire, explosion, etc.);
- Name and quantity of material(s) involved;
- The extent of injuries, if any;
- An assessment of actual or potential hazards to human health or the environment, where applicable; and
- Estimated quantity and disposition of recovered material that resulted from the incident.

Table 2-1

EMERGENCY SITUATION

EVALUATION CRITERIA FOR

POTENTIAL IMPLEMENTATION OF CONTINGENCY PLAN

Fire and /or Explosion

- Fire[2] which may cause the release of toxic fumes.
- Fire which may spread and could possibly, ignite materials at other locations on-site or off-site, or could cause heat-induced leaks or explosions.
- The use of fire suppressants; either chemicals or water could result in contaminated runoff leaving the site.
- Explosion[2] which has or could:
  - result in danger from flying fragments or shock waves;
  - ignite other hazardous waste at the facility;
  - release toxic materials.

Spill or Material Releases

- A spill that has or could release toxic vapors or significant flammable liquids or vapors, thus presenting a fire or gas explosion hazard.
- A spill outside of a secondary containment unit which could result in off-site or on-site soil contamination and/or surface water contamination.
- A spill that could endanger human health or the environment for other reasons.
- Initiation of containment and control procedures, as described in Section 3.0.

---

[2]Minor or controllable fires or explosions are to be addressed pursuant to Section 2.0 without implementing the Contingency Plan. See Section 2.3 for a discussion of what constitutes implementation of the Contingency Plan.

TABLE 2-1 (CONTINUED)

- An accounting for all facility personnel/visitors by comparing a head count with sign-in/sign-out forms or other appropriate mechanisms.
- Implementation of internal notification and provision of authorities with an assessment of the situation, requesting outside assistance as necessary.
- Coordination of first aid activities, if casualties are involved, and activation of the casualty control procedures described in Section 5.0.
- Evacuation, if required, by activation of the Evacuation Plan described in Section 6.0.

TABLE 2-2

NOTIFICATION ACTION SUMMARY

ON-SITE NOTIFICATION:

Report all emergencies to the Emergency Coordinator or Regulatory/Technical personnel.

Communication Systems

Two-Way Radios:

Base Station	Main Office Building Truck Wash/Unloading Building
Mobile Units	Maintenance Department Vehicle(s) Operations Vehicles

Portable Units (10)

Telephones for external communication (419) 547-7791 and Inter-communication at the following locations:

Truck Wash/Unloading Building
Administrative Office Building
Receipt Control
Main Laboratory
Maintenance Shop
Guard House
T-Tank Pump House
Control Room
Pump Houses No. 1, 2, 3, and 5
Filter Building 1 and 2
Employee Operations Building (lunchroom)

Emergency coordinator (EC), Casualty Control Officer (CCO), and Communications Coordinator (CC) and Regulatory/Technical

See Incident Contact List (Table 2-2) for the names, telephone numbers, addresses, and paging device numbers of the Emergency Coordinator, and Communications Coordinator and their Alternates.

TABLE 2-3

SITE INCIDENT TELEPHONE CONTACT LIST

EMERGENCY COORDINATOR	ADDRESS	PHONE NO.
Operations Shift Supervisor On-Duty		
Kennard Franks	1709 Emmett Dr., Fremont, OH 43420	(419) 334-2771
Dennis McClure	3795 SR 53 N, Fremont, OH 43420	(419) 334-3528
John Moneghan	711 Chestnut St., Fremont, OH 43420	(419) 332-0115
Kevin Adams	623 Morrison St., Fremont, OH 43420	(419) 332-4994
Robert A. Baumer	1655 E. State St., Fremont, OH 43420	(419) 332-9208
Greg Burr	1103 W. Cole Rd., Fremont, OH 43420	(419) 334-2386
Daniel Durbin	1703 Tiffin Rd., Fremont, OH 43420	(419) 334-4533
Vince Sidoti	101 Thomas Dr. Apt. A, Bellevue, OH 44811	(419) 483-1765

REGULATORY/TECHNICAL

Paul Anteau	413 Erie St., Woodville, OH 43469	(419) 849-2929
Mike Curry	2127 Buckland Ave., Fremont, OH 43420	(419) 332-2145
Carolyn Golamb	1230 C.R. 198, Fremont, OH 43420	(419) 334-7075
Fred Lear	7215 N. St. Rt. 101, Clyde, OH 43420	(419) 639-3419
Steve Lonneman	4369 E. Stonehenge, Pt. Clinton, OH 43452	(419) 797-6385
Fred Nicar	3955 St. Rt. 412, Vickery, OH 43464	(419) 547-6431
Phil Randolph	103 N. Main St., Lindsey, OH 43442	(419) 665-2444
Sandy Clark	2059 Victor St., Fremont, OH 43420	(419) 334-4958

NOTE: Regulatory/Technical Personnel share paging devices. The phone number for the paging device is (419) 627-6551.

COMMUNICATIONS COORDINATOR (CC)

Fred Nicar (primary)	(419) 547-6431
Steve Lonneman (alternate)	(419) 797-6385

NOTE: After hours the EC will notify the General Manager (Fred Nicar at (419) 547-6431) as soon as possible following an incident.

TABLE 2-4

EMERGENCY CONTACTS

GENERAL EMERGENCY	CONTACT	PHONE NUMBER
Fire/Explosion	Townsend Township Fire Dept. (primary)	911
	Clyde Fire Department	(419) 547-7123 or 911
	Sandusky County Sheriff	(419) 332-2613 or 911
Hazardous Material Spill or Release	Townsend Township Fire Dept.	911
	Clyde Fire Department	(419) 547-7123 or 911
	Sandusky County Sheriff	(419) 332-2613 or 911
	Ohio State Patrol	(419) 332-8246 or 911
	National Response Center	(800) 424-8802
	Ohio Environmental Protection Agency (Spill Response Branch)	(800) 282-9378
	Ohio Environmental Protection Agency (NW District Office)	(419) 352-8461
Personnel Injury	Fremont Memorial Hospital	(419) 332-7321
	Bellevue Hospital	(419) 483-4040
	Sandusky County EMS	911
	Bellevue 4 County Ambulance Service	(419) 483-3322 or 911

Give the following information to the notified agencies and authorities:

- Your name and telephone number
- Name and address of the facility
- Time and type of incident (e.g., release, fire)
- Name and quantity of material involved, to the extent known
- The extent of injuries, if any
- Possible hazard to human health or the environment, outside the facility

Some additional contacts are:

- CHEMTREC.....(800) 424-9300
- National Poison Control Center.....(404) 588-4400
- Sandusky County Board of Health.....(419) 334-6377

3.0 CONTAINMENT AND CONTROL ACTIVITIES

3.1 GENERAL PROCEDURES

The facility's operations are designed to minimize the potential hazards to facility personnel, and to contain spilled or leaked materials and prevent their movement from the facility. Operational features and response activities are presented below.

3.1.1 Facility Provisions

Rainwater not accumulating in tank containments or other hazardous waste management areas flows off site. The Surface Water Management System as described in the Surface Water Management Plan (PTI 03-1567), makes possible the control of onsite surface water flow using dikes, surface grading and flow control gates. Flow control gates can be closed in the event of a material release outside a contained area. Waters associated with these events are disposed of by deepwell injection.

The wellhead houses, pump houses and filter buildings have curbed floors. The treatment/storage tanks have secondary containment. Rainwater accumulating in tank containments is disposed of by deepwell injection.

Processing and storage tanks are equipped with level indicators and alarms where appropriate. Pressures are monitored in all injection wells. All high pressure waste transfer lines are contained within a secondary enclosure (pipe within a pipe) which, in the event of a line breakage or other failure, directs wastes to a leak detection unit which immediately sounds an alarm in the control room. Catastrophic high pressure line breaks result in automatic feed pump shutdown.

The facility is equipped with emergency electrical generators which may supply power to site areas as necessary.

The facility has developed and implemented a detailed inspection program designed to detect potential problems and discrepancies before an incident occurs. Inspections of the various process and storage areas as well as containment, alarm systems, communications and other emergency/safety equipment are conducted on a daily, weekly and monthly basis. These plans are revised when changed to the operations require modification or revision.

3.1.2 Personnel Response Activities

CWM is prepared to respond to incidents at the facility which could cause potential emergencies, e.g., fires, explosions, spills or material releases as discussed in Section 1.4.1. Unless these emergencies are uncontrollable, the E.C. will respond on-site without assistance of outside agencies, and without implementing the Contingency Plan. Containment and control activities are initiated by the Emergency Coordinator, who will activate facility personnel responses as follows:

Emergency Coordinator (E.C.) Activities

For a spill or release the Emergency Coordinator or his designee will mobilize personnel and:

- Perform Hazard Assessment and formulate action plan for incident.
- Assemble the required response equipment: protective clothing and gear, heavy equipment (scrapers, back hoe), absorbent material (such as oil dry or sand), empty drums, drum overpacks and plugging materials.

- Determine the most appropriate containment or diking method: Earthen berms or ditches, or excavation and dikes.
- Coordinate activities of supervisory personnel and maintain constant communication with them and response teams.

For a fire or potential explosion, and to guard against a spill caused by the latter, the EC or his designee will mobilize personnel and:

- Assemble required response equipment: Emergency equipment (protective clothing and gear); fire extinguishers; water truck and heavy equipment; diking and neutralization material; and empty drums, pumps, vacuum trucks and tank trucks.
- Determine the best method of approach and containment
  - Move in from upwind side. Never walk in or through flammable liquids or ground soaked with flammable or unknown liquids.
  - Use dry chemicals for fire suppression of flammable liquids and in situations where flash-back potential exists during cleanup of residues.
  - Use on-site water truck to flood adjacent flammable materials to cool them and control spread of fire.
  - If outside of containment area, use soil for residue containment or use adsorbents if control by earthen dikes is not possible.
- Fire fighting activities will be limited to incipient stage fires. Fires or <u>potential</u> fires beyond the suppressing capabilities of fire extinguishers or garden hoses will be relegated to the local Fire Department.

<u>Communications Coordinator Activities</u>

For a spill release, fire, or explosion, the Communications Coordinator (CC) will:

- Establish telephone contacts as directed by the EC.
- Establish other telephone contacts as directed by the EC.

Casualty Control Officer Activities

For an uncontrollable spill, release, fire, or explosion, the designated Casualty Control Officer (CCO) will:

- Coordinate movement of personnel to regrouping areas as follows (and relay information to EC):
  - Parking lot adjacent to the storage garage south of the facility on St. Rt. 412
  - Gate entrance to west end of facility on Twp. Rd. 244
  - Any safe area as designated by the EC and Conduct a "head count" and relay information to EC. The "head count" will be compared to the shift roster, administrative office sign-in log for staff and visitors, the sign-in/sign-out sheet at the guardhouse and\or Receipt Control office, and the contractor sign-in/sign-out sheet at the guard house and\or Receipt Control office.

Remediation Personnel Activities

- Under the direction of the Emergency Coordinator, these personnel may after a spill or release has been discovered:
  - Respond to releases with a purpose of stopping or reducing the flow of the leak or release.
  - Respond to releases or potential releases of hazardous substances as a part of the initial site response for

the purpose of protecting nearby persons, property, or environment.

- Contain and remediate the release through plugging, diking, or patching affected areas.
- Personnel will respond to site emergencies such as acid, caustic, leachate releases or spills, releases to the atmosphere and mechanical failures caused by sources listed in the plan. Personnel will only respond to off site emergencies at the request of the local authorities when the spill is of a nature to spills experienced at the site.

Regulatory\Technical Personnel Activities

- These personnel are summoned by the E.C. to assist in managing the incident from a regulatory or technical aspect. The personnel may be assigned additional duties as the E.C. sees fit.
- Additional duties could be but are not limited to directing remediation, maintenance decontamination, site control, communications or casualty control activities. These additional duties assigned will be in accordance with the respective training level of the regulatory/technical personnel.

3.1.2.1 Employee Right To Refuse Hazardous Remediation Assignments

1. Employees of CWM Vickery have the right to refuse a work assignment when the employee believes that the work assignment will put his/her personal safety in jeopardy or when the employee feels

Figure 3-1: EMERGENCY COORDINATOR DESIGNATION CERTIFICATE

CERTIFICATE

The undersigned, Thomas A. Witt, does hereby certify that:

1. He is the duly elected, qualified and acting Secretary of Chemical Waste Management, Inc., a Delaware corporation.

2. Set forth below is a true, correct and complete copy of one or more resolutions duly adopted by the Board of Directors of Chemical Waste Management, Inc. by unanimous consent on September 17, 1984:

RESOLVED: That the Corporation hereby grants to the individual(s) designated as "Emergency Coordinator" in the approved Contingency Plan for the Vickery Facility to commit such of the Corporation's resources as are needed to carry out such Contingency Plan; and

BE IT FURTHER RESOLVED: That such individual(s) designated as "Emergency Coordinator" in such approved Contingency Plan be and hereby are authorized, directed, and empowered to execute and deliver for and on behalf of the Corporation any and all such contracts, agreements, documents and memoranda to be necessary and appropriate to execute the herein authorized resolution.

3. Said resolution(s) have not been modified, amended or rescinded, and are still in force and effect.

IN WITNESS WHEREOF, the undersigned does hereby set his hand and the seal of said corporation this sixth day of July, 1989.

Thomas A. Witt
Secretary

[SEAL]

FIGURE 3-1 A

LINES OF AUTHORITY FOR A CWH, INC. ON SITE EMERGENCY RESPONSE

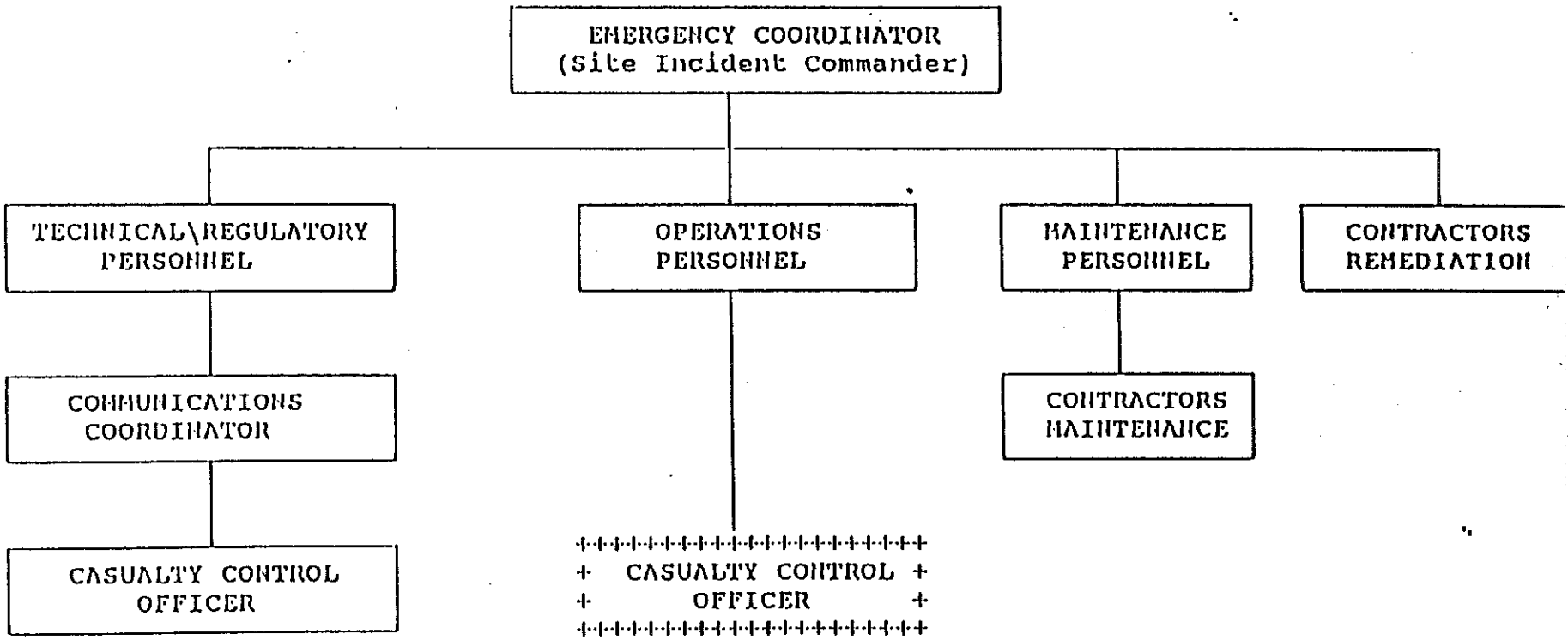


FIGURE 3-1 B

LINES OF AUTHORITY FOR AN ON SITE
EMERGENCY RESPONSE REQUIRING ASSISTANCE FROM A GOVERNMENTAL JURISDICTION

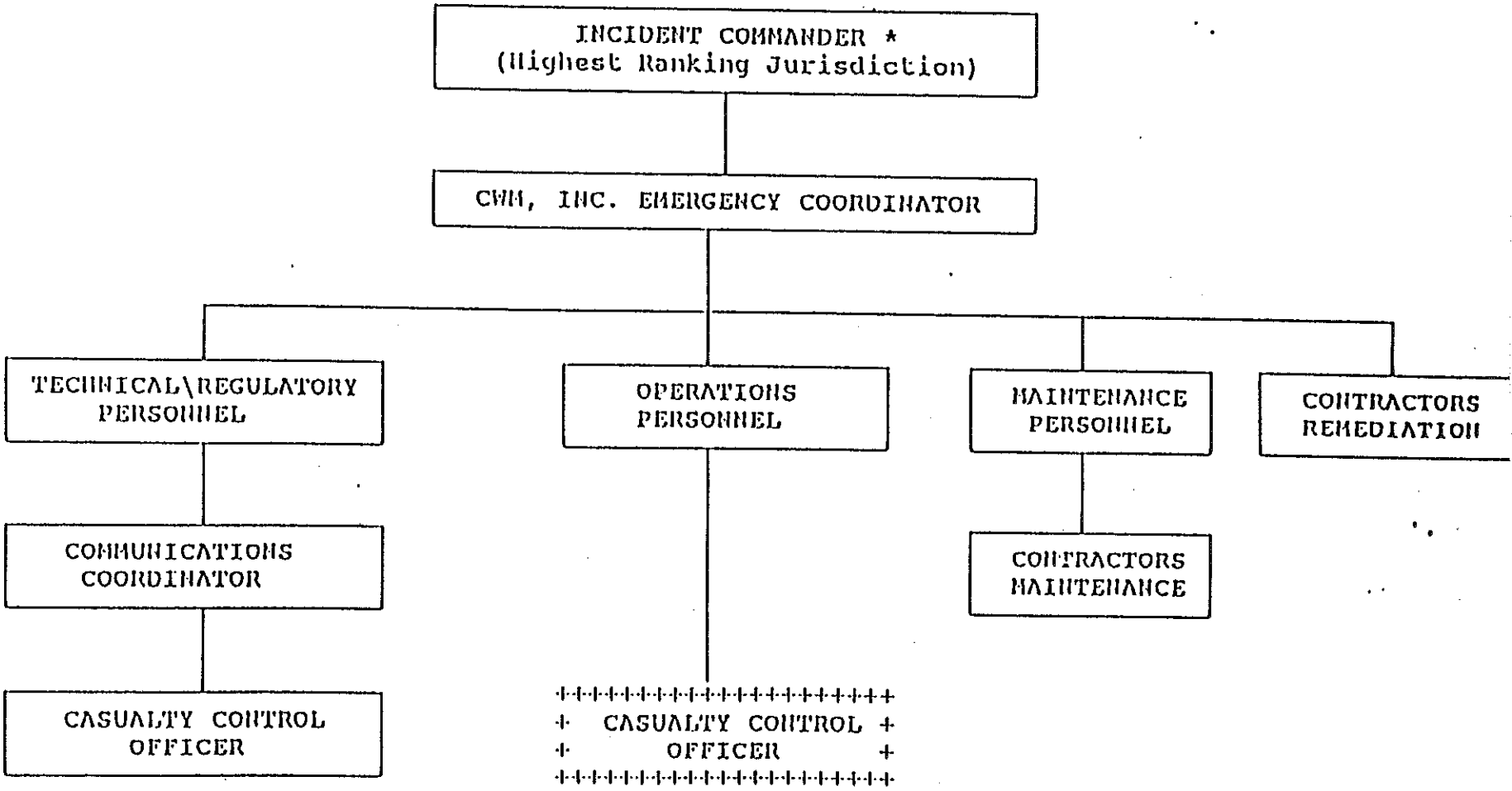
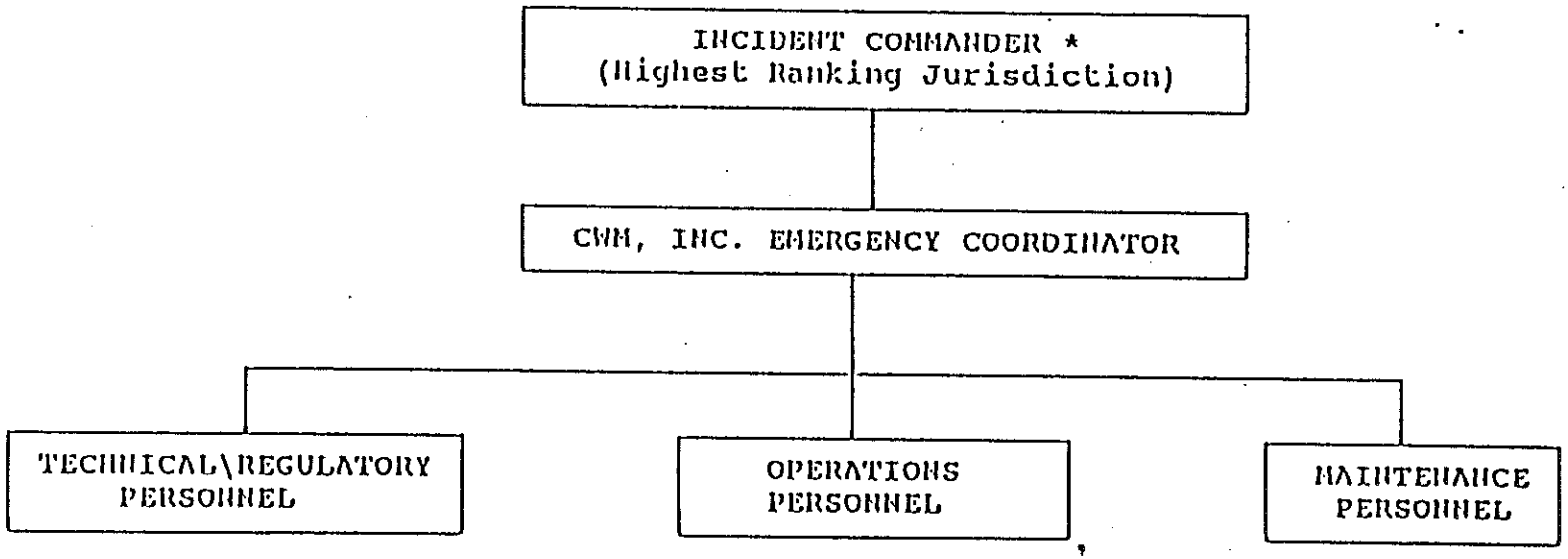


FIGURE 3-1 C

LINES OF AUTHORITY FOR A CWM, INC. OFF-SITE
EMERGENCY RESPONSE AT THE REQUEST FROM A GOVERNMENTAL JURISDICTION



*NOTE: The Incident Commander for Emergency Responses depicted in Figures 3-1 B and 3-1 C will be the Highest Ranking Official having jurisdiction for a hazardous waste spill. Normally, the local Fire Department Chief will assume the role of Incident Commander. In the absence of the Fire Chief the Coast Guard, EPA, Ohio State Patrol and the Sheriff Department (listed here in descending order of jurisdiction) will assume control of the incident until a person of a higher jurisdiction assumes the role of Incident Commander.

that his/her level of training does not qualify to perform the work assignment safely.

3.1.2.2 Incident Command System

1. Where an event occurs and the contingency plan\emergency response plan is not activated, the incident command system shall be as follows:

   The emergency coordinator shall be in charge of the incident and shall have access to those site resources necessary to control and remediate the incident.

   The EC shall have the authority to assign site personnel as he\she sees fit.

   The EC shall have the authority to expend site monetary resources in order to control and remediate an incident.

   The Casualty Control Officer, Communications Coordinator and other personnel assigned a task during an emergency response has the authority to assign site personnel to related duties after conferring with the EC.

2. Where an event occurs and the contingency plan\emergency response plan is activated and outside assistance is obtained from the fire department or other government agency, then the highest ranking official shall be in charge of the scene. CWM, Inc. employees shall take directions from that person. The local fire chief shall assume control of the scene upon his arrival on site.

3. Where an event occurs and CWM, Inc. employees are asked to assist local government agencies in responding to an environmental or other emergency, the CWM, Inc. employees shall take their directions from the Fire Department Chief or the next highest ranking official at the scene. CWM, Inc. employees shall not control the incident scene or act without direction from the Incident Commander.

4. Where a CWM, Inc. employee believes that participation in an emergency response activity will exceed his training or place the employee's safety at risk, the employee may request an alternate assignment by the E.C. and must be granted.

3.1.3 Spill Response Procedures

3.1.3.1 Reporting Spills

1. Any employee is to report as soon as possible any spills or material release to the on-duty Emergency Coordinator or the Regulatory/Technical representative. Reports of spills should provide:

   a. location
   b. type of discharge
   c. existence of fire or personal injury
   d. immediate threat to on-site personnel
   e. threat of surface waters or groundwater migration
   f. name of employee

2. The on-duty Emergency Coordinator or the Regulatory/Technical representative will report within two (2) hours all spills or material releases in excess of one pound/pint to the following:

   a. National Response Center.....(800) 424-8802
   b. Ohio Environmental Protection Agency....(419) 352-8461 and (800) 282-9378

   Upon judging the size and condition of the spill, the on-duty Emergency Coordinator or the Regulatory/Technical representative will determine if evacuation procedures are necessary.

3.1.3.2 Controlling Spills

In the event of an accidental spillage of hazardous materials or hazardous wastes, the following procedures will be instituted:

1. The on-duty Emergency Coordinator will go to the location of the spill. He or his designee will initiate spill control and containment action immediately.
2. For spills from pipes, pumps or valves, the EC or his designee shall:
   a. discontinue transfer operation if in process
   b. valve off leaking equipment
   c. ensure that secondary containment contains released materials; remedy leak sources.

3. For spills from tanks, the EC or his designee shall:
   a. discontinue transfer operation if in process
   b. identify lowest point of break in tank surface
   c. reduce liquid level in tank below lowest point of break by transfer to another tank or tank truck
   d. ensure that secondary containment contains released materials; remedy leak sources.
4. For spills of sufficient magnitude to cause an emergency pollution problem, the EC shall notify:
   a. National Response Center
   b. Region V Environmental Protection Agency
   c. Ohio Environmental Protection Agency
   d. Sandusky County Sheriff's Department
   e. Townsend Township Fire Department
   f. U.S. Coast Guard (for oil spills)

3.2 PROCESS-SPECIFIC PROCEDURES

Each storage, treatment, and disposal unit at the facility will have built-in control features, containment structures or equipment to facilitate emergency response procedures. The general procedures in Section 3.1 will apply to all areas of the facility; however, containment and control activities specific to each process unit are shown in Appendix CP-1.

3.3 SITE SECURITY AND CONTROL

Site security and control during an emergency response incident will be provided as follows:

- The E.C. or Incident Commander will be responsible for having a hot zone, warm zone, and cold zone established and supervised by site or other designated personnel.
- Access through the cold zone, support areas and the corridor to the hot one will be controlled to prohibit unauthorized personnel such as news persons, onlookers or unnecessary response personnel from entering contaminated areas.
- Access from the hot zone will be controlled to ensure that personnel and equipment are decontaminated before the latter are allowed to exit into the cold zone.
- The E.C. or his designee will ensure that, where practical physical barriers are erected to prohibit access to unauthorized area.
- The assistance of local law enforcement agencies will be asked to maintain and patrol areas where site security and control is necessary.
- Site security and control will be maintained until all equipment has been decontaminated, equipment and process checks have been completed, and the emergency has been terminated by the E.C. or incident commander.

3.4 CONTAMINATION CONTROL

The CWM, Inc. Vickery Site Contamination Control Procedure will be followed when:

- Decontaminating site or other emergency equipment
- Decontaminating personnel
- Establishing a contamination control strategy
- Contingency Plan/Emergency Response activities are required

4.0 AVAILABLE EMERGENCY EQUIPMENT

The facility will maintain an alarm system, a communication system and an inventory of equipment suitable for emergency response. The on-site equipment will enable facility personnel to react and respond to the majority of emergency incidents which may arise. If needed, supplemental emergency equipment supplies will be available from outside sources. A current inventory list will be available in the Safety Manager's office.

4.1 ALARM AND COMMUNICATION SYSTEMS

The Facility's Administration/Laboratory Building and Employee Lunchroom and Shower Building are equipped with central station fire detection and alarm systems. The systems can be activated automatically through the use of smoke and heat sensor units or manually by wall mounted, push button controls located at various points throughout the building. A master control unit is located on the first floor of the Administration Building, adjacent to the base radio station. This unit, upon receipt of a signal from either the smoke/heat sensors or one of the manual activators, sends an electrical impulse which activates the building's evacuation horns. At the same time, a signal is sent through a special telephone line to an outside communication service which quickly contacts/dispatches the facility's local fire department. A second call is initiated directly to the facility to inform site personnel of the received alarm.

The facility will be equipped with a communications network to link both on-site and off-site resources. Off-site communications will be available via the local telephone system. Telephones will be located in the following buildings and treatment units a shown in Figure 4-1:

Truck Wash/Unloading Building

Office Building

Main Laboratory

Maintenance Shop

Receipt Control

Guard House

Pump Houses Nos. 1, 2, 3, and 5

Filter Building 1 and 2

Employee Lunchroom/Locker Room

T-Tank Pump House

Control Room

On-site communications are through the telephone system and two-way radio. The two-way radio system consists of a base station in the Control Room at the Truck/Unloading and Wash Building, and some mobile and portable hand-held units. Some mobile units are located in various on-site vehicles.

Maintenance Department Vehicle(s)

Operations Department Vehicles

The two-way radio system will be used for intra and extra site communications in the event of a power failure. In addition, a messenger could be sent to the Sheriff's Dept. which is located approximately 5 miles west of the site off of State Route 412.

When off-site emergency response assistance is required from a government jurisdiction such as the Fire Dept., the E.C. or the designated Communications Coordinator shall ensure that the Incident Commander is provided with a site two-way radio.

When personnel are dressed out in P.P.E., the following methods of communication will be maintained where practicable during emergency response activities:

- Two way radio
- Respirators with speaking diaphragms and/or two-way radios
- Hand signals which are universally understood or which are discussed by the emergency response team members prior to entering the hot zone.

Alarm System

Portable, manually operated alarm horns will be available at several dispersed locations.

Two-way radios in conjunction with the telephone paging system is available for use as a site alarm system for employees not located in buildings.

Automatic alarms with a manual capability exist in the Administration Building and Lunchroom. The automatic alarms are wired to an alarm service. Air horns would be used for contingency/emergency response incidents as a means to notify site personnel of the emergency who are not provided with radios and who are not working in buildings serviced by the public address system.

Communicating Spills

- Any employee is to report as soon as possible any spills or material release to the on-duty Emergency Coordinator or the Regulatory/Technical Representative. Reports of spills should provide:

  - location
  - type of discharge
  - existence of fire or personal injury
  - immediate threat to on-site personnel

- threat of surface waters or groundwater migration
- name of employee

- The on-duty Emergency Coordinator or the Regulatory/Technical Representative will report within two (2) hours all spills or material releases in excess of one pound/pint to the following:
- National Response Center (800)424-8802
- Ohio Environmental Protection Agency (419)352-8461 and (800)282-9378

Upon judging the size and condition of the spill, the on-duty Emergency Coordinator or the Regulatory/Technical Representative will determine if evacuation procedures are necessary.

4.2 ON-SITE EQUIPMENT

An Example of primary emergency response equipment available at the site will include the following.

- ABC type extinguishers
- Emergency eyewash and shower units
- First aid stations
- Personal safety and protective equipment
- Weather station/wind sock

Various types of fire extinguishers, all rated for fire types A, B, or C, are located throughout the facility. Water will be supplied by the facility's wells. Spigots for garden-size hoses are scattered throughout the facility.

Eye wash and safety showers are located in areas with potential for personal contact with wastes.

An example of respiratory protective equipment available at locations throughout the facility is shown on Table 4-1.

A first aid station is located on the second floor of the Truck Unloading and Wash Building. Large industrial first aid cabinets are located at the facility.

An example of spill containment and cleanup equipment available at the facility is listed in Table 4-1.

Employees will be issued the following safety equipment as required. This equipment will be worn when performing work in areas where there is a possibility of exposure to hazardous wastes.

- Chemical resistant rubber suits (PVC)
- Chemical resistant boots (PVC)
- Full face cartridge respirators (air purifying)
- Full face shield
- Chemical resistant gloves
- SCBA's or supplied air respirators where air monitoring or safe work practices require a high level of respiratory protection.
- CWM, Vickery Site employees will not be assigned to work in an atmosphere immediately dangerous to life or health.
- Level B and Level C, P.P.E. will be assigned according to the hazard presented by the emergency.
- Boots, gloves and chemical suits are considered disposable after a spill requiring the activation of the Contingency Plan.

A weather station is located at the Administration/Lab Complex to provide site officials with pertinent weather information such as wind direction and velocity, rainfall, etc. In addition, a wind sock is located atop storage tank T-9 located towards the back of the plant. This wind sock,

which is illuminated at night, is also a reliable device to site personnel in determining wind direction and approximate velocity.

4.3 OFF-SITE RESOURCES

Supplemental emergency equipment and supplies, contracting services, etc., will be available, if needed, from off-site (outside) sources. The Townsend Township and Clyde City Fire Departments are fully equipped and trained to respond to incidents at the facility. Back-up resources, including an aerial truck are available from the City of Fremont.

The facility is serviced by the county-wide and regulated E.M.S. system (Sandusky County E.M.S.) and a private provider (Bellevue E.M.S., Inc.). Both services are fully equipped and personnel trained in all aspects of basic and advanced life support procedures and rescue techniques. Most on-site spills can be handled by facility personnel. In the event additional resources are required (or a spill occurs off-site), the following contractors may be contacted for assistance:

O.H. Materials Company
P.O. Box 1002
16404 St. Rt. 224, East
Findlay, OH 45840
(419) 423-3526

Cousins Waste Control
1801 Matzinger Road
Toledo, OH 43412
(419) 726-1500

Brand Precision Services, Inc.
6551 Wales Road
Northwood, OH 43619
(419) 698-5323

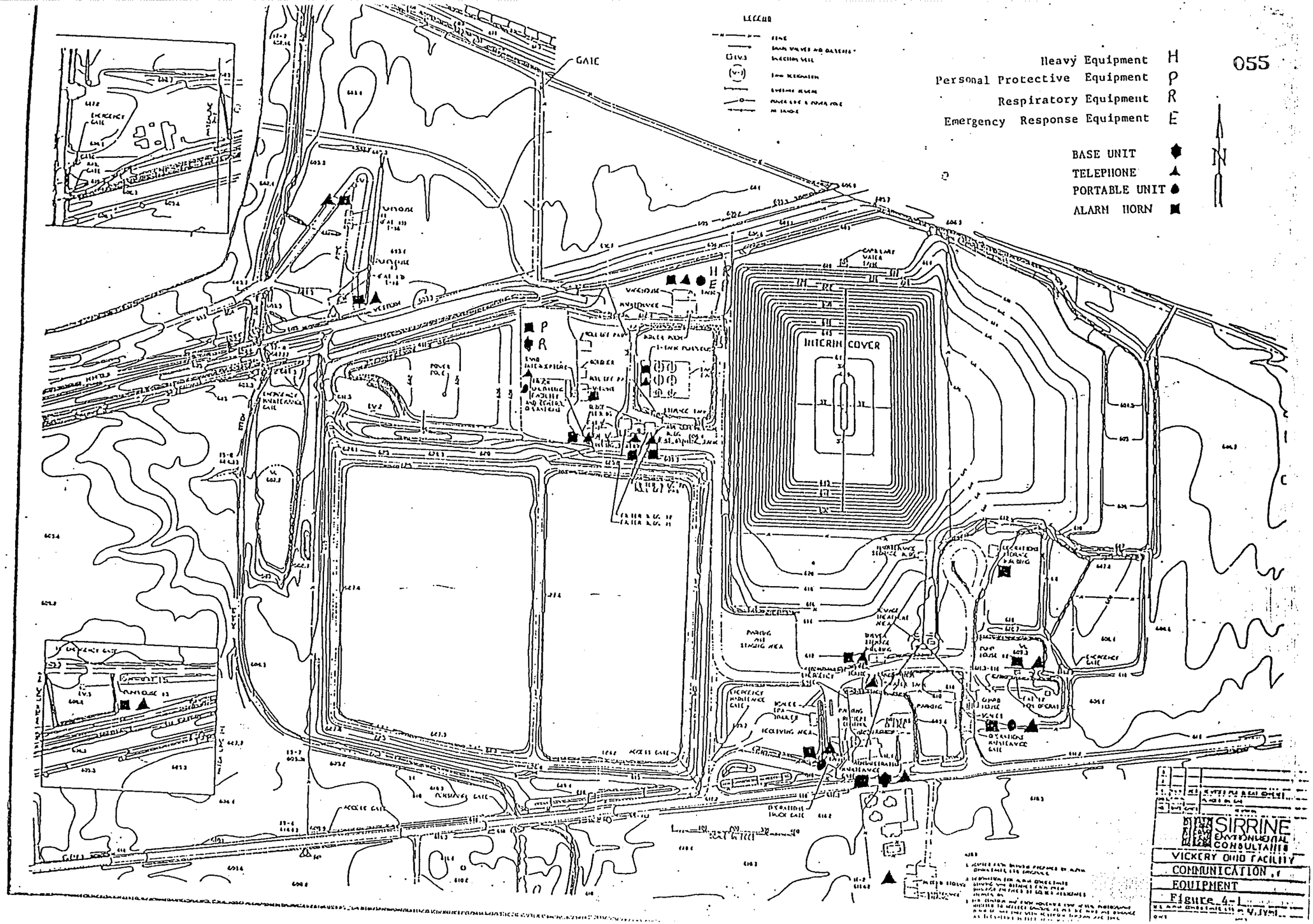

Heavy Equipment H
Personal Protective Equipment P
Respiratory Equipment R
Emergency Response Equipment E
BASE UNIT
TELEPHONE
PORTABLE UNIT
ALARM HORN
N
GATE
INTERIM COVER
SIRRINE
ENVIRONMENTAL
CONSULTANTS
VICKERY OHIO FACILITY
COMMUNICATION
EQUIPMENT
Figure 4-1

TABLE 4-1

SAFETY/EMERGENCY EQUIPMENT INVENTORY LIST

Equipment type, location, and capability may change at the discretion of CWM, Inc. The Equipment List below is an example of equipment which could be used to satisfy site fire protection or other emergency response needs.

I. FIRE RESPONSE EQUIPMENT

Definition of Fire Extinguisher Capability:

Type A - Extinguish trash, wood, and paper fires

Type B - Extinguish liquid and grease fires

Type C - Extinguish electrical equipment fires

LOCATION	TYPE	QUANTITY	CAPABILITY
Guard House	10# Dry Chemical Ext.	1	A, B, C
Vehicle Fuel Station	20# Dry Chemical Ext.	1	A, B, C
Pump House #2	10# Dry Chemical Ext.	2	A, B, C
Pump House #3	10# Dry Chemical Ext.	2	A, B, C
Pump House #5	20# Dry Chemical Ext.	1	A, B, C
Pump House #1	20# Dry Chemical Ext.	1	A, B, C
Maintenance Shop	10# Dry Chemical Ext.	4	A, B, C
Maintenance Store Room	10# Dry Chemical Ext.1	4	A, B, C
	20# CO_2 Ext.	1	B, C
Laboratory	10# Dry Chemical Ext.	3	A, B, C
	10# CO_2 Ext.	1	B, C
	5# Halon Ext.	2	B, C
	2-1/2# Halon Ext.	1	B, C
Carpenter Shop/Storage Garage	10# Dry Chemical Ext.	3	A, B, C
Office Building	10# Dry Chemical Ext.	3	A, B, C
	5# Dry Chemical Ext.	2	A, B, C
	Pressurized H_2O Ext.	1	A
Employee Lunchroom/ Clean Change Building	10# Dry Chemical Ext.	3	A, B, C

TABLE 4-1 CONTINUED

Filter Building #1	10# Dry Chemical Ext.	3	A, B, C
Filter Building #2	10# Dry Chemical Ext.	2	A, B, C
Truck Unloading Facility	20# Dry Chemical Ext.	8	A, B, C
Waste Receiving Tanks	10# Dry Chemical Ext.	5	A, B, C
	5# Dry Chemical Ext.	2	A, B, C
	15# CO_2 Ext.	2	B, C
(Computer Control Room)	5# Halon Ext.	2	B, C
Gas Scrubber Plant	20# CO_2 Ext.	1	B, C

Vehicles:

All site vehicles are equipped with dry chemical fire extinguishers ranging in size from five (5) pounds to twenty (20) pounds, depending upon the type and size of the vehicle (Ex: pickup truck - 5# ext.). Each has A, B, and C capability.

II. RESPIRATORY PROTECTION EQUIPMENT

Definition of Respiratory Protection Capability Table: # of minutes refers to the number of minutes of available breathing air in each piece of equipment listed.

LOCATION	TYPE	QUANTITY	CAPABILITY
Unload Area	Survivaire Unit (SCBA)	2	30 minutes
Maint. Bldg.	Survivaire Unit (SCBA)	1	30 minute
South Sampling Area	MSA Supplied Air Lines	2	
North Sampling Area	MSA Supplied Air Lines	1	
Maint. Bldg. Out of Service	MSA Supplied Air Lines w/ Escape Pack	6	5 minute

III. OTHER PERSONAL PROTECTIVE EQUIPMENT/GEAR

Each employee is issued the following items dependent upon duties and job requirements:

	Equipment	Capabilities
1.	Hard Hats	Protection of head from bumps and falling objects

TABLE 4-1 CONTINUED

2.	Chemical Resistant Protective Clothing	Body protection for chemical exposure
3.	Chemical Resistant Boots	Foot protection from chemical exposure
4.	Cartridge Respirators (air purifying)	Respiratory protection from inhalation of hazardous material
5.	Full Face Shields w/Attachment	Face protection from chemical exposure
6.	Splash Goggles	Secondary eye protection from chemical exposure
7.	Chemical Resistant Gloves	Hand protection from chemical exposure
8.	Safety Glasses	Eye protection from flying debris

IV. SAFETY SHOWERS AND EYE WASH STATIONS

Capabilities - Combination eyewash/safety shower are capable of flushing eyes and body to remove chemicals.

Permanent Fixtures:

LOCATION	QUANTITY
Maintenance Shop	1 Combination SS/Eye Wash
Laboratory	1 Combination SS/Eye Wash
	1 Eye Wash Unit
Truck Unloading Building	2 Combination SS/Eye Wash
Filter Building #2	1 Combination SS/Eye Wash
	1 SS/Eye Wash
Filter Building #1	1 Combination SS/Eye Wash

Portable Units:

LOCATION	QUANTITY
Pump House #2	1
Pump House #3	1

LOCATION	QUANTITY
Pump House #5	1
Pump House #1	1
Laboratory	1

TABLE 4-1 CONTINUED

V. FIRST AID EQUIPMENT AND SUPPLIES

The primary first aid station is located on the second floor in the Truck Unloading and Wash Building, and in addition, large industrial first aid cabinets are located throughout the facility.

VI. OTHER INCIDENT RESPONSE EQUIPMENT

Equipment	Capabilities
Portable Pumps	Cleanup of liquid material release
Pick-up Trucks	Hauling material or equipment to incident site for cleanup purposes
Semi Trucks	Hauling semi trailers to incident site for cleanup purposes
Backhoe	Building containment dikes and/or or cleanup or released material
Vacuum Trailer	Cleanup of material following release
(3) Generators	Providing electric power for tools and equipment at incident site
Front End Loader	Building containment dikes and/or cleanup of released material
Equipment	**Capabilities**
Tractor	Hauling containment equipment or cleanup equipment to incident sites
Forklift	Hauling containment equipment or cleanup equipment to incident sites
Vacuum Truck	Cleanup of material that has been released
Air Compressor	Providing air for pneumatic tools at incident site
Semi Trailers (tankers)	Hauling liquid material that is cleaned up from incident site
Patching & Diking Material	
Wooden Stakes & Wedges	Patching materials (temporary)
Dry & Pre-mixed patching materials	Patching materials (temporary)

TABLE 4-1 CONTINUED

Portable Supplied Airline	Respiratory protection
Banner Tape	Crowd Control
Plastic Sheeting	Dike & decontamination substrate
Sand Bags*	Dike material
Poly Drums*	Disposal Drums
Corn Cob*	Absorbent material
Oil Dry*	Absorbent material
Lime*	Absorbent material
Hand Tools	
Strategic Stockpiles of Clay	
Silt Screen, Hay/Straw, Oil Boom with Skirt	

* Items stored in bulk warehouse.

<u>Environmental Assessment Instrumentation</u>

HS-82	H_2S Meter & Calibration Gas
Biosystems PhD	Electrochemical Sensor
Detector Tubes	Various

OHM Corporation

Figure 4-2: LETTER FROM OHM CORPORATION

October 12, 1989

Mr. Paul Anteaux
Manager, Safety & Health
Chemical Waste Management
3956 State Route 412
Vickery, OH 43464

Dear Mr. Anteaux:

Thank you for your interest in O.H. Materials Corp. As we discussed on the telephone yesterday, OHM would be able to respond to an environmental emergency at Chemical Waste Management's Vickery, Ohio, facility within 2 to 3 hours after receiving notification.

OHM Corp. is headquartered in Findlay, Ohio, only fifty miles from Vickery. Our Findlay facility is staffed with over 300 operations personnel and over 5,000 pieces of equipment.

In the event of an emergency at your facility, OHM would respond if called upon. If you have any questions or need additional information, please do not hesitate to call me. I may be reached at 419-424-4951.

Sincerely,

Derrick A. Rehbein

Derrick A. Rehbein
Account Representative
Central Region

DAR:jlw

16406 U.S. Route 224 East ■ P.O. Box 551 ■ Findlay, Ohio 45839-0551 ■ 419-423-3526

Waste Control • Environmental Services • Dust Control
PROVIDING QUALITY SERVICES SINCE 1971
1801 Matzinger Road
Toledo, Ohio 43612
(419) 726-1500 • (800) 433-6754

SALES FAX:
(419) 729-8501

MAIN FAX:
(419) 729-8507

ENVIRONMENTAL FAX:
(419) 729-8506

Mr. Paul Anteau
Chemical Waste Management
3956 State Route 412
Vickery, Ohio 43464

April 1, 1994

Dear Paul,

Thank you for calling regarding listing Cousins Waste Control Corporation as a spill clean-up contractor for your Toledo and Vickery facilities.

In accordance with our conversation, I have enclosed the following information:

1. OPA 90 designation
2. complete insurance packet
3. Cousins Waste Control Corp.'s literature packet

If you have any additional questions or need additional information, please do not hesitate to call. Good luck with the boating season this year. Hopefully you will find time to enjoy your sailboat.

Yours Truly,

Barry Cousins

Barry Cousins

Enclosures

Recycled Paper

5.0 CASUALTY CONTROL

The Emergency Coordinator (EC) shall determine the existence or probability of on-site casualties and is responsible for activating the casualty control plan and designating a Casualty Control Officer.

1. The Casualty Control Officer (CCO) will assess, implement, and direct first aid for any and all injuries. The CCO will also advise the EC of the need to summon outside emergency medical assistance.

2. The Casualty Control Officer will give the details of the emergency assistance needed to the EC or his designee.

3. The EC or his designate will call the following Emergency Medical Service agencies as needed:

   a. Sandusky County E.M.S.....911
   b. Bellevue 4 County Ambulance Service.....(419) 483-4444

4. When calling for emergency medical assistance, the following information must be given:

   a. The address and location of the emergency
   b. Nature of the emergency
   c. An estimate of numbers, types and conditions of Casualties
   d. The existence of hazardous conditions or special risks
   e. The name, number, and location of caller

5. The Casualty Control Officer will coordinate search and rescue operations.

6. The Casualty Control Officer will designate and inform the Emergency Coordinator and search and rescue staff of the location of the Triage Area, and the Casualty Receiving Area (first aid station).

The Casualty Receiving Area will be located at the:

Employee Lunchroom/Locker Room Building

In case the employee lunchroom/locker room building cannot be used, the alternate Casualty Receiving Area is the:

Lunchroom - Administration Office

7. Casualties that can be safely moved by on-site personnel will be transported to the Casualty Receiving Area.

8. The Casualty Control Officer will designate a technical person from the laboratory department to help identify injury causing hazardous agents and provide information on toxicity and decontamination.

If needed, the following organizations may provide emergency chemical information:

Chemtrec.....(800) 424-9300
Poison Control Center located at the Medical College of Ohio at Toledo .....(419) 381-3897

9. The Casualty Control Officer will ensure that incoming emergency medical assistance will be escorted to the Casualty Receiving Area or emergency location.

10. The Emergency Medical Service (E.M.S.) will assume control of casualty treatment and disposition when they arrive.

11. The Casualty Control Officer shall maintain a record of all casualties; listing names, injuries, and disposition.

12. The site Safety Officer shall be contacted on any serious injury, illness, or death as soon as possible.

6.0 EVACUATION PLAN

The Emergency Coordinator, or the Regulatory/Technical representative are the only persons authorized to call for complete evacuation of the site in response to an emergency situation which threatens the health and safety of facility personnel. He may take this action based upon his analysis of the situation or at the request of an on-scene public emergency services coordinator, e.g., Sheriff, Fire Chief.

6.1 SITE ACCESS AND EGRESS

The facility is located about eight (8) miles east of Fremont, Ohio. The site can be reached by road from State Highway 510 from the north or south and State Highway 412 from the east or west. Township Road 244 runs north and south along the western perimeter of the site intersecting State Route 412 at the south end. The Ohio Turnpike (U.S. 80) running east to west, lies parallel, and just north of the facility, with service plazas located approximately one mile east of this site. The area surrounding the site is predominantly farm land, with residences located within 1/8 mile to the east and west, adjacent to the site from the south and approximately 1/2 mile to the north.

The site is designed and operated to facilitate access to all points within the site for inspection and emergency response.

Enclosed processing areas are designed for emergency response and evacuation, if necessary.

Facility access is controlled and maintained during an emergency. The Emergency Coordinator will determine the personnel to be admitted during an emergency.

6.2 EVACUATION PROCEDURES

The evacuation routes for the facility are shown in Figure 6-1.

The following actions will be taken when the EC orders a site evacuation.

1. The EC or his designee will activate emergency services by calling the Sandusky County Sheriff's Department for assistance, reporting any casualties and arranging for their emergency care. The EC will coordinate activities with the sheriff and/or other emergency agencies.

2. The EC or his designee will determine which gates will be used depending upon wind direction and the locations of the incident and personnel. The EC and/or his support staff will utilize the windsock located atop tank T-9 and/or the weather station located at the Administration/Lab Complex to ascertain wind direction and velocity.

3. The EC will broadcast evacuation instructions to area supervisors via the facility's telephone paging system and/or two-way radio system.

4. The EC will instruct site personnel to unlock the required exit gates and assist in directing evacuation.

5. All personnel, including visitors and contractors, will be instructed to leave through the exit gates designated by the EC.

6. Gate attendants are to remain at their stations to assist in accounting for outside contractors until they are relieved by the EC or his designee, or until such time as the emergency situation becomes a threat to their safety or health. No employee is to remain in an area if their safety or health is at risk.

7. Evacuation will proceed as follows:

If downwind of incident, evacuate perpendicularly to wind direction over the most accessible route.

If upwind of incident, evacuate in upwind direction.

8. Personnel will regroup at one of the following areas as designated by the EC:

Regrouping Area 1 - Parking lot adjacent to the storage garage south of the facility on State Route 412.

Regrouping Area 2 - Gate entrance to west end of facility on Twp. Road 244 (Haymill Area).

9. Once all personnel have been evacuated, plant gates are to be closed to prevent unauthorized personnel from re-entering the facility. If gates must remain open to facilitate entrance by emergency crews, a representative of the company designated by the EC will be stationed at the gate entrance. Another facility representative will be stationed at the entrance to the administrative office to prevent unauthorized entrance into the office or employee locker room.

10. The Casualty Control Officer (CCO) will initiate a head count and check it against the site attendance system. This information will be transferred to the EC.

11. All attempts to rescue or find persons will be directed by the Emergency Coordinator or his designee in conjunction with the responding agencies.

12. In the event of a tornado or severe wind storm, all personnel will be directed to the Employee Lunchroom/Locker Room, the basement of the main office building, or the ground floor central area of the Truck Unloading Building.

13. Upon activation of the fire alarm system located at the Administration/Lab Building, the following actions will taken:

All personnel located inside the building or its adjacent structures will evacuate immediately and relocate to a safe area upwind and away from the fire. The Telephone Operator is responsible for the administrative office sign in/sign out sheet during an evacuation. The Shift Supervisor/EC shall be contacted immediately and upon notification of the exact location of the fire, confirm with the Control Room Operator or Telephone Operator, that the fire department has been contacted.

If the fire is out of control, the EC shall make sure that all personnel maintain a safety distance away from the fire. In addition, if possible, all adjacent vehicles are to be moved to another location to reduce the likelihood of further involvement and also allow for ample work area for responding emergency units.

The site fire response will be one of an incipient nature. That is site personnel may respond to fires of a magnitude which may be suppressed with extinguishers or a garden hose.

14. The evacuation routes from specific site buildings are indicated by the emergency exit signs located within the buildings. The evacuation routes of each building are very evident in light of the locations of the emergency exit signs, the buildings consist of one room, or each occupied room on site contains an exterior window or door (except the driver's room in the unload building).

15. For a spill release, fire, or explosion, the Communications Coordinator (CC) will:

- Establish telephone contacts as directed by the EC
- Establish other telephone contacts as directed by the EC

Casualty Control Officer Activities

For an uncontrollable spill, release, fire, or explosion, the designated Casualty Control Officer (CCO) will:

- Coordinate movement of personnel to regrouping areas as follows (and relay information to EC):
    1. Parking lot adjacent to the storage garage south of the facility on St. Rt. 412.
    2. Gate entrance to west end of facility on Twp. Rd. 244.
    3. Any safe area as designated by the EC and conduct a "head count" and relay information to EC. The "head count" will be compared to the shift roster, administrative office sign-in log for staff and visitors, and the contractor sign-in/sign-out sheet at the Receipt Control office and\or guardhouse.

6.3 COMMUNITY IMPACT CONSIDERATIONS

In the event that areas adjacent to the site may be endangered due to the emergency, the evacuation will be initiated and controlled by the Sandusky County Sheriff's Department. The following responsibilities have been determined:

o The Emergency Coordinator will notify the Sandusky County Sheriff's Department of the possible need to evacuate off-site areas. This

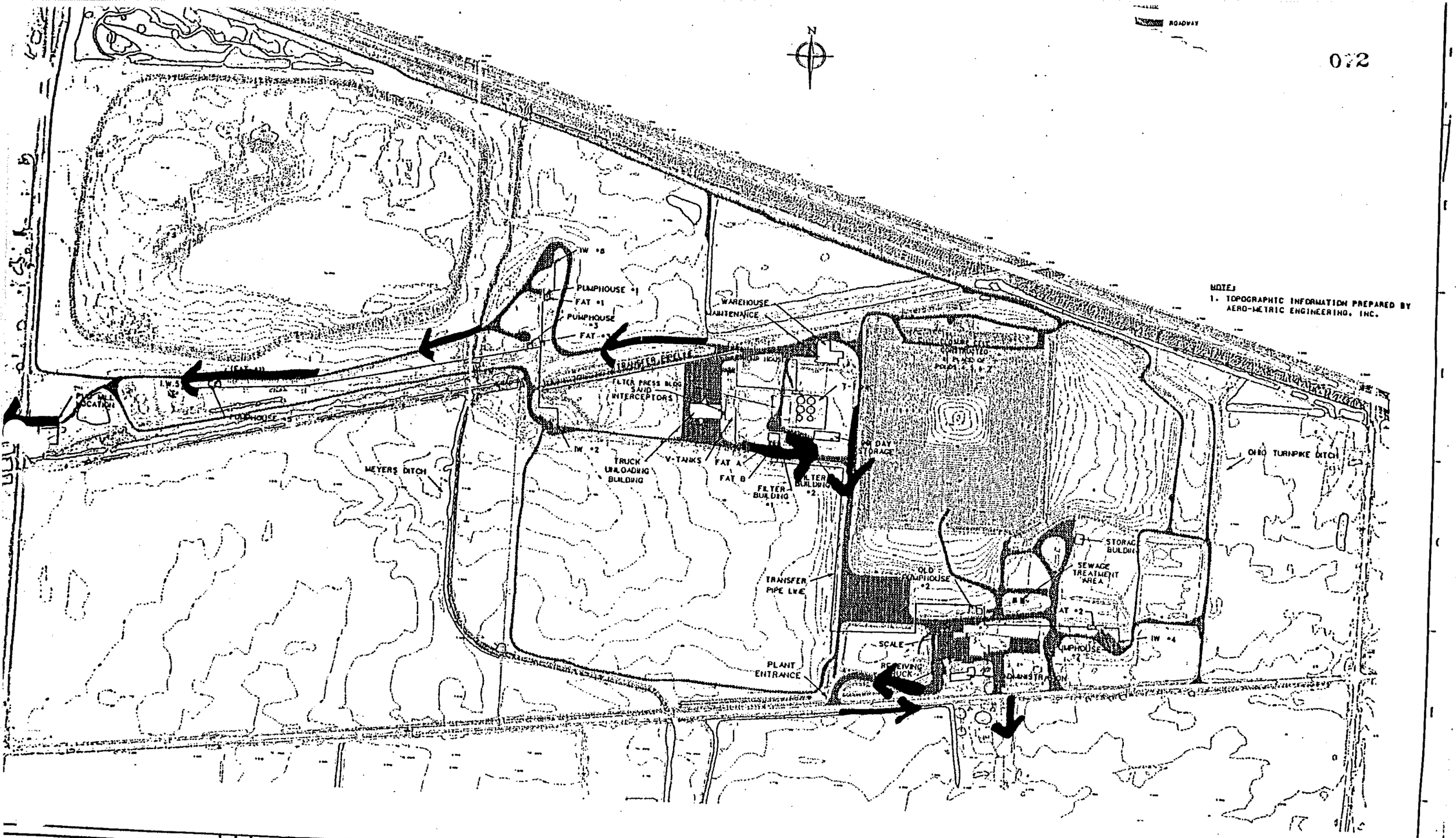
need will depend on the nature, extent and rate of spread (including direction) of potential hazards to surrounding areas.

- Until local units can respond, facility personnel will, under the Emergency Coordinator's direction, initiate roadblocks and evacuation procedures for areas adjacent to the site. This will be done, provided there are available personnel.

- The Emergency Coordinator will maintain communication with local authorities and assist in the coordination of evacuation, emergency response and casualty control activities.

6.4 RE-OCCUPANCY OF FACILITY

The determination of when the facility may be safely reoccupied will be made by the EC in consultation with responding emergency services agencies. Site activities will only resume after the EC has given an "all clear" notification.



EVACUATION ROUTES

[redacted]

ADDED ROADWAY HATCH

CWM

CHEMICAL WASTE MANAGEMENT, INC.

RUST ENVIRONMENT & INFRASTRUCTURE

7.0 POST-EMERGENCY PROCEDURES

Post-emergency procedures are designed to prevent reoccurrence, to clean up and dispose of residuals, to decontaminate equipment and to provide for personnel debriefing.

7.1 PREVENTION OF RECURRENCE

The Emergency Coordinator will take all necessary steps to ensure that a secondary release, fire or explosion does not recur. If the facility stops operations in response to a fire, explosion or release, the EC must ensure that the following procedures are carried out:

- Monitoring of all pressure valves
- Inspection for any leaks or cracks in pipes, valves, and tanks
- Inspection for gas generation
- Isolation of all collected waste materials

All operations that were initially shut down during response to the incident will not be reactivated until the EC and/or the General Manager gives the approval.

7.2 CLEANUP AFTER CONTINGENCY PLAN IMPLEMENTATION (Per OAC 3745-65-56/40 CFR 265.56)

After implementation of the Contingency Plan and after the incident is under control, the emergency coordinator must ensure that, in the affected area(s) of the facility:

1. No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

2. All emergency equipment listed in the Contingency Plan is cleaned and fit for its intended use before operations are resumed.

The owner or operator must notify the Regional Administrator and/or the Director of OEPA, and other appropriate State and local authorities that the facility is in compliance with this section, 7.2 (or paragraph (H) of OAC 3745-65-56/paragraph (h) of 40 CFR 265.56), before operations are resumed in the affected area(s) of the facility.

7.3 REPORT TO OEPA DIRECTOR/REGIONAL ADMINISTRATOR [OAC 3745-65-56 (J)/40 CFR 265.56(j)]

The incident will be noted in the operating record including the time, date, and details of the incident that required implementation of the Contingency Plan.

Within 15 days after the incident, a written report must be submitted to the Director of OEPA and/or the Regional Administrator. The report must include:

1. Name, address, and telephone number of the owner or operator;

2. Name, address, and telephone number of the facility;

3. Date, time, and the type of incident (e.g., fire, explosion, etc.);

4. Name and quantity of material(s) involved;

5. The extent of injuries, if any;

6. An assessment of actual or potential hazards to human health or the environment, where applicable; and

7. Estimated quantity and disposition of recovered material that resulted from the incident.

7.4 REOCCUPATION OF FACILITY OR EMERGENCY RESPONSE HOT ZONE

The E.C. after consultation with the General Manager and available Technical/Regulator personnel will determine when it is safe to reoccupy the facility.

7.5 PERSONNEL DEBRIEFING AND CONTINGENCY PLAN REVIEW

The Emergency Coordinator and General Manager and other appropriate personnel will review preparedness and prevention activities, response activities, casualty control and evacuation procedures with all involved personnel. Based on this review, suggestions for revisions to the Contingency Plan will be made to facility management. The review for all Contingency Plan events will be in writing. Recommendations and action items will be documented in the Contingency Plan Review. Specific persons will be assigned to complete items requiring follow up or further action. The Environmental Manager will enter follow up items into the CARS system for resolution by appropriate site personnel.

The review will be kept\filed with the CWM Incident Report for the spill\release. A copy of the review will be forwarded to the Safety Dept., Environmental Manager, and General Manager.

8.0 ARRANGEMENTS WITH LOCAL AUTHORITIES AND OTHER RESOURCES

CWM has made contact with those local and regional agencies listed in Table 8-1 which may be involved in an emergency situation. Each of these agencies have been provided with a current copy of this Contingency Plan and relevant background information. Letters of notification of any changes to the Contingency Plan will be on file at the Vickery Facility with acknowledgement of receipts.

8.1 EMERGENCY RESPONSE AGENCIES

The Emergency Coordinator will notify certain agencies if the Contingency Plan is implemented.

The County Sheriff's Department has agreed to assist in the movement of emergency personnel and equipment. Additionally, they have agreed to take the lead in the evacuation of areas surrounding the site, if necessary.

Townsend Township and Clyde City Fire Departments have been provided a copy of the Contingency Plan.

8.2 COMMUNITY EMERGENCY RESPONSE ORGANIZATIONS' ROLE

It is believed that the communities role in responding to emergencies at the Vickery Facility will be categorized into the following responses:

- fire suppression
- protect structures from fire impingement
- search and rescue
- medical treatment
- medical transport
- logistical support for breathing air
- manpower for diking activities

8.3 CHEMICAL WASTE MANAGEMENT'S OFF SITE EMERGENCY RESPONSE LEVEL

Chemical Waste Management, Inc. will respond to environmental or other emergencies to the best of its ability with manpower and\or equipment when called upon by the community.

CWM, Inc. shall respond to environmental emergencies with available manpower and equipment when the emergency involves materials which the site has had experience handling. For other response scenarios CWM, Inc. will provide available equipment upon request by the community.

8.4 COMMUNITY EMERGENCY RESPONSE ORGANIZATIONS INTERFACE WITH CHEMICAL WASTE MANAGEMENT, INC.

Chemical Waste Management, Inc. Emergency Response Training or interface activities shall on an annual basis include one of the following:

- An invitation to local emergency response organizations to participate in a CWM, Inc. site emergency response drill.

  Organizations are familiarized with site emergency response capabilities.

- A presentation to local emergency response organizations which discusses the CWM, Inc. Site Emergency Response Plan and the Community Emergency Response Organization's Role. The focus of this presentation will be the local fire departments and emergency medical services groups.

TABLE 8-1

COORDINATION AGREEMENTS

To ensure that any on-site emergency requiring outside assistance is responded to in a timely and effectively manner, CWM has and will continue to communicate with the following response departments:

Townsend Township Fire Department	(419)547-8122
Clyde City Fire Department	(419)547-7123
Sandusky County Sheriff	911 or (419)332-2613
Sandusky County E.M.S.	911
Bellevue 4 County Ambulance Service	(419)483-4444
Fremont Memorial Hospital	(419)332-7321
Bellevue City Hospital	(419)483-4040
Sandusky County Disaster Services	(419)334-8933
Region V, U.S. EPA	(312)353-2197
Ohio EPA	1-800-282-9378
Sandusky County Health Board	(419)334-6377
U.S. Coast Guard	(216)522-3983
Ohio State Highway Patrol (OSP)	(419)332-8246
National Response Center	1-800-424-8802

9.0 INCIDENT REPORTING

Section 103 of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) requires that notification be made to the National Response Center (800/424-8802) whenever there is a release of a hazardous substance to the environment in amounts equal to or greater than the "reportable quantity".

OAC 3745-65-56 (J) and 40 CFR 265.56 further state that any emergency event requiring the implementation of the Contingency Plan will be reported in writing within 15 days to the Director of the Ohio EPA and the Regional Administrator.

CWM must follow corporate internal notification procedures. If a release occurs, a report similar to the one required by the Ohio EPA must be submitted to CWM's corporate office. The information will also be incorporated into the Operating Record. Any reportable material release or waste spill must be reported to OEPA within two hours of detection (per the Consent Decree).

9.1 INCIDENT MITIGATED ON-SITE (Contingency Plan not Implemented)

- Report the incident to CWM corporate office verbally at the time of the incident and submit a completed report form such as the one in Figure 9-1, after the incident is controlled.
- File an incident report with the facility manager and maintain incident reports in the facility's central file.

9.2 IMPLEMENTING THE CONTINGENCY PLAN

- Report the incident to local authorities and request emergency support, as needed.
- If off-site human health or environment are threatened, report the incident verbally to National Response Center and the Ohio EPA, immediately.

- Report the incident to CWM's corporate office verbally at the time of the incident and submit a completed incident report form, at least equivalent to that shown in Figure 9-1 after the situation is controlled.

9.3 CLEANUP AFTER CONTINGENCY PLAN IMPLEMENTATION (Per OAC 3745-65-56/40 CFR 265.56)

After implementation of the Contingency Plan and after the incident is under control, the emergency coordinator must ensure that, in the affected area(s) of the facility:

1. No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and
2. All emergency equipment listed in the Contingency Plan is cleaned and fit for its intended use before operations are resumed.

<u>The owner or operator must notify the Regional Administrator and/or the Director of OEPA, and other appropriate State and local authorities that the facility is in compliance with this section, 2.3.1 (or paragraph (H) of OAC 3745-65-56/paragraph (h) of 40 CFR 265.56), before operations are resumed in the affected area(s) of the facility.</u>

9.4 REPORT TO OEPA DIRECTOR/REGIONAL ADMINISTRATOR [OAC 3745-65-56 (J)/40 CFR 265.56(j)]

The incident will be noted in the operating record including the time, date, and details of the incident that required implementation of the Contingency Plan.

Within 15 days after the incident, a written report must be submitted to the Director of OEPA and/or the Regional Administrator. The report must include:

1. Name, address, and telephone number of the owner or operator;
2. Name, address, and telephone number of the facility;
3. Date, time, and the type of incident (e.g., fire, explosion, etc.);
4. Name and quantity of material(s) involved;
5. The extent of injuries, if any;
6. An assessment of actual or potential hazards to human health or the environment, where applicable; and
7. Estimated quantity and disposition of recovered material that resulted from the incident.

9.5 CWM VICKERY INCIDENT REPORT FORM SAMPLES

On the following pages are samples of CWM Vickery's Incident Reporting Forms.

CWM VICKERY FACILITY
SUPERFUND RELEASE REPORTING FORM

DATE OF INCIDENT _____/_____/_____ TIME OF INCIDENT _____AM/PM

Instructions: Fill in all spaces. Mark Non-Applicable (NA) where the question on the form does not apply. Complete only the incident form which applies and the follow-up form (i.e., spill form and follow-up form or injury form and follow-up form, etc.).

1. FACILITY: CHEMICAL WASTE MANAGEMENT, INC., 3956 STATE ROUTE 412, VICKERY, OHIO 43464
2. FACILITY TELEPHONE NUMBER: (419) 547-7791
3. LOCATION OF SPILL/RELEASE: _____
4. CAUSE OF SPILL/RELEASE: _____
   a) Name of substance spilled/released: _____
   b) Amount released_____G/T/P/Y (If PT or LB or <10 LB on dry pavement, not reportable)
   c) Contained in building (If yes, not reportable): _____YES _____NO
   d) Was the release to: _____AIR _____*SURFACE WATER _____PAVEMENT _____SOIL
   e) Was the release: _____CONTINUOUS _____EPISODIC
   f) Was the release reportable: _____YES _____NO
5. CLEAN UP PROCEDURE: (N/A for vapors such as NOX)
   a) Material Type: Liquid: _____YES _____NO Solid: _____YES _____NO
      1) Treatment method (if any): _____
      2) Removal method: _____
      3) Transferred to: CONTAINER TYPE: _____ CONTAINER #: _____
      4) Volume transferred: _____LBS/YDS _____GALLONS
6. AGENCIES CONTACTED: *Contact if release is to waterway or offsite.

	TIME/DATE	AGENCY	CONTACT	PHONE NUMBER	COMMENTS
a)	_____/_____	OEPA-NWDO (Ask for Chuck Hull/Beth Ames)		(410)352-8461)	_____
	_____/_____	Return Call	_____		_____
b)	_____/_____	OEPA/EMG	_____	(800)282-9378	_____
	_____/_____	Return Call	_____		_____
c)	_____/_____	Nat. Resp. Center	_____	(800)424-8802	_____
d)	_____/_____	OEPA On-Site Rep	_____	(if on duty or a witness)	_____
*e)	_____/_____	U.S. Coast Guard	_____	(216)522-3983	_____
*f)	_____/_____	USEPA Region V	_____	(312)353-2197	_____
*g)	_____/_____	Sand. Co. Sheriff	_____	911	_____

_____ _____
NAME OF SHIFT SUPERVISOR AND/OR EC SIGNATURE DATE

Circulation:
Safety Manager
Operations Manager
General Manager
Administrative Secretary
Control Room (file)

Special Routing:
_____
_____

CWM VICKERY FACILITY
SUPERVISOR'S REPORT OF
INJURY/ILLNESS OR VEHICLE OR OTHER INCIDENT

INFORMATION

Name of person involved in Incident:_____ Age:_____ Sex:___M ___F

SS No:_____ Report Date:_____ CWM Employee: ___Yes ___No

Job Title:_____ Home Address:_____

Check Appropriate Space(s): Injury:____ Illness:____ Vehicle Accident:____

Property Damage:____ Other:_____

Division:_____ Address:_____

INJURY/ILLNESS/VEHICLE/OTHER INCIDENT INFORMATION

Date of Incident:_____ Time of Incident:_____AM / PM

Incident Witnessed By:_____

Location Where Incident Occurred:_____

Individual's Activity When Incident Occurred:_____

_____

Brief Description of Incident. (Describe what occurred including facts currently known such as body part(s) affected and object(s), vehicle(s), substance(s), or unsafe conditions directly contributing to incident):_____

_____

Describe Damage, if any, to vehicles, property, or other._____

_____

MEDICAL TREATMENT INFORMATION

First Aid Administered: ____Yes ____No Medical Attention Received: ____Yes ____No

Medical Prescribed: ____Yes ____No Fatality: ____Yes ____No

OSHA Recordable: ____Yes ____No

Clinic/Hospital Name:_____ Physician's Name:_____

Address:_____

Diagnosis:_____

Date of Diagnosis (if different from occurrence day)):_____

Supervisor's Name:_____

Signature:_____ Date:_____

IF MOTOR VEHICLE OR HEAVY EQUIPMENT ACCIDENT, PLEASE COMPLETE BACK SIDE OF FORM.

SUPPLEMENT #1
SUPERVISOR'S ACCIDENT REPORT
MOTOR VEHICLE

icle No: _____ Make/Model of Cab _____ Body _____

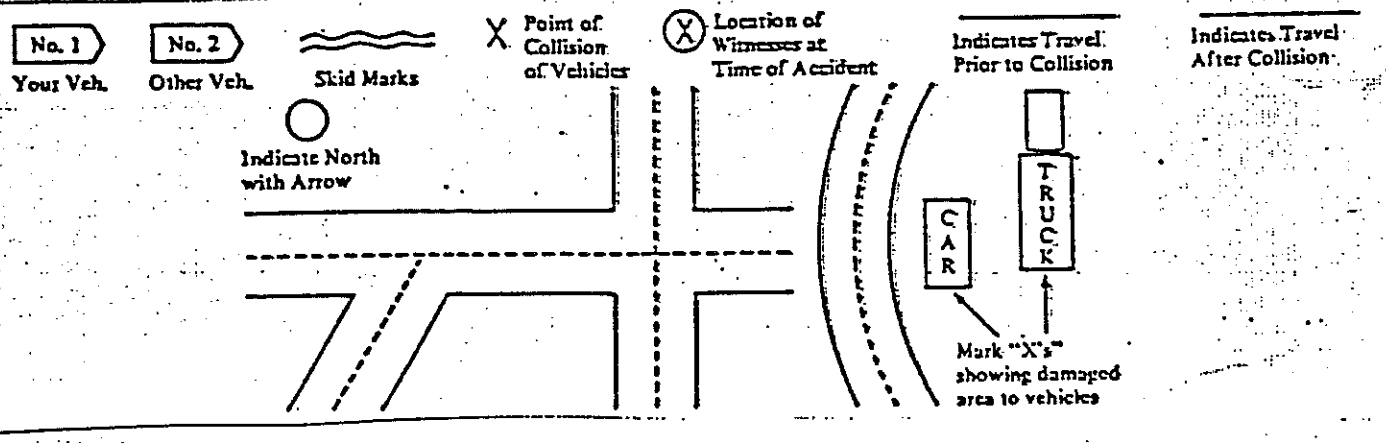
Describe driving maneuver, the accident and damage (Use Diagram Below) _____

What was the basic accident cause? _____

Were police called?: _____ Citation Issued?: _____

To Whom?: _____ For What?: _____

THIS REPORT IS CONFIDENTIAL AND TO BE USED ONLY BY "COMPANY OFFICIALS AND THE INVOLVED OPERATOR". Draw "COMPLETE" diagram showing position of all involved vehicles at TIME OF COLLISION AND FINAL POSITION showing direction of travel, both BEFORE and AFTER collision. Correct diagram to fit streets involved. Use the following symbols:



"X" ALL APPLICABLE SQUARES ON EACH SUBJECT

WEATHER	LIGHTING	ROAD SURFACE	ROAD DESCRIPTION
☐ Clear	☐ Daylight ☐ Dark	☐ Dry ☐ Wet	☐ Straight ☐ Curve
☐ Cloudy	☐ Dusk ☐ Dawn	☐ Muddy	☐ Level
☐ Fog	☐ Dark-No St. Lights On	☐ Snowy	☐ Hill ☐ Up ☐ Down
☐ Rain	☐ Dark-St. Lights On	☐ Snow Covered	☐ Paved ☐ Black Top
☐ Snow	☐ Headlights	☐ Ice in Places	☐ One Way
☐ Sleet	☐ Headlights On Dim	☐ Ice Covered	☐ Two Way
☐ Other	☐ Headlights On Bright	☐ Other	☐ Divided Road
	☐ No Lights On		☐ Intersection

ACTION OF DRIVERS	YOU	OTHER
☐ Exceeding Safe Speed	☐	☐
☐ On Wrong Side of Street	☐	☐
☐ Did Not Have Right-of-Way	☐	☐
☐ Disobeyed Traffic Signal	☐	☐
☐ Illegal Passing	☐	☐
☐ Improper Turning	☐	☐
☐ Improper Backing	☐	☐
☐ Following Too Closely	☐	☐
☐ Failure to Signal	☐	☐
☐ Improper Lane Change	☐	☐
☐ Misjudged Clearance	☐	☐
☐ Other	☐	☐

WHAT WAS SPEED LIMIT? _____

WITNESSES?
☐ YES ☐ NO

TRAFFIC CONTROL
☐ Signal Lights
☐ Caution Lights
☐ Stop Sign
☐ Police Officer
☐ None ☐ Other

WITNESSES NAME _____

ADDRESS _____

NAME _____

ADDRESS _____

CWM VICKERY FACILITY
EMPLOYEE REPORT OF INCIDENT

CWM INFORMATION

Division: _____ Injury: ____Yes ____No

Location: _____ Illness: ____Yes ____No

Date of Incident: _____ Damage to CWM Vehicle or Property:

Time of Incident: _____ ____Yes ____No

Damage to Non-CWM Vehicle or Property: ____Yes ____No

Other (Specify): _____

INDIVIDUAL INFORMATION

Name: _____ SS No: _____

Age: _____ Job Title: _____ Sex: ____M ____F Time in Job (yrs): _____

Home Address: _____

INCIDENT INFORMATION

Location of Incident: _____

When did you report the incident: _____

To Whom did you report the incident: _____

Describe facts of the occurrence, i.e., who, what, how: _____

_____

_____

_____

Employee Signature: _____ Date: _____

IF MOTOR VEHICLE ACCIDENT, PLEASE COMPLETE BACK SIDE OF FORM

CWM VICKERY FACILITY
DRIVERS REPORT OF ACCIDENT

T LOCATION OF ACCIDENT: _____

VEHICLE NO: _____ MAKE/MODEL OF CAB: _____ BODY: _____

DESCRIBE DRIVING MANEUVER, THE ACCIDENT AND DAMAGE. USE DIAGRAM BELOW ALSO: _____

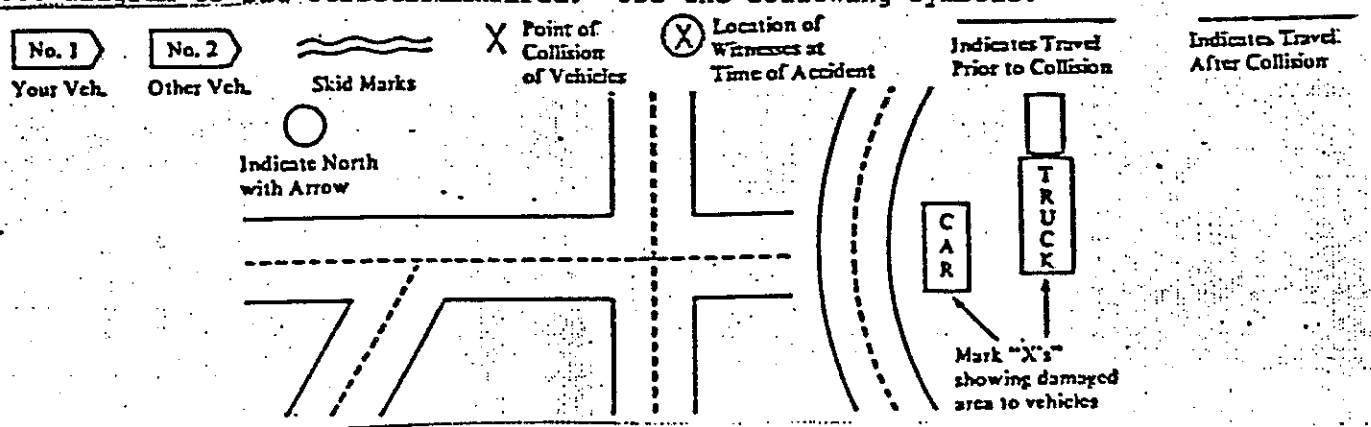
WERE POLICE CALLED: ____YES ____NO BY WHOM: _____

TICKET ISSUED: ____YES ____NO BY WHOM: _____

FOR WHAT ALLEGED VIOLATION: _____ POLICE DEPARTMENT: _____

DOT REPORTABLE: ___YES ___NO REPORTED TO DOT BY: _____ DATE: _____

THIS REPORT IS CONFIDENTIAL AND TO BE USED ONLY BY "COMPANY OFFICIALS AND THE INVOLVED OPERATOR". Draw "COMPLETE" diagram showing position of all involved vehicles at TIME OF COLLISION AND FINAL POSITION showing direction of travel, both BEFORE and AFTER collision. Correct diagram to fit streets involved. Use the following symbols:



"X" ALL APPLICABLE SQUARES ON EACH SUBJECT

WEATHER
- ☐ Clear
- ☐ Cloudy
- ☐ Fog
- ☐ Rain
- ☐ Snow
- ☐ Sleet
- ☐ Other

LIGHTING
- ☐ Daylight ☐ Dark
- ☐ Dusk ☐ Dawn
- ☐ Dark-No St. Lights On
- ☐ Dark-St. Lights On
- ☐ Headlights
- ☐ Headlights On Dim
- ☐ Headlights On Bright
- ☐ No Lights On

ROAD SURFACE
- ☐ Dry ☐ Wet
- ☐ Muddy
- ☐ Snowy
- ☐ Snow Covered
- ☐ Ice in Places
- ☐ Ice Covered
- ☐ Other

ROAD DESCRIPTION
- ☐ Straight ☐ Curve
- ☐ Level
- ☐ Hill ☐ Up ☐ Down
- ☐ Paved ☐ Black Top
- ☐ One Way
- ☐ Two Way
- ☐ Divided Road
- ☐ Intersection

ACTION OF DRIVERS	YOU	OTHER
☐ Exceeding Safe Speed	☐	☐
☐ On Wrong Side of Street	☐	☐
☐ Did Not Have Right-of-Way	☐	☐
☐ Disobeyed Traffic Signal	☐	☐
☐ Illegal Passing	☐	☐
☐ Improper Turning	☐	☐
☐ Improper Backing	☐	☐
☐ Following Too Closely	☐	☐
☐ Failure to Signal	☐	☐
☐ Improper Lane Change	☐	☐
☐ Misjudged Clearance	☐	☐
☐ Other	☐	☐

WHAT WAS SPEED LIMIT? _____

WITNESSES?
☐ YES ☐ NO

TRAFFIC CONTROL
- ☐ Signal Lights
- ☐ Caution Lights
- ☐ Stop Sign
- ☐ Police Officer
- ☐ None ☐ Other

WITNESSES NAME _____

ADDRESS _____

NAME _____

ADDRESS _____

CWM VICKERY FACILITY
INCIDENT INVESTIGATION
FOLLOW-UP REPORT

GETTING TO IMMEDIATE AND UNDERLYING CAUSES

USE THE LISTING BELOW AS AN AID IN IDENTIFYING THE FACTORS THAT CONTRIBUTED TO THE INCIDENT, ACCIDENT, OR NEAR MISS. CHECK ALL THAT APPLY.

NOTE: THE AREAS LISTED ARE PROVIDED TO HELP STIMULATE THE DISCUSSION PROCESS. ADD YOUR OWN AS NEEDED.

PROCEDURES
- ☐ Developed but not followed
- ☐ Developed but not understood
- ☐ Developed but not trained
- ☐ Developed but not accurate
- ☐ Developed but unable to follow
- ☐ _____
- ☐ _____

TRAINING
- ☐ Insufficient training
- ☐ Circumstances not addressed in training
- ☐ Tool used incorrectly
- ☐ _____
- ☐ _____

IN A HURRY
- ☐ Supervisor implied need
- ☐ Employee perceived need
- ☐ Friendly competition
- ☐ Due to external factors
- ☐ Workload too heavy
- ☐ Lack of teamwork
- ☐ Taking shortcuts
- ☐ _____
- ☐ _____

FACILITIES/EQUIPMENT
- ☐ Faulty equipment
- ☐ None developed
- ☐ Poor design
- ☐ Corrosion/Wear
- ☐ Ergonomic factors
- ☐ _____
- ☐ _____

HAZARD
- ☐ Repaired but deficient report
- ☐ Created by man
- ☐ Created by external factors
- ☐ Documented but not repaired
- ☐ Unidentified
- ☐ Identified but accepted
- ☐ Conditions changed without proper communication
- ☐ Lack of Documentation
- ☐ _____
- ☐ _____

COMMUNICATION
- ☐ Insufficient planning
- ☐ Breakdown in communication between workers
- ☐ Breakdown in communication between worker & supervisor
- ☐ Breakdown in communication between work teams
- ☐ Confusion after communication
- ☐ _____
- ☐ _____

OTHER FACTORS
- ☐ Weather/Temperature
- ☐ Working long hours
- ☐ Physical over-exertion
- ☐ Personal protective equipment
- ☐ Improper body position

PLEASE COMPLETE BACK SIDE OF FORM

CWM VICKERY FACILITY
INCIDENT INVESTIGATION
FOLLOW-UP REPORT

IDENT CAUSATION SUMMARY (Include Job factors, personal factors, substandard practices, substandard conditions, etc.): _____

_____

_____

PREVENTABLE INCIDENT: (WAS THE INCIDENT PREVENTABLE BY CWM EMPLOYEE?)

_____YES _____NO _____ALLEGED _____NO EMPLOYEE INVOLVED

RISK (Evaluation of loss potential, if not corrected)

LOSS SEVERITY POTENTIAL: _____MAJOR _____SERIOUS _____MINOR

PROBABILITY OF OCCURRENCE: _____HIGH _____MEDIUM _____LOW

SPECIFIC CORRECTIVE ACTIONS (To prevent a reoccurrence of incident, employee counseling, retraining, OJT, etc.)

CORRECTIVE ACTION PLAN (Actions to prevent reoccurrence - including target dates and responsible person)

SUPERVISOR: _____ DATE: _____

COMMENTS: _____

SAFETY MANAGER: _____ DATE: _____

COMMENTS: _____

ATIONS MANAGER: _____ DATE: _____

COMMENTS: _____

GENERAL MANAGER: _____ DATE: _____

10.0 AMENDMENTS TO CONTINGENCY PLAN

This Contingency Plan is subject to review and amendment, if:

1. Deficiencies in the Plan are noted.
2. The facility permit is revised.
3. The facility changes in design, construction, operation, or other circumstances develop that change the potential for fires, explosions, or releases of hazardous materials.
4. The list of Emergency Coordinators and alternates changes.
5. The list of emergency equipment changes substantially.
6. The applicable regulations are revised.
7. The plan fails in an emergency (OAC 3745-54-54(B)/40 CFR 265.54(b))

Any significant change in the Contingency Plan that impacts an agency will be reviewed and discussed with that agency or emergency response authority. New Contingency Plan documents will be prepared and distributed by certified mail to local, state, and federal agencies. Facility personnel will be informed of all changes in the Plan with copies available to personnel responsible for its implementation.

This Contingency Plan may be updated when technological advances, changes in government regulations, corporate procedures, market availability, or more efficient management practices warrant a change. Some anticipated areas where changes may occur are listed below:

- Forms
- Procedures
- Sampling Equipment
- Operations Equipment
- Remedial Equipment and Supplies
- Specific inventories of itemized equipment and supplies

When changes referred to in the above paragraph occur, the Ohio EPA will be notified verbally or in writing.

11.0 TYPES OF WASTES RECEIVED BY THE FACILITY

This section describes the chemical and physical nature of the hazardous wastes received and managed at the facility and expected to be received and managed at the proposed facility.

CHEMICAL AND PHYSICAL CHARACTERISTICS

The wastes currently received by the existing IAWTS facility are best described by the three categories of wastes delineated in Table 11-1. The waste categories include Waste Pickle Liquors, Neutral Waters, and F-Solvent Contact Waters. Table 11-1 defines typical EPA Hazardous Waste numbers for each type of waste.

In the existing facility, where all wastes are treated in the Waste Treatment/ Storage Tanks, segregation of wastes into the three separate treatment systems is not necessary.

CWM will use the Waste Analysis Plan to fully describe and categorize received wastes and ensure compliance with applicable regulations. Furthermore, CWM Vickery will not accept for treatment at the facility radioactive wastes, infectious wastes, explosive or shock-sensitive wastes, air-reactive wastes, water-reactive wastes, compressed gases, reactive wastes that generate dangerous quantities of toxic or explosive gases when acidified, bulk ignitable wastes (with a flash point less than 212°F) bulk wastes containing 5% VOCs, or wastes that the General Manager deems cannot be properly or safely managed at the facility.

TABLE 11-1

REPRESENTATIVE WASTES RECEIVED BY THE

EXISTING FACILITY

Waste Type	Typical EPA Hazardous Waste Numbers
Waste Pickle Liquors	D002, F006, K062, D007, U134, U151
Neutral Waters (Brines, Leachates) On-Site Generated Waters	D004 - D011, all listed wastes
F-Solvent Contact Waters	F001-F005

In Section C (Waste Characteristics) Tables C-3 and C-4 of the permit application, a list of the wastes that will be managed in the proposed facility together with an indication of their hazardous characteristics and basis for listing may be found. Table C-3 includes the general D, F, and K codes while Table C-4 contains the specific P and U Codes.

12.0 EMERGENCY MEDICAL AND FIRST AID PROCEDURE

In the event medical treatment is required by personnel located on site, the following procedure shall be followed:

12.1 NOTIFICATION

1. All injuries should be reported to the Safety Department. An injury would include a wound which merely receives simple first aid as the only treatment.

12.2 INJURY TRIAGE

1. Injuries which are more severe than simple first aid cases will be triaged/assessed by a person trained in CPR/First Aid.

2. The extent of the injury and the immediate care to be provided to the victim will be decided and provided.

3. Emergency transportation and medical assistance will be summoned at this time where it is deemed necessary.

12.3 MEDICAL PROVIDERS AND MEDICAL TRANSPORTATION

1. The nearest medical provider to the site is Fremont Memorial Hospital, 715 South Taft Ave., Fremont, Ohio (419)334-6621.

2. The Sandusky County Emergency Medical Service can provide a level of medical care beyond that which the site is trained to provide. Also, the Sandusky County EMS has the ability to transport victims. The Sandusky County EMS may be contacted by dialing 911.

12.4. FREMONT MEMORIAL HOSPITAL (LOCATION)

1. St. Rt. 412 West to US 20 West (bypass)

   US 20 West exit onto Oak Harbor Road (also known as Stone Street), follow Stone Street South to hospital (will also follow signs to R.B. Hayes Presidential Library).

12.5. SITE CPR AND FIRST AID TRAINING REQUIREMENTS

1. At least one person per shift shall be trained in CPR and First Aid.

2. The training shall be a certified course by a medical agency such as the Red Cross.

3. The frequency of the training will depend on the certification.

12.6. FIRST AID EQUIPMENT

1. First aid kits are located in each building or functional set of buildings (pump house\well head).

2. An extensive supply of first aid supplies including splints and a backboard are located in the Control Room.

3. First aid supplies are inventoried and replenished monthly by a contract service.

APPENDIX CP-1

PROCESS-SPECIFIC PROCEDURES

OVERVIEW

This appendix provides a process-specific Contingency Plan for each of the waste storage, treatment, and disposal unit at the facility. Periodically, this appendix will be revised to reflect changes, modifications or additions to the units described. Following a short introduction for each unit, a description of the general safety and operating rules followed to prevent and be prepared for emergencies is provided. Following this, a list of response criteria is given. These criteria will be used to determine whether an emergency exists and whether response action should be implemented. Finally, the procedures that will be followed to respond to emergencies are provided.

TRUCK RECEIPT CONTROL STATION

INTRODUCTION

The Truck Receipt Control Station is located next to the main laboratory. Waste trucks enter the Vickery Facility through the Receipt Control Gate operated by Receipt Control staff. The unit consists of receiving office within the trailer attached to the administrative office, and a large concrete pad, under roof, with lanes for three (3) tanker trucks. Two (2) of the truck positions have concrete curbs and slabs and provide containment in the event of minor spills. Further, the slabs are sloped longitudinally to a low point at the mid-length of each truck position.

Manifest and shipping papers of each waste load are checked here. The truck is inspected to ensure valves and hatches are closed and that no leaks are evident before proceeding onto interior site roads. The truck proceeds to the scale where it is weighed. The truck then proceeds to the Truck Unloading Facility.

GENERAL SAFETY AND OPERATING RULES

The truck is positioned on the slab under the direction of the Receipt Controller, and carefully inspected for potential leaks. It is also inspected for damage to the truck's tank, valves, or undercarriage that might lead to difficult unloading. Assuming no defects are found, the CWM Receipt Controller then proceeds with verifying the paperwork.

No smoking, welding, or other spark-generating activities are allowed in the vicinity of the vehicle.

When the receiving paperwork is completed, the truck pulls ahead and parks on the scale. After weighing, it moves to the Truck Unloading Facility.

RESPONSE CRITERIA

A. Fire and Explosion

- Fire, either in the truck's fuel system or engine, or in the waste tank itself.
- Explosion, in either the truck's fuel system or engine, or in the waste itself.

B. Spills or Material Releases

- Leaks or spills from the waste tank, valves or pumps.
- Truck fuel leakage.

RESPONSE PROCEDURES

A. Fires or Explosions

- Evacuate personnel from the unit and vicinity.
- Equip all response personnel with appropriate protective clothing and respiratory protection.
- Shut off valves, pumps, and electrical service, as appropriate.
- Use CO_2 and/or dry chemicals on the fire itself.
- Cool adjacent tanks, equipment and buildings with water.
- If the fire cannot be controlled in five (5) minutes with fire extinguishers, call for outside assistance and initiate the facility evacuation plan.
- When the emergency is over, clean up the affected area, put the response equipment back in readiness, and restock emergency response supplies.
- If a tank has exploded, immediately evacuate the facility and respond to any fire as described above and/or respond to spillage of wastes as described below.

B. Spills or Material Releases

- Shut off the valves, pumps, and electrical equipment, as appropriate.
- Equip response personnel with appropriate protective gear.

- If the truck's tank itself is leaking or overflowing, remove the wastes to another tank trailer(s).
- If a valve, pipe, hose, or pump is leaking or spilling, isolate this equipment by shutting off the appropriate valves.
- Clean up the area affected by the release, repair or replace the tank or equipment, clean up and decontaminate response equipment, and restock emergency response supplies.

TRUCK UNLOADING AND SAMPLING FACILITIES

INTRODUCTION

These facilities consist of: The truck unloading and wash building, the sand interceptors, the waste receiving sump tanks, the waste head gas scrubber, the solids handling unit, and an exterior sampling bay. In addition, a second sampling area is located adjacent to the administration building.

The truck unloading and wash building has two (2) interior unloading bays at its east end and one (1) exterior sampling bay. The floors of each are sloped to sumps located to one side of the bay about midway along the length of the bay. One such sump serves the two interior bays, and another serves the exterior bay. Each sump has two (2) quick-connections for hoses and one (1) working drain pipe. The four (4) hose connections lead, via underground carrier pipes within protective shield pipes, to four (4) sand interceptors set in a pair of underground concrete chambers just beyond the east end of the building. The sand interceptors are each, in effect, small settling vessels with screened inlets to control entrance of debris. The interceptor outlets go through piping manifolds into any of four (4) waste receiving sump vessels that are set below grade in a nearby reinforced concrete chamber. Each of the hose connections and its corresponding sand interceptor will normally be dedicated for extended periods, along with one of the waste receiving sump vessels, to receipt of a particular group of mutually compatible wastes. Problems with mixing of incompatible wastes in the truck unloading portion of the facility will thereby be avoided. The incoming wastes in the four waste receiving vessels will then be pumped to the various sections of the IAWTS, as determined by processing requirements based on laboratory tests.

The truck unloading bays also have an internal washing system, consisting of a spray nozzle hung from a track mounted near the ceiling. After the truck has been unloaded, this nozzle may be lowered into the truck's hatch and turned on

for a set period. The wash water is drained out through the still-connected hose into the sand interceptors and waste receiving sump vessels.

The waste-head gas scrubber draws vapor, under a slight vacuum, from the head-space above the liquid in the sand interceptors, the waste receiving sump vessels, the scrubber holding tank, the solids settling tank, and all of the major waste storage and treatment tanks. The duct carrying this vapor goes into the bottom of a packed scrubbing tower and is then discharged through a tall stack. A recirculating caustic solution is sprayed into the top of the scrubbing tower, removing most of the offensive gaseous components, and flows out the bottom of the tower to the holding tank for recirculation.

The Solids Handling Unit of the final IAWTS consists of a curbed concrete pad northeast of the Truck Unloading Building upon which a roll-off bin can be set. A monorail suspended above this pad can go over the sand interceptor chambers. When the sand interceptors are sufficiently filled with solids to impair effectiveness, they can be lifted out bodily, moved along the monorail to the roll-off bin and tilted so as to dump into it.

GENERAL SAFETY AND OPERATING RULES

The waste truck must first be positioned in the unloading bay so as the tanker's discharge valve are entirely positioned within the contained area draining to the sump. From this point on, the CWM personnel must wear full protective clothing. The discharge hose must then be connected to the correct quick nozzle, and to the truck discharge outlet, by the CWM personnel. It is important to realize that each of the six (6) quick-connect nozzles for the receipt of wastes, and the units to which it leads, will normally be dedicated to a particular group of mutually compatible wastes. It is the responsibility of CWM personnel to see that connection is made to the proper nozzle, that is, to one that is compatible with the waste being unloaded. During unloading, or whenever the truck's hatches are open (including the periods during internal washing), no smoking, welding, or other spark-generated activities will be permitted near the vehicle.

Operation of the sand interceptors is essentially automatic, and does not need outside attention except for periodic inspection of the solids level. The operation of the waste receiving sump tanks is also largely automatic, except for manual setting of valves and of pump operation to move the liquids from the tanks into the major storage and treatment tanks of the IAWTS.

Scrubber operation is also essentially continuous and automatic, although periodic checking of scrubber solution pH and composition, blowdown, and makeup and addition of new solution is to be done manually.

The solids handling unit's operation is manually controlled, but relatively infrequent. The emptying of the sand interceptor boxes has the hazard of being contaminated with a variety of waste components. Personnel performing this task must wear full protective clothing from the very beginning to the end of the task.

RESPONSE CRITERIA

A. Fires and Explosions

- Fire in or adjacent to the unit
- Explosion of the unit

B. Spills or Material Releases

- Leaks or spills from tanker trucks, tanks or appurtenant piping, valves, or pumps
- Overflow of a tank
- Hose, coupling, or pipe breaks during loading/unloading operation
- Gaseous emission from a tanker truck

RESPONSE PROCEDURES

A. Fires or Explosions

- Evacuate personnel from the unit and vicinity.

- Equip all response personnel with appropriate protective clothing and respiratory protection.
- Shut off valves, pumps, and electrical service, as appropriate.
- Use CO2 and/or dry chemicals on the fire itself.
- Cool adjacent tanks, equipment and buildings with water.
- If the fire cannot be controlled in five (5) minutes with fire extinguishers, call for outside assistance and initiate the facility evacuation plan.
- When the emergency is over, clean up the affected area, put response equipment back in readiness, and restock emergency response supplies.
- If a unit has exploded, immediately evacuate the facility and respond to any fire as described above and/or respond to spillage of wastes as described below.

B. Spills or Material Releases

- Shut off valves, pumps and electrical equipment, as appropriate.
- Equip response personnel with appropriate protective gear.
- If a tank or tanker truck is leaking or overflowing, remove the wastes to another tank or tank trailer(s).
- If a valve, pipe, hose, or pump is leaking or spilling, isolate this equipment by shutting of appropriate valves.
- Clean up the area affected by the release, repair or replace the tank or equipment, clean up and decontaminate response equipment, and restock emergency response supplies.

PUMP HOUSES AND FILTER BUILDINGS

INTRODUCTION

The Pump Houses and Filter Buildings are one-story steel framed structures set on concrete slabs. The slabs generally have curbs all around and floor drains. The waste and other piping in the building, as well as the equipment and utilities, are usually quite complex. However, the containment system is generally adequate to contain most spills.

A variety of pump types (both centrifugal and positive displacement), materials (both corrosion-resistant metals and plastics), and sizes are used, with similarly varying packing and seal mechanisms. Some of the packing and seam mechanisms customarily leak a small amount of the pumped fluid; others require a continuous flushing with a small amount of clean water. Both such flows are contained by the curbing around the pumps and drained to a local sump at the pump house for automatic transfer to the IAWTS, but such flows should not be confused with spills. Spills are larger, uncontrolled flows resulting from rupture of pipes or pump casings, or gross failure of the pump packing or seals. Most such spills will be caught by the curbing and drained to the local sump, but prompt action will still be required to address pipe or equipment failure.

The pressure-leaf filters and the recessed-plate filter press are complex pieces of equipment with elaborate cycles of sequential operating steps, which will not be described here. However, particularly with the recessed plate press, leakage of small amounts of waste during filter runs is normal. This occurs because the reseating of the seals between the large number of plates at the start of each filter run is frequently imperfect, but the imperfection does not become apparent until the run is partially completed. The curbing, containment and drainage system is usually adequate to handle this controlled leakage. Spill control measures are only required when the leakage is large and uncontrolled or when there is an actual rupture of piping or equipment. Also, in the recessed plate filter there are a large number of moving parts, and sometimes a hydraulic

system; in either case, the machine contains a substantial amount of lubricating and other oils. Although not in themselves hazardous, leakage of these oils can cause difficulty if they get into the floor drains and are pumped into the IAWTS. The hazard comes from possible reactions with various oxidants in certain wastes, and the simple fire hazard from floating oils.

GENERAL SAFETY AND OPERATING RULES

Pumps and filters may be either manually or automatically controlled. Periodic inspections, as detailed in the Inspection Plan, for proper performance, including the absence of excessive waste leakage or any leakage of lubricating or hydraulic oil, is the main operating rule. For manually-operated units, it is desirable to observe the unit briefly after starting (or stopping) it to see that it is functioning properly. If excessive waste leakage is observed, full protective clothing must be put on before approaching the equipment, even to turn it off, because in certain cases (such as the jamming of check valves in the open position) shutting of the equipment may not stop the flow of waste from the leak.

RESPONSE CRITERIA

A. Fire and Explosion

- Fire in or adjacent to the pump or filter unit
- Explosion of the unit

B. Spills or Material Releases

- Excessive leaks or spills of waste from pumps or filters, or any leaks or spills from appurtenant piping or valves.
- Leaks of lubricating of hydraulic oil from pumps or filters.

RESPONSE PROCEDURES

A. Fires or Explosions

- Evacuate personnel from the unit and vicinity.

- Equip all response personnel with appropriate protective clothing and respiratory protection.
- Shut off valves, pumps, and electrical service, as appropriate.
- Cool adjacent tanks, equipment and buildings with water.
- If the fire cannot be controlled in five (5) minutes with fire extinguishers, call for outside assistance and initiate the facility evacuation plan.
- When the emergency is over, clean up affected area, put response equipment back in readiness, and restock emergency response supplies.
- If a unit has exploded, immediately evacuate the facility and respond to any fire as described above and/or respond to spillage of wastes as described below.

B. Spills or Material Releases

- Shut off valves, pumps, and electrical equipment, as appropriate. Equip response personnel with appropriate protective gear. If a pump, filter, valve, or pipe is leaking or spilling waste, isolate this equipment by shutting off appropriate valves. Clean up area affected by the release, repair or replace the tank or equipment, clean up and decontaminate response equipment, and restock emergency response supplies.

FILTERED ACID TANKS (FAT) AND DEEPWELL HEADS

INTRODUCTION

The FAT tanks are surge tanks that are usually situated close to the deepwells that they serve. Also close by are Pump Houses Nos. 1, 2, 3, and 5, which serve the various deepwells, and which have been discussed earlier herein. Except for their isolated locations, the FAT tanks are similar to the major IAWTS tanks, as are their hazards, operating rules and safety precautions; thus the FAT tanks can be handled according to the procedures in the section "Major Storage and Treatment Tanks."

The deepwell heads consist of a series of pipes connecting to both the inner casing of the well, which conveys the waste injected into the ground, and the annular space between the inner and outer casings, which contains an inert, immiscible, stationary fluid such as diesel oil. The inner casing is pressurized to about 750 psi, whereas the outer is pressurized to about 1,000 psi. The annulus filter liquid is pressurized by inert gas (such as nitrogen), from a cylinder of compressed gas, and the interface level between the gas and the liquid is observable in a sight glass. Should a leak develop in either the inner casing (at a level above the injection stratus), or the outer casing, specific perturbations show up in both the annulus liquid level and pressure that are indicative of the type of leak that has developed. Either abnormality will trigger automatic alarms and shutdown of the well.

GENERAL SAFETY AND OPERATING RULES

As most of the equipment and valves on the well head are automatic, the periodic inspections described in the Inspection Plan, along with the automatic alarms, should be adequate to discover any leaks, spills, or other hazardous conditions requiring attention.

RESPONSE CRITERIA

A. Fire and Explosion

- Fire in or adjacent to the well head unit
- Explosion at well head

B. Spills or Material Releases

- Leaks or spills of wastes from the well head or appurtenant piping or valves
- Leaks or spills of annulus filler liquid from piping or valves

RESPONSE PROCEDURES

A. Fires and Explosions

- Evacuate personnel from the unit and vicinity
- Equip all response personnel with appropriate protective clothing and respiratory protection.
- Shut off valves, pumps, and electrical service as appropriate.
- Use CO2 and/or dry chemicals on the fire itself.
- Cool adjacent tanks, equipment and buildings with water.
- If the fire cannot be controlled in five (5) minutes with fire extinguishers, call for outside assistance and initiate the facility evacuation plan.
- When the emergency is over, cleanup the affected area, put response equipment back in readiness, and restock emergency response supplies.
- If a well head has exploded, immediately evacuate the facility and respond to any fire as described above and/or respond to spillage of wastes as described below.

B. Spills or Material Releases

- Shut off valves, pumps, and electrical equipment, as appropriate.
- Equip response personnel with appropriate protective gear.

- If a valve or pipe is leaking or spilling waste, isolate this equipment by shutting off the appropriate valves.
- Clean up the area affected by the release, repair or replace the leaking pipe, clean up and decontaminate response equipment, and restock emergency response supplies.

MAJOR STORAGE AND TREATMENT TANKS

INTRODUCTION

The Integrated Aqueous Waste Treatment System (IAWTS) is composed of four parts: Major storage and treatment tanks, pumps and pump houses, filters and filter buildings, and yard piping. This section covers the first part; the other parts have been covered in previous sections.

Bulk liquid wastes are stored and treated in large tanks during processing. Total tank capacity at the facility for both storage and treatment is approximately 1,200,000 gallons.

GENERAL SAFETY AND OPERATING RULES

No incompatible waste or materials are stored in the same tank. No corrosive wastes are stored in tanks that are not specifically designed for these wastes.

All tanks are equipped with pressure and vacuum relief valves as necessary. All tanks are equipped with level-of-liquid indicators and high-level alarms, and all loading operations are performed with foreknowledge of the unfilled capacity of the tank and the quantity of the waste or material to be loaded into the tank.

All valve open/close settings are checked by a supervisor before waste or material transfer into or out of any tank is initiated.

All tanks are located in secondary containment systems designed to hold the capacity of the largest tank plus the rainfall from a 25 year, 24-hour storm event. Any liquids in these secondary containment system units are drained to a sump, pumped into a holding tank, and then slowly bled into the IAWTS for treatment and subsequent disposal in the deep wells.

No smoking, welding, or other spark-generating activities are allowed at or near tank storage units without a permit.

All tanks are equipped with caged safety ladders or railed catwalks, as appropriate, to ensure personnel safety.

The Inspection Plan has been implemented to assure observance of the above procedures, to detect leaks or spills, and to achieve annual testing of tanks.

RESPONSE CRITERIA

A. Fire and Explosion

- Fire in or adjacent to the tank storage unit
- Tank Explosion

B. Spills or Material Releases

- Leaks or spills from tanks or appurtenant piping, valves, or pumps
- Overflow of a tank
- Pipe breaks during transfer of liquid into or out of a tank
- Gaseous emissions from a tank (from the pressure-relief valve or otherwise)

RESPONSE PROCEDURES

A. Fire or Explosions

- Evacuate personnel from the unit and vicinity.
- Equip all response personnel with appropriate protective clothing and respiratory protection if appropriate.
- Shut off valves, pumps, and electrical service, as appropriate.
- Use CO_2 and/or dry chemicals on the fire itself.
- Cool adjacent tanks, equipment, and buildings with water.

- If the fire cannot be controlled in 5 minutes with fire extinguishers, call for outside assistance and initiate facility evacuation plan.
- When emergency is over, clean up affected area, put response equipment back in readiness, and restock emergency response supplies.
- If a tank has exploded, immediately evacuate the facility and respond to any fire as described above and/or respond to spillage of waste as described below.

B. Spills or material Releases

- Shut off valves, pumps and electrical equipment, as appropriate.
- Equip response personnel with appropriate protective gear.
- If the tank itself is leaking or overflowing, remove the wastes to another tank or tank trailer(s).
- If a valve, pipe, or pump is leaking or spilling, isolate this equipment by shutting off appropriate valves.
- Clean up area affected by the release, repair or replace the tank or equipment, clean up and decontaminate response equipment, and restock emergency response supplies.

- If the fire cannot be controlled in 5 minutes with fire extinguishers, call for outside assistance and initiate facility evacuation plan.
- When emergency is over, clean up affected area, put response equipment back in readiness, and restock emergency response supplies.
- If a tank has exploded, immediately evacuate the facility and respond to any fire as described above and/or respond to spillage of waste as described below.

B. Spills or material Releases

- Shut off valves, pumps and electrical equipment, as appropriate.
- Equip response personnel with appropriate protective gear.
- If the tank itself is leaking or overflowing, remove the wastes to another tank or tank trailer(s).
- If a valve, pipe, or pump is leaking or spilling, isolate this equipment by shutting off appropriate valves.
- Clean up area affected by the release, repair or replace the tank or equipment, clean up and decontaminate response equipment, and restock emergency response supplies.

APPENDIX CP-2

BOMB THREAT CALL CHECKLIST

1. Where is the bomb?_____

2. When will it go off?_____

3. What does it look like?_____

4. Did you place the bomb? If so why? If not, how does he/she know about it?_____
_____
_____

5. What is your name/organization? _____

****

Fill out the following information immediately after the caller hangs up:

1. Your name:_____

2. Date:_____/_____/_____ Time:_____:_____ am pm

3. Call received on extension #:_____

4. Call lasted approximately_____minutes.

5. Did you recognize the caller's voice? (Y or N) _____

6. Did the description of the bomb location or anything else indicate that the caller was familiar with the premises?_____
_____
_____

7. Caller's sex: MALE FEMALE

8. Caller's voice and manner (Circle all descriptions that apply):

SPEECH: fast slow distinct stuttering nasal lisp
distorted/slurred high hoarse

Other:_____
_____

Language: Educated-sounding Uneducated-sounding Foul or Profane

Other:_____
_____

Dialect: Did caller seem to speak in a foreign accent or regional American dialect?

If so can you describe?_____

Manner: Calm Angry Rational Irrational Coherent Incoherent Deliberate
Emotional Righteous Businesslike Shouting Ill at Ease Laughing

Other:_____

9. Did you hear background noise that might suggest where the caller was?
Conversations Street Traffic Airplanes Trains Party
Animals Crowd Office Machines Factory Machines School bell Music
Public Address System
Other:_____
_____

10. Additional comments:_____
_____