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CDM

Final
Remedial Investigation and
Feasibility Study Work Plan

For

Fresno Sanitary Landfill
Fresno, California

Camp Dresser & McKee

1751-00054

AR0059

April 15, 1991

FRESNO SANITARY LANDFILL DRAFT RI/FS WORK PLAN
EPA COMMENT/CAMP DRESSER & McKEE INC. RESPONSE

EPA Comment

1. The draft work plan does not mention the irrigation pipeline through the landfill along the Annadale alignment. This issue must be addressed in the work plan. The work plan should contain any available historical information about the construction of the pipeline and immediate surrounding soil conditions. An approach should be included to investigate or remove this source of water into the trash prism. This source of water may be contributing to the generation of leachate. If further evidence of leachate from this mechanism is discovered the work plan should include a plan and schedule to investigate the extent and nature of the leachate generated.

CDM Response

Preliminary information on the pipeline has been obtained from the City and is included in Section 2.13. A work plan task has been added regarding leachate investigation which will address the potential for the pipe acting as a source for leachate.

EPA Comment

2. The possibility of overall leachate in the landfill is not adequately considered in the work plan. It does not seem unreasonable that leachate may exist because municipal trash is generally 20-30% water and the landfill has never been capped to exclude infiltration. One possibility is the application of the HELP model to predict the significance and magnitude of infiltration. The work plan should include a plan to drill into the trash prism to locate, characterize and attempt to estimate the volume of the leachate if evidence to support the existence and possible location of leachate is discovered. The work plan should consider and evaluate indicator parameters which may include BNA's, salts or metals to suggest leachate contamination of the groundwater. VOC's will not necessarily indicate leachate as this may be the result of migrating landfill gas. However, nonvolatile contaminants in the groundwater may indicate a leachate type mechanism.

CDM Response

As described above, a new RI Task (Section 5.3) has been added to investigate the potential for leachate generation. Drilling may be performed in the trash prism if there is sufficient evidence to suggest that significant quantities of leachate exist in the prism.

EPA Comment

3. The work plan should include a plan to review any existing evidence of possible previous infiltration into the landfill and specific areas prone to ponding and infiltration. Sources of evidence to suggest infiltration may include previous topographic maps and aerial photographs.

CDM Response

The issue of ponding and infiltration of ponded water has been addressed in the new leachate task, Section 5.3

EPA Comment

4. Section 1.3 RI/FS Objectives, Page 1-4, states the objective of the RI is to characterize the nature and extent of the contamination. The RI should also make a reasonable effort to characterize the nature of the source of contamination which is assumed to be landfill gas and leachate. Without adequate knowledge of the nature of the source a long term remedy will be difficult to design.

CDM Response

Section 1.3 has been revised to be consistent with Section 3.0, the conceptual site model. The site model assumes that the landfill refuse prism is the source; landfill gas and leachate are the primary "release mechanisms". The Final Work Plan has been structured to adequately characterize these release mechanisms.

EPA Comment

5. The work plan should include an approach to compare and correlate the soil gas contaminant list with the contaminants found in the groundwater to determine if the soil gas migration mechanism can be verified as the only or dominant mechanism for groundwater contamination. Also, soil gas sampling for vinyl chloride alone when methane is found may not be sufficient. A soil gas analysis which will allow for the determination of mechanism is needed for at least some of the soil gas samples.

CDM Response

This comment has been addressed in the revision of the soil gas task, Section 5.2. Also, Section 3.0 has been updated to reflect the proposed additional data collection activities.

EPA Comment

6. The work plan should include some effort to analyze and correlate the historical pumping practices of the nearby irrigation wells with historical groundwater contamination results to anticipate the effects of these wells on the RI/FS sampling and results.

CDM Response

An effort will be made to determine the historical pumping practices of all irrigation wells within a one mile radius of the site. This statement has been included in Section 5.3. The irrigation pumping will not affect the water quality sampling, but will be very important in determining groundwater flow fields as they will relate to remediation.

EPA Comment

7. Throughout the draft work plan but, especially in Section 2.3 Existing Data, reference to the specific monitoring well and specific study should be given for each statement about previous findings. Also in Figure 2-3 the data for MW-4 does not match the data given in Appendix A. A thorough QC check should be made to ensure that the figures match the tables of data. In addition, Appendix A-2, Appendix A-3, and Appendix A-4 referred to on Page 2-13 do not exist in the draft work plan.

CDM Response

The specific studies from which all groundwater data were obtained are referenced in Appendix A, and this statement has been added to Section 2.3. The data for W-4 in Figure 2-3 have been corrected. All appendices have been included in the report.

EPA Comment

8. Section 3.2.1 should include the reference for the statements about composition and generation of landfill gas.

CDM Response

Information included on the composition and generation of landfill gas was taken in part from the Critical Review and Summary of Leachate and Gas Production from Landfills by Frederick Potlard and Stephen Harper, August 1986.

EPA Comment

9. Page 3-2, Paragraph 2, states that surface soil will be sampled to ascertain the possibility of human exposure due to volatile contaminants adhered to soil particles. Surface soils may be sampled for VOC's but should also be sampled to determine if other nonvolatile contaminants have been deposited by erosion or movement of contaminated soil. The absence of surface seeps at the face of the landfill does not exclude the possibility of this pathway.

CDM Response

Section 3.2 has been revised to include a pathway that includes surface runoff/erosion. Surface soil samples will be analyzed for VOCs, BNAs, pesticides/PCBs, herbicides, metals and dioxins, as stated in Section 5.8.

EPA Comment

10. Section 3.2.2 Leachate suggests that due to the absence of records about liquid waste being disposed at the landfill leachate from this mechanism is unlikely. The records kept for the landfill are poor and no assumptions about the lack of liquid waste at this landfill should

be made. Also the origin of the information about the deepest portion of trash should be stated in the work plan or more thoroughly investigated.

CDM Response

The wording in Section 3.2.2 has been modified regarding the potential for liquid waste disposal. Also, a reference regarding depth of refuse burial has been added, based on previous site drilling to determine the depth of trash.

EPA Comment

11. The remedial action objectives given on Pages 3-4 and 3-5 should include preventing exposure to noncarcinogenic contaminants at levels determined in the risk assessment to present a hazard index greater than 1.

CDM Response

The remedial action objectives have been revised to discuss exposure to noncarcinogenic contaminants at levels determined in the risk assessment to present a hazard index greater than 1.

EPA Comment

12. Section 3.4 Preliminary Identification of Remedial Technology Types and Section 3.5 Remedial Action Phasing and Operable Units appear to be developed on the premise that the Fresno Sanitary Landfill does not contain leachate. This fact has not been verified and should not be assumed at this point in the RI/FS. Consequently, these sections of the work plan should include discussion of leachate remediation.

CDM Response

The Conceptual Site Model, Section 3.0, now includes leachate as a potential release mechanism. The leachate investigation is discussed in Sections 3.4, 3.5, 4.4.4 and 5.3.

EPA Comment

13. The last paragraph on Page 3-7 anticipates that the RI/FS can be conducted in one single process. While this would be ideal, the possibility exists that the RI/FS may need to be done in a phased approach. A phased approach may require revision of the site conceptual model and subsequent sampling. The work plan should include some discussion of this possible project pathway.

CDM Response

The possibility of a phased approach is discussed in Section 3.5.

EPA Comment

14. Section 4.2.2 and Section 5.6. Ambient Air Investigation should be revised to reflect the fact that ambient air sampling <u>will</u> be performed and is not a contingency.

CDM Response

Sections 4.4.2 and 5.6 have been revised to reflect CDM's plan to collect ambient air samples.

EPA Comment

15. Section 4.4.3 Soil Gas Investigation should include some discussion of investigation the effects of a possible hardpan layer at the site on soil gas migration. There may exist effectively two soil gas environments. Also, this section should include some discussion of the modeling of the mechanism of soil gas and contaminant migration. Is the soil gas migration all pressure-driven or is there some diffusion-driven contaminant migration?

CDM Response

The soil gas modeling effort will consider the effects of a possible hardpan layer on soil migration. The revised soil gas discussion is included in Sections 4.4.3 and 5.2.

EPA Comment

16. Section 4.4.6 Risk Assessment should include discussion of a plan to characterize the agricultural produce exposure pathway near the landfill because this exposure pathway will be considered in the risk assessment. The seasonality of produce should be considered and should not be allowed to present a delay in the RI/FS schedule. If seasonality does present a scheduling problem the EPA risk assessment contractor could possibly make arrangements for sampling.

CDM Response

The agricultural exposure pathway has been identified in Section 4.4.6.

EPA Comment

17. Page 5-6 second paragraph first sentence states that there are presently thirteen methane monitoring wells. The EPA soil gas report states that there are seventeen gas monitoring wells.

CDM Response

This sentence has been corrected and now states that there are presently 17 methane monitoring wells.

EPA Comment

18. Section 5.2 Soil Gas Investigation should include quantifying benzene in the soil gas as an objective. This is necessary because benzene is a known carcinogen. Also, some effort at a literature search should be made to verify that vinyl chloride is not likely to be detected where no methane can be detected.

CDM Response

The soil gas investigation (Section 5.2) now includes analysis for the 8 Calderon compounds which have been detected in previous groundwater or ambient air investigations, including benzene. In a 1987 study by the South Coast Air Quality Management District, (John Wood, "Hazardous Pollutants in Class II Landfills", The International Journal of Air Pollution Control and Hazardous Waste Management 37, No. 5, May 1987) methane was found to be a useful indicator of the presence of subsurface gas migration. Methane has a lower molecular weight than other landfill gases, and is therefore more mobile.

EPA Comment

19. The objectives of Section 5.3 Hydrogeologic Investigation given on Page 5-9 should be expanded to include an investigation of the extent and depth of the hardpan layer at the site. This hardpan layer may play a significant role in soil gas migration.

CDM Response

Modifications have been made to the objective statement in Section 5.3, and to Section 4.4.3.

EPA Comment

20. Soil sampling and analysis given on Page 5-22 should include analysis for metals.

CDM Response

Metals have been added to the list of analytical parameters.

EPA Comment

21. Section 3.0 Conceptual Site Model should include some discussion which anticipates the impacts of contaminants in soil gas or leachate on groundwater chemistry.

CDM Response

The Conceptual Site Model, Section 3.0, has been revised to include a leachate investigation and soil gas modeling.

EPA Comment

22. This section should give some discussion of the results of a rising water table in the future and the possibility of a large reservoir of lipophilic contaminants, resulting from leachate, in the vadose zone immediately above the saturated zone. The reference Transport and Fate of Contaminants in the Subsurface EPA 625-489-019 may be helpful.

CDM Response

See response to Comment #21.

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1:13

April 15, 1991

FRESNO SANITARY LANDFILL DRAFT RI/FS WORK PLAN
ICF COMMENT/CAMP DRESSER & McKEE INC. RESPONSE

<u>ICF Comment</u>

1. (This 2-page comment is not repeated here for the sake of brevity).

<u>CDM Response</u>

Section 3.0, Conceptual Site Model, has been revised. The model considers landfill gas and leachate as release mechanisms, and surface runoff/erosion as secondary release mechanisms. In addition, a leachate investigation task, which considers recharge, has been added to Section 5.0.

Storm drain debris, which is dark brown in color, was routinely disposed of at the Fresno Sanitary Landfill (FSL). This may explain local residents having reported seeing city trucks "disposing of petroleum products and solvents in the FSL."

<u>ICF Comment</u>

2. As previously noted in our comments on the soil-gas survey, the air-SWAT did not include taking air samples over the south end of the landfill. If solvents had been dumped in the south end of the landfill, that might account for the higher concentrations in the groundwater plume moving off-site from that area. One might also expect to find higher levels of volatiles in air samples taken at the landfill surface over that area, especially since the cover thickness is thinner there. Why not take some air samples over the landfill surface at the south end of the landfill? That might also identify the general areas at which samples of soil and refuse could be taken to quantify contaminants, if any, which have been held up in a smear zone. (See Sections 5.6 "Air Investigation", Pages 5-18 through 5-20 for description of air investigation).

<u>CDM Response</u>

A discussion of ambient air sample collection, including collection of samples at the southern end of the landfill, is included in Section 5.7

<u>ICF Comment</u>

3. Previous Investigations, Page 2-8, third paragraph. Mention is made of the contaminants detected during the air-SWAT; however, no concentration levels are given. As a general comment, considerable data are included on concentrations of the various contaminants in groundwater (Figures 2-3, 2-4, and 2-5), but no comparable quantification is presented in the landfill gas and soil gas. Why not? Was the data considered less reliable?

CDM Response

All previous soil gas and ambient air data are discussed in Sections 2.3.2 and 2.3., and are included in Appendix A.

ICF Comment

4. On Pages 3-4 and 3-5, why is a range of cancer risk given (10^{-4} to 10^{-7})? Should this be the sum of all pathways?

CDM Response

A remedial action objective is defined as a medium-specific goal presented in terms of the contaminants of concern, the exposure routes and potential receptors, and an acceptable range of contaminant levels for each exposure route. (US EPA, Guidance for Conducting Remedial Investigations/Feasibility Studies, October 1988). The 10^{-4} to 10^{-7} cancer risk range represents the potentially acceptable contaminant level required in the remedial action objective.

ICF Comment

5. Section 3.3 lists Maximum Contaminant Levels as criteria for use in environmental protection. If groundwater breaks out to surface water, the contaminants need to meet Ambient Water Quality Criteria.

CDM Response

There are no natural lakes or streams near the landfill; the depth to groundwater makes it very unlikely that groundwater would "break out" to surface water. Moreover, MCLs are, in general, more protective than Ambient Water Quality Criteria standards.

ICF Comment

6. Page 5-18. Why is it assumed that existing ambient air quality data are sufficient for the risk assessment source model?

CDM Response

Section 5.7 describes the modified ambient air sampling program.

ICF Comment

7. Page 4-6, Section 4.4.3, "Soil-Gas Investigation". It is stated that samples will be taken at multiple depths and analyzed for total organics as methane; however, should temporary soil-gas probes be sampled and analyzed for both methane and vinyl chloride? Why not analyze vinyl chloride versus depth? That might show whether the vinyl chloride is decreasing with depth or increasing.

CDM Response

See revisions incorporated into Section 5.2.

ICF Comment

8. Page 5-21, top of page. It is stated that there has been no reported observances of waste conveyed off-site which could potentially contaminate the soil. What about the water pumped for irrigation near the landfill?

CDM Response

Water pumped for irrigation has been included as a potential source of off-site soil contamination.

ICF Comment

9. Table B-2, Appendix B, ARARs. Title 23, Subchapter 15, California Administrative Code and Title 14, CCR, Division 7 California Waste Management Board should be listed as ARARs.

CDM Response

These ARARs have been added to Table B-2.

ICF Comment

10. Data Quality Objectives (DQOs) do not adequately address level of data needed for pathways considered and some pathways that need to be considered were not addressed. For example, for ambient air exposure, collecting only vinyl chloride data does not meet objective of "preventing inhalation of carcinogens in air..." and objective does not address potential noncarcinogenic health effects. Potentially exposed populations to be examined have not been outlined, therefore, the DQOs do not necessarily provide adequate information for assessing risks to those populations. There is no logical outline of potential fate and transport pathways, potentially exposed populations and potential exposure routes. The work plan is, therefore, inadequate in meeting risk assessment data needs, because little justification is provided for the pathways considered and for those eliminated. A diagrammatic Conceptual Site Model should be prepared.

CDM Response

See revisions in Section 3.0, Conceptual Site Model and Sections 4.4.3 and 5.2, Soil Gas. The number of people estimated to be living within 1/2 mile of the site has been added to Section 2.1.4. Numerical data quality objectives for each remedial investigation task will be presented in The SAP.

ICF Comment

11. In general, all statements based on previous investigations should be referenced.

CDM Response

The specific studies from which all groundwater data were obtained are referenced in Appendix A, and this statement has been added to Section 2.3

ICF Comment

12. According to data in Appendix A-1, the data for groundwater monitoring well W-4 is incorrect in Figure 2-3. It should be noted, that the tabulated data shown in Figure 2-3 for wells W-4 and MW-4 are identical.

CDM Response

In Figure 2-3 the data for well W-4 has been corrected.

ICF Comment

13. Groundwater monitoring well EW-1 is an intermediate well, according to Appendix A-1, and should not be included in the summary of shallow wells, Figure 2-3.

CDM Response

Well EW-1 has been designated as a "shallow well" in Appendix A.

ICF Comments on Health and Safety Plan

1. On Page 12, the route to the hospital is described to Valley Medical Center. On Page 13, the route arrows appear to end up at Industrial Medical Group. Although Valley Medical Center is shown, the route arrows do not go there.

CDM Response

The Health and Safety Plan has been modified to depict the route to the Valley Medical Center.

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1:14

April 15, 1991

FRESNO SANITARY LANDFILL DRAFT RI/FS WORK PLAN
DHS COMMENT/CAMP DRESSER & McKEE INC. RESPONSE

DHS Comment

1. When monitoring wells are no longer in use, the wells should be closed using Department of Water Resources published criteria.

CDM Response

This comment will be addressed in the Sampling and Analysis Plan (SAP).

DHS Comment

2. If the monitoring well system is to operate continuously in order to prevent any data loss spare pumps and sampling materials should be kept available by the operator(s).

CDM Response

This comment will be addressed in the SAP.

DHS Comment

3. A schedule should be prepared for checking sampling pumps, meteorological instruments, extension cords, crimps in sampling tubing, and leaks.

CDM Response

This comment will be addressed in the SAP.

2416-112-RT-BWPL
1:15

Final
Remedial Investigation and Feasibility Study Work Plan

For

Fresno Sanitary Landfill
Fresno, California

Prepared For:

City of Fresno
2326 Fresno Street
Fresno, California 93721

Prepared By:

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April 15, 1991

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April 15, 1991

Mr. George Slater
Assistant Director, Public Works
City of Fresno
2101 G Street, Building A
Fresno, CA 93706

Submittal of Final Work Plan and Response to Comments on the Draft RI/FS Work Plan - Fresno Sanitary Landfill

Dear Mr. Slater:

Camp Dresser & McKee Inc. (CDM) has reviewed the Draft RI/FS Work Plan comments submitted by the Environmental Protection Agency (EPA) and received on March 15, 1991. Please find attached the response to those comments and the revised Final Work Plan document. A copy of these deliverables has also been transmitted to Bret Moxley of the EPA.

Please do not hesitate to call if you have any questions regarding this matter.

Very truly yours,

CAMP DRESSER & McKEE INC.

Wayne Pickus

Wayne Pickus
Project Manager

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Section One

1.1 SITE LOCATION AND HISTORY

The Fresno Sanitary Landfill (FSL) is located four miles southwest of the City of Fresno in Fresno County, California. The landfill consists of approximately 145 acres and is bounded on the north by Jensen Avenue, on the east by West Avenue, on the south by North Avenue and the west by agricultural fields. The area surrounding the landfill is primarily agricultural with several residences adjacent to the north and south boundaries.

The FSL is owned and was operated by the City of Fresno as a Class III municipal landfill, as defined in the current California Code of Regulations Title 23, Chapter 3 subchapter 15 (Discharge of Waste to Land). The FSL is reported to be the oldest compartmentalized municipal landfill in the Western United States (CH2M Hill, 1989). Operations began in the north section of the landfill in 1937. Short trenches were dug to a depth of 3 feet (eventually increased to a depth of 25 feet); waste was dumped into the trench by collection trucks, the pile was leveled off and compacted; a second trench was dug adjacent to the first trench, and the dirt from the second trench was used to cover the waste fill. The landfill area was never lined.

According to the FSL Closure and Post-Closure Maintenance Plan prepared by EMCON in December 1989, from 1937 to 1964 the landfill received only domestic wastes from various sources. From 1964 until the site closed in 1989, the landfill received only municipal wastes collected by the City. The average waste stream consisted of 16,500 tons per month; the total waste quantity is approximately 4.7 million tons (assuming an in-place refuse density of 1,200 lbs/cubic yard), or 7.9 million cubic yards (EMCON, 1989). According to EMCON's report, the landfill accepted approximately 500 pounds per day of waste from local convalescent homes and the Fresno

Dialysis Center, with approval from the County Health Department. The time periods that these wastes were received is not known.

At the time of its inception, the landfill was primarily located north of Annadale Avenue. The depth of the landfill was approximately 10 to 15 feet below the surrounding terrain. The City expanded the landfill to the south of Annadale in 1945. Prior to this expansion an irrigation canal extended in an east-west direction through what is now the south portion of the landfill. After expansion, this canal was replaced with a pipeline that is currently in use and is covered by landfill material. In June, 1984, the edge of the pipeline was excavated and a video camera was drawn through the pipeline to check the pipe's integrity. This effort showed that the pipe sagged considerably. This sag is probably due to ground settling from the weight of the landfill overburden.

The City began the process of closing the landfill by filing a Negative Declaration with the California Regional Water Quality Control Board (RWQCB) in August, 1981. The FSL was first evaluated by the Superfund program as a result of a CERCLA Section 103 (c) notification filed by the City of Fresno Solid Waste Management Division on May 27, 1981. The California Department of Health Services (DOHS) conducted a preliminary inspection of the site in June 1984 in response to complaint letters from nearby residents. The Preliminary Assessment determined that off-site migration of methane gas and a variety of hazardous volatile organic chemicals in the groundwater had been documented.

The problem of methane gas was first identified in June 1983, when the Fresno City Public Works Department and the County Health Department conducted a preliminary investigation using portable equipment. A methane monitoring system consisting of 17 methane monitoring wells have since been installed. In November 1984 the City installed methane migration barriers along the northern and southern boundaries of the landfill. The barriers are trenches 26 feet deep containing a vertical sheet of plastic and filled with rock, which have two horizontal perforated PVC pipes at depths of 12 and 19 feet which vent passively to the surface.

Groundwater monitoring efforts have included sampling domestic-private, irrigation, and monitoring wells near the landfill. Sampling has been conducted by the City, DOHS, and the RWQCB. Samples have been analyzed for general mineral constituents, physical parameters, anions/cations, trace metals, EPA method 601 and 602-volatile organics (VOCs), and pesticides. VOCs are reported to be in the shallow aquifer at levels reported to be in excess of Applicable or Relevant and Appropriate Requirements (ARARs) (CH2M Hill 1989).

Most recently EPA's Technical Assistance Team sampled soil gases beyond the methane barriers for VOCs including vinyl chloride. Data from this sampling show that methane and other VOCs have migrated past the methane barriers on the north and south sides of the landfill. The FSL was placed on the National Priorities List (NPL) on October 4, 1989. On September 21, 1990 a consent order was signed between EPA and the City of Fresno (City). The order requires the City to conduct a RI/FS and undertake all actions required by the terms and conditions of the order in accordance with the provisions of CERCLA and the National Contingency Plan (NCP) 40 C.F.R. Part 300 et. seq., as amended.

1.2 REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) PROCESS

The RI/FS process was developed by the United States Environmental Protection Agency (EPA) for conducting environmental investigations under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), otherwise known as Superfund. The RI/FS approach is the methodology that the Superfund program has established for characterizing the nature and extent of risks posed by uncontrolled hazardous waste sites and for evaluating potential remedial options.

The RI serves as the mechanism for collecting data to characterize site conditions, determine the nature of the waste, assess risk to human health and the environment, and conduct treatability testing as necessary to evaluate the potential performance and cost of the treatment technologies that are being considered. In addition, the RI data supports the design of selected remedies (EPA, 1988). The FS serves as the mechanism for development, screening, and detailed evaluation of alternative remedial actions. Data from the RI is used to develop alternatives and screen technologies. The range of developed alternatives drives subsequent site characterization and/or treatability studies.

1.3 RI/FS OBJECTIVES

The objective of a remedial investigation is to characterize the nature and extent of contamination and the associated risks to human health and the environment. This objective is met by collecting data to characterize the site that meet the needs of the risk assessment and the remedial alternatives evaluation. For the FSL site, the landfill is the identified source; the primary pathways of concern are landfill gas and leachate, and their effects on groundwater. These pathways will be characterized to provide data necessary to adequately determine the nature and extent of contamination.

The overall objective of the FS is to provide the decision makers with an assessment of alternatives which will result in cleanup of the site in a protective and cost effective manner. The FS includes a description of a range of alternatives, and an evaluation and comparison of these alternatives against a defined set of criteria. These criteria include protection of human health and the environment, compliance with ARARs, long-term effectiveness, reduction of toxicity, mobility, and volume, short-term effectiveness, implementability, cost, and state and community acceptance.

A concurrent objective of the RI/FS is to meet all requirements of landfill closure under State of California regulations. The specific state regulations to be addressed include the water monitoring program requirements of CAC Title 23, Subchapter 15 and the landfill gas monitoring and general closure requirements of Title 14, CCR, Division 7. These regulations establish the criteria for the location, depth, and construction of groundwater, vadose zone, and landfill gas monitoring wells.

1.4 ORGANIZATION OF THE WORK PLAN

This work plan is the overall guidance document for all RI/FS project activities at the FSL site. It presents current information on site conditions and the tasks that relate to the RI/FS. The content of the RI/FS work plan is as follows:

- Section 2 presents the site background and setting of the FSL site.
- Section 3 presents a conceptual model of the FSL site.
- Section 4 discusses the Data Quality Objectives for the RI/FS.
- Section 5 presents the RI objectives and remedial investigation tasks to be performed on the FSL site.
- Section 6 presents the Feasibility Study tasks.
- Section 7 describes the FSL site RI/FS project coordination and management.

Section Two

The purpose of this section is to describe the physical setting of the Fresno City Landfill, and to briefly summarize the previous investigations which have been conducted. The following discussion describes the regional environment, followed by a summary of previous site investigations.

2.1 ENVIRONMENTAL SETTING

2.1.1 Climate and Meteorology

The Fresno Sanitary Landfill (FSL) site is situated in the eastern San Joaquin Valley. Coastal mountain ranges to the west insulate the valley from the cooling effects of the Pacific Ocean. Thus, the area is subject to hot dry summers and moderate winters. Average monthly temperature extremes range from 36.3°F in December to a high of 97.9°F in July (EMCON, 1989).

Rainfall in the San Joaquin Valley is sparse. The State of California Department of Water Resources (DWR) reports a maximum annual precipitation of 19.14 inches recorded in 1969 at the Fresno weather station, located 8 miles northeast of the FSL. Average annual precipitation recorded from 1951 through 1980 at the Fresno station is 10.52 inches, 90 percent of which normally occurs between November and April. DWR has reported a mean annual precipitation at the FSL of approximately 9.5 inches (EMCON, 1989).

The nearest wind monitoring station is at Chandler Field, located approximately 2 miles north of the landfill. The prevailing wind is reported to be from the northwest.

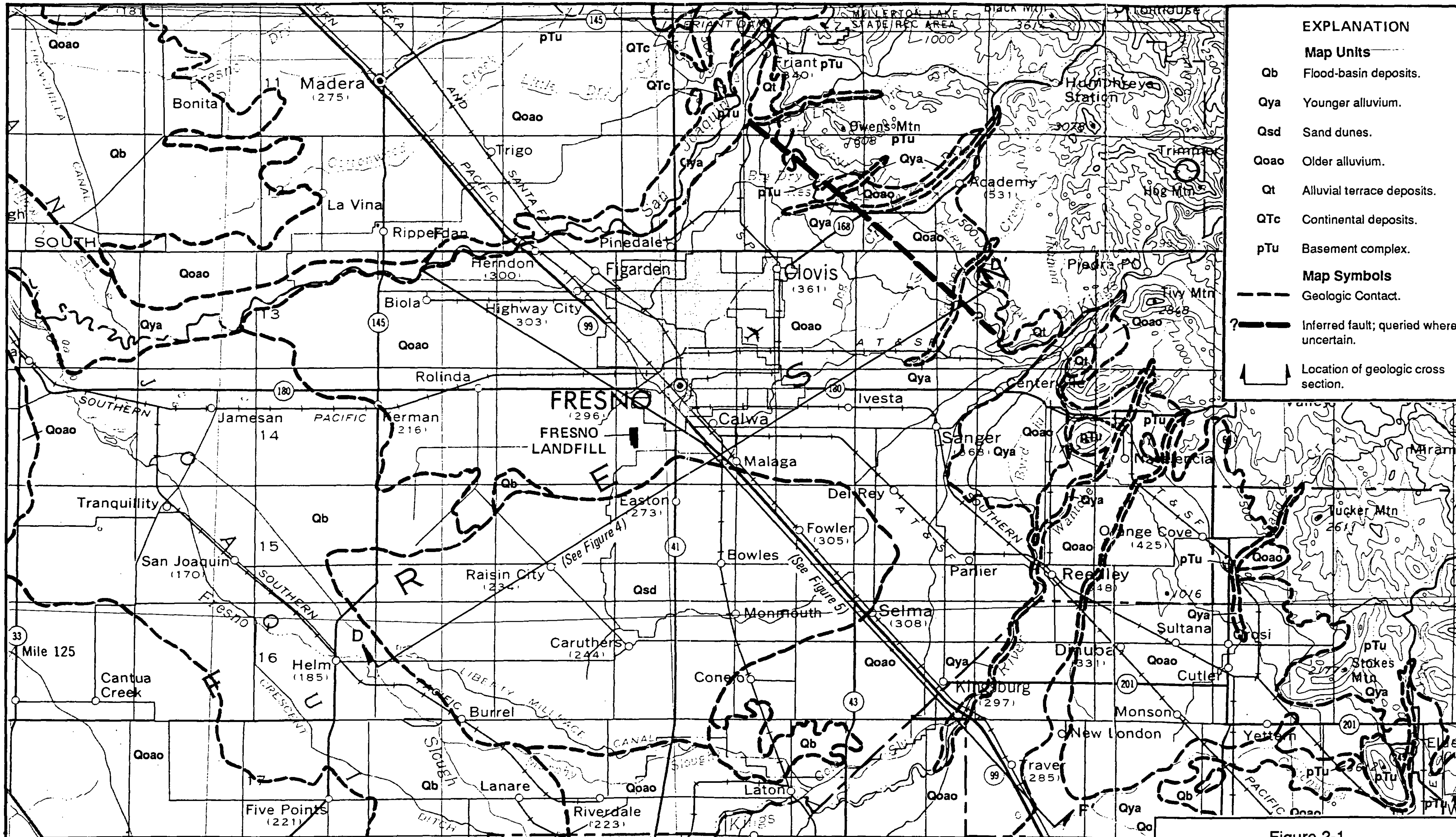
2.1.2 Regional Geology and Hydrology

The FSL is situated on the east side of the San Joaquin Valley, named for the river that drains the southern half of the Great Valley or Central Valley of California. The Central Valley is a large elongate northwesttrending asymmetric structural trough that has been filled with a thick sequence of sediments, in some areas up to 60,000 feet thick (Hackel, 1966). In the Fresno vicinity, granitic and metamorphic rocks of the Sierra Nevada foothills, which extend beneath the Central Valley, are found at a depth of about 4,500 feet. A geologic map of the Fresno vicinity is shown on Figure 2-1.

In the vicinity of Fresno, the near-surface geologic units include Older Alluvium of Quaternary age, which extends to a depth of about 500 feet according to Page and LeBlanc, 1969 (as referenced by ESA, 1988). There are also less extensive deposits of Younger Alluvium, flood-basin deposits, and sand dunes on the valley floor. These unconsolidated materials are underlain by undifferentiated continental deposits of Quaternary age, which overlie granitic basement. The Older Alluvium, which underlies the FSL (Figure 2-1) consists of interbedded layers and lenses of clay, silt, sand, and gravels, which increase in thickness and decrease in grain size toward the west or center of the valley, away from the source area of the Sierra foothills.

The Older Alluvium is the principal groundwater aquifer in the Fresno area. According to Page and LeBlanc, as reported in ESA (1988), ground-water beneath Fresno is unconfined. Regionally confined groundwater does not occur in the vicinity of the FSL, apparently because regional confining clay layers, such as the Corcoron Clay found in the central part of the Great Valley, do not extend eastward as far as Fresno.

In general, groundwater flow in the region is from east to west, away from the foothills and toward the valley axis. However, ESA (1988) reports that pumping depressions near the City of Fresno and to the west locally influence the direction of groundwater movement. The U.S. Geological Survey (USGS) reported that the permeability of the aquifer is between 1 and 3 feet per day, which yields an anticipated groundwater flow rate (disregarding irrigation pumping) of 1 foot per year (BSK, 1987). According to Kenneth Schmidt (1987) who performed a pilot extraction well test at the site, groundwater flow at the FSL is generally westward at a gradient of 4 to 5 feet per mile.



0 5 miles

Notes

1) Topographic base from U.S. Geological Survey 1:500,000 California (South Half) map.

2) Geology from Page and LeBlanc (1969) as modified and extended from Page (1986).

Reference: ESA, 1989

Figure 2-1

CITY OF FRESNO SANITARY LANDFILL

GEOLOGIC MAP OF THE FRESNO AREA

Camp Dresser & McKee Inc.

According to the County of Fresno Water Resources Management Plan, the area has been in a state of overdraft which has been reflected in a continuously falling water table. Hydrographs constructed with data from 1924 to the mid-1960 show a drop of 50 to 60 feet in the shallow groundwater table during that time period. The Water Management Plan indicates that groundwater levels in 1978 had fallen to the lowest level in recorded history but since that time, there has been a slight upward trend in the area (EMCON, 1988).

2.1.3 Surface Water and Drainage

The surrounding terrain in the vicinity of the Fresno City Sanitary landfill is flat and contains large areas of surface irrigated agriculture. It is reported that water ponding has occurred near the landfill. BSK reported that drain water accumulated near the landfill, particularly on the north end of the western side.

The area along West Avenue, at the intersection of the Annadale Avenue extension, also is reported to have poor drainage during major precipitation events (BSK, 1987).

A water supply line bisects the landfill along the approximate alignment of the Annadale Avenue extension. The pipeline, reported to be 30 inches in diameter, terminates just west of the west landfill boundary. The purpose of the line is to supply irrigation water to the agricultural fields west of the facility.

Finally, the Fresno Colony Canal passes in close proximity to the landfill, supplying irrigation water to the area. It is oriented east-west and runs parallel to the Annadale alignment until West Avenue, where it turns south and runs parallel to West Avenue, on the east side.

2.1.4 Land Use and Demographics

The FSL covers approximately 145 acres and is located 4 miles southwest of downtown Fresno. The site is within the city limits of Fresno, and is considered part of the Edison Community Planning Area. Current land use within a radius of one mile of the site includes, in order of decreasing intensity, farming, rural habitation,industrial, and some commercial activities. The site is bordered on the east and the west by vineyards and agricultural fields. There is one residence on the north border of the landfill and four residences on the south border. Approximately 500 people live within 1/2 mile of the site. The Western Elementary School lies one-half mile east of the site. Because of the proximity of homes and the agricultural use of the area, hunting and consumption of game is unlikely.

Fresno County has 15 incorporated cities, 11 unincorporated communities, and a total population of 621,000. The largest city is Fresno which has a population of 351,800 and which encompasses a 100 square mile area. The ethnicity of Fresno County is varied, and includes the largest Southeast Asian refugee population in the United States. The breakdown of ethnic groups in Fresno County is as follows: White - 56.9%, Hispanic - 29.3%, Black - 4.9:, Oriental - 8%, Other - 0.9%.

Total employment by industry includes agriculture (21.6%); services (18.8%); government (17.4%), and retail trade (15.4%).

2.2 PREVIOUS INVESTIGATIONS

This section of the Work Plan presents a summary of the previous investigations conducted on the FSL site. The discussion presented is based on a review of the documents presented in Table 2-1. The summary of the previous work includes a description of the objectives of each investigation, the activities performed under each project, and the findings. In addition, a general assessment of the quality of analytical data obtained during each investigation is also discussed.

TABLE 2-1
LIST OF PREVIOUS INVESTIGATIONS

Solid Waste Assessment Test, Proposal and Report AB3525 Caldron, December 22, 1986. BSK & Associates.

Final Report - Extent of Groundwater Degradation, February 9, 1987. BSK & Associates.

Geotechnical Engineering Investigation - Preliminary Evaluation of Final Cover Material, Jensen Avenue Landfill, Fresno, CA, July 13, 1987. Twining Laboratories, Inc.

Results of the Pilot Extraction Well Test at the City of Fresno Landfill, October 1987. Kenneth D. Schmidt and Associates.

Review of Submitted SWAT Report for City of Fresno Landfill, Fresno County, March 1, 1988. California Regional Water Quality Control Board Central Valley Region.

Air Quality Solid Waste Assessment Test Report, City of Fresno Sanitary Landfill, California, October 1988. EMCON Associates.

Eastin Bill Initial Estimate Closure/Post Closure Maintenance Costs, City of Fresno Sanitary Landfill, Fresno County, California, December 1988. EMCON Associates.

Phase I Geologic and Hydrogeologic Investigation of the Fresno Landfill, December 23, 1988. Earth Sciences & Associates.

Draft Environmental Impact Report Jensen Avenue Landfill, Closure Plan, February 1989. CH2M Hill.

Jensen Avenue Landfill - Grading and Drainage Plans, June 8, 1989. CH2M Hill.

Site Grading and Drainage Plan Design Report for the City of Fresno, Jensen Avenue Landfill Site, June 1989. CH2M Hill.

Phase II Investigation to Establish Extent of Groundwater Contamination at the City of Fresno Landfill, September 25, 1989. Earth Sciences and Associates.

Preliminary Feasibility Study for Remediation of Groundwater at the City of Fresno Landfill, September 1989. James M. Montgomery.

Final EIR - Jensen Avenue Landfill Closure Plan, October 1989. CH2M Hill.

Construction of Landfill Gas Migration Control System, Jensen Avenue Landfill (Specifications), November 1989. City of Fresno, Department of Public Works.

Closure and Post Closure Maintenance Plan, Fresno City Landfill, December 1989. EMCON Associates.

Landfill Analysis, 1989. City of Fresno.

Landfill Ground Monitoring Wells, May 17, 1990, City of Fresno, Wastewater Management Division.

Review, Summary and Interpretation of 1989-1990 Quarterly Samplings and Other Laboratory Test Results for City of Fresno Landfill Site, May 31, 1990. Valera GeoConsultants.

Landfill Ground Monitoring Wells, July 31, 1990. City of Fresno, Wastewater Management Division.

A number of studies have been conducted at the FSL site by various investigators. The earliest investigation was conducted by Twining Laboratories in 1971 to evaluate the permeability and characteristics of soil materials beneath the landfill, south of the extension of Annadale Avenue. The conclusion of the report by Twining Laboratories indicated the presence of three non-permeable strata of soil (ESA, 1988).

CH2M Hill prepared a report in 1975 (as referenced in BSK, 1987) concerning potential expansion of the landfill to the west in the area south of the Annadale Avenue extension. The report concluded that low permeability clays are present beneath the disposal site expansion area.

BSK and Associates was retained by the City of Fresno to provide an initial assessment of groundwater contamination and methane migration in 1983. Six groundwater monitoring wells (the "W" series wells) were installed around the perimeter of the landfill as part of that investigation (Figure 2-2). Analytical results from groundwater samples collected under this investigation indicated the presence of Volatile Organic Compounds (VOCs) in excess of drinking water standards in 4 of the 6 wells (W-1R, W-2, W-3, W-4).

The BSK data for the W-series is presented in tables located in Appendix A-1. The general quality of the data is questionable. Only a few VOC compounds were reported. No QA/QC samples (field blanks, travel blanks, laboratory quality control samples) appear to have been collected or analyzed.

In 1986 BSK completed a Solid Waste Assessment Test (SWAT) report in accordance with the Calderon Bill (AB 3525/3374). The purpose of the SWAT assessment was to determine if hazardous constituents were placed in the landfill, investigate migration of hazardous constituents from the disposal site, and identify threats to water and ambient air quality. The report described the site characteristics which included geology, hydrogeology, land use and waste characteristics. Analytical data from the previous BSK investigation, described above, was included in the SWAT report.

The report concluded that hazardous material likely to be present within the landfill included products normally found in municipal refuse and that leakage of hazardous constituents (volatile organics) from the site, based on analytical testing of groundwater, had occurred and migrated to a limited extent off-site. Finally the report concluded that contamination of groundwater from landfill gas had not been adequately investigated.

In 1987 BSK and Associates completed a report, with the objective to document the lateral and vertical extent of groundwater contamination at the FSL site. Under this phase of the project, four groundwater well clusters (the UW and DW wells) were installed and screened at depths of 50, 100, and 150 feet (Figure 2-2). Also, 19 additional temporary wells were sampled downgradient of the landfill. The locations of these temporary wells are shown on Figure 2-2.

The BSK 1987 report concluded that there was no significant aquitard beneath the landfill at shallow subsurface depths, and that groundwater at the site is part of an unconfined groundwater system. With regards to analytical results the report concluded that bacteriological and nitrate pollution were present in domestic wells, located around the landfill (BSK, 1987). The report notes that methane gas migration was identified approximately 150 feet laterally from the edge of the landfill.

For both the 1986 and 1987 BSK investigations 19 groundwater wells were sampled. The wells included on-site monitoring wells and 11 private wells. Groundwater samples were analyzed for VOCs, metals, pesticides, PCBs, bacteriological activity, and water quality constituents.

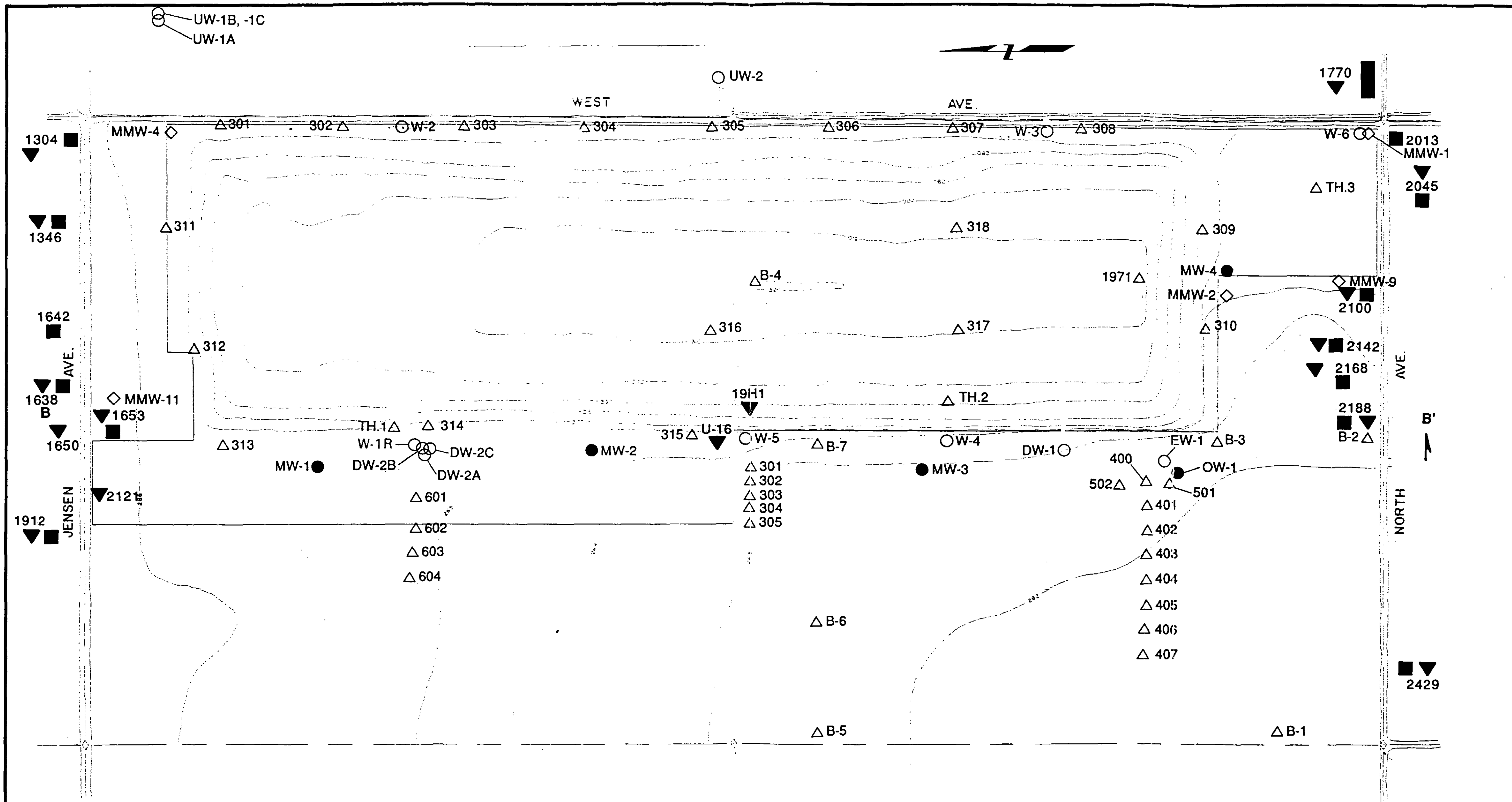
The report documented that the lateral extent of groundwater contamination reached beyond the landfill boundary, both up and downgradient of the site. The maximum vertical extent was reported to be between 100 and 150 feet below grade near the edge of the landfill (BSK 1987).

The quality of the analytical data from these two investigations is questionable. Some of the compounds reported to be analyzed were not reported in data summary tables. Also detection limits are not consistently provided. In addition, no QA/QC analytical data (blanks or duplicates) are reported. The data has not gone through any formal data validation.

In 1987, Kenneth D. Schmidt and Associates installed and developed a pilot extraction/pumping well, EW-1, to investigate aquifer characteristics at the site. Analytical results from groundwater samples collected from the well detected VOCs. No soil sampling was carried out during drilling of the boring; however, an SP/resistivity geophysical log was made in order to establish soil stratigraphy at the well location. The report describes the hydrogeology at the site and presents cross sections through or near the site. The report concludes that there is a fairly continuous clay layer beneath much of the area, underlying the shallow aquifer at a depth of 80 to 100 feet, which precludes downward migration of contaminants. However, the geologic cross sections were developed, for the most part, on the basis of water well drillers' logs from wells as far as one mile from the site.

EMCON prepared an Air Quality Solid Waste Assessment Test (SWAT) report in 1988. In accordance with the Calderon amendments to the Health and Safety Code (HSC Section 41805.5) landfill owners are required to analyze landfill gas and ambient air and report the results to the local air pollution control district (EMCON, 1988). In 1987 EMCON conducted a gas stream characterization, collected and analyzed ambient air samples, performed an integrated surface walk to quantify emissions through the landfill cover, and investigated off-site gas migration. Landfill gas samples were analyzed for VOCs and major landfill gas components (methane, oxygen, nitrogen, and carbon dioxide). Existing monitoring wells included W-1, W-2, and W-3 (these wells are not the "W" series groundwater monitoring wells). In addition, two new gas monitoring wells, W-4 and W-5 were installed. Ambient air samples were also collected upwind and downwind along the perimeter of the landfill.

The gas monitoring data reported in the SWAT indicated the presence of nitrogen, methane, and carbon dioxide at levels greater than the instrument detection limits. VOCs exceeding detection limits included vinyl chloride



LEGEND

- ● Ground-water monitoring well established during ESA investigation
- ○ Ground-water monitoring well established by others
- ◇ Methane monitoring well established by others
- ▼ Approximate locations of private wells
- △ Sealed test boring by others (approximate location)
- ■ Approximate location of private residence

0 400 800 ft.

Base map and locations of existing wells from City of Fresno Department of Public Works, June 1988. Original map scale is 1 in. = 200 ft.

Reference: ESA, 1989

Figure 2-2

CITY OF FRESNO SANITARY LANDFILL

SITE LOCATION MAP

Camp Dresser & McKee Inc.

(VC), benzene, 1,2-dichloroethane (1,2-DCA), methylene chloride, tetrachloroethene (PCE), 1,1,1-trichloroethane (TCA), and trichloroethylene (TCE). However, the report states that freon and methylene chloride, typical laboratory contaminants, resulted in an interference in the sample results, suggesting that the quality of the data is questionable.

Analytical results of ambient air samples, collected during the integrated surface walk, showed that total landfill gases measured as methane were detected in the field at 1 ppm. Concentrations of PCE, carbon tetrachloride (CCL4), 1,1,1-trichloroethane (1,1,1-TCA), and trichloroethene (TCE) ranged from 0.08 to 1.1 ppb.

Analytical results of ambient air samples were collected over three 24-hour periods from September 22 to 25, 1987. Meteorological conditions were also monitored during the air sampling event. Analytical results showed the presence of CCL4 from 0.07 to 0.09 ppb, 1,1,1 TCA from 0.60 to 2.60 ppb, TCE from 0.1 to 0.3 ppb, and TCE from trace levels to 1.03 ppb. Methylene chloride was detected at 1300 ppb in one sample. However the lab report states that possible interference from freon (TF) may have resulted in a high methylene chloride concentration.

Except for the interference from laboratory contaminants the analytical results for the air SWAT appear of reasonable quality. QA/QC samples (blanks) were collected during the sampling events. The data has not gone through formal data validation.

EMCON also prepared a closure/post closure cost estimate report in accordance with the Eastin Bill (AB2448). The report was prepared as a basis for landfill owners or operators to dedicate funds for landfill closure and 15 years of post-closure maintenance and monitoring, as required by the Eastin Bill. No physical work such as sampling or well installation was performed under this investigation.

Earth Sciences (ESA) was retained in 1988 to refine and expand the geologic and groundwater database at the site. Two studies were completed. The Phase I geologic and hydrogeologic investigation was performed and a report prepared in 1988 to adequately define geologic and hydrogeologic conditions in the immediate vicinity of the FSL. Under this investigation previous data was reviewed, five new borings were drilled, (of these borings, one was converted into an observation well and the remaining four were converted into groundwater monitoring wells,) downhole gamma ray logging of existing and new borings was completed and one multiple-well pumping test was performed. No soil or groundwater sampling was conducted under the Phase I investigation.

The Phase II investigation was performed to establish the lateral and vertical extent of groundwater contamination. ESA complied and summarized all hydrogeologic data collected to that point and collected groundwater samples from site monitoring wells and nearby residential wells. In addition ESA collected groundwater samples from 15 temporary well locations.

The report concluded that the groundwater contamination occurred within the shallow and intermediate stratigraphic zones (depths ranging between 55 to 110 feet). They reported that concentrations of VOCs in the private wells, and for the majority of the deep wells (greater than 110 feet) were, for the most part, below detection limits. However, the Phase II study reported vinyl chloride (VC) and TCE at concentrations exceeding federal and/or state action levels.

The quality of of the analytical data collected prior to June 1989 from the ESA study is somewhat questionable because detection limits are not reported. The May and June 1989 data is of better quality. Detection limits are reported, but for some compounds are higher than federal and state MCL standards. A total of 60 samples were analyzed plus four travel blanks. A quality control report for five VOC compounds was included in the report.

In 1989 five other investigations were conducted on the FSL site. These included an EIR for landfill closure, a grading and drainage plan report, a closure and post closure maintenance plan, and a feasibility study for site remediation. The feasibility study is applicable to the RI/FS process and is summarized below.

In September 1989 James M. Montgomery Consulting Engineers, under contract with ESA, completed a preliminary feasibility study for remediation of groundwater at the FSL site. The objective of the report was to review existing data on the FSL site and conduct a preliminary screening of technologies for remediation of the groundwater contamination. No environmental sampling or monitoring was performed under this investigation.

The report concluded the groundwater in the area of the FSL site is contaminated primarily with VOCs. The report explained that compounds with the highest concentrations include trans-1,2 DCE, methylene chloride, TCE, PCE, and VC. Five detailed alternatives were identified for further evaluation. These alternatives included no action, groundwater extraction in combination with air stripping or oxidation, and disposal options. In addition James M. Montgomery Engineers recommended that a detailed risk assessment be performed on the site.

In July and August, 1990, a soil gas survey was conducted by Lockheed Engineering and Sciences Company for the U.S. EPA. Soil gas samples were collected from 42 temporary probes outside the north and south side of the landfill perimeter, and from 17 existing gas monitoring wells. Landfill gas samples were analyzed for vinyl chloride and major landfill gas components (methane, oxygen, and carbon dioxide).

The analytical data for on-site wells indicated the presence of methane and vinyl chloride at levels greater than the detection limit. The off-site probes indicated the presence of methane and vinyl chloride just outside the north and south barriers. The data is useful as a qualitative indicator of the presence and composition of landfill gas.

The remaining pertinent data for the site consists of analytical reports of quarterly groundwater monitoring performed at the FSL site by the City. The data from these reports is presented in Appendix A of this work plan.

2.3 EXISTING DATA

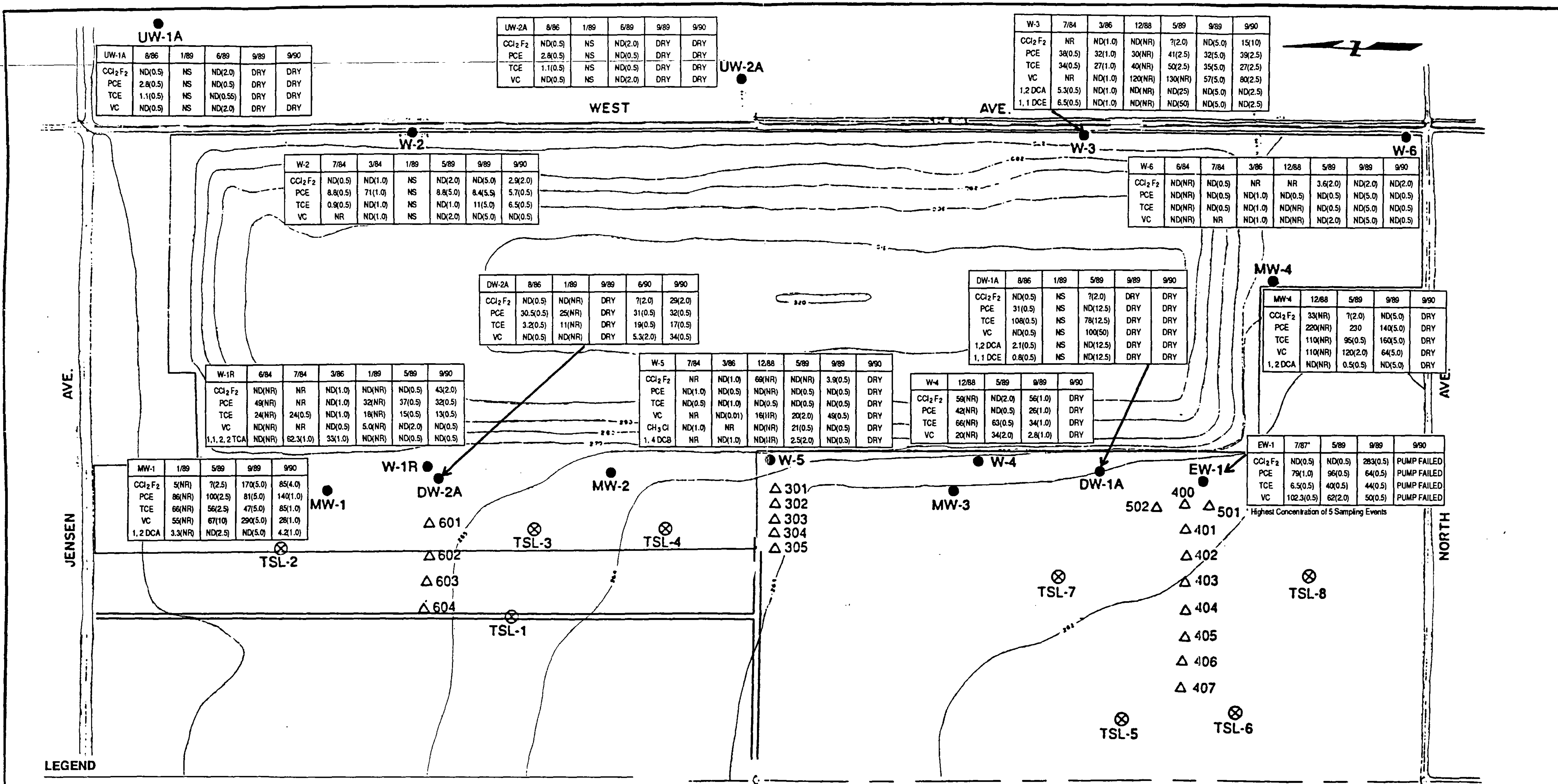
2.3.1 Groundwater

This section presents and summarizes existing analytical data for the FSL site gathered during previous investigations (Table 2-1). A review of the existing data reveals that volatile organic compounds (VOCs), namely TCE, PCE, VC and Dichlorodifluoromethane (CCl_2F_2) were consistently detected throughout the reported sampling events. This section will focus on these compounds because, with the exception of CCl_2F_2, they present a potential human health risk as reflected by low maximum contaminant levels (MCLs). There is a potential that these MCLs may drive the Endangerment Assessment and the RI/FS process and ultimately remediation of the FSL site. CCl_2F_2 does not have an established MCL. However, this compound was consistently detected in all sampling events and it is presented for characterization purposes. The MCLs for TCE, PCE and VC are 5, 2, and 0.5 $\mu g/l$ respectively.

This section presents three figures which show the concentrations of the four compounds discussed above, as well as other VOCs detected in the shallow, intermediate, and deep wells. Data collected since 1984 is reported in Appendix A, including data on VOCs, pesticides, metals, and water quality parameters. The specific studies from which data were obtained are referenced in Appendix A.

Figure 2-3 shows the shallow well locations at the FSL site and presents existing analytical data on the VOC compounds of interest. A review of the data shows that the reported VOCs have been found at concentrations exceeding MCLs both up and downgradient of the FSL site. Some of the highest concentrations are reported for wells MW-1, W-4, DW-1A, and EW-1, located downgradient of the FSL site.

Figure 2-4 shows the intermediate well locations and presents existing data on the four VOC compounds. In addition to monitoring wells, private wells are also reported on the figure. A review of the data shows that the reported VOCs have been found at concentrations exceeding MCLs both up and



UW-1A	8/86	1/89	6/89	9/89	9/90
CCl_2F_2	ND(0.5)	NS	ND(2.0)	DRY	DRY
PCE	2.8(0.5)	NS	ND(0.5)	DRY	DRY
TCE	1.1(0.5)	NS	ND(0.55)	DRY	DRY
VC	ND(0.5)	NS	ND(2.0)	DRY	DRY

UW-2A	8/86	1/89	6/89	9/89	9/90
CCl_2F_2	ND(0.5)	NS	ND(2.0)	DRY	DRY
PCE	2.8(0.5)	NS	ND(0.5)	DRY	DRY
TCE	1.1(0.5)	NS	ND(0.5)	DRY	DRY
VC	ND(0.5)	NS	ND(2.0)	DRY	DRY

W-3	7/84	3/86	12/88	5/89	9/89	9/90
CCl_2F_2	NR	ND(1.0)	ND(NR)	?(2.0)	ND(5.0)	15(10)
PCE	38(0.5)	32(1.0)	30(NR)	41(2.5)	32(5.0)	39(2.5)
TCE	34(0.5)	27(1.0)	40(NR)	50(2.5)	35(5.0)	27(2.5)
VC	NR	ND(1.0)	120(NR)	130(NR)	57(5.0)	80(2.5)
1,2 DCA	5.3(0.5)	ND(1.0)	ND(NR)	ND(25)	ND(5.0)	ND(2.5)
1, 1 DCE	6.5(0.5)	ND(1.0)	ND(NR)	ND(50)	ND(5.0)	ND(2.5)

W-2	7/84	3/84	1/89	5/89	9/89	9/90
CCl_2F_2	ND(0.5)	ND(1.0)	NS	ND(2.0)	ND(5.0)	2.9(2.0)
PCE	8.8(0.5)	71(1.0)	NS	8.8(5.0)	8.4(5.5)	5.7(0.5)
TCE	0.9(0.5)	ND(1.0)	NS	ND(1.0)	11(5.0)	6.5(0.5)
VC	NR	ND(1.0)	NS	ND(2.0)	ND(5.0)	ND(0.5)

W-6	6/84	7/84	3/86	12/88	5/89	9/89	9/90
CCl_2F_2	ND(NR)	ND(0.5)	NR	NR	3.6(2.0)	ND(2.0)	ND(2.0)
PCE	ND(NR)	ND(0.5)	ND(1.0)	ND(0.5)	ND(0.5)	ND(5.0)	ND(0.5)
TCE	ND(NR)	ND(0.5)	ND(1.0)	ND(NR)	ND(0.5)	ND(5.0)	ND(0.5)
VC	ND(NR)	NR	ND(1.0)	ND(NR)	ND(2.0)	ND(5.0)	ND(0.5)

DW-2A	8/86	1/89	9/89	6/90	9/90
CCl_2F_2	ND(0.5)	ND(NR)	DRY	?(2.0)	29(2.0)
PCE	30.5(0.5)	25(NR)	DRY	31(0.5)	32(0.5)
TCE	3.2(0.5)	11(NR)	DRY	19(0.5)	17(0.5)
VC	ND(0.5)	ND(NR)	DRY	5.3(2.0)	34(0.5)

DW-1A	8/86	1/89	5/89	9/89	9/90
CCl_2F_2	ND(0.5)	NS	?(2.0)	DRY	DRY
PCE	31(0.5)	NS	ND(12.5)	DRY	DRY
TCE	108(0.5)	NS	78(12.5)	DRY	DRY
VC	ND(0.5)	NS	100(50)	DRY	DRY
1,2 DCA	2.1(0.5)	NS	ND(12.5)	DRY	DRY
1, 1 DCE	0.8(0.5)	NS	ND(12.5)	DRY	DRY

MW-4	12/88	5/89	9/89	9/90
CCl_2F_2	33(NR)	?(2.0)	ND(5.0)	DRY
PCE	220(NR)	230	140(5.0)	DRY
TCE	110(NR)	95(0.5)	160(5.0)	DRY
VC	110(NR)	120(2.0)	64(5.0)	DRY
1, 2 DCA	ND(NR)	0.5(0.5)	ND(5.0)	DRY

W-1R	6/84	7/84	3/86	1/89	5/89	9/90
CCl_2F_2	ND(NR)	NR	ND(1.0)	ND(NR)	ND(0.5)	43(2.0)
PCE	49(NR)	NR	ND(1.0)	32(NR)	37(0.5)	32(0.5)
TCE	24(NR)	24(0.5)	ND(1.0)	18(NR)	15(0.5)	13(0.5)
VC	ND(NR)	NR	ND(0.5)	5.0(NR)	ND(2.0)	ND(0.5)
1,1, 2, 2 TCA	ND(NR)	62.3(1.0)	33(1.0)	ND(NR)	ND(0.5)	ND(0.5)

W-5	7/84	3/86	12/88	5/89	9/89	9/90
CCl_2F_2	NR	ND(1.0)	69(NR)	ND(NR)	3.9(0.5)	DRY
PCE	ND(1.0)	ND(0.5)	ND(NR)	ND(0.5)	ND(0.5)	DRY
TCE	ND(0.5)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	DRY
VC	NR	ND(0.01)	16(NR)	20(2.0)	49(0.5)	DRY
CH_3Cl	ND(1.0)	NR	ND(NR)	21(0.5)	ND(0.5)	DRY
1, 4 DCB	NR	ND(1.0)	ND(NR)	2.5(2.0)	ND(0.5)	DRY

W-4	12/88	5/89	9/89	9/90
CCl_2F_2	59(NR)	ND(2.0)	56(1.0)	DRY
PCE	42(NR)	ND(0.5)	26(1.0)	DRY
TCE	66(NR)	63(0.5)	34(1.0)	DRY
VC	20(NR)	34(2.0)	2.8(1.0)	DRY

EW-1	7/87*	5/89	9/89	9/90
CCl_2F_2	ND(0.5)	ND(0.5)	283(0.5)	PUMP FAILED
PCE	79(1.0)	96(0.5)	64(0.5)	PUMP FAILED
TCE	6.5(0.5)	40(0.5)	44(0.5)	PUMP FAILED
VC	102.3(0.5)	62(2.0)	50(0.5)	PUMP FAILED

* Highest Concentration of 5 Sampling Events

LEGEND

CCl_2F_2	Dichlorodifluoromethane MCL = None	ND	Not Detected at Indicated Detection Level
CH_3Cl	Chloromethane MCL = 2ug/l	NR	Not Reported
1, 2 DCA	1, 2 Dichloroethane MCL = 0.5ug/l	NS	Not Sampled
1, 1 DCE	1, 1 Dichloroethene MCL = 6ug/l	( )	Method Detection Level
1, 4 DCB	1, 4, Dichlorobenzene MCL = 75ug/l	?	Undetermined Concentration
PCE	Tetrachloroethene MCL = 2ug/l	●	Groundwater Monitoring Well by ESA
TCE	Trichloroethene MCL = 5ug/l	⊗	Temporary Sampling Locations by ESA
VC	Vinyl Chloride MCL = 0.5ug/l	Δ	Temporary Sampling Locations by BSK

Note: Concentration of Compounds Reported in ug/l (ppb)

0 400 800 ft.

Notes: Numerous methane monitoring wells exist within landfill boundary (not shown).

Base map and locations of existing wells from City of Fresno Department of Public Works June 1988. Original map scale is 1 in. = 200 ft.

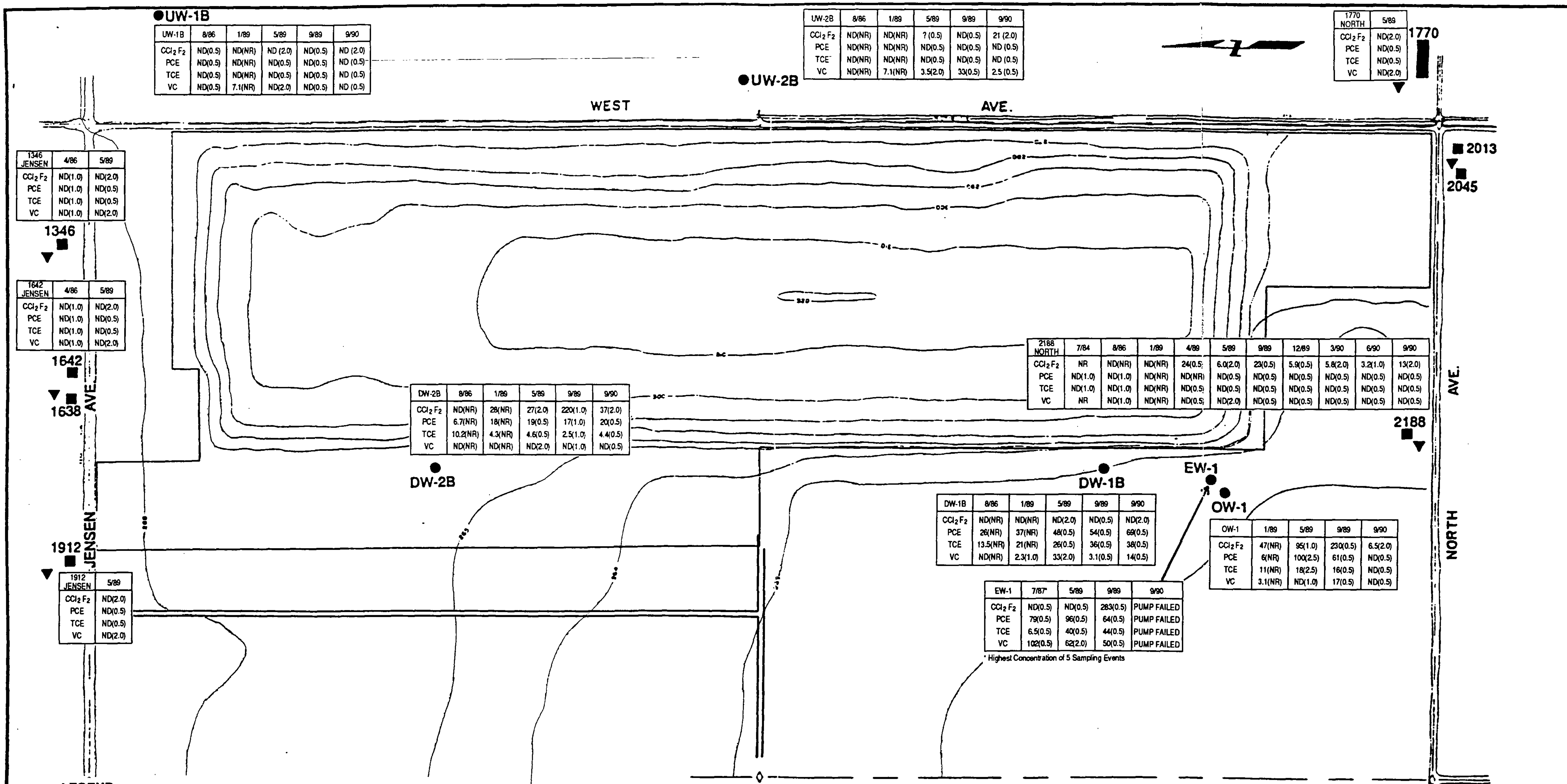
Reference: ESA, 1988

Figure 2-3

CITY OF FRESNO SANITARY LANDFILL

DATA SUMMARY OF SHALLOW WELL LOCATIONS (UP To 70 FT.)

Camp Dresser & McKee Inc.



UW-1B	8/86	1/89	5/89	9/89	9/90
CCl_2F_2	ND(0.5)	ND(NR)	ND (2.0)	ND(0.5)	ND (2.0)
PCE	ND(0.5)	ND(NR)	ND(0.5)	ND(0.5)	ND (0.5)
TCE	ND(0.5)	ND(NR)	ND(0.5)	ND(0.5)	ND (0.5)
VC	ND(0.5)	7.1(NR)	ND(2.0)	ND(0.5)	ND (0.5)

UW-2B	8/86	1/89	5/89	9/89	9/90
CCl_2F_2	ND(NR)	ND(NR)	? (0.5)	ND(0.5)	21 (2.0)
PCE	ND(NR)	ND(NR)	ND(0.5)	ND(0.5)	ND (0.5)
TCE	ND(NR)	ND(NR)	ND(0.5)	ND(0.5)	ND (0.5)
VC	ND(NR)	7.1(NR)	3.5(2.0)	33(0.5)	2.5 (0.5)

1770 NORTH	5/89
CCl_2F_2	ND(2.0)
PCE	ND(0.5)
TCE	ND(0.5)
VC	ND(2.0)

1346 JENSEN	4/86	5/89
CCl_2F_2	ND(1.0)	ND(2.0)
PCE	ND(1.0)	ND(0.5)
TCE	ND(1.0)	ND(0.5)
VC	ND(1.0)	ND(2.0)

1642 JENSEN	4/86	5/89
CCl_2F_2	ND(1.0)	ND(2.0)
PCE	ND(1.0)	ND(0.5)
TCE	ND(1.0)	ND(0.5)
VC	ND(1.0)	ND(2.0)

2188 NORTH	7/84	8/86	1/89	4/89	5/89	9/89	12/89	3/90	6/90	9/90
CCl_2F_2	NR	ND(NR)	ND(NR)	24(0.5;	6.0(2.0)	23(0.5)	5.9(0.5)	5.8(2.0)	3.2(1.0)	13(2.0)
PCE	ND(1.0)	ND(1.0)	ND(NR)	ND(NR)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
TCE	ND(1.0)	ND(1.0)	ND(NR)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
VC	NR	ND(1.0)	ND(NR)	ND(0.5;	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

DW-2B	8/86	1/89	5/89	9/89	9/90
CCl_2F_2	ND(NR)	28(NR)	27(2.0)	220(1.0)	37(2.0)
PCE	6.7(NR)	18(NR)	19(0.5)	17(1.0)	20(0.5)
TCE	10.2(NR)	4.3(NR)	4.6(0.5)	2.5(1.0)	4.4(0.5)
VC	ND(NR)	ND(NR)	ND(2.0)	ND(1.0)	ND(0.5)

DW-1B	8/86	1/89	5/89	9/89	9/90
CCl_2F_2	ND(NR)	ND(NR)	ND(2.0)	ND(0.5)	ND(2.0)
PCE	26(NR)	37(NR)	48(0.5)	54(0.5)	69(0.5)
TCE	13.5(NR)	21(NR)	26(0.5)	36(0.5)	38(0.5)
VC	ND(NR)	2.3(1.0)	33(2.0)	3.1(0.5)	14(0.5)

OW-1	1/89	5/89	9/89	9/90
CCl_2F_2	47(NR)	95(1.0)	230(0.5)	6.5(2.0)
PCE	6(NR)	100(2.5)	61(0.5)	ND(0.5)
TCE	11(NR)	18(2.5)	16(0.5)	ND(0.5)
VC	3.1(NR)	ND(1.0)	17(0.5)	ND(0.5)

1912 JENSEN	5/89
CCl_2F_2	ND(2.0)
PCE	ND(0.5)
TCE	ND(0.5)
VC	ND(2.0)

EW-1	7/87*	5/89	9/89	9/90
CCl_2F_2	ND(0.5)	ND(0.5)	283(0.5)	PUMP FAILED
PCE	79(0.5)	96(0.5)	64(0.5)	PUMP FAILED
TCE	6.5(0.5)	40(0.5)	44(0.5)	PUMP FAILED
VC	102(0.5)	62(2.0)	50(0.5)	PUMP FAILED

* Highest Concentration of 5 Sampling Events

LEGEND

CCl_2F_2	Dichlorodifluoromethane MCL = None	( )	Method Detection Level
PCE	Tetrachloroethene MCL = 2ug/l	?	Undetermined Concentration
TCE	Trichloroethene MCL = 5ug/l	●	Groundwater Monitoring Well by ESA
VC	Vinyl Chloride MCL = 0.5ug/l	▼	Private Well
ND	Not Detected at Indicated Detection Level	■	Private Residence
NR	Not Reported		Private Wells, Well Log Data Not Reported
NS	Not Sampled		

Note: Concentration of Compounds Reported in ug/l (ppb)

0 400 800 ft.

Notes: **Numerous methane monitoring wells exist within landfill boundary (not shown).**

Base map and locations of existing wells from City of Fresno Department of Public Works June 1988. Original map scale is 1 in. = 200 ft.

Reference: ESA, 1989

Figure 2-4

CITY OF FRESNO SANITARY LANDFILL

DATA SUMMARY OF INTERMEDIATE WELL LOCATIONS (70 To 110 Ft.)

Camp Dresser & McKee Inc.

downgradient of the FSL site. However, the concentrations reported are lower than those reported in the shallow wells. Again the highest concentrations are found in wells located on the downgradient or southwest perimeter of the landfill.

Figure 2-5 shows the deep well locations and presents existing data on the VOC compounds reported on the figure. Private wells are also reported on the figure. A review of the data shows that the VOC concentrations are lower than those found in both the intermediate and shallow wells. Also, only PCE and CCl_2F_2 are detected in the private wells, located to the north and south of the site; TCE and VC were not detected in the deep private wells. For the upgradient deep wells UW-1C and UW-2C, no VOCs were detected in these wells in 1990 data. However, VC, TCE, and PCE were detected in the these wells in 1989, with VC the only compound exceeding its MCL.

Appendix A-1 presents VOC data collected and analyzed between 1974 and 1990 for all the wells reported on Figures 2-3, 2-4, and 2-5. MCLs for designated VOC compounds are reported at the bottom of each table. MCLs have not been promulgated for the compounds that do not have an MCL reported on the tables. A review of the data shows that other VOC compounds besides the ones reported in the figures have been detected in the wells on and near the FSL site. The compounds, namely dichloroetheylene (DCE), dichloroethane (DCA), dichloropropane (DCPA), dichloropropene (DCPE), dichlorobenzenes (DCBS), trichlorofluoromethane, and methylene chloride have been reported at concentrations above instrument detection limits.

Appendix A-1 also presents existing analytical data on the FSL site for purgeable aromatic compounds. A number of compounds were detected above instrument detection limits. They include benzene, chlorobenzene, 1,2-dichlorobenzene (1,2-DCB), and 1,4-dichlorobenzene (1,4-DCB). Benzene was detected at concentrations exceeding its MCL of 1 μg/l in wells OW-1 and EW-1. The MCL for 1,4-dichlorobenzene is 75 μg/l. This compound was detected in well DW-1B, DW-2A, and W-2 at concentrations below 1 μg/l.

Appendix A-2 present existing analytical data on the FSL site for pesticide compounds. A review of the data shows that no pesticides were detected above instrument detection limits.

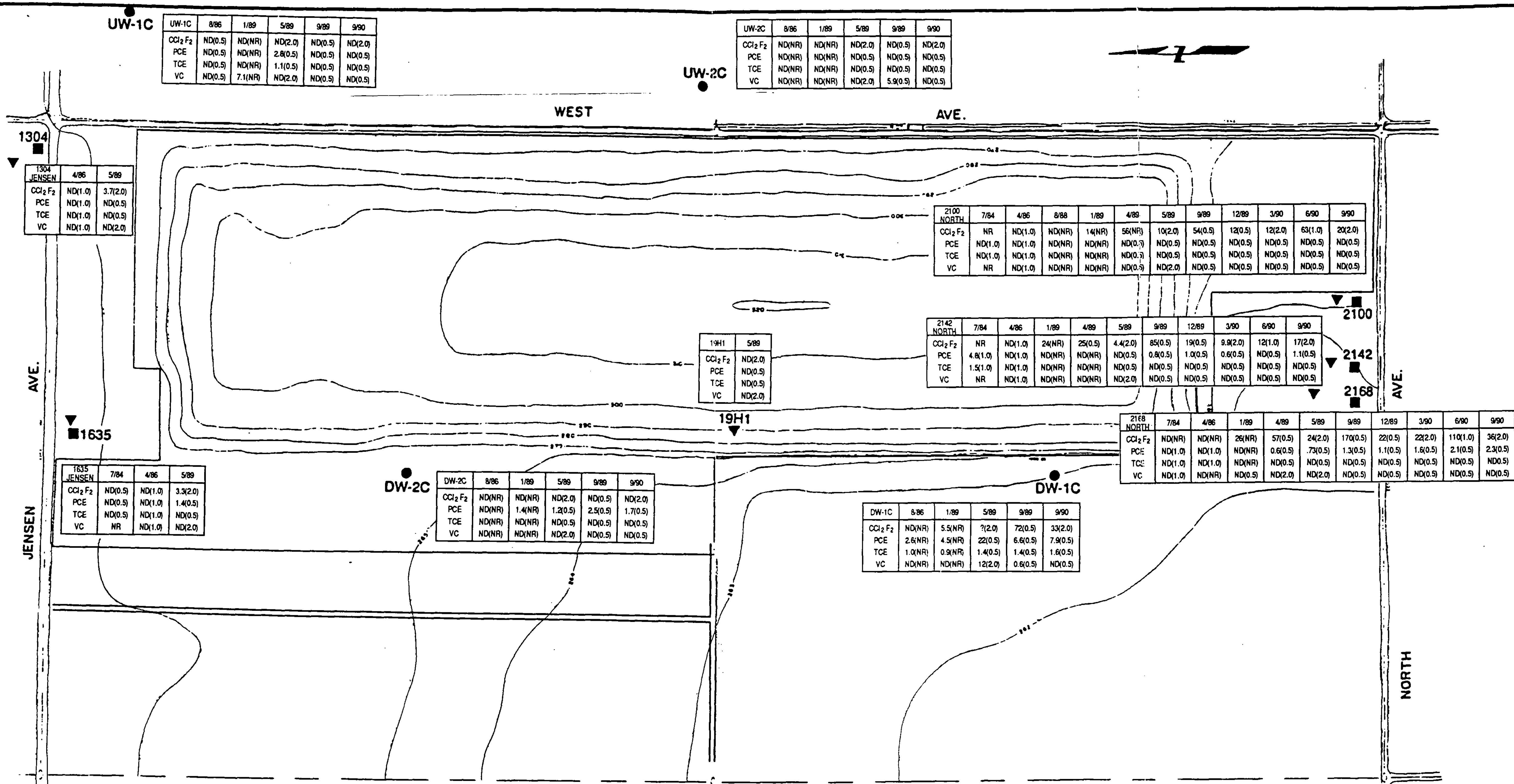
Appendix A-3 presents the limited available groundwater analytical data for metals. A number of metals were detected below MCL levels. These include arsenic, barium, fluoride, selenium, lead, and zinc. Nitrate was the only compound detected above MCLs. Private wells 1304 Jensen and 2121 Jensen are reported to have nitrate concentration in excess of the MCL standard (45,000 ug/l). In addition, monitoring wells W-2 and W-4 also had nitrate concentrations exceeding MCLs. Previous investigations have attributed the nitrate levels to the extensive agriculture in the vicinity of the FSL site.

Finally, Appendix A-4 presents groundwater analytical data for general water quality parameters. A review of this data shows a general trend of higher dissolved solids (TDS) and hardness values in shallow wells than in the deep wells. pH levels range from 6 to 8 for the majority of monitoring wells sampled. Also, iron is detected above its secondary MCL of 300 ug/l (0.3 mg/l) in a number of monitoring wells reported in Appendix A-4.

2.3.2 Soil Gas

This section summarizes existing analytical data for the FSL site gathered during previous soil gas investigations. Results from VOC and methane analysis of interior gas wells, perimeter gas wells, and temporary off-site probes, as well as monthly methane monitoring of perimeter wells, are discussed. All analytical data presented in Appendix A-5.

Five interior gas monitoring wells (Figure 5-1) were sampled in 1987 as part of the EMCON Air Quality Solid Waste Assessment Test (SWAT) investigation. Each sample was collected in a 10-liter Tedlar bag, and analyzed at a fixed-base laboratory for VOCs and major landfill gas components (methane, oxygen, nitrogen and carbon dioxide). Methane concentrations ranged from 27.2% to 57.02%. VOCs exceeding the detection limits included vinyl chloride, benzene, 1,2-dichloroethane, methylene



UW-1C	8/86	1/89	5/89	9/89	9/90
CCl_2F_2	ND(0.5)	ND(NR)	ND(2.0)	ND(0.5)	ND(2.0)
PCE	ND(0.5)	ND(NR)	2.8(0.5)	ND(0.5)	ND(0.5)
TCE	ND(0.5)	ND(NR)	1.1(0.5)	ND(0.5)	ND(0.5)
VC	ND(0.5)	7.1(NR)	ND(2.0)	ND(0.5)	ND(0.5)

UW-2C	8/86	1/89	5/89	9/89	9/90
CCl_2F_2	ND(NR)	ND(NR)	ND(2.0)	ND(0.5)	ND(2.0)
PCE	ND(NR)	ND(NR)	ND(0.5)	ND(0.5)	ND(0.5)
TCE	ND(NR)	ND(NR)	ND(0.5)	ND(0.5)	ND(0.5)
VC	ND(NR)	ND(NR)	ND(2.0)	5.9(0.5)	ND(0.5)

1304 JENSEN	4/86	5/89
CCl_2F_2	ND(1.0)	3.7(2.0)
PCE	ND(1.0)	ND(0.5)
TCE	ND(1.0)	ND(0.5)
VC	ND(1.0)	ND(2.0)

2100 NORTH	7/84	4/86	8/88	1/89	4/89	5/89	9/89	12/89	3/90	6/90	9/90
CCl_2F_2	NR	ND(1.0)	ND(NR)	14(NR)	56(NR)	10(2.0)	54(0.5)	12(0.5)	12(2.0)	63(1.0)	20(2.0)
PCE	ND(1.0)	ND(1.0)	ND(NR)	ND(NR)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
TCE	ND(1.0)	ND(1.0)	ND(NR)	ND(NR)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
VC	NR	ND(1.0)	ND(NR)	ND(NR)	ND(0.5)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

19H1	5/89
CCl_2F_2	ND(2.0)
PCE	ND(0.5)
TCE	ND(0.5)
VC	ND(2.0)

2142 NORTH	7/84	4/86	1/89	4/89	5/89	9/89	12/89	3/90	6/90	9/90
CCl_2F_2	NR	ND(1.0)	24(NR)	25(0.5)	4.4(2.0)	85(0.5)	19(0.5)	9.9(2.0)	12(1.0)	17(2.0)
PCE	4.8(1.0)	ND(1.0)	ND(NR)	ND(NR)	ND(0.5)	0.8(0.5)	1.0(0.5)	0.6(0.5)	ND(0.5)	1.1(0.5)
TCE	1.5(1.0)	ND(1.0)	ND(NR)	ND(NR)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
VC	NR	ND(1.0)	ND(NR)	ND(NR)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

2168 NORTH	7/84	4/86	1/89	4/89	5/89	9/89	12/89	3/90	6/90	9/90
CCl_2F_2	ND(NR)	ND(NR)	26(NR)	57(0.5)	24(2.0)	170(0.5)	22(0.5)	22(2.0)	110(1.0)	36(2.0)
PCE	ND(1.0)	ND(1.0)	ND(NR)	0.6(0.5)	.73(0.5)	1.3(0.5)	1.1(0.5)	1.6(0.5)	2.1(0.5)	2.3(0.5)
TCE	ND(1.0)	ND(1.0)	ND(NR)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND0.5)
VC	ND(1.0)	ND(NR)	ND(0.5)	ND(2.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

1635 JENSEN	7/84	4/86	5/89
CCl_2F_2	ND(0.5)	ND(1.0)	3.3(2.0)
PCE	ND(0.5)	ND(1.0)	1.4(0.5)
TCE	ND(0.5)	ND(1.0)	ND(0.5)
VC	NR	ND(1.0)	ND(2.0)

DW-2C	8/86	1/89	5/89	9/89	9/90
CCl_2F_2	ND(NR)	ND(NR)	ND(2.0)	ND(0.5)	ND(2.0)
PCE	ND(NR)	1.4(NR)	1.2(0.5)	2.5(0.5)	1.7(0.5)
TCE	ND(NR)	ND(NR)	ND(0.5)	ND(0.5)	ND(0.5)
VC	ND(NR)	ND(NR)	ND(2.0)	ND(0.5)	ND(0.5)

DW-1C	8/86	1/89	5/89	9/89	9/90
CCl_2F_2	ND(NR)	5.5(NR)	?(2.0)	72(0.5)	33(2.0)
PCE	2.6(NR)	4.5(NR)	22(0.5)	6.6(0.5)	7.9(0.5)
TCE	1.0(NR)	0.9(NR)	1.4(0.5)	1.4(0.5)	1.6(0.5)
VC	ND(NR)	ND(NR)	12(2.0)	0.6(0.5)	ND(0.5)

LEGEND

CCl_2F_2	Dichlorodifluoromethane MCL = None	NS	Not Sampled
PCE	Tetrachloroethene MCL = 2ug/l	( )	Methane Detection Level
TCE	Trichloroethene MCL = 5ug/l	?	Undetermined Concentration
VC	Vinyl Chloride MCL = 0.5ug/l	●	Groundwater Monitoring Well by ESA
ND	Not Detected at Indicated Detection Level	▼	Private Well
NR	Not Reported	■	Private Residence

Note: Concentration of Compounds Reported in ug/l (ppb)

0 400 800 ft.

Notes: Numerous methane monitoring wells exist within landfill boundary (not shown).

Base map and locations of existing wells from City of Fresno Department of Public Works June 1988. Original map scale is 1 in. = 200 ft.

Reference: ESA, 1989

Figure 2-5

CITY OF FRESNO SANITARY LANDFILL

DATA SUMMARY OF DEEP WELL LOCATIONS (Greater Than 110 Ft.)

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chloride, tetrachloroethene (PCE), trichloroethane and trichloroethene (TCE). Vinyl chloride was detected in 4 of the 5 on-site wells (W-1, W-3, W-4, and W-5) at concentrations ranging from 1.4 to 2.9 ppm. Methylene chloride was detected in all wells at concentrations ranging from 3.7 to 34 ppm. PCE and TCE levels ranged from less than 1 ppm in W-1, W-2 and W-3 to between 2 and 6 ppm in W-4 and W-5. Benzene was detected in W-3, W-4, and W-5 at levels ranging from 0.8 to 2 ppm. For all VOCs, the highest concentrations were found in W-4 and W-5, while the lowest were found in W-2.

In 1990, Lockheed conducted a soil gas survey that included the collection of samples from 42 off-site temporary probes, and from the 17 perimeter wells illustrated in Figure 5-1. Each of the perimeter wells (MMW1-MMW17) has three nested points screened at approximately 5 feet, 25 feet and 40 feet. Methane levels from perimeter wells located within the landfill ranged from 37% to 57%, and vinyl chloride concentrations up to 56 ppm were detected. Elevated methane and vinyl chloride concentrations just outside the barrier suggested gas migration below or around the barrier. These concentrations dropped off rapidly, within 100 feet. The gas monitoring wells farthest from the landfill (MMW11 and MMW13) did not show detectable concentrations of either vinyl chloride or methane at any depth. In general, results of samples collected from the shallowest depths of the perimeter wells outside of the landfill were low relative to the deeper concentrations.

The 42 temporary probes were driven to depths of 5-7 feet. Two samples collected from the vineyard to the east of the landfill contained measurable amounts of methane and vinyl chloride. All other points of detected contamination were within approximately 100 feet of the north and south barriers. Based on the results of previous soil-gas surveys, the Lockheed report states that variability of sampling results is within 25%.

Monthly monitoring of the 17 perimeter wells was initiated by the City of Fresno in 1989. These analytical results are included in Appendix A-5. The data illustrates that methane barriers are effectively blocking off-site migration of landfill gas at the north barrier. This is not consistent with the results of the Lockheed survey. Measurable methane concentrations at MMW15 indicate that a leak exists in the barrier at the south side.

The City of Fresno was issued Administrative Order No. 90-23, effective February 15, 1991, by the U.S. EPA directing the City to develop a vacuum system for the existing methane barriers. The design of this vacuum system is discussed in the CDM document entitled "Methane Barrier Vacuum System Design Report and Operations Plan for the Fresno Sanitary Landfill" dated March 4, 1991. The vacuum system will be operational in early spring, 1991.

2.3.3 Air

This section summarizes existing ambient air analytical data for the FSL site gathered during the 1987 EMCON Air Quality Solid Waste Assessment Test (SWAT) investigation. Sample locations and analytical results are included in Appendix A-6.

EMCON collected 24-hour time-integrated ambient air samples on three consecutive days from one upwind and one downwind location. Each sample was collected 9 feet above the ground in a 10-liter Tedlar bag. The air samples contained benzene, methylene chloride, tetrachloroethylene, carbon tetrachloride, 1,1,1- trichloroethane, and trichloroethylene. The concentrations of the compounds ranged from 0.07 to 2.6 ppb, except for one methylene chloride value of 1,300 ppb. The methylene chloride value may be anomalous since it was only detected in one sample. The quality of this data is not known since neither sample duplicates nor field blanks were collected.

An integrated surface sampler was also used to collect a surface air sample of approximately 8 liters. The sampling probe was held 2-3 inches above the landfill surface while the technician walked a 2,600 linear foot grid over a 25 minute time period. The bag sample was analyzed in the field for total organics as methane. A fixed base laboratory performed analyses for volatile organic compounds.

The concentration of total organics as methane was at the detection limit of the OVA instrument (1 ppm). Trichloroethane was detected by the fixed base laboratory at 1.10 ppb. TCE, TCA, and PCE were detected at levels ranging from 0.08 to 0.30 ppb. The quality of this data is not known since neither sample duplicates nor field blanks were collected.

Section Three

3.0 CONCEPTUAL SITE MODEL

3.1 INTRODUCTION

The purpose of this section is to present a preliminary conceptual model of the FSL site, based on the existing site data and knowledge of the site dynamics. The assumed model includes the trash prism as source; landfill gas and leachate as release mechanisms; surface runoff/erosion as a secondary release mechanism; groundwater, soil, and ambient air as affected media; and the potential exposure pathways as primarily ingestion and inhalation by human receptors, as depicted in Figure 3-1. The site model is a tool to help develop preliminary remedial action objectives and associated remedial action alternatives, based upon an understanding of the release mechanisms and the extent of release in the environment. The conceptual model thus provides the framework for developing the RI/FS activities described in the Work Plan.

3.2 CONTAMINANT RELEASE MECHANISMS AND AFFECTED MEDIA

3.2.1 Landfill Gas

Landfill gas generation is a microbiological phenomenon which occurs following the disposal of organic solid wastes. The organic fraction of the waste provides a source of nutrients for bacteria in the refuse prism which produce a waste gas consisting primarily of methane and carbon dioxide. The specific composition of the landfill gas is a function of the age of the refuse. The landfill goes through four discrete stabilization phases before reaching a steady state condition approximately one to two years after refuse placement (Pohland, 1986). At steady state the gas is approximately 55 percent methane and 40 percent carbon dioxide with the remainder being nitrogen and trace constituents. The trace constituents detected at the FSL, as reported in the Air Quality Solid Waste Assessment Test Report prepared by EMCON Associates dated October 1988, include the volatile organic compounds vinyl chloride, benzene, 1,2-dichloroethane, methylene chloride, tetrachlorethylene, 1,1,1-trichlorethane, and trichlorethylene.

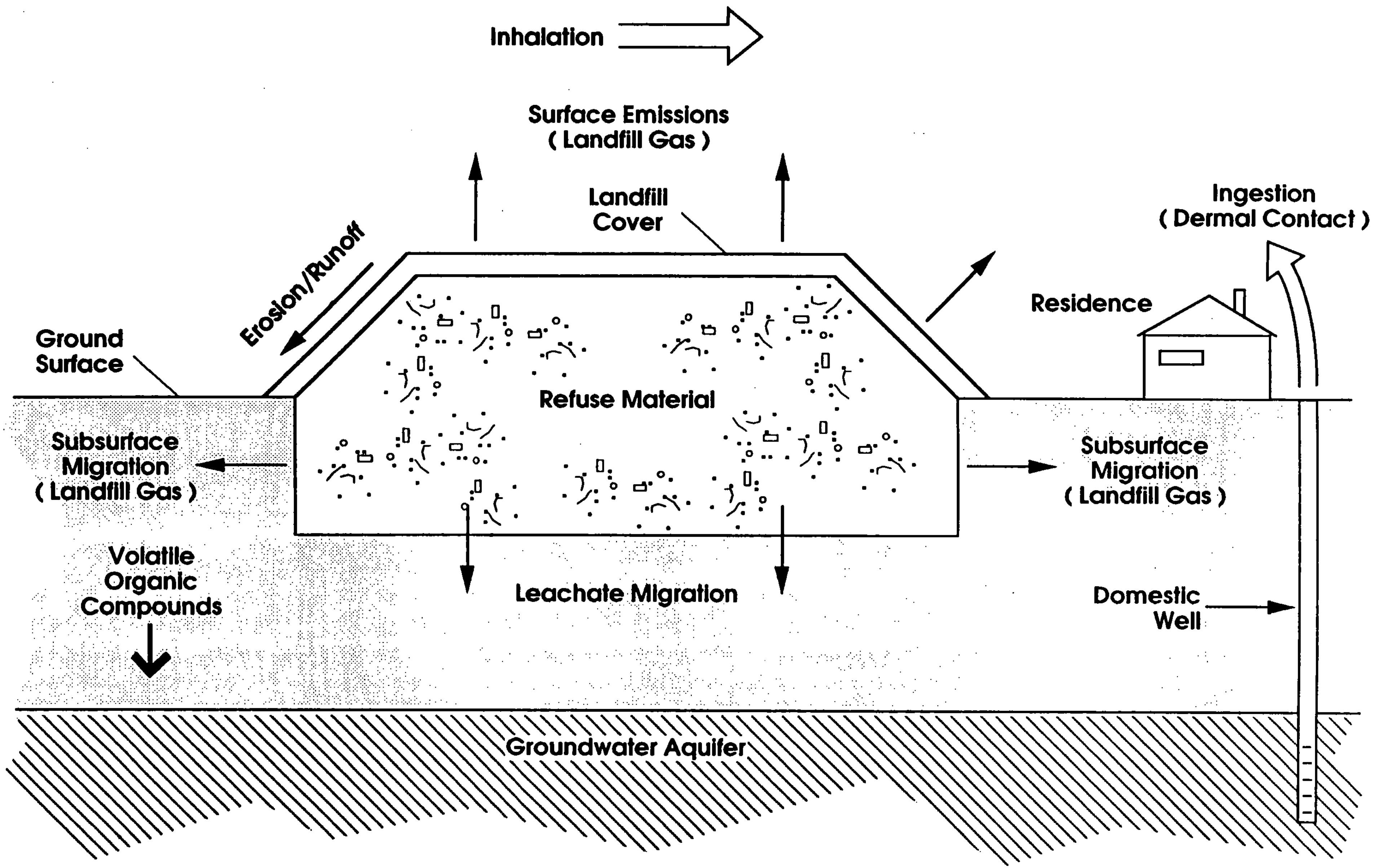


Figure 3-1

CONCEPTUAL SITE MODEL

Landfill gas is conveyed off-site primarily through convective mechanisms. As the organic fraction of the refuse decomposes, the waste gas generated produces a pressure in the landfill. A decreasing pressure gradient develops from the landfill to atmospheric conditions. This drives the landfill gas through the soil cover into the ambient air and through subsurface soil voids. The hazardous constituents in the landfill gas come into contact with the environment, potentially contaminating the soil, groundwater, and ambient air. Landfill gas will be sampled during the RI to determine the extent of off-site gas migration and to assess the concentration and constituents of the gas.

The hazardous constituents in the landfill gas are primarily organic compounds which readily volatilize when introduced to air. It is not anticipated that these compounds would adhere to the soil particles and create an ingestion or dermal contact exposure pathway. However, surface and subsurface soil sampling will be performed to evaluate the existence of this pathway; samples will be analyzed for a range of contaminants, in addition to volatiles.

In a case where landfill gas comes in contact with groundwater, an equilibrium is established between the gas and the liquid through the exchange of molecules across the liquid-gas interface. For landfill gas, which is a mixture of several gases, an equilibrium is established for each gas. The concentration of a specific constituent of landfill gas in the groundwater is dependent upon the concentration and partial pressure of that constituent.

Previous studies undertaken to establish the extent of groundwater contamination in the vicinity of the landfill site have revealed the presence of volatile organic compounds. Some of these compounds, including vinyl chloride, trichlorethene, and tetrachloroethene (ESA 1988), are also constituents found in the gas at the FSL (EMCON 1988). This appears to indicate that the landfill gas is migrating off-site and contacting the groundwater, and resulting in the gases dissolving in the groundwater.

The ingestion of groundwater potentially contaminated by landfill gas has the potential for causing adverse public health impacts. Remedial investigation activities, including soil gas modeling, will be performed to document the presence of this mechanism and to determine the extent of contamination, defined in terms of pollutant concentration levels and the lateral and vertical expanse of the contaminant plume. The constituents found in the soil gas will be compared to the groundwater analyses to help determine if soil gas is impacting groundwater.

Finally, ambient air could potentially be impacted by landfill gas migration. As the landfill gas is conveyed along the pressure gradient from the refuse through the soil cover, the contaminants can enter the atmosphere, resulting in inhalation of the contaminants by the potential receptors. The magnitude and extent of this mechanism will be quantified by establishing monitoring stations under the remedial investigation and conducting an ambient air sampling program.

3.2.2 Leachate

Leachate is defined as water that comes in contact with the landfill refuse and becomes contaminated with constituents of the refuse. The two most probable sources of water for leachate formation at the FSL include the percolation of rainfall and runoff through the existing cover and the production of liquids as the organic fraction of the waste degrades. The extent of other leachate generation processes, including the disposal of liquid wastes and contact of the groundwater with the refuse, appear to have a limited potential to exist at the FSL. This is based on the lack of evidence of liquid waste being deposited at the FSL, and the occurrence of the groundwater table below the base of the landfill. After drilling test holes through the landfill it is reported by BSK (1984) that the depth of burial of refuse in the southern or deepest part of the landfill is approximately 25 feet below the ground surface. An exhibit presented in ESA (1988) indicates a 50 foot minimum depth to groundwater in the Fresno area since 1950.

When the volume of the leachate exceeds the absorption capacity of the waste and cover soil, it accumulates in the voids of the refuse prism. The leachate tends to percolate downward within the landfill until relatively impervious layers are encountered. If uncontrolled, the leachate may migrate downward through underlying materials into saturated zones and contaminate the groundwater. Hydraulic gradients can be produced through the accumulation of pockets of liquid in the refuse prism, which cause leachate to move horizontally and appear as surface seeps on the face of the landfill. Leachate seeps draining aboveground have the potential to contaminate the soil as it moves off-site.

Surface seepage of leachate has not been observed to date at the FSL site. Further, the drilling program implemented for the preparation of the Air SWAT (EMCON, 1988) included the installation of four gas monitoring wells 20 feet into the refuse prism. Liquids were not encountered during the drilling of these wells. However, since groundwater contamination has been observed at the site, based on existing data, the impact of leachate on groundwater will be investigated. The Leachate Task Investigation (Section 5.3) has been developed to determine if leachate generation and subsequent migration is occurring at the FSL.

3.2.3 Surface Runoff/Erosion

There is a potential concern that erosion of the existing cover material on the landfill side slopes may have resulted in contamination being carried off-site. In addition, there is a remote possibility that the use of groundwater with low levels of organic constituents for irrigation may have contaminated off-site soils. The soil sampling task proposed in Section 5.0 is designed to determine if potential site contaminants are present in off-site soils.

3.3 PRELIMINARY IDENTIFICATION OF REMEDIAL ACTION OBJECTIVES

A remedial action objective is defined as a medium-specific goal for protecting human health and the environment. Objectives are developed in terms of the contaminants of concern, the exposure routes and potential receptors, and a stated acceptable range of contaminant levels for each exposure route. Based on previous site investigations at the FSL, a general understanding of landfill processes, and the conceptual site model described above, the preliminary remedial action objectives developed are listed below.

Environmental Media	Potential Receptors	Objective
Groundwater	Nearby residents, consumers of produce grown near site, workers near site.	For Human Health: Prevent ingestion of water containing carcinogenic contaminants, specifically volatile organic compounds, in excess of either a Maximum Contaminant Level (MCL) and/or a level that would pose an excess cancer risk of greater than 10^{-4} to 10^{-7}. Prevent ingestion of non-carcinogenic compounds at levels determined in the risk assessment to present a hazard index greater than 1.
		For Environmental Protection: Restore the groundwater aquifer to contaminant concentrations equal to or less than the MCL for that contaminant.
Soil	Nearby residents, workers near site.	For Human Health: Prevent ingestion, inhalation, and dermal contact with soil containing contaminants above the reference dose, carcinogenic contaminants presenting greater than 10^{-4} to 10^{-7} excess cancer risks, and non-carcinogenic compounds with a hazard index greater than 1.
Ambient Air	Nearby residents, workers near site.	For Human Health: Prevent inhalation of carcinogens in air, specifically volatile organics, at levels that would pose an excess of 10^{-4} to 10^{-7} excess cancer risks. Prevent inhalation of non-carcinogenic compounds with a hazard index greater than 1.

3.4 PRELIMINARY IDENTIFICATION OF REMEDIAL TECHNOLOGY TYPES

The most feasible remedial alternatives for a landfill site are typically containment actions. In general, the landfill waste is not excavated for transport to another disposal site or to a treatment facility. This limits the identification of remedial technology types to a cap for the landfill itself, in conjunction with mitigation measures to control landfill gas migration and leachate transport from the landfill.

EPA has prepared a reference fact sheet, applicable to the FSL, entitled "Streamlining the RI/FS for CERCLA Municipal Landfill Sites", September 1990 which addresses the limited range of landfill remedial alternatives. The guidance recommends a final cover, with the necessary drainage as the most effective technology type for the landfill itself. The control of landfill gas at the FSL will be achieved through an active landfill gas extraction system designed to intercept both subsurface migration and surface emissions through the cover. Management of the collected gas could include thermal destruction, utilization of a physical/chemical treatment processes and/or energy recovery.

Based upon the investigations previously performed at the site, it appears that landfill gas and/or leachate has migrated off-site through the subsurface and come in contact with both the saturated and vadose zones in the vicinity of the facility. This has resulted in the contamination of the groundwater and soil gas with organic compounds.

If leachate is found to be a problem, potential mitigation strategies include control of infiltration into the trash prism by the landfill cover, combined with control of surface water runon and drainage to prevent further generation of leachate. Control of existing leachate may be achieved with leachate extraction wells in the landfill itself, combined with subsurface cutoff walls to prevent further off-site migration.

A potential mitigation strategy for groundwater and extracted leachate consists of an extraction system to extract the contaminated groundwater. Treatment alternatives could include air stripping, carbon adsorption, or UV/peroxidation treatment; these are unit processes applied commonly in the water treatment industry to remove organic compounds. Ultimate management of the treated water may involve injection into the aquifer to facilitate flushing of the aquifer material, conveyance to a water treatment facility for further treatment prior to disposal, or utilization as a source of irrigation supply.

The remediation of the landfill gas present off-site in the unsaturated zone can most readily be accomplished through some type of soil venting or gas extraction system. This system would consist of extraction wells installed throughout the impacted area with the gas being drawn out through the vadose zone. The collected gas could then be conveyed to the landfill gas control system for management or treated independently through the use of carbon adsorption or other processes. The extent of the migration of landfill gas off-site through the unsaturated zone and the necessity to implement mitigation measures will be determined during the performance of the remedial investigation and the preparation of the risk assessment.

3.5 REMEDIAL ACTION PHASING AND OPERABLE UNITS

Based upon the existing information, the major pathways of contaminant transport at the FSL appear to be the subsurface migration and surface emissions of landfill gas. The importance of leachate will be determined in the RI investigation. The subsurface gas migration has apparently resulted in the contamination of both the groundwater and the unsaturated zone in the vicinity of the landfill. The surface emissions may be adversely impacting the quality of the ambient air. Control of this contaminant transport mechanism, through the construction of an on-site landfill gas control system in conjunction with a low permeability cover and surface drainage controls, should precede any response actions addressing off-site contamination. This is based on the premise that clean up of off-site contamination, either of the groundwater or soil-gas in the vadose zone, cannot be effective until the source contaminant, the landfill gas, is under control. The City is currently improving the existing landfill gas barriers as an interim action, to help address the gas migration issue.

The installation of the final cover with the gas control system is necessary to maximize the effectiveness of the gas system operation. The low permeability cover provides a barrier to the intrusion of air into the landfill through the cover as the gas in the refuse is collected. This greatly improves gas collection efficiencies through maximization of landfill gas extraction rates. In addition, placement of the final cap and drainage system minimizes the potential for surface water infiltration and the associated leachate generation and contaminant transport.

It is proposed at this time to keep all elements of the landfill closure and remediation together in a single process or operable unit. If during the course of the initial remedial investigation activities, it appears that the determination of the extent of the contaminated groundwater plume and/or the off-site gas migration in the vadose zone would require additional phases of field work, splitting off the landfill gas and cover remedial response into a separate operable unit would be considered. Implementation of the on-site mitigation measures should not be impeded, in terms of schedule, by the formulation of off-site responses. It is assumed that the initial round of remedial investigation activities, the groundwater investigation and soil-gas study, will provide sufficient information to perform the feasibility study for the on-site actions.

Section Four

4.0 DATA QUALITY OBJECTIVES

4.1 DQO GENERAL DISCUSSION

Data Quality Objectives (DQOs) are qualitative and quantitative statements of the quality of data needed to support specific decisions or regulatory actions. The process of developing DQOs for projects involving environmental data collection activities is not intended to be an independent requirement, but is meant to be integrated into the normal process of planning, designing and carrying out such projects. Data quality objectives should be jointly developed by both the data users and the data collectors.

The DQO development process consists of determining what information is needed, why it is needed, how it will be used and who will use it; evaluating different monitoring approaches based on cost and resource constraints; selecting the most cost-effective monitoring approach that will meet the needs of the ultimate data user; and formulation of data quality goals. Results of the DQO development process are included, in general terms, in this work plan and will be translated into specific sampling and laboratory methodology requirements in the sampling and analysis plan. DQOs will facilitate data collection activities, and will yield data meeting the needs of the user.

4.2 DQO DEVELOPMENT

Data Quality Objectives have been developed for the Fresno Sanitary Landfill based on the three-stage process outlined in "Data Quality Objectives For Remedial Response Activities" (EPA 540/G-87/003A). The three stages are described below:

Stage 1 - Identify Decision Types

Stage 2 - Identify Data Uses and Needs

Stage 3 - Design Data Collection Program

The purpose of Stage 1 is to define the types of decisions which will be made as part of the RI/FS, identify the decision makers, and identify and involve the data users. Decisions at this stage could include whether or not available data is adequate to determine a need for action; whether or not a risk assessment is necessary; identifying the action needed to reduce or eliminate the apparent risk.

Stage 2 of the DQO process defines data uses and specifies the type of data needed to meet project objectives. Decisions at this stage could include identifying specific chemical parameters, analytical methodologies, detection limits, and sample locations needed to identify the nature and extent of contamination, or to characterize the risk; identifying the physical tests required to evaluate mobility or remedial design; identifying the data needed by a feasibility study engineer to evaluate alternatives and to design the full-scale remedy. While precision, accuracy, representativeness, comparability, and completeness are considered in Stage 2, they are not discussed in detail or numerically defined until Stage 3.

During Stage 3 the data acquisition program is conceptualized and planned. The conceptual plan is developed jointly by the project managers, data collectors, data analyzers, and data users. The results of the two previous stages are combined and incorporated in the Sampling and Analysis Plan, which directs data acquisition activities. The Sampling and Analysis Plan describes all samples to be collected including matrix, analytical method, number of samples, sample locations, and QA/QC samples. The goals for precision, accuracy and completeness are numerically defined; the goals for data representativeness and comparability are discussed.

4.3 ANALYTICAL LEVELS

Field and analytical data can be used for a vast number of purposes ranging from qualitative determination of a chemical, to enforcement level data which can sustain scrutiny within a court of law. To ensure that data will be usable for the intended purpose, analytical levels have been defined which consider data uses, types of technology, and documentation. Each of these analytic levels, as well as the type of data collection planned at the Fresno Sanitary Landfill for each level, are described below.

- Level I - field screening or analysis using portable instruments. Results are often not compound-specific and not quantitative, but results are available in real-time. It is the least costly of the analytical options, but the least defensible due to greatest potential for error, and precision and accuracy limitations. Level I is normally used for health and safety purposes, but can also be used to identify media or samples that can be subject to further analyses. Field pH, conductivity, and temperature measurements are included in this level.

For the Fresno Sanitary Landfill Level I field screening will be restricted to explosimeters, photoionization detection equipment (e.g., HNu, and OVA), and pH, conductivity, and turbidity meters. This equipment will be used to support health and safety decisions, and to monitor purge water during well evacuation.

- Level II - field analyses using more sophisticated portable analytical instruments; in some cases, the instruments may be set up in a mobile laboratory on site. There is a wide range in the quality of data that can be generated. It depends on the use of suitable calibration standards, reference materials, and sample preparation equipment; and the training of the operator. Results are available in real-time or several hours.

For FSL, Level II analysis of methane is planned; this data will be used to define the extent of landfill gas migration.

- Level III - all analyses performed in an off-site analytical laboratory using established analytical procedures and strict QC. Level III analyses may or may not use EPA Contract Laboratory Program (CLP) procedures, and do not usually utilize the full validation or documentation procedures required of a normal CLP Level IV analysis. Analytical results from Level III analyses are normally available for use throughout the RI/FS and remedial design process. The results may not be usable for enforcement cases, however.

- Level IV - all analyses are based on the CLP routine analytical services (RAS) requirements. All analyses are performed in an off-site analytical laboratory following CLP procedures, when applicable.

All soil, groundwater, soil gas (excluding methane analysis), and ambient air samples submitted for inorganic and organic analyses will be subject to Level IV QC criteria.

- Level V - analysis by non-standard methods. All analyses are performed in an off-site analytical laboratory. Method development or method modification may be required for specific constituents or detection limits. Level of data validation is dependent on the technique and proposed use of the data. Non-chemical tests (e.g., grain-sized analysis) are included under Level V.

No Level V data collection activities are planned for the Fresno Sanitary Landfill.

4.4 DQOs BY FIELD TASK

The general data quality objectives for the Fresno Sanitary Landfill RI/FS are listed below. Each of these tasks is discussed more specifically in the sections which follow. Specific data collection activities are described in Section 5.0.

- To determine the nature and extent of the contaminants migrating from the landfill refuse prism. This includes the determination of the lateral and horizontal extent of soil and groundwater contamination attributable to the site, and the direction and rate of contaminant migration; identifying the nature and extent of landfill gas migration; determination of the nature of downwind/upwind ambient air concentration at the landfill.
- To develop a conceptual site model which will be used to interpret the fate and transport mechanisms as data becomes available.
- To determine if human and environmental receptors are at risk from exposure to contaminants from each of the sites.
- To determine and evaluate feasible remedies.

4.4.1 Groundwater Investigation

In order to characterize the groundwater contamination at the FSL, the data users will require data that identifies the nature and extent of groundwater contamination. To achieve this goal, the FSL RI will include sampling of all existing on-site groundwater monitoring wells, as well as residential wells adjacent to the site. Installation and sampling of approximately 16 new monitoring well locations is also planned.

The Level IV analysis will, at a minimum, consist of the following:

Parameter	Method
Volatile Organics	EPA 8010/8020
BNAs	EPA 8270
Pesticides/PCBs	EPA 8080
Herbicides	EPA 8150
Dioxins	EPA 8280
Metals	EPA 6010, 7061, 7471, 7741
Water Quality Parameters	To be provided in the SAP

CLP type deliverable packages will be required for all samples. Analysis will be performed by a laboratory certified by California Department of Health Services for drinking water and hazardous waste analysis. The selected lab must also have experience compiling CLP data packages.

4.4.2 Ambient Air Investigation

To characterize the nature of ambient air contamination at the FSL, the data users will require data that will supply the following:

- 24 hour composite, upwind/downwind volatile organic levels from the landfill perimeter. This data will be used to calculate off-site exposure to volatile gases.
- Wind speed, wind direction, and precipitation. This data will be measured and recorded by a meteorological station.

Since the data on volatile organic compounds will be used for risk assessment purposes, Level IV analysis is required. Samples will be collected in Summa canisters and will be analyzed by an off-site lab using EPA Method T014. There is currently no laboratory certification program for air analysis. The selected laboratory must, however, be able to demonstrate their ability to perform the EPA T014 analysis within the QA/QC constraints required by Level IV analysis.

4.4.3 Soil Gas Investigation

To characterize the nature and extent of landfill gas migration at the FSL, and to obtain data for the soil gas monitoring effort, data users will require data that will supply the following:

- The landfill perimeter areas at which landfill gas is migrating off site, and the way in which VOC concentrations vary with depth at these locations. Multiple depth gas monitoring wells will be installed around the perimeter of the landfill. Samples from these wells will be analyzed for methane and the 10 Calderon compounds.

- The extent of landfill gas migration off-site. Temporary soil gas probes will be used to determine the extent of off-site soil gas migration. All samples will be analyzed for methane. At least 5% of the samples indicating the presence of methane will be analyzed by the mobile laboratory for the 7 Calderon compounds that have been detected at FSL during previous groundwater or air investigations: vinyl chloride, benzene, methylene chloride, 1,2-DCA, TCA, TCE and PCE. This information will be used to correlate the presence of vinyl chloride and other contaminants with methane at the FSL.

  Samples from approximately 10% of all probe locations analyzed for the Calderon compounds will be collected in a Summa canister for analysis by a fixed base laboratory.

Level II analysis of methane is required to identify the extent of landfill gas migration. Methane measurements at the perimeter wells will be taken by an organic vapor analyzer and gas explosimeter. Temporary probe samples will be collected by an on-site laboratory, and analyzed by a Thermal Conductivity Meter (TCD).

Both Level II and Level IV volatile organic data will be collected for use in modeling and risk assessment. Perimeter well samples will be collected in Summa canisters and will be analyzed by an off-site lab using EPA Method T014 (Level IV). Temporary probe samples will be analyzed for either vinyl chloride or volatile organics by modified EPA 8010 (Level II). A subset of the temporary probe samples will be collected in Summa canisters and sent to a fixed-base laboratory for identical analysis (Level IV). There is currently no laboratory certification program for air analysis. The selected laboratories must, however, be able to demonstrate their ability to perform the analyses within the QA/QC constraints specified by the SAP.

4.4.4 Leachate Investigation

In order to determine whether or not leachate may be present, the data users will require the following information:

- A water balance study on the existing underground irrigation pipeline to determine whether or not the pipeline is leaking. A flow monitoring study, and a video camera investigation, may be conducted as part of this water balance study.

- A review of existing Hydrologic Evaluation of Landfill Performance Version 2 (HELP-2) model data.

Sample analysis is not required for this phase of the investigation. The precision and accuracy of the flow monitoring equipment, and of the data used in HELP-2, will be considered during each step of the investigation.

Based on the results of the water balance study and the HELP model review, a drilling program may be initiated. If a drilling program is undertaken, the data users will require data that supplies the following:

- The nature of contamination present in the leachate. A minimum of two borings within the landfill will allow collection of leachate, as well as soils from the underlying vadose zone. Also, existing on-site gas wells may be sampled for leachate.

Since the data will be used for remedial design and modeling purposes, Level IV analysis is required. Analysis of leachate samples will, at a minimum, consist of the following: volatile organics, metals and those parameters recommended by the EPA landfill guidance (EPA, 1991). Analysis of soil samples will, at a minimum, consist of the following: volatile organics, BNAs, pesticides/PCBs, herbicides, dioxins, and metals.

CLP deliverable packages will be required for all samples. Analysis will be performed by a laboratory certified by California Department of Health

Services for drinking water and hazardous waste analysis. The lab must also have experience compiling CLP data packages.

4.4.5 Surface and Subsurface Soil Investigation

To characterize the nature and extent of surface and subsurface soil contamination, the data users will require data that will supply the following:

- The nature of surface soil contamination from the 0- to 2-inch interval to provide data for the risk assessment. Samples will be collected near residences and in agricultural areas near the site to determine the nature of contamination in order to assess the risk that could result from inhalation, ingestion and dermal contact.

- The nature and extent of subsurface soil contamination from 1- to 5-foot interval. Subsurface soil samples will be collected during installation of the gas monitoring wells installed around the perimeter of the site. The purpose is to determine the nature of contamination, if any, at shallow depths adjacent to the landfill.

The Level IV analysis of all soil samples will, at the minimum, consist of the following:

Parameter	Method
Volatile Organics	EPA 8010/8020
BNAs	EPA 8270
Pesticides/PCBs	EPA 8080
Herbicides	EPA 8150
Dioxins	EPA 8280
Metals	EPA 6010, 7061, 7471, 7741

CLP deliverable packages will be required for all samples. Analysis will be performed by a laboratory certified by California Department of Health Services for drinking water and hazardous waste analysis. The lab must also have experience compiling CLP data packages.

4.4.6 Conceptual Model

Another major objective of the overall RI/FS is to develop a conceptual model of the site. A preliminary conceptual model is presented in Section 3.0 of this Work Plan. The model is used to understand the migration pathways for contaminant and thus potential risks to human health and the environment. Previous data and data collected from the remedial investigation will be used to develop the conceptual model. The model will provide an understanding of the sources of contaminants, the migration pathways and potential receptors. Data types for the conceptual model include data from previous investigations and chemical and physical data from the site characterization activities.

Once an initial conceptual model is developed, objectives are set for further data collection and evaluation efforts, if needed, to meet remedial program goals.

4.4.7 Risk Assessment

To support development of a risk assessment, data will be collected and evaluated to assess the risk to human health and the environment posed by exposure to contaminants at the FSL. Risk assessment data will be generated from sampling and analysis of environmental media. Major data requirements for FSL include collection of:

- Surface soil data (0- to 2-inch interval), which represents the soil interval most likely to result in exposure;
- Groundwater data, due to potential drinking water exposure; and
- Soil gas and ambient air, due to potential inhalation exposure.

This information is required to determine the exposure from potential ingestion, inhalation, or dermal exposure to contaminated soil, groundwater, or air.

Another potential exposure pathway is ingestion of agricultural produce impacted by landfill contaminants. Sampling of produce to characterize this pathway for the risk assessment will be performed by the EPA, if required.

Demographic and epidemiologic data, to the extent available, will also be used in the risk assessment process.

4.4.8 Feasibility Study

Another DQO for the FSL is to collect sufficient data to allow development and evaluation of alternatives for completion of the feasibility study. This study will evaluate remedial technologies and group technologies into alternatives to allow selection of a viable remedy. Selected remedies must be protective of human health and the environment and appropriate data must be available for making this decision. Data required for alternative development and evaluation include:

- Contaminant type (metal or organic);
- Chemical characteristics (volatile, semi-volatile, non-volatile, soluble, unsoluble, etc.);
- Media affected;
- Site physical characteristics and data;
- Site physical constraints;
- Potential chemical-specific ARARs that may limit a remedy;
- Results of treatability tests for this site or similar sites; and
- General design data such as soil characteristics and general water quality parameters.

The evaluation of alternatives may involve performing a bench-scale or pilot scale study to determine if a particular process or material may be effective in mitigating site contamination. Data types collected during the RI/FS which are applicable to the evaluation process include waste characterization, preliminary volume estimates, and physical and biological characteristics of soil and water.

Section Five

This section of the Work Plan describes the tasks that will be completed during the RI. The major tasks include project planning, soil gas investigation, hydrogeologic investigation, groundwater investigation, residential well sampling, air investigation, surface and subsurface soil investigation, and the remedial investigation report. The background approach and rationale for each task are presented to provide the basis for the RI investigation. Specific sampling and field procedures and data quality objectives will be presented in the Sampling and Analysis Plan (SAP). Disposition of any RI-derived wastes will be discussed in the SAP.

5.1 PROJECT PLANNING

Project planning includes preparation of project plans which support RI field activities. The plans include the Health and Safety Plan (HSP) and the SAP which consists of the Field Sampling Plan (FSP) and the Quality Assurance Project Plant (QAPP). These project plans will be prepared to ensure that the field effort will (1) use documented and accepted procedures prior to implementation; (2) provide adequate protection for on-site personnel during field activities; (3) provide a sufficient database for remedial considerations; (4) assure the accuracy, precision completeness, and comparability and compatibility of data. These plans are described in the following sections.

5.1.1 Health and Safety Plan (HSP)

A detailed site-specific Health and Safety Plan (HSP) will be prepared for all of the field activities that involve potential exposure to chemicals or hazardous situations. The plan will be developed as a separate document detailing on-site procedures which ensure the protection of personnel conducting sampling and other site investigation work at the FSL site. The HSP will be submitted to EPA in January 1991 before field investigations begin.

The HSP will be developed according to regulations and guidelines promulgated by the Occupational Safety and Health Administration (OSHA) (29 CFR, Part 1910), the National Institute for Occupational Safety and Health, EPA, and the American Conference of Governmental and Industrial Hygienists. Development and implementation of the HSP will be overseen by occupational health professionals trained and certified to perform health and safety functions. The plan will govern all on- and off-site activities for all CDM personnel contributing to the RI/FS field activities. The HSP will address the potential for occupational and public exposure to contamination resulting from sampling activities and will be based on available site data. The plan will include site maps, a site description, results of previous investigations, contingency plans for medical emergencies, decontamination procedures, and a description of monitoring equipment warning levels.

5.1.2 Field Sampling Plan

The elements of each field investigation task presented in Section 5.4 of this Work Plan will be incorporated into a Field Sampling Plan (FSP) developed to address EPA Region IX sampling and analytical protocols. The purpose of the FSP is to ensure that environmental sampling and data collection activities will be based on documented and accepted procedures prior to implementation. The FSP will describe sampling rationale and approach. The FSP is subject to a peer review to ensure that the procedures identified will be adequate to meet sampling objectives and data requirements. Adherence to procedures stated in the FSP will ensure that data of known and documented quality are obtained. The proposed field activities to be included within the FSP involve sample collection of groundwater, soil and air, installation of groundwater monitoring wells, performing aquifer tests, performing soil gas surveys, installation of soil gas monitoring wells, performing a geophysical survey, and monitoring of groundwater levels.

Identification of sample locations, sampling objectives and rationale, as well as sample collection and measurement protocols will be included in the FSP. The final FSP will provide specific, detailed protocol descriptions, and will be developed in accordance with U.S. EPA Region IX "Sampling Plan

Preparation Guidance" dated April 1989. The FSP will include procedures for equipment decontamination, sample collection, preservation, sealing, labeling, storage, shipping of sample containers, documentation, and chain of custody. Analytical methods and protocols for each type of sample will also be identified in the FSP. The FSP will include a description of sampling equipment, sample containers, drilling methods, and borehole logging procedures as appropriate. It is anticipated that the FSP may be revised as necessary as the need for different types of field activities is reassessed and rescoped. A draft of the FSP is scheduled for submittal in January 1991 with finalization in March 1991.

5.1.3 Quality Assurance Project Plan (QAPP)

A Quality Assurance Project Plan (QAPP) is being prepared along with the FSP. Both plans will be incorporated into the SAP. This section describes the content of the QAPP.

EPA policy requires that all RI/FS activities performed at an NPL site be under the control of a centrally-managed quality assurance program. This requirement applies to all environmental monitoring and measurement efforts mandated or supported by EPA.

Quality Assurance (QA) is the integrated program implemented to ensure that generation of all data attains a degree of documented quality to facilitate appropriate decisions for site remediation. Quality Control (QC) is the application of specific procedures to determine and measure the performance and implementation of stated quality assurance objectives. Quality control procedures are used to define whether sampling and analytical techniques have produced data within specified control limits.

The FSL QAPP will be prepared in accordance with EPA guidance as developed in "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans" (QAMS005/80), and U.S. EPA Region IX "Guidance for Preparing Quality Assurance Project Plans" September 1989.

The QAPP addresses the procedures to ensure the precision, accuracy, representativeness, comparability and completeness of all data collected and generated during the course of the FSL RI/FS activities. The policies, organization, objectives, functional activities and specific QA/QC activities designed to achieve the data quality goals will be specified. Further, the QAPP provides the quality assurance requirements for data handling and manipulation during all phases of the project. It is intended to guide field, laboratory, and management personnel in all relevant aspects of data collection, management, and control while on or off the site.

Each party generating data has the responsibility to implement procedures which assure that the data generated are of known and documented quality. In addition, target levels of quality that the data should meet in order to be compatible with the project objectives will be specified in the QAPP and other project planning documents. The QAPP is being prepared to ensure that this responsibility is met uniformly throughout the RI/FS process. A draft of the QAPP is scheduled for submittal in January 1991. Finalization of the plan is expected in March 1991.

5.1.4 Data Management Approach

Since extensive information will be generated during the RI, careful management of these data will be necessary to ensure that field data are correctly transcribed in reports and filed for later retrieval. Procedures for the inventory, control, filing, storage, and retrieval of data collected and reports generated during the RI will be included in the QAPP and FSP. Data management procedures will be designed such that the integrity of the data collected is maintained for subsequent use. Tracking of data will be similarly maintained. The DQOs will govern the data management method(s) used and the level of review to which the data are subjected.

Precautions will be taken to prevent introduction of errors or loss of data. Included in the QAPP will be a description of the project file structure and document inventory control; and a description of procedures for controlling the receipt, tracking, access, and distribution of all data, reports, and records generated. A description of the data storage system will also be provided. All data generated by contractors and laboratories, including laboratory documentation, will be maintained in one central location. Procedures for data review and validation will also be provided. Data will be maintained in a standardized form to promote easy updating.

Records of sample shipments, receipt of analytical results, submittal of preliminary results for data validation, completion of data validation, and evaluation of the QC package will be maintained to ensure that only final and approved analytical data are used in the RI/FS evaluation. In some instances, the use of preliminary data is warranted to initiate data analysis. However, preliminary data are considered unofficial, and as such, will only be used for preliminary evaluations. Any preliminary data used in analysis will be updated upon receipt of the official data validation package.

The stated DQOs for each activity involving sample analysis will specify whether the information is valid and if qualifiers exist; in addition, the DQOs will specify which qualifiers can invalidate use of certain data. For example, reproducibility of plus or minus 20 percent may be acceptable in a treatability study but may not be acceptable for determining treatment technologies required for meeting a drinking water standard.

Acceptability of data quality is not established until the reviewed QA/QC package accompanies the analytical data.

5.2 SOIL GAS INVESTIGATION

Background And Objectives

Preliminary work has been performed at the FSL to determine the nature of the landfill gas and its pathways for migration off-site. The two primary gas investigations conducted include the Air Quality Solid Waste Assessment Test (SWAT) Report prepared by EMCON Associates dated October 1988 and the Soil-Gas Survey Report for the Fresno Municipal Landfill by Lockheed Engineering and Sciences Company dated September 1990. The SWAT report provides a characterization of the landfill gas with an assessment of the landfill gas emissions into the ambient air. The Lockheed work investigated the subsurface migration of landfill gas through the unsaturated zone on the north and south sides of the landfill.

A system of seventeen multiple depth methane monitoring wells exists at the site as depicted on Figure 5-1. The wells are clustered on the north and south sides of the landfill in the general vicinity of the residences. The system was constructed to monitor the presence and movement of landfill gas in proximity to the homes. Both the monitoring of the system and Lockheed's investigation revealed the existence of off-site gas migration.

The objective of the soil gas investigation is four-fold: 1) to determine the pathways of subsurface migration of landfill gas; 2) to define the extent of off-site landfill gas migration and consequent contaminant migration; 3) to quantify the concentrations of volatile organic compounds in the gas which has migrated off-site; and 4) to evaluate the possible impact of soil gas on groundwater quality through computer modeling. The first two objectives will guide the formulation of both on- and off-site gas control remedial actions. The volatile organic assessment will be performed to provide data for modeling and risk assessment purposes.

Task Description

The first objective is addressed through the expansion of the existing methane monitoring well network. The network will consist of permanent installations constructed in accordance with State requirements for landfill gas control and monitoring at closed disposal sites (CAC Title 14, Chapter 3, Article 7.8). Six additional wells are proposed at the locations depicted on Figure 5-1. Well locations were selected to meet the requirement that a maximum distance of 1000 feet exists between adjacent monitoring wells.

The wellbore depth will be approximately 45 feet. Three probes will be installed in each wellbore. The shallow probe will be placed at a depth of approximately five below the ground surface in an attempt to be above the hardpan layer reported at the site. The hardpan has the potential for

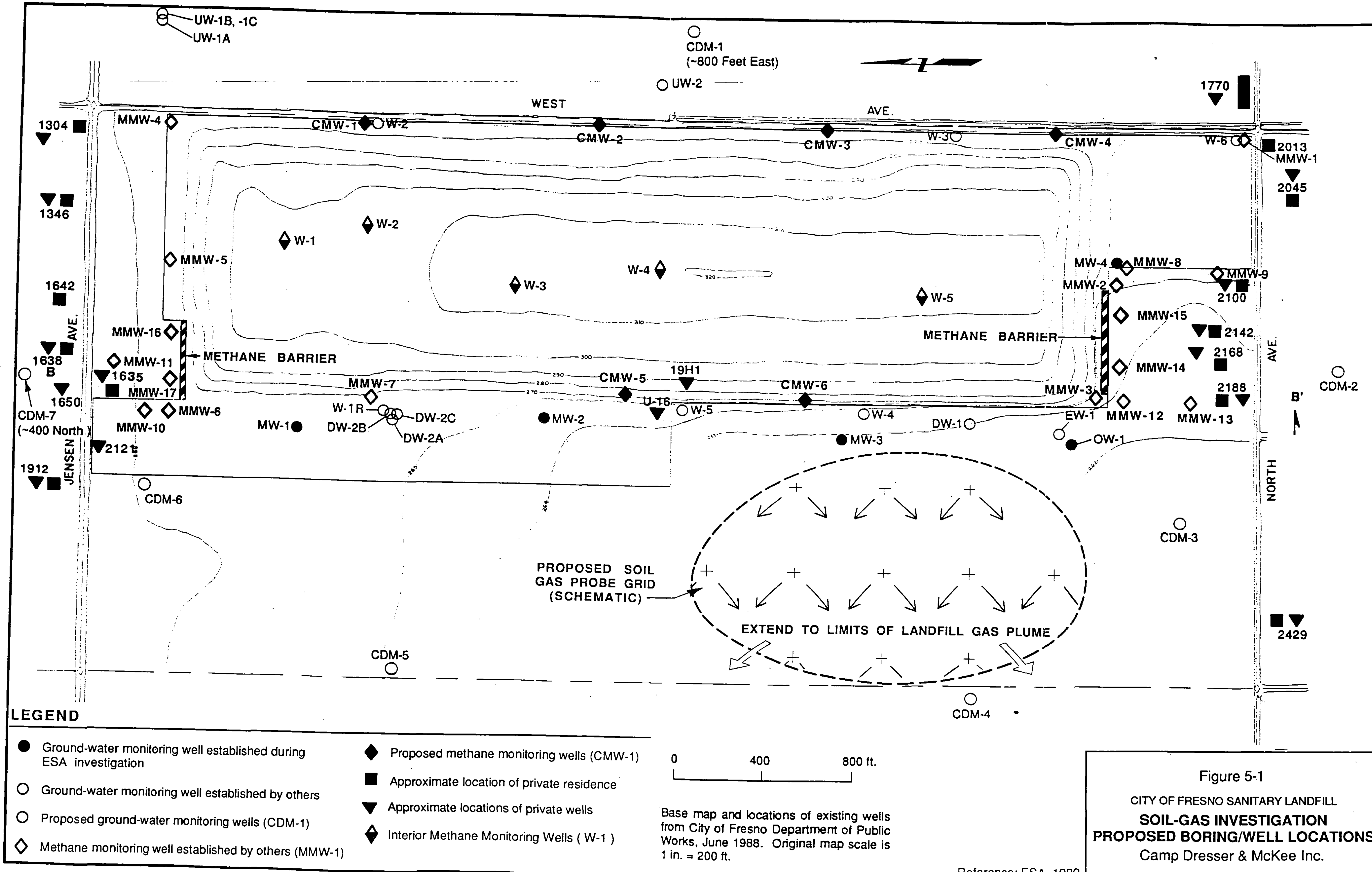


Figure 5-1

CITY OF FRESNO SANITARY LANDFILL

SOIL-GAS INVESTIGATION
PROPOSED BORING/WELL LOCATIONS

Camp Dresser & McKee Inc.

acting as a confining layer to vertical migration of landfill gas. The second probe will be placed at a depth of approximately 25 feet, which corresponds with the general maximum depth of refuse. The third probe will be placed at a depth of approximately 45 feet.

Details on the construction of the gas monitoring wells will be included in the Sampling and Analysis Plan (SAP). The required documentation of well location, depth, and construction will also be specified in the SAP. The gas monitoring wells selected for permanent perimeter monitoring will be analyzed for methane and Calderon volatile organics.

The extent of existing gas migration off-site will be determined by establishing a grid of temporary small-volume ground probes radiating in all directions from the landfill perimeter. The grid will be expanded away from the landfill perimeter until the presence of landfill gas is no longer detected. Figure 5-1 indicates a schematic representation of the location and spacing of the grid points. The objective in identifying temporary probe locations is to adequately define the boundaries of the soil gas plume with an efficient number of probes. The small-volume probes consist of stainless steel tubes which are installed through the use of a van outfitted to drive the probes and take samples. Probes will be placed at approximately 15 foot depths or to maximum depth possible for the van, whichever is greater. If probe placement beneath the hardpan is not possible with a mobile hydraulic unit, alternative probe installation plans (such as small drilling rig) will be developed. Grid spacing and location will be developed in greater detail in the SAP.

The third objective of the soil-gas survey, quantification of volatile organic levels in off-site landfill gas, will be accomplished using the temporary probe network. At approximately 5% of the specified locations of the grid, soil-gas samples will be drawn and analyzed by a gas chromatograph (GC) in the van. Analysis will include the 7 Calderon compounds that have been detected in either in groundwater or ambient air during previous investigations: vinyl chloride, benzene, methylene chloride, 1,2-DCA, TCA, TCE and PCE. Approximately 10% of the probe locations sampled for VOCs will also be sampled using a Summa cannister, for analysis by a fixed base laboratory for confirmatory purposes. The rationale for the specific location of the volatile organic sampling locations, and the number of samples to be collected, will be developed in the SAP.

The final objective of the soil gas investigation is to attempt to evaluate the possible impact of soil gas on groundwater quality through computer modeling. Analytical data from the perimeter wells will be used to model the pathway of subsurface migration, as well as the vertical distribution of gases. Results of the temporary probe sampling will indicate the extent of off-site migration below the hardpan layer and yield further information on the location of a hardpan layer. At a minimum, diffusion driven migration will be modeled in order to determine the migration pathway of soil gas after the source (landfill) is cut-off. This information will be used to evaluate the impact of off-site soil gas on groundwater quality.

Prior to initiating the field sampling investigation, a trial modeling effort will be implemented using the analytical data collected by Lockheed to model gas migration at the north and south area of the landfill. Through this trial modeling effort, needs for additional geologic and soil gas data will be identified.

Soil-Gas Sampling and Analysis

In a 1987 study of 20 Class II landfills by the South Coast Air Quality Management District, methane was found to be a useful indicator of the presence of subsurface gas migration. The proposed approach, therefore, is to monitor for the presence of methane in all gas monitoring wells and temporary probes. As discussed above, at approximately 5% of the temporary probe locations where methane is detected, analysis for volatile organics will take place. An organic vapor analyzer (OVA) will be employed to monitor methane in the probes and by field technicians to sample the gas wells. The OVA is capable of measuring total organic concentration as methane, in the parts per million range.

The gas monitoring wells selected for landfill perimeter monitoring will be sampled for volatile organics using Summa cannister methods and analyzed by a fixed-base laboratory. The specific wells selected and the sampling techniques will be developed in more detail in the SAP.

Sampling of the gas monitoring wells will indicate the general pathways of off-site migration around the landfill perimeter, as well as the vertical distribution of contaminants. Monitoring of the off-site probes will determine the lateral extent of gas migration. Samples taken from the temporary probes and analyzed for volatile organics by the GC in the van will support the development of the risk assessment. All soil gas samples will be utilized in the soil gas modeling effort.

Meeting Data Quality Objectives

Level II analyses of methane is required to identify the extent of landfill gas migration in both the gas monitoring wells and off-site probes. Since volatile organic data will be used for modeling and risk assessment purposes, Level III analysis is required.

5.3 LEACHATE INVESTIGATION

Background and Objectives

The FSL is an unlined landfill and does not have a leachate collection system installed. Because of the arid climate and limited rainfall in the Fresno area, previous investigators have felt that leachate generation due to infiltration of precipitation is unlikely (BSK, 1986). There have been no reports of surface seeps of leachate in previous reports. Available records of disposal operations at the landfill do not indicate any liquid waste disposal.

The fact that groundwater has shown evidence of low levels of organic constituents may indicate that leachate migration is a mechanism causing groundwater contamination. Ponding of surface runoff has occurred historically around the margins of the FSL, which could have contributed to infiltration of surface water. The pipeline which is buried along the Annadale Avenue alignment, bisecting the site, could have leaked, creating a source for leachate generation. Also, EPA has cited the historical occurrence of fires at the landfill, which were extinguished using water. The objectives of the leachate task will be to investigate whether leachate generation is a viable mechanism of contaminant migration. If evidence suggests that leachate could be present, drilling will be undertaken in the refuse area to investigate and characterize, to the extent possible, leachate in the refuse and the underlying vadose zone soils. In addition, the feasibility of vadose zone monitoring for post-closure monitoring required by State of California landfill closure regulations will be addressed by this drilling program through the investigation of vadose zone soils.

Task Description

In order to accomplish the objectives above, the primary task will be to conduct a water balance study for the site. A major part of the water balance will be to determine if the existing buried irrigation pipeline is leaking. All available information will be gathered for the pipeline; if accurate flow information is not available, flow monitoring will be conducted, if possible, at the upstream and downstream ends of the pipeline to determine any losses. A video camera survey will be considered, if possible, to obtain a visual record of any breaks in the pipeline.

The water balance will also include a review of the existing HELP model data; the model will be rerun if necessary to obtain an accurate estimate of infiltration. The ponded water which has been observed at the site will be included as an infiltration source; historical evidence and quantities of ponding will be investigated via historical aerial photographs and topographic maps.

Sampling and Analysis

If leachate appears to be a viable mechanism based on the above analysis, a limited drilling program will be undertaken in those areas where leachate appears likely. If free leachate is encountered and can be sampled, it will be characterized by analyzing for leachate parameters as suggested in EPA's landfill guidance, Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill sites (EPA 15401 P-91/001), as well as for volatile organics. After noting the depth of refuse, the borings will be continued into the underlying vadose zone soils. Samples will be collected of the underlying soils and analyzed for volatile organics, BNAs, pesticides/PCBs, herbicides, dioxins, and metals.

Sampling of leachate, if present, and underlying soils will identify a potential pathway of contaminant migration, and aid in the development of mitigation strategies.

Meeting Data Quality Objectives

Since the data will be used for remedial design and modeling purposes, Level IV analysis of soil and leachate samples is required.

5.4 HYDROGEOLOGIC INVESTIGATION

Background and Objectives

The hydrogeologic investigation will be a focused program to supplement and expand on existing information that has been developed at the site by previous investigators. As described in Section 2.2, several previous investigators have conducted studies and installed monitoring wells (Figure 2-2) in an effort to determine the site hydrogeology. The site stratigraphy is typical of the Central Valley of California, consisting of a thick sequence of alluvial sediments of Cenozoic age overlying granitic basement rock at a depth of about 4500 feet. At the site, the near surface geology has been generally characterized as consisting of interbedded clays, silts, sands, sandy clays, and sandy silts. The existing data do not appear to indicate any well-developed, continuous aquifers or aquitards at discrete depths. It appears, based on the water level data collected since 1987, that the site hydrogeology is comprised of a single aquifer system, at least to the depths investigated to date (approximately 170 feet).

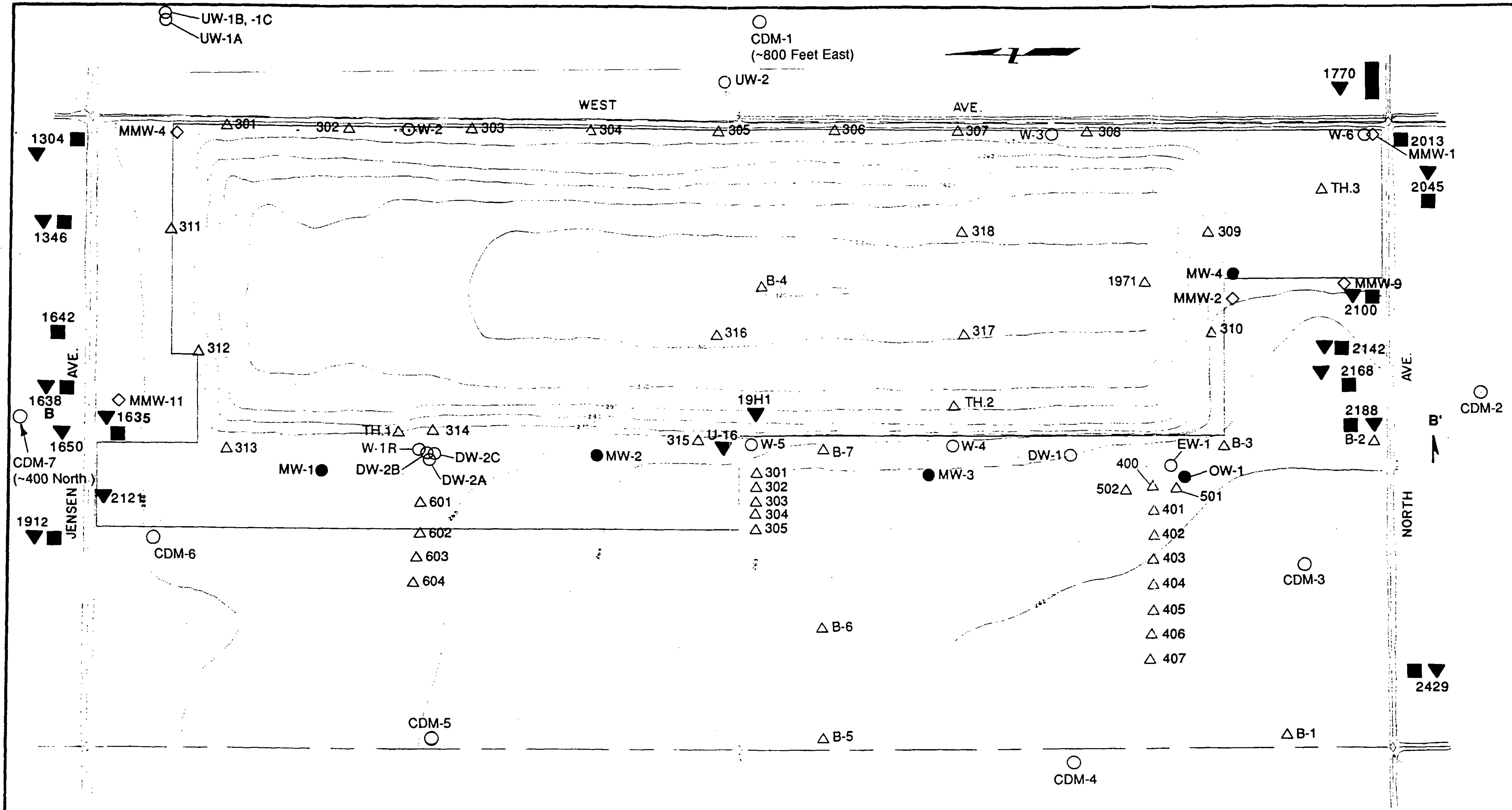
The existing data show that groundwater flow at the site is generally to the west (ESA, 1989) at a gradient of 0.0013 feet per foot. The site groundwater flow field is apparently influenced by the pumping of an agricultural well at the west boundary of the landfill, identified as U-16 by ESA (1988). Pumping of this well, for which completion information has not been located, appears to have created a significant cone of depression, at least for the time period contoured in ESA's Phase II report. However, there are irregularities in water levels observed in several wells which were not accounted for in the contour information. For example, well W-4 exhibits a lower water level than expected from the contoured water level surface, which may reflect a hydraulically separate groundwater zone. The differences in head may also be due to the fact that the water levels were not all measured at the same time, but over a several week period.

Previous site investigators have identified three general hydrostratigraphic units: shallow, intermediate and deep. These units do not appear to necessarily correspond to specific aquifer zones or permeable sand units, but were apparently selected for well completion intervals in order to vertically characterize what appears to be a single interconnected aquifer system. ESA (1988) attempted to correlate permeable zones across the site by using downhole gamma ray logging, which can detect natural gamma radiation through existing well casing.

The objectives of the hydrogeologic task under this RI investigation are to 1) continue to develop, to the extent possible, a more complete hydrogeologic model of the site by drilling of additional borings and downhole geophysical logging; in particular, information on the possible presence of a hardpan layer is needed for soil gas modeling; 2) to identify to the extent possible the location and extent of off-site migration pathways for contaminants in ground water, and 3) to install additional monitoring wells to further define the groundwater flow field and the lateral and vertical extent of the contaminant plume.

Task Description

In order to accomplish the objectives of the hydrogeologic task as described above, a program of drilling, downhole geophysical logging, and well installation is proposed. The proposed locations of borings and wells are shown on Figure 5-2. Pilot borings will be drilled using mud rotary techniques; monitor wells will be installed using an air rig. At each selected location, a small-diameter pilot boring will be advanced to a



LEGEND

● Ground-water monitoring well established during ESA investigation

○ Ground-water monitoring well established by others

◇ Methane monitoring well established by others

○ CDM-1 Proposed Ground-water Monitoring Well

▼ Approximate locations of private wells

△ Sealed test boring by others (approximate location)

■ Approximate location of private residence

Base map and locations of existing wells from City of Fresno Department of Public Works, June 1988. Original map scale is 1 in. = 200 ft.

Reference: ESA, 1989

Figure 5-2

CITY OF FRESNO SANITARY LANDFILL

HYDROGEOLOGIC INVESTIGATION
PROPOSED BORING/WELL LOCATIONS

Camp Dresser & McKee Inc.

total depth of about 250 feet using mud rotary drilling, and will be lithologically logged by the field geologist. The purpose of the pilot boring will be to characterize the subsurface stratigraphy, and allow selection of well completion intervals. Lithologic information including grain size, texture, color, USCS soil classification, and drilling characteristics will be recorded in the field log book.

Downhole geophysical logging will then be conducted by a qualified contractor. Spontaneous potential, resistivity, and gamma logs will be run in each hole. The purpose of these logs will be to establish the stratigraphy at the new locations, and will allow correlation with existing gamma logs and descriptions. This approach will provide a means of geologic correlation across the site, in order to recognize potential migration pathways for groundwater. At the conclusion of logging, the pilot hole will be immediately grouted to the surface using a tremie system; holes will not be allowed to remain open overnight.

The proposed well locations have been chosen to define the lateral and vertical boundaries of the contaminant plume, either downgradient of areas of known contamination, or further upgradient of the landfill. Each location has been numbered starting at the upgradient or east side of the landfill; the rationale for each location follows. The need for remote upgradient or background wells at Location 1 is evident since organic compounds have been detected at each of the existing upgradient locations (UW-1 and UW-2). The transport mechanism to explain the presence of organics at upgradient wells will be investigated during the RI, but may be due to partitioning from landfill gas. It is anticipated that a 3-well cluster will be installed about 1200 feet east of West Avenue, or beyond the influence of migrating landfill gas. The exact location will be dependent on the results of soil gas survey. The three wells will be installed at varying depths, roughly corresponding to the shallow, intermediate and deep zones of the previous investigators; actual completion depths will be dependent on the location of permeable aquifer material as shown by the geophysical log. Each well will be installed in a separate boring, not in a single boring as was done in the past. This will eliminate the potential for cross-contamination between wells sharing a borehole. The background wells will characterize the groundwater away from the influence of the landfill.

Location 2 is proposed to define the lateral and vertical extent of the plume south of the landfill boundary, based on the detected dichlorofluoromethane in the residences along North Avenue. A 3 well cluster is proposed for this location, again to correspond to the general completion intervals identified by others. The actual completion depths will depend on the results of the geophysical logging in the pilot hole at that location. Location 3 is downgradient of wells MW-4, OW-1 and EW-1, with detected organics. Two wells are proposed at this location, to characterize the shallow and intermediate zones. The completion zones will be dependent on the geophysical log at this location.

Location 4 will be a far downgradient monitor outside the limit of the plume. The results of the soil gas survey will be reviewed to assist in locating these wells beyond the plume boundary. Three wells are anticipated, including a deep well to define the vertical extent of contamination. Location 5 has been located in the same manner, downgradient of observed organics in MW-1 and W-1R.

Location 6 is proposed to define the northwestern extent of the plume. One shallow well is anticipated at this location. Finally, Location 7 will be placed downgradient of observed, although very low, levels of organics north of the landfill in residential wells. Two wells are anticipated at this location, which will function as a far off-site monitor beyond the plume. As above, completion intervals will be dependent on the results of the geophysical logging.

Proposed locations may change, depending on access agreements with landowners. Details of well installation and handling of drilling/ development wastes will be presented in the Sampling and Analysis Plan (SAP). The historical pumping practices of all irrigation wells within a 1 mile radius of the site will be investigated in order to anticipate any effect they may have on the hydrologic model.

Soil Sampling and Analysis

At each pilot hole location, in situ core samples of the subsurface material will be obtained at selected depths dependent on field conditions. These samples will be analyzed for grain size, total organic carbon (TOC), and volatile organics. The purpose of these analyses is to characterize the aquifer material and achieve an understanding of contaminant transport by groundwater. Approximately 2 samples per boring are anticipated. Depth of sampling will be dependent on the identification of permeable aquifer material. Details of the sampling procedures and laboratory analysis will be described in the Sampling and Analysis Plan (SAP).

Meeting Data Quality Objectives

The purpose of the data collected under this task will be to allow definition of groundwater contaminant pathways and extent of contamination, so that remedial alternatives for the treatment of groundwater can be developed in the Feasibility Study. The data will be used to develop the conceptual site model. Geological and geophysical data will be Level I and II field screening data. Level IV quality data will be required for the subsurface soil samples. The quantitative data quality objectives associated with this task will be outlined in the Quality Assurance Project Plan.

5.5 GROUNDWATER INVESTIGATION

Background and Objectives

As described in Section 2.2, a considerable number of groundwater samples have been collected and analyzed by previous investigators including the City of Fresno from monitoring wells at the site, in an effort to monitor the potential off-site migration of organic compounds in groundwater. A preliminary review of Figures 2-3 through 2-5 and the data in Appendix A appears to show offsite migration of contaminated groundwater. In addition, a well inventory of all private, municipal, and industrial wells within a mile of the site was completed by ESA (1988). It identified over 85 wells and provided information regarding completion intervals.

The groundwater investigation will consist of a coordinated periodic sampling effort at existing wells and new monitor wells to be installed at the site. Currently, the City samples the 24 on-site monitoring wells for organic compounds once every year; sampling of nearby residential wells is discussed in the following section. Table 5-1 is a summary of the existing site monitoring wells, showing surface elevation, depth, screened interval, and water level elevation. Each of the existing wells has been equipped with a packer system which isolates the screened interval, and a dedicated sampling pump. This type of sampling arrangement eliminates the need to purge large volumes of casing storage prior to sampling, and the dedicated pump eliminates the risk of cross-contamination of groundwater samples.

The objectives of the groundwater investigation will be to continue to monitor the existing well network at the site, and to sample the new wells to be installed during the proposed investigation. Additional chemical parameters will be analyzed for as necessary to fully investigate the potential range of chemicals present. The purpose of the monitoring will be to develop a data base for drinking water ingestion scenarios for the health risk assessment, to allow the development of groundwater treatment alternatives, including a potential treatability study, in the Feasibility Study and to address the monitoring requirements of the applicable California regulations for Waste Management Units.

Task Description

Prior to any well installation or field work, a thorough review will be undertaken of the City's methods and protocols for sampling and analysis of the existing wells, to determine how sampling was conducted in the past. After well development, the new wells will be equipped with dedicated sampling pumps and packers, similar to the existing wells. This will ensure that samples are collected under similar conditions at all wells, and will be more cost-effective over time by eliminating the need for repetitive decontamination of a single sampling pump. Purge water will be contained and screened in the field; a discussion of how purge water will be disposed and which sampling techniques will be utilized will be presented in the SAP.

TABLE 5-1

ELEVATION AND COMPLETION DATA FOR EXISTING
ON-SITE MONITORING WELLS
FRESNO SANITARY LANDFILL

Well	Elevation At Well Datum (ft)	Distance From Well Datum To Grade (ft)	Approximate Elevation At Grade (ft above MSL)	Static Water Depth* (ft)	Depth of Screened Interval (ft)	Elevation of Water Surface (ft above MSL)
W-1R	267.90[1] **	-1.95	265.95	55.10	50-60	210.85
W-2	266.40[1]	-0.75	265.65	55.03	50-60	210.62
W-3	266.40[1]	-2.20	264.20	52.55	50-60	211.65
W-4	264.00[1]	-0.83	263.17	54.96	50-60	208.21
W-5	266.50[1]	-1.76	264.74	56.10	50-60	208.64
W-6	Not Surveyed	—	—	—	50-60	—
MW-1	267.38**	-2.17**	265.21	54.13	59-61	211.08
MW-2	266.22**	-2.01**	264.21	52.89	59-69	211.32
MW-3	264.47	-2.30	262.17	51.79	53-63	210.38
MW-4	266.54**	-2.40**	264.14	52.56	55-65	211.58
UW-1A	266.54	-0.75	265.79	54.41	50-60	211.38
UW-1B	265.48	-0.18	265.30	53.25	100-110	212.05
UW-1C	265.41	-0.11	265.30	53.38	150-160	211.92
UW-2A	265.42	-0.59	264.83	54.28	50-60	210.55
UW-2B	265.38	-0.55	264.83	53.62	100-110	211.21
UW-2C	265.42	-0.59	264.83	53.73	150-160	211.10
DW-1A	262.23	-0.73	261.50	Not Measured	50-60	—
DW-1B	262.07	-0.57	261.50	51.93	100-110	209.57
DW-1C	260.95	0.55	261.50	51.87	150-160	209.63
DW-2A	265.95	-1.25	264.70	54.97	50-60	209.73[2]
DW-2B	264.99	-0.75	264.24	54.70	100-110	209.54
DW-2C	266.34	-0.78	265.56	54.69	150-160	210.87
OW-1	263.92	-2.20	261.72	51.76	82.5-102.5	209.96
EW-1	264.52	-2.33	262.19	51.67	50-100	210.52

* Water level measurements taken on: 5/11 - 5/18/89
**Portion of 2-inch PVC stick up cut to accommodate new pump
[1] From measurement by Mitchel/Anderson 7/29/88
[2] Water level measurement taken on 6/5/89

An additional task will be to repair or replace inoperative sampling pumps such as the one in well EW-1.

Groundwater Sampling and Analysis

The proposed approach is to sample all on-site wells, both new and existing, when the well installation task is complete. It is anticipated that City personnel will then conduct subsequent quarterly sampling under CDM direction. Analyses will be conducted for all Target Compound List (TCL) parameters not previously sampled for, including metals, BNAs, pesticides, PCBs and dioxin. The purpose of adding additional parameters such as metals and non-volatile organics is to determine whether these contaminants are present at concentrations that may pose a health risk. After the initial one-time sampling of all wells, subsequent quarterly monitoring will be established for selected wells and selected indicator chemicals; once a year, or every fourth quarter, all on-site wells will be sampled and analyzed for all TCL parameters. Table 5-2 presents the proposed yearly and quarterly sampling schedule; the final selection of wells for ongoing monitoring wil be presented in the SAP.

Meeting Data Quality Objectives

Level IV quality data will be required for the on-site well data in order to define the lateral and vertical limits of groundwater contamination. This level of data quality is also required to support the development of the risk assessment. The specific data quality objectives for the groundwater analyses will be presented in the Quality Assurance Project Plan.

5.6 RESIDENTIAL WELL SAMPLING

Background and Objectives

As described in Section 2.0, quarterly sampling of five residential wells has been carried out by the City since mid-1989. Previous to the initiation of quarterly sampling, a considerable number of groundwater

TABLE 5-2
PROPOSED GROUNDWATER SAMPLING PROGRAM
SCHEDULE

One-Time Sampling During RI	Subsequent Quarterly Sampling	Yearly Sampling (Every 4th Quarter)
UW-1A	CDM-1	UW-1A
UW-1B	CDM-2	UW-1B
UW-1C	CDM-3	UW-1C
W-2	CDM-4	W-2
UW-2A	CDM-7	UW-2A
UW-2B		UW-2B
UW-2C		UW-2C
CDM-1		CDM-1
W-3		W-3
W-6		W-6
MW-4		MW-4
CDM-2		CDM-2
CDM-3		CDM-3
OW-1		OW-1
EW-1		EW-1
DW-1A		DW-1A
DW-1B		DW-1B
DW-1C		DW-1C
CDM-4		CDM-4
W-4		W-4
MW-3		MW-3
W-5		W-5
19-H1		19-H1
MW-2		MW-2
CDM-5		CDM-5
DW-2A		DW-2A
DW-2B		DW-2B
DW-2C		DW-2C
W-1R		W-1R
MW-1		MW-1
CDM-6		CDM-6
CDM-7		CDM-7
Residential Wells		
1770 North	2100 North	1770 North
2045 North		2045 North
2100 North	2142 North	2100 North
2142 North	2168 North	2142 North
2168 North	2188 North	2168 North
2188 North	2429 North	2188 North
1912 Jensen		1912 Jensen
1635 Jensen		1635 Jensen
1642 Jensen		1642 Jensen
1346 Jensen		1346 Jensen
1304 Jensen		1304 Jensen
2429 North		2429 North
1650 Jensen		1650 Jensen
2121 Jensen		2121 Jensen

samples were collected by previous investigators and the City from a total of 14 nearby residential wells. A review of reports presented by previous investigators indicates that concentration levels for the majority of VOCs were below the detection limits. Tetrachloroethylene was detected at levels above the detection limits, but below federal and state action limits at numerous wells. Tetrachloroethylene was detected in 2 wells (2168 and 2429 north) at levels slightly above the MCL limit.

The objective of this task will be to continue quarterly sampling of the 5 residential wells in conjunction with the on-site water quality sampling program. The 9 residential wells not currently part of the quarterly monitoring program will be sampled concurrently with the sampling of of newly installed on-site monitoring wells.

At all residential wells, additional chemical parameters will be analyzed for as necessary to fully investigate the potential range of contaminants present. The purpose of this monitoring will be to develop a database for the health risk assessment, and to allow the development of groundwater treatment alternatives.

Task Description

Fourteen residential wells have been identified in the vicinity of the FSL as shown in Table 5-2.

Quarterly sampling by the City at five residential wells will continue. The analyses to be conducted on these samples, however, will be expanded from VOCs to include BNAs, pesticides, PCBs, metals, and dioxin. The nine residential wells not currently part of the quarterly monitoring program will also be sampled for VOCs, BNAs, pesticides, PCBs, pesticides, metals and dioxin. Details of the sampling procedures and laboratory analyses will be described in the Sampling and Analysis Plan.

Meeting Data Quality Objectives

Data collected at residential wells will be used to identify the nature and extent of groundwater contamination; to assist in development of remedial alternatives; and to evaluate the potential health threat to residents. Level IV quality data is required for all residential well data. The quantitative and qualitative data quality objectives associated with this task will be outlined in the Quality Assurance Project Plan.

5.7 AIR INVESTIGATION

Background and Objectives

As discussed in Section 5.2, there is evidence that gas generated by the decomposition of wastes in the FSL may be migrating offsite. There is also the potential that gases may be emanating from the landfill surface into the ambient air, which could pose a potential health risk to nearby residents. The inclusion of this task in the RI is to provide data on ambient air at the landfill so that a risk assessment can be completed for the inhalation pathway.

The presence of landfill gas in the ambient air has been investigated by EMCON (1988) as part of the Air Quality Solid Waste Assessment Test Report completed in accordance with California landfill regulations. EMCON collected 24-hour time- integrated ambient air samples on three consecutive days in September, 1987, from two locations on the landfill perimeter, one upwind and one downwind. A meteorological station on-site recorded wind speed and direction during the sampling events. Samples were collected in Tedlar bags. The results of the EMCON sample analyses are shown in Table 5-3.

Task Description

This program will consist of establishing upwind and downwind air sampling locations. Previous weather monitoring data indicate a prevailing wind direction from the west-northwest. Based on this data, the proposed upwind sample location would be located on Jensen Avenue, in the vicinity of private residence. The proposed downwind location would be located near North Avenue, also in the vicinity of private residences. Two additional locations on the east and west sides of the landfill would be selected based on weather data. At each location, a 24-hour sample would be taken

TABLE 5-3

AMBIENT AIR VOLATILE ORGANIC COMPOUND DATA

Date	Sample Number and Location	Volatile Organic Compound Concentrations (ppb)									
		VC	BENZ	EDB	DCA	MECL	PCE	CCL4	TCA	TCE	CHCL3
09/23/87	AA-4/24 HR DWN	ND	ND	ND	ND	ND	0.10	0.07	1.70	0.30	ND
09/23/87	AA-5/WD DWN	ND	ND	ND	ND	ND	ND	0.08	0.20	0.10	ND
09/23/87	AA-1/24 HR UP	ND	ND	ND	ND	ND	TR	0.08	0.50	0.10	ND
09/23/87	AA-2/WD UP	ND	ND	ND	ND	ND	TR	0.08	1.10	0.30	ND
09/24/87	AA-6/24 HR DWN	ND	ND	ND	ND	ND	TR	0.07	0.60	0.20	ND
09/24/87	AA-7/WD DWN	ND	ND	ND	ND	1,300	1.03	0.09	2.60	0.20	ND
09/24/87	AA-9/24 HR UP	ND	ND	ND	ND	ND	TR	0.07	0.40	0.10	ND
09/24/87	AA-10/WD UP	ND	ND	ND	ND	ND	TR	0.07	0.30	0.20	ND
09/25/87	AA-11/24 HR DWN	ND	2.00	ND	ND	ND	ND	0.10	0.80	0.30	ND
09/25/87	AA-12/WD DWN	ND	2.00	ND	ND	ND	TR	0.10	0.70	0.30	ND
09/25/87	AA-14/24 HR UP	ND	2.00	ND	ND	ND	TR	0.10	0.60	0.10	ND
09/25/87	AA-15/WD UP	ND	ND	ND	ND	ND	TR	0.10	0.30	0.10	ND
	Regulatory Detection Limit	2	2	0.5	0.2	1	0.2	0.2	0.5	0.6	0.8
	Laboratory Detection Limit	1	0.5	0.05	50[1]	20[2]	0.1	0.05	0.1	0.1	0.02

VC = vinyl chloride
BENZ = benzene
EBD = 1,2-dibromoethane
DCA = 1,2-dichloroethane
MECL = methylene chloride
PCE = tetrachloroethylene
TR = Trace (detected below laboratory detection limit)

CCL4 = carbon tetrachloride
TCA = 1,1,1-trichloroethane
TCE = trichloroethylene
CHCL3 = chloroform
ppb = parts per billion
ND = not detected

24 HR UP = 24 hour upwind sample
WD UP = wind directional upwind sample
24 HR DWN = 24 hour downwind sample
WD DWN = wind directional downwind sample

[1]Elevated detection limit for 1,2-dichloroethane is due to interference from Freon TF, a laboratory air contaminant.
[2]Elevated detection limit for methylene chloride is due to laboratory background as a result of using methylene chloride in the extractions of soil and water samples.

utilizing a Summa canister with a critical orifice to control the sampling rate. At a minimum, each location would be sampled twice over a 24-hour period.

A temporary site weather station would be installed to obtain meteorological data. Specifically, wind speed and direction measurements would be recorded over the sampling period.

<u>Ambient Air Analysis</u>

The ambient air samples will be analyzed for vinyl chloride and benzene. These compounds are selected as the toxic volatile organic compounds present in the landfill gas at the FSL which will have the greatest impact on development of the risk assessment.

<u>Meeting Data Quality Objectives</u>

Data gathered under this task will meet the objectives of the risk assessment source modeling to be performed by EPA's contractor. The specific data quality objectives will be presented in the Quality Assurance Project Plan.

5.8 SURFACE AND SUBSURFACE SOIL INVESTIGATION

<u>Background and Objectives</u>

The purpose of this task is to determine if operations at the FSL resulted in the contamination of soils off-site. The field work will consist of a preliminary investigation of both surface and subsurface soils. If initial investigations indicate the existence of soil contamination, additional sampling will be performed in order to provide additional data in which to evaluate the need for remediation.

There has been no reported observations of either leachate seeps or waste conveyed off-site which could potentially contaminate the soil. Surface runoff/erosion or water pumped for irrigation near the site, however, could potentially contaminate the off-site soils. None of the previous investigatory work at the site has included sampling and analysis of the soil in proximity to the landfill.

Task Description

This field task consists of taking surface soil samples around the perimeter of the site, adjacent to some of the homes and in local agricultural fields. Samples will be obtained using a trowel or similar tool to obtain material from a depth of 0- to 2-inches. Subsurface samples will be taken during the drilling operations for the gas monitoring well installation.

Soil Sampling And Analysis

Surface soil samples will be taken at each of the proposed gas monitoring wells as shown on Figure 5-1. Samples of subsurface material at approximately 5-feet in depth will be taken during the course of the drilling of the gas monitoring wells. The sample will be collected from the auger as it is removed from the wellbore.

The six sample locations include four on the east boundary of the landfill and two on the west boundary. One "upgradient" background sample will also be collected. Coupling the soil sampling with the well installation allows the samples at depth to be obtained without the need to construct additional borings. The 5-foot depth corresponds with the level at which a clay hardpan has been observed around the site. It is assumed that contaminant transport to greater depths would be impeded by the hardpan.

Additional surface samples will be taken adjacent to residences to provide data for the risk assessment. The existence of a possible ingestion or dermal exposure pathway can be investigated through this additional sampling. Surface soil samples in agricultural fields near the site will be obtained and analyzed to establish background conditions. Specific sampling locations and numbers of samples will be described in the SAP.

The samples described above will be analyzed for volatile organics, BNAs, pesticides/PCBs, herbicides, metals, and dioxins.

Meeting Data Quality Objectives

The purpose of data collected under this task is to ascertain if an exposure pathway exists for ingestion or dermal contact due to soils contaminated by the landfill. There are no indications that this contaminant pathway is present at the site; therefore, the field work will help to confirm past observations.

Upgradient subsurface samples and surface soils from local agricultural properties will assist in establishing background levels of contaminants. For example, any pesticides and herbicides contamination revealed adjacent to the site might be due to past and present agricultural operations as opposed to landfill activities.

Level IV quality data will be required for all the soil samples due to its inclusion in the development of the Risk Assessment.

5.9 REPORTING

5.9.1 Site Characterization Summary

At the conclusion of the field investigation tasks, and after laboratory analysis is complete, CDM will prepare a Site Characterization Summary for EPA review and approval. The purpose of the Summary is to provide the EPA a preliminary reference for developing the Risk Assessment, and to evaluate the development of preliminary remedial alternatives. The summary will consist of a technical memorandum which will review the field activities, present the analytical results in tabular form, and document the locations and characteristics of each affected medium investigated. Where appropriate, the technical memorandum sections will serve as early drafts of the initial chapters of the Draft RI report. The analytical data will also be presented to EPA in floppy disc format, compatible with dBase III Plus software, to facilitate data entry into the risk assessment database. All data sets included in the Site Characterization Summary will be accompanied with a QA/QC summary describing data quality and how data quality objectives were met. Any comments presented by EPA will be addressed as appropriate and a Final Site Characteristics Summary will be issued if necessary.

5.9.2 Remedial Investigation (RI) Report

CDM will prepare a Draft RI report in accordance with current EPA guidance (EPA 1988) which will summarize the results of field activities, the physical characteristics of the site, discuss the nature and extent of contamination, present the fate and transport mechanisms of the site contaminants in all affected media, and present the results of the baseline Risk Assessment. The Draft RI will be presented to EPA for review and comment. Following receipt of EPA comments, the Draft RI will be revised as necessary and a Final RI will be prepared.

The final objective of the soil gas investigation is to attempt to evaluate possible impact of soil gas on groundwater quality through computer modeling. Analytical data from the perimeter wells will be used to model the pathway of subsurface migration, as well as the vertical distribution of gases. Results of the temporary probe sampling will indicate the extent of off-site migration below the hardpan layer and yield further information on the location of a hardpan layer. At a minimum, diffusion driven migration will be modeled in order to determine the migration pathway of soil gas after the source (landfill) is cut-off. This information will be used to evaluate the impact of off-site soil gas on groundwater quality.

Prior to initiating the field sampling investigation, a trial modeling effort will be implemented using the analytical data collected by Lockheed to model gas migration at the north and south area of the landfill. Through this trial modeling effort, needs for additional geologic and soil gas data will be identified.

Section Six

6.1 INTRODUCTION

The purpose of the Feasibility Study is to identify, analyze and evaluate potential remedial action alternatives for the cleanup of the Fresno Sanitary Landfill (FSL). Municipal landfill sites are unique among CERCLA sites in that potential response actions are often limited to containment technologies. That is, treatment or removal of the waste deposited in the landfill is generally not a viable mitigation measure. A range of response actions, containment through treatment, can be developed for the media requiring cleanup located beyond the boundaries of the landfill. At the FSL, this includes the contaminated groundwater and the vadose zone impacted by the landfill gas migration.

This section will include a general presentation of the feasibility study process as it specifically applies to the FSL. The general steps include identification of Applicable or Relevant and Appropriate Requirements (ARARs), initial development of alternatives, screening of remedial alternatives, and detailed evaluation of selected alternatives. Potential treatability study requirements will also be addressed in this section.

6.2 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

Under Section 121(d) (1) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 as amended in 1986 by the Superfund Amendment and Reauthorization Act (SARA) remedial actions must attain a degree of cleanup which assures protection of human health and the environment. Additionally, CERCLA remedial actions that leave any hazardous substance, pollutant, or contaminant on-site must meet, upon completion of the remedial action, a level or standard of control that at least attains standards, requirements, limitations, or criteria that are "applicable or relevant and appropriate" under the circumstances of the release. These requirements, known as "ARARs", may be waived only for certain instances specified in Section 121(d) (4) of CERCLA.

ARARs are derived from both Federal and State laws. Under Section 121(d)(2), the Federal ARARs for a site could include requirements under any of the Federal environmental laws (e.g., the Clean Air Act, the Clean Water Act, and the Safe Drinking Water Act). State ARARs include promulgated requirements under the State environmental or facility siting laws that are more stringent than Federal ARARs and have been identified to EPA by the State in a timely manner. Subparagraph 121(d) (2) (c) of CERCLA limits the applicability of State requirements or siting laws which could effectively result in the statewide prohibition of land disposal of hazardous substances, pollutants, or contaminants unless certain conditions are met.

Subsection 121(d) of CERCLA requires that Federal or State substantive requirements that qualify as ARARs be compiled by remedies (in the absence of a waiver). State requirements can be waived if a State has not consistently applied or demonstrated the intent to consistently apply a requirement in similar circumstances at other remedial actions within the State (Subparagraph 121(d) (4) (E) of CERCLA). Federal, State, or local permits do not need to be obtained for removal or remedial actions implemented on-site (Subsection 121(e) of CERCLA). "On-site" is interpreted by EPA to include the areal extent of contamination and all suitable areas in a reasonable proximity to the contamination necessary for implementation of the response action.

The definition of "applicable" and "relevant and appropriate" requirements is derived from the National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, 40 CFR Part 300, March 8, 1990 (NCP). These definitions are presented below.

Applicable Requirements - "Means those cleanup standards, standards of control, and other substantive environmental requirements, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site. Only those State standards that are identified by the State in a timely manner that are more stringent that Federal requirements may be applicable."

Relevant and Appropriate Requirements - "Means those cleanup standards, standards of control, and other substantives requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those State standards that are identified in a timely manner and are more stringent than Federal requirements may be relevant and appropriate." The determination of which requirements are "relevant and appropriate" is somewhat flexible. EPA and State may look to the type of remedial actions contemplated, the hazardous substances present, the waste characteristics, the physical characteristics of the site, and other appropriate factors. It is possible for only a part of a requirement to be considered relevant and appropriate. Additionally, only substantive requirements need be followed, 50 Federal Register 47,946 (1985) (preamble to the NCP).

ARARs are classified into three groups to help in identification and compliance. The first type are chemical-specific requirements. These ARARs are usually site-specific health or risk-based numerical values which establish the acceptable amount or contaminant concentration that may be found in, or discharged to, the environment. Examples of this type of ARAR are ambient water quality criteria and drinking water standards. The second type are location-specific requirements. These ARARs place restrictions on the concentrations of hazardous substances or the conduct of activity based on site location. These include restrictions on activities in wetlands, flood plains, and historic sites. The third type are performance, design, or other action-specific requirement. These ARARs are technology- or activity-based requirements or limitations on hazardous waste actions. Examples of action-specific ARARs are Resource Conservation and Recovery Act (RCRA) regulations for waste treatment, storage, and disposal.

6.2.1 ARARs Identification Process

ARARs are identified on a site-specific basis from information about contaminants found at the site, features of the site location, and actions that are being considered as remedies. If no ARAR covers a particular situation, or if an ARAR is not sufficient to protect human health or the environment, then non-promulgated standards, criteria, guidance, and advisories may be used, as appropriate, to provide support in determining what is protective at a site. A risk assessment may also be used to evaluate the sufficiency of a specific ARAR to provide protection.

EPA and the State of California will identify Federal and State ARARs for possible application to the FSL site. Appendix B-1 contains a list of potential Federal ARARs, and Appendix B-2 contains a list of potential state ARARs. Within both tables each potential ARAR states whether or not it is "applicable" or "relevant and appropriate" to the landfill site. This preliminary identification of ARARs assists in guiding SAP development and initially formulating remedial action alternatives.

Federal ARARs potentially associated with the FSL are based upon the Safe Drinking Water Act; the Clean Water Act; the Clean Air Act; and the Resource Conservation and Recovery Act. Additionally, on-site investigations and remediation activities require compliance with regulations promulgated by the Occupational Safety and Health Administration for worker safety, and Acts which require the consultation with other Federal agencies for the protection of fish and wildlife and critical habitats of endangered species.

State ARARs are administered by the State of California Department of Health Services, the Central Valley Regional Water Quality Control Board, Fresno Air Pollution Control District and the Integrated Waste Management Board. Potential State ARARs associated with the site, based mainly on the protection of public drinking water supplies and surface discharges, are the California Safe Drinking Water Act; the Porter Cologne Water Quality Control Act; the Safe Drinking Water Act; and the Regional Water Quality Control Boards Water Quality Objectives. State landfill closure requirements are enforced by the Integrated Waste Management Board under Title 14 and the Regional Water Quality Control Board under Title 23. Air quality regulations are implemented by the Air Resources Control Board under authorization of the Air Resources Act and the Mulford-Carrell Air Resources Act.

6.3 INITIAL DEVELOPMENT AND SCREENING OF ALTERNATIVES

A discussion of preliminary remedial action objectives and remedial technology types was presented in Section 3.0, Conceptual Site Model. The overall process for developing and screening alternatives will be described in this section. Specific feasibility study deliverables required under the Consent Order will be identified here. The steps employed to develop remedial alternatives include:

- Development of remedial action objectives specifying the contaminants and media of interest, exposure pathways, and preliminary remediation goals.
- Development of general response actions for each medium of interest defining containment, treatment, pumping, or other actions, singly or in combination, that may be taken to satisfy the remedial action objectives for the site.
- Identification of volumes or area of media to which general response actions might apply; for example, quantification of the volume of groundwater requiring treatment.
- Identification and screening of the technologies applicable to each general response action to eliminate those that cannot be implemented technically at the site. Technology identification will consider the unique characteristics of a municipal landfill which primarily leads to containment alternatives as discussed in the EPA guidance.
- Assembling the selected representative technologies into alternatives representing a range of treatment and containment combinations, as appropriate. At the FSL, this would apply to a range of containment and treatment options possible for the contaminated groundwater or off-site soil migration. However, treatment of the landfill's refuse prism will not be considered.

6.3.1 Remedial Action Objectives

Preliminary remedial action objectives were presented in Section 3.0 of this Work Plan. These objectives are defined in terms of media specific goals for protecting human health and the environment. The objectives specify the chemicals of concern, exposure routes and receptors, and an acceptable level or range of levels for each exposure route. A risk assessment will be performed by the EPA to be used in conjunction with the ARARs in the formulation of the remedial action objectives.

6.3.2 General Response Actions

A general response action is defined as those actions which when implemented will satisfy the remedial action objectives. These actions may include a range or combination of treatment, containment, extraction, or institutional activities. An initial identification of general response actions for the FSL is presented below.

Environmental Media	Response Action
Groundwater	No Action/Institutional Controls Containment Extraction/Treatment
Soil Gas (Landfill gas in the vadose zone adjacent to the site)	No Action/Institutional Controls Containment Extraction/Treatment
Air (Landfill gas control)	No Action Containment Extraction/Treatment
Soil	No Action Containment Removal/Disposal

To focus the evaluation on alternatives that are most likely to be chosen for implementation, an initial screening of the response actions will be conducted on the basis of effectiveness, implementability, and cost as required by the NCP. The primary criteria applied during this phase of the screening will be effectiveness.

6.4 IDENTIFICATION OF TREATABILITY STUDIES

Treatability studies provide a database by which to more accurately evaluate the effectiveness, implementability, and/or cost of a proposed remedial technology. They are performed after the initial screening of process options has been completed resulting in a list of potentially viable technologies. Treatability studies are performed only for those process options where additional data is necessary to perform the detailed evaluation of remedial action alternatives.

It is proposed that a treatability study be conducted for the contaminated groundwater at the site. Previous studies performed at the FSL indicate the presence of volatile organic compounds in the groundwater. The objective of the treatability study would be to examine various treatment processes and evaluate these processes in terms of effectiveness in removing the organics from the water. In addition, operational parameters will be developed which will assist in estimating costs for the treatment systems as well as provide information for the remedial design phase of the project. Potential unit processes to be investigated include air stripping, carbon adsorption, and ultraviolet/peroxidation treatment technologies.

It is possible that during the course of the remedial investigation and feasibility study other site liquids may be found which require treatment. These could include landfill leachate and gas condensate collected in the landfill gas control system. The necessity to perform treatability studies on these liquids in conjunction with the contaminated groundwater will be addressed in the Treatability Testing Statement of Work.

Mitigation of the off-site soil-gas plume may require the implementation of a soil venting system. The necessity to perform pilot work, in the field, for soil gas extraction system design will be determined upon completion of the soil gas investigation field task. Information on the well spacing, depth, and construction details in addition to operational parameters can be developed through a pilot program. This would be accomplished by installing approximately three to four extraction wells with an associated monitoring probe network in a specified area of the soil gas plume. Through the use of a portable blower, a range of vacuums can be applied to the extraction wells with their influence monitored at the probes. The data obtained would be useful in determining the number of wells required to mitigate the entire soil gas plume and in estimating the length of operation required to clean up the plume. This information would assist in the detailed evaluation of the remedial action alternative in terms of effectiveness and cost.

6.5 DETAILED EVALUATION OF REMEDIAL ALTERNATIVES

A detailed analysis will be performed on the remedial alternatives which proved to be viable through the initial screening process. The evaluation will conform to the requirements of the NCP, Section 300.430(e)(g). This detailed analysis will consist of an evaluation of the remedial alternatives in terms of nine specified criteria. A comparative analysis of the alternatives will also be conducted which examines the relative performance of the alternatives in terms of the criteria.

Table 6-1 presents the nine evaluation criteria and the factors considered for each one. A brief description of each criterion is provided below.

Overall Protection of Human Health and the Environment

This criterion provides a final check to assess whether each alternative is protective of human health and the environment. The overall assessment of protection is based on a composite of factors assessed under the evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs.

Compliance With ARAR's

This criterion is used to determine how each alternative complies with applicable or relevant and appropriate Federal and State requirements, as defined in CERCLA Section 121.

Long-Term Effectiveness

This criterion addresses the results of the remedial action in terms of the risk remaining at the site after the response objectives have been met. The primary focus of this evaluation is to determine the extent and effectiveness of the controls that may be required to manage the risk posed by treatment residuals and/or untreated wastes. The factors to be evaluated included the magnitude of remaining risk (measured by numerical standards such as cancer risk levels), and the adequacy, suitability and long-term reliability of management controls for providing continued

TABLE 6-1
DETAILED EVALUATION CRITERIA

- OVERALL PROTECTION OF HUMAN HEALTH AND ENVIRONMENT

- COMPLIANCE WITH ARARs

  - Compliance with chemical-specific ARARs
  - Compliance with action-specific ARARs
  - Compliance with location-specific ARARs
  - Compliance with appropriate criteria, advisories and guidance

- LONG-TERM EFFECTIVENESS

  - Magnitude of risk remaining at the site after the response objectives have been met
  - Adequacy of controls
  - Reliability of controls

- REDUCTION OF TOXICITY, MOBILITY OR VOLUME

  - Treatment process and remedy
  - Amount of hazardous material destroyed or treated
  - Reduction in toxicity, mobility or volume of the contaminants
  - Irreversibility of the treatment
  - Type and quantity of treatment residuals

- SHORT-TERM EFFECTIVENESS

  - Protection of community during remedial actions
  - Protection of workers during remedial actions
  - Time until remedial response objectives are achieved
  - Environmental impacts

- IMPLEMENTABILITY

  - Ability to construct technology
  - Reliability of technology
  - Ease of undertaking additional remedial action, if necessary
  - Monitoring considerations
  - Coordination with other agencies
  - Availability of treatment, storage capacity, and disposal service
  - Availability of necessary equipment and specialists
  - Availability of prospective technologies

- COST

  - Capital costs
  - Annual operation and maintenance costs
  - Present worth analysis
  - Sensitivity analysis

- STATE ACCEPTANCE

- COMMUNITY ACCEPTANCE

protection from residuals (i.e., assessment of potential failure of the technical components).

Reduction of Toxicity, Mobility, or Volume

This criterion addresses the statutory preference for selecting remedial actions that employ treatment technologies that permanently and significantly reduce toxicity, mobility or volume of the contaminants. The factors to be evaluated include: the treatment process employed; the amount of hazardous material destroyed or treated; the degree of reduction expected in toxicity, mobility, or volume; and, the type and quantity of treatment residuals.

Short-Term Effectiveness

This criterion addresses the effects of the alternative during the construction and implementation phase until the remedial actions have been completed and the selected level of protection has been achieved. Each alternative is evaluated with respect to its effects on the community and on-site workers during the remedial actions, environmental impacts resulting from implementation, and the amount of time until protection is achieved.

Implementability

This criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and material required during its implementation. Technical feasibility considers construction and operational difficulties, reliability, ease of undertaking additional remedial action (if required), and the ability to monitor its effectiveness. Administration feasibility considered activities needed to coordinate with other agencies (e.g., state and local), in regards to obtaining permits or approvals for implementing remedial actions.

Cost

This criterion addresses the capital costs, annual operation and maintenance costs, and present worth analysis.

Capital costs consist of direct (construction) and indirect (non-construction and overhead) costs. Direct costs include expenditures for the equipment, labor, and material necessary to perform remedial actions. Indirect costs include expenditures for engineering, financial, and other services that are not part of actual installation activities but are required to complete the installation of a remedial alternative. Annual operation and maintenance costs are post-construction costs necessary to ensure the continued effectiveness of a remedial action. These costs will be estimated to provide an accuracy of +50 percent to -30 (EPA October 1988).

A present worth analysis is used to evaluate expenditures that occur over different time periods by discounting all future costs to a common base year, usually the current year. This allows the cost of remedial action alternatives to be compared on the basis of a single figure representing the amount of money that would be sufficient to cover all costs associated with the remedial action over its planned life. As suggested in the EPA's RI/FS Guidance (EPA October 1988), a discount rate of 5 percent will be considered unless the market values indicate otherwise during the performance of the FS.

State Acceptance

This criterion evaluates the technical and administrative issues and concerns the State may have regarding each of the alternatives. The factors to be evaluated include those features of alternatives that the State supports, reservations of the State, and opposition of the State.

Community Acceptance

This criterion incorporates public concerns into the evaluation of the remedial alternatives.

After each of the remedial alternatives has been assessed against the nine criteria, a comparative analysis will be performed. This analysis will compare all the remedial alternatives against each other for each of the nine evaluation criteria.

6.6 FEASIBILITY STUDY DELIVERABLES AND SCHEDULE

6.6.1 Technical Memorandum Identifying Candidate Technologies

This technical memorandum will expand upon the preliminary list of technologies identified in this Work Plan. A description of each technology will be included in the memo. The description will consist of a discussion of the general engineering process central to the technology, and the equipment requirements.

The memo will be submitted in draft form 7 weeks after approval of the Sampling and Analysis Plan.

6.6.2 Technical Memorandum Documenting Revised Remedial Action Objectives

Remedial action objectives will be revised from those presented in Section 3.0 after an initial site characterization has been completed. The initial site characterization defines the contaminants of concern and the exposure routes and recepters which are necessary to develop the remedial action objectives.

The memo will be submitted 6 weeks after the EPA approval of the preliminary site characterization summary.

6.6.3 Technical Memorandum on Remedial Technologies, Alternatives, and Screening

Once the remedial action objectives have been determined, the development and screening of remedial technologies and alternatives can proceed. The technical memo on Remedial Technologies, Alternatives, and Screening will document the process by which technologies were formulated to satisfy the remedial action objectives at the FSL. A presentation of the screening procedure applied will also be included in the memo.

This memo will be submitted 6 weeks after receiving EPA's comments on the Technical Memorandum Documenting Revised Remedial Action Objectives.

6.6.4 Technical Memorandum Summarizing Results of Comparative Analysis of Alternatives

The final major phase of the feasibility study is to compare the remedial alternatives which resulted from the screening process. This comparison of alternatives, based upon the nine evaluation criteria, provides the basis by which EPA determines which remedial actions will be implemented. This technical memo will summarize the detailed evaluation of alternatives.

This memo will be submitted to EPA 5 weeks after receiving EPA comments on the Technical Memorandum on Remedial Technologies, Alternatives, and Screening.

6.6.5 Feasibility Study (FS) Report

An FS report will be prepared to summarize the activities performed and to present the results and associated conclusions. The report will include a summary of laboratory treatability studies (if performed), a description of the alternatives identification, initial screening, and the detailed evaluation of the alternatives. The FS report will be prepared and presented in the format specified in the RI/FS Guidance (EPA, October 1988). The FS report will be a compilation of the technical memorands described above.

The FS Report will include an executive summary and four sections. The executive summary will be a brief overview of the FS and the analysis underlying the remedial actions which were evaluated. The FS will contain the following four sections:

- Introduction and Site Background;
- Identification and Screening of Remedial Technologies;

- Development and Screening of Remedial Alternatives; and
- Description and Detailed Analysis of Alternatives.

A discussion of each component is presented below. The format used to develop the FS Report is presented in Exhibit 6-1.

The introduction will provide background information regarding site location and facility history and operation. The nature of the problem, as identified through the various studies, will be presented. A brief summary of geohydrological conditions, remedial action objectives, nature and extent of contamination, and risk assessment addressed in the RI Report will also be provided.

The feasible technologies and process options for site remediation will be identified for each general response action, and the results of the remedial technologies screening will be described.

Remedial alternatives will be developed by combining the technologies identified in the previous screening process. The results of screening of remedial alternatives, with respect to effectiveness, implementability and cost, will be described.

A general description of the features of each remedial action alternative passing the screening of the previous section will be presented. The detailed evaluation of each remedial alternative with respect to nine evaluation criteria, will be presented. A comparison of these alternatives will also be presented.

The FS report will be submitted to EPA 12 weeks after EPA approval of the Treatability Study Evaluation Report, or, if treatability testing is not to be performed, 18 weeks after EPA approval of the RI report.

Section Seven

This section presents the management structure for performance of RI/FS activities governed by this Work Plan. The City of Fresno (City) has tasked CDM to conduct the RI/FS at the Fresno Sanitary Landfill. This section discusses the project key personnel, subcontracting, deliverables, and schedules.

7.1 PROJECT ORGANIZATION AND KEY PERSONNEL

The project organization is shown in Figure 7-1. Key personnel and their respective responsibilities for the implementation of the Fresno Sanitary Landfill (FSL) RI/FS are identified below:

- Mr. John Mitchell - City of Fresno Program Manager.
- Mr. George Slater - City of Fresno Project Manager.
- Mr. Bret Moxley - EPA Remedial Project Manager (RPM). As lead agency project manager, Mr. Moxley will oversee all aspects of the RI/FS implementation. Risk Assessment tasks will be completed by EPA's contractor at Mr. Moxley's direction.
- Mr. John Burgh - CDM Officer-in-Charge.
- Mr. Wayne Pickus - CDM Project Manager. Responsible for day-to-day management and communication with the City and EPA. Mr. Pickus will also be responsible for directing engineering and scientific efforts in the development of the FS report.
- Ms. Sara R. Black - Ms. Black serves as the Project Hydrogeologist. She also will be the Field Supervisor, responsible for implementation of the RI field program.
- Ms. Laurie Mann - Quality Assurance and Quality Control (QA/QC). Ms. Mann will be responsible for QA/QC reporting activities for the project.

Technical Review

The CDM technical review committee will be responsible for internally reviewing all deliverables prior to their submission to the EPA.

Field Personnel

Field personnel will be responsible for data collection activities at the site, including site Health and Safety implementation.

7.2 SUBCONTRACTING PLAN

CDM plans to subcontract a number of RI/FS field activities. These activities include the following: analytical testing of environmental media samples (air, water, soil), a soil gas survey, site survey, drilling services, geophysical logging services, and field support functions such as trailer and equipment rental. These services will be procured after approval of the Work Plan approach by EPA.

7.3 PROJECT COMMUNICATION

Project management meetings will be held once every month, as discussed in the Consent Decree. Participants will include, at a minimum, representatives of the EPA, the City and CDM. Other agencies or contractors will be invited as determined by the EPA and the City. The purpose of the monthly meetings is to keep all parties informed of the progress of the FSL RI/FS activities. In addition, meetings will be used to discuss upcoming activities, identify problems, and receive input from additional parties on the conductance of the RI/FS.

Monthly status reports, as stipulated by the Consent Decree, are a deliverable under the FSL RI/FS program. The status reports are to be submitted monthly to signators of the Consent Decree. The reports will describe progress made during the reporting period, a summary of samples submitted for laboratory analysis, results of all sampling and/or tests generated under the SAP, a description of work planned for the next two months, and a description of problems encountered and solutions developed.

7.4 PROJECT SCHEDULE

Major project deliverables include those documents identified in the Consent Order. Deliverables will initially be submitted to the EPA in

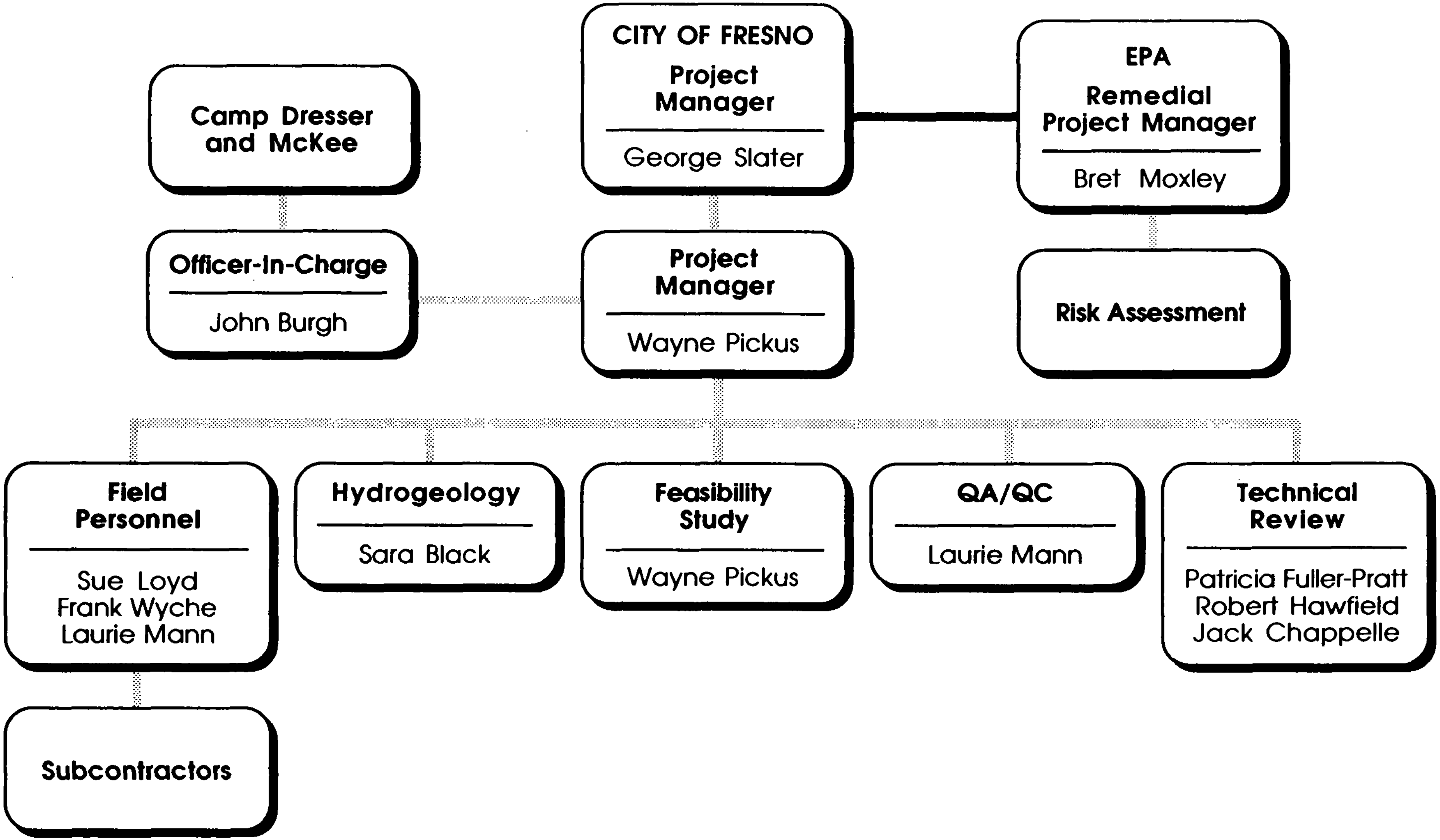


Figure 7-1

PROJECT ORGANIZATION

draft form. The EPA review comments will then be incorporated into the final submittal. The Consent Order authorizes the EPA to issue final approval on the majority of the deliverables.

Deliverables and due dates for the FSL RI/FS include the following:

	Deliverable	Date
1.	Monthly Status Reports	Monthly
2.	RI/FS Workplan	April 15, 1991
3.	Health and Safety Plan	January 9, 1991
4.	Sampling and Analysis Plan	May 6, 1991
5.	Technical Memorandum on Modeling of Site Characteristics (where appropriate)	To Be Established
6.	Preliminary Characterization Summary (due 27 weeks after initiation of field tasks)	To Be Established
7.	Remedial Investigation Report (Draft RI due 15 weeks after EPA approves the characterization summary)	To Be Established
8.	Technical Memorandum Identifying Candidate Technologies (due 7 weeks after approval of the SAP)	To Be Established
9.	Treatability Testing Statement of Work (if necessary)	To Be Established
10.	Treatability Testing Workplan (if necessary)	To Be Established
11.	Treatability Study Site Health & Safety Plan (if necessary)	To Be Established
12.	Treatability Study Evaluation Report (if necessary)	To Be Established
13.	Technical Memorandum Documenting Revised Remedial Objectives (due 6 weeks after EPA approval of Preliminary Site Characterization Summary)	To Be Established
14.	Technical Memorandum Remedial Technologies, Alternatives, and Screening (due 6 weeks after receiving EPA comments on Remedial Action Objectives memo)	To Be Established
15.	Technical Memorandum Summarizing Results of Comparative Analysis of Alternatives (due	To Be Established

5 weeks after receiving EPA comments on Remedial Technologies, Alternatives, and Screening memo)

16. Feasibility Study Report (the Draft FS Report will be due 12 weeks after EPA approval of the treatability testing, if treatability is not performed the Draft FS is due 18 weeks after EPA approval of the RI report).	To Be Established

LIST OF REFERENCES

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Appendix

APPENDIX A-1

GROUNDWATER - VOLATILE ORGANICS

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL UW-1A (SHALLOW) — PARAMETERS

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1-2,2-TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	3.8(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	ESE 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	ESA II 1989
5/17/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	NR	NR	ESA II 1989
9/15/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	APPL 10/2/89
9/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	APPL10/18/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC = METHYLENE CHLORIDE
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

MATRIX: GROUNDWATER		WELL UW-1B (INTERMEDIATE)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	BSK 1987
5/17/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	NR	NR	NR	ESA II 1989
9/15/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 10/2/89
9/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL10/18/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE,
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
(1.0) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL UW-1B (INTERMEDIATE) — PARAMETERS

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	7.1(NR)	NR	NR	BSK 1987
5/17/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	NR	NR	ESA II 1989
9/15/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	APPL 10/2/89
9/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	APPL10/18/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE DCPE = DICHLOROPROPENE, EB =ETHYL BENZENE, MC = METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

MATRIX: GROUNDWATER		WELL UW-1C (DEEP) PARAMETERS																	
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	BSK 1987
5/17/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	NR	NR	NR	ESA II 1989
9/15/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 10/2/89
9/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL10/18/90
MCL		100	100		5	30			100		100				75					

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL UW-1C (DEEP) PARAMETERS																	
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	7.1(NR)	NR	NR	BSK 1987
5/17/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	2.8(0.5)	ND(0.5)	ND(0.5)	1.1(0.5)	ND(1.0)	ND(2.0)	NR	NR	ESA II 1989
9/15/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	APPL 10/2/89
9/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	NR	NR	APPL10/18/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE DCPE = DICHLOROPROPENE, EB =ETHYL BENZENE, MC = METHYLENE CHLORIDE
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER		WELL C-W1A																		
		PARAMETERS																		
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	BSK 1987
9/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	BSK 1987
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
5/17/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	ND(2.0)	ND(0.5)	ND(0.5)	NR	NR	NR	ESA II 1989
9/15/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 10/2/89
5/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 10/18/90
MCL		100	100		5	30			100		100									

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-2 (SHALLOW)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO - METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
7/84	601	ND(0.5)	NR	NR	ND(0.5)	ND(0.5)	NR	NR	ND(0.5)	NR	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	BSK 1987
3/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	NR	BSK 1987
1/89	601	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	NR	ESA II 1989
5/19/89	5030/8010	ND((1.0)	ND((1.0)	ND((1.0)	ND((1.0)	ND((1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(5.0)	ND(0.50)	5.5(NR)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	NR	NR	NR	ESA II 1989
9/11/89	601	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	NR	NR	NR	APPL 9/25/89
9/18/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	0.9(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	2.9(2.0)	0.6(0.5)	ND(0.5)	0.7(0.5)	ND(0.5)	NR	NR	NR	APPL 10/2/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
( ) = METHOD DETECTION LIMIT
NR = NOT REPORTED
NS = NOT SAMPLED
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL W-2 (SHALLOW) — PARAMETERS

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
7/84	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	3.4(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	8.8(0.5)	NR	ND(0.5)	0.9(0.5)	ND(0.5)	NR	NR	NR	BSK 1987
3/84	601	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	71(1.0)	ND(1.0)	NR	ND(1.0)	ND(0.1)	ND(1.0)	NR	NR	BSK 1987
1/89	601	NS	NS	NS	NR	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	ESA II 1989
5/19/89	5030/8010	ND(0.5)	ND(1.0)	19(1.0)	NR	1.8(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	8.8(0.5)	ND(0.5)	ND(0.5)	5.6(0.5)	ND(0.5)	ND(2.0)	NR	NR	ESA II 1989
9/11/89	601	ND(5.0)	ND(5.0)	ND(5.0)	65(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	NR	ND(50)	ND(5.0)	8.4(5.0)	ND(5.0)	ND(5.0)	11(5.0)	ND(5.0)	ND(5.0)	NR	NR	APPL 9/25/89
9/12/90	601	ND(0.5)	ND(0.5)	0.5(0.5)	41(0.5)	2.0(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	5.7(0.5)	ND(0.5)	ND(0.5)	6.5(0.5)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 10/2/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC = METHYLENE CHLORIDE
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
( ) = METHOD DETECTION LIMIT
NR = NOT REPORTED
NS = NOT SAMPLED
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL UW-2A (SHALLOW)															
		PARAMETERS															
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	BSK 1987
1/89	601	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	ESA II 1989
6/5/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	ND(0.5)	ESA II 1989
9/15/89		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/89
9/26/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/90
MCL		100	100		5	30			100	100					75		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL UW-2A (SHALLOW)																
		PARAMETERS																
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	1,2-DCPA	CIS-1,3-DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	2.1(0.5)	ND(0.5)	2.8(0.5)	ND(0.5)	ND(0.5)	1.1(0.5)	ND(0.5)	ND(0.5)	BSK 1987
1/89	601	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	ESA II 1989
6/5/89	5030/8010	ND(0.5)	ND(1.0)	1.2(1.0)	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(1.0)	ESA II 1989
9/15/89		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/89
9/26/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/90
MCL		5	[illegible]			0.5*		680		[illegible]	[illegible]	200	32	5		0.5	

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE,
DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE
MC = METHYLENE CHLORIDE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
NS = NOT SAMPLED

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER	WELL UW-2B (INTERMEDIATE)																				
	PARAMETERS																				
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
8/86	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	7.1(NR)	NR	NR	NR	ESA II 1989
5/17/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	?(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	NR	NR	NR	ESA II 1989
9/15/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 10/2/89
9/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	21(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL10/18/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
? = UNDETERMINED

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER	WELL UW-2B (INTERMEDIATE)																			
	PARAMETERS																			
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
8/86	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	ESA II 1989
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	7.1(NR)	NR	NR	ESA II 1989
5/17/89	5030/8010	ND(0.5)	ND(1.0)	2.1(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	3.5(2.0)	NR	NR	ESA II 1989
9/15/89	601	ND(0.5)	ND(0.5)	ND(0.5)	2.2(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	33(0.5)	NR	NR	APPL 10/2/89
9/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	4.8(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	2.5(0.5)	ND(0.5)	ND(0.5)	APPL 10/18/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC = METHYLENE CHLORIDE
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER — WELL UW-2C (DEEP)

PARAMETERS

DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
8/86	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	BSK 1987
5/17/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	NR	NR	NR	ESA II 1989
9/15/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 10/2/89
9/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL10/18/90
MCL		100	100		5	30			100		100				75					

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL UW-2C (DEEP)

PARAMETERS

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
8/86	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	BSK 1987
5/17/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	NR	NR	ESA II 1989
9/15/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	5.3(0.5)	NR	NR	APPL 10/2/89
9/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	APPL10/18/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENES, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC = METHYLENE CHLORIDE
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER	WELL W-3 (SHALLOW)																				
	PARAMETERS																				
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
7/84	601	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	NR	NR	ND(0.5)	NR	ND(0.5)	NR	NR	NR	NR	ND(0.5)	NR	NR	NR	BSK 1987
3/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	NR	BSK 1987
12/88	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	6.3(NR)	NR	NR	NR	ESA II 1989
5/15/89	5030/5010	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(2.5)	ND(2.5)	ND(2.5)	?(2.0)	ND(10.0)	ND(10.0)	ND(10.0)	7.6(2.5)	NR	NR	NR	ESA II 1989
9/11/89	601	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	9.2(5.0)	NR	NR	NR	APPL 9/25/89
9/18/90	601	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	NR	ND(2.5)	ND(2.5)	ND(2.5)	15(10.0)	ND(2.5)	ND(2.5)	ND(2.5)	9.2(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	APPL 10/3/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
? = UNDETERMINED

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL W-3 (SHALLOW)

PARAMETERS

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
7/84	601	5.3(0.5)	6.5(0.5)	33(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	38(0.5)	ND(0.5)	ND(0.5)	34(0.5)	NR	NR	NR	NR	BSK 1987
3/86	601	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	32(1.0)	ND(1.0)	ND(1.0)	27(1.0)	ND(1.0)	ND(1.0)	NR	NR	BSK 1987
12/88	601	ND(NR)	ND(NR)	9.7(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	30(NR)	ND(NR)	NR	40(NR)	ND(NR)	120(NR)	NR	NR	ESA II 1989
5/15/89	5030/5010	ND(25)	ND(50)	340(5.0)	NR	ND(2.5)	ND(25)	ND(25)	NR	ND(10.0)	ND(2.5)	41(2.5)	ND(2.5)	NR	50(2.5)	ND(5.0)	130(NR)	NR	NR	ESA II 1989
9/11/89	601	ND(5.0)	ND(5.0)	15(5.0)	740(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	NR	ND(50)	ND(5.0)	32(5.0)	ND(5.0)	ND(5.0)	35(5.0)	ND(5.0)	57(5.0)	NR	NR	APPL 9/25/89
9/19/90	601	ND(2.5)	ND(2.5)	17(2.5)	560(2.5)	4.1(2.5)	ND(2.5)	ND(2.5)	NR	ND(25)	ND(2.5)	27(2.5)	ND(2.5)	ND(2.5)	39(2.5)	ND(5.0)	50(2.5)	ND(2.5)	ND(2.5)	APPL 10/2/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC = METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER	WELL W-6 (SHALLOW)																			
	PARAMETERS																			
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
6/84	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
7/84	601	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	NR	NR	ND(0.5)	NR	ND(0.5)	ND(0.5)	NR	NR	NR	ND(0.5)	NR	NR	NR	BSK 1987
3/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	NR	BSK 1987
12/88	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
5/15/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	3.6(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	NR	NR	NR	ESA II 1989
9/11/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 9/25/89
9/18/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 10/2/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE,
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER

WELL W-6 (SHALLOW)

PARAMETERS

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
6/84	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ESA II 1989
7/84	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	NR	BSK 1987
3/86	601	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	BSK 1987
12/88	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(0.5)	ND(NR)	NR	ND(NR)	0.7(NR)	ND(NR)	0.7(NR)	ND(NR)	ESA II 1989
5/15/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	ND(1.0)	ND(2.0)	ESA II 1989
9/11/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	APPL 9/25/89
9/18/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 10/2/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC = METHYLENE CHLORIDE
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER		WELL 1770 NORTH (INTERMEDIATE)															
		PARAMETERS															
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO -METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	REFERENCE
5/11/89	5030/5010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	ESA II 1989
MCL		100	100		5	30			100		100				75		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1770 NORTH (INTERMEDIATE)															
		PARAMETERS															
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
5/11/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	ESA II 1989
MCL		5	6			0.5*		680		1	2	200	32	5		0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

4

MATRIX: GROUNDWATER		WELL MW-[illegible] (SHALLOW) PARAMETERS																
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	REFERENCE
12/88	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	33(NR)	ND(NR)	ND(NR)	ND(NR)	23(NR)	ESA II 1989
5/15/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	2(2.0)	ND(0.5)	ND(2.0)	8.[illegible](2.0)	40(0.5)	ESA II 1989
9/11/89	601	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	34(5.0)	APPL 9/25/89
9/25/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/90
MCL		100	100		5	30			100		100						

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL MW-4 (SHALLOW) PARAMETERS																
DATE SAMPLED		1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS 1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
12/88	601	ND(NR)	ND(NR)	4.4(NR)	NR	5.0(NR)	ND(NR)	ND(NR)	ND(NR)	260(NR)	ND(NR)	[illegible](NR)	ND(NR)	ND(NR)	110(NR)	ND(NR)	110(KNR)	ESA II 1989
5/15/89	5030/8010	0.5(0.5)	4.[illegible](1.0)	130(1.0)	NR	6.1(0.5)	ND(5.0)	ND(5.0)	NR	300(2.0)	ND(0.5)	[illegible](0.5)	ND(0.5)	ND(0.5)	95(0.5)	ND(1.0)	120(2.0)	ESA II 1989
9/11/89	601	ND(5.0)	ND(5.0)	15(5.0)	187(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	NR	69(50)	ND(5.0)	140(5.0)	ND(5.0)	ND(5.0)	[illegible](5.0)	ND(5.0)	64(5.0)	APPL 9/25/89
9/25/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/90
MCL		5	6				0.5*		[illegible]		1	2	200	32			0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER		WELL 2100 NORTH (																		
		PARAMETERS																		
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3 DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
7/84	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	BSK 1987
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	NR	BSK 1987
8/88	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	14(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
4/14/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	56(NR)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 5/2/89
5/10/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	10(2.0)	ND(2.0)	ND(2.0)	ND(2.[illegible]	ND(0.5)	NR	NR	NR	ESA II 1989
9/6/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	54(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 10/2/89
12/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	12(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 1/15/90
3/5/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	12(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 3/13/90
6/28/90	601	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	NR	ND(1.0)	NR	ND(0.5)	ND(1.0)	ND(0.5)	63(1.0)	NR	NR	NR	ND(0.5)	NR	NR	NR	TWIN 7/13/90
9/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	20(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL [illegible]
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER

WELL 2100 NORTH (DEEP)

PARAMETERS

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRACHLOROETHANE	TETRACHLOROETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRICHLOROFLUOROMETHANE	VC	1,1,1,2-TETRACHLOROETHANE	DICHLOROMETHANE	REFERENCE
7/84	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND(1.0)	NR	NR	ND(1.0)	NR	NR	NR	NR	BSK 1987
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	BSK 1987
8/88	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	ESA II 1989
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	0.5(NR)	ND(NR)	NR	NR	ESA II 1989
4/14/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	0.7(0.5)	ND(0.5)	NR	NR	APPL 4/14/89
5/10/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	NR	NR	ESA II 1989
9/6/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	0.5(0.5)	ND(0.5)	NR	NR	APPL 10/2/89
12/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	1.4(0.5)	ND(0.5)	NR	NR	APPL 1/15/90
3/5/90	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	NR	NR	APPL 3/13/90
6/28/90	601	ND(0.5	ND(0.5	ND(0.5	ND(0.5)	ND(0.5	ND(0.5	ND(0.5	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	TWIN 7/13/90
9/17/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 9.25.90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER	WELL 2142 NORTH (DEEP)																			
	PARAMETERS																			
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3 DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
7/84	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	BSK 1987
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	24(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
4/14/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	25(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 5/2/89
5/15/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	4.4(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	NR	NR	NR	ESA II 1989
9/6/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	85(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 10/2/89
12/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	19(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 1/15/90
3/5/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	9.9(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 3/13/90
6/28/90	601	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	NR	ND(1.0)	NR	ND(0.5)	ND(1.0)	ND(0.5)	12(1.0)	NR	NR	NR	ND(0.5)	NR	NR	NR	TWIN 7/18/90
9/17/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	17(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	
MCL		100	100		5				100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL 2142 (DEBP)

PARAMETERS

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
7/84	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	4.8(1.0)	NR	NR	1.5(1.0)	NR	NR	NR	NR	BSL 1987
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	0.9(NR)	ND(NR)	NR	NR	ESA II 1989
4/14/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	NR	ND(5.0)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	0.6(0.5)	ND(NR)	NR	NR	APPL 5/2/89
5/15/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(1.0)	NR	NR	ESA II 1989
9/6/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	0.8(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	2.0(0.5)	ND(0.5)	NR	NR	APPL 10/2/89
12/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	1.0(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	4.[illegible](0.5)	ND(0.5)	NR	NR	APPL 1/15/90
3/5/90	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	0.6(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	1.6(1.0)	ND(0.5)	NR	NR	APPL 3/13/90
6/28/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	TWIN 7 13/90
9/17/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	1.1(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	1.[illegible](1.0)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 9/26/90
MCL		5	6				0.5*		680		1	2	200	32	5		[illegible]			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE.
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER — WELL 2168 NORTH (DEEP) — PARAMETERS

DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3 DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	1,1,1,2-TETRA-CHLORO-ETHANE	REFERENCE
7/84	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	BSK 1987
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(NR)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	26(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
4/14/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	57(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 5/2/89
5/15/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	24(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	NR	NR	NR	ESA II 1989
9/6/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	170(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 10/2/89
12/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	22(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 1/15/90
3/13/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	22(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 3/5/90
6/28/90	601	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	NR	ND(1.0)	NR	ND(0.5)	ND(1.0)	ND(0.5)	110(1.0)	NR	NR	NR	ND(0.5)	NR	NR	NR	TWIN 7/18/90
9/17/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	36(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 9/26/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

TABLE [illegible]

GROUNDWATER ANALYTICAL RESULTS

(ug/L)

MATRIX: GROUNDWATER — WELL 2168 NORTH (DEEP) — PARAMETERS

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
7/84	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND(1.0)	NR	NR	ND(1.0)	NR	NR	NR	NR	BSK 1987
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	2.3(NR)	ND(NR)	NR	NR	ESA II 1989
4/14/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	0.6(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	2.6(0.5)	ND(0.5)	NR	NR	APPL 5/2/89
5/15/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	.73(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	4.1(1.0)	ND(2.0)	NR	NR	ESA II 1989
9/6/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	1.3(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	7.0(0.5)	ND(0.5)	NR	NR	APPL 10/2/89
12/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	1.1(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	7.6(0.5)	ND(0.5)	NR	NR	APPL 1/15/90
3/6/90	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(5.0)	ND(0.5)	1.6(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	6.0(1.0)	ND(0.5)	NR	NR	APPL 3/13/90
6/28/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	2.1(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	6.8(0.5)	ND(0.5)	NR	NR	TWIS 7/18/90
9/17/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	2.2(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	5.5(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 9/26/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5	0.5	0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER — WELL 2188 NORTH (INTERMEDIATE)

PARAMETERS

DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3 DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
7/84	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	BSK 1987
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(NR)	ND(NR)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
4/14/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	24 (0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 5/2/89
5/11/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(1.5)	ND(0.5)	6.1(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	NR	NR	NR	ESA II 1989
9/6/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	23 (0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 10/2/89
12/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	5.9(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 1/15/90
3/5/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	5.3(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL 3/13/90
6/28/90	601	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	NR	ND(1.0)	NR	ND(0.5)	ND(1.0)	ND(0.5)	3.2(1.0)	NR	NR	NR	ND(0.5)	NR	NR	NR	TWIN 7/19/90
9/17/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	23 (2.0)	ND(1.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 9/26/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2188 NORTH (INTERMEDIATE)																			
		PARAMETERS																			
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
7/84	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND(1.0)	NR	NR	ND(1.0)	NR	NR	NR	NR	BSK 1987
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	0.7(NR)	ND(NR)	NR	NR	ESA II 1989
4/14/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(NR)	ND(0.5)	ND(0.5)	ND(0.5)	0.6(0.5)	ND(0.5)	NR	NR	APPL 5/2 89
5/11/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	1.2(1.0)	ND(2.0)	NR	NR	ESA II 1989
9/6/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	APPL 10/2 89
10/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	1.6(0.5)	ND(0.5)	NR	NR	APPL [illegible] 89
3/5/90	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	1.0(1.0)	ND(0.5)	NR	NR	APPL 3/[illegible] 90
6/28/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	TMIN 7/[illegible] 90
9/17/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	[illegible]	ND(0.5)	ND(0.5)	ND(0.5)	APPL 9/26 90
MCL		5	6				0.5*		680		1	[illegible]	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE.
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER		WELL OW-1 (INTERMEDIATE) PARAMETERS																		
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-BENZENE	CHLORO-TOLUENE	REFERENCE
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	47(NR)	ND(NR)	ND(NR)	ND(NR)	4.5(NR)	NR	NR	NR	ESA II 1989
5/15/89	5030/8010	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(2.5)	ND(2.5)	ND(2.5)	95(10)	ND(10)	ND(10)	ND(10)	7.1(2.5)	NR	NR	NR	ESA II 1989
9/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	230(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	7.0(0.5)	NR	NR	NR	APPL 1989
9/24/90	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	3.4(1.0)	ND(1.0)	ND(1.0)	120(4.0)	ND(1.0)	ND(1.0)	ND(1.0)	8.8(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	APPL 10/9/90
MCL		100	100		5	30			100		100				75					

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL OW-1 (INTERMEDIATE) PARAMETERS																		
DATE SAMPLED	METHOD	1,2-DCE	1,1-DCE	TRANS-1,2-DCE	CIS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	11(NR)	6.1(NR)	3.1(NR)	3.1(NR)	3.1(NR)	ESA II 1989
5/15/89	5030/8010	ND(2.5)	ND(5.0)	ND(5.0)	NR	ND(2.5)	ND(2.5)	ND(2.5)	NR	15(10)	ND(2.5)	100(2.5)	ND(2.5)	ND(2.5)	18(2.5)	18(5.0)	ND(10.0)	ND(10.0)	ND(10.0)	ESA II 1989
9/20/89	601	ND(0.5)	ND(0.5)	1.7(0.5)	0.7(NR)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	61(0.5)	ND(0.5)	ND(0.5)	16(0.5)	ND(0.5)	17(0.5)	NR	NR	APPL 10/11/8
9/24/90	601	ND(1.0)	ND(1.0)	2.5(1.0)	1.8(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(10.0)	ND(1.0)	86(1.0)	ND(1.0)	ND(1.0)	20(1.0)	61(2.0)	1.5(1.0)	ND(1.0)	ND(1.0)	APPL 10/9/90
MCL		5	6				0.5*		680		1	2	20	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC = METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

MATRIX: GROUNDWATER		WELL DW-1A (SHALLOW)															
		PARAMETERS															
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	21(0.5)	BSK 1987
1/89	601	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	ESA II 1989
5/15/89	5030/8010	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(125)	ND(25)	ND(12.5)	ND(12.5)	ND(12.5)	?(2.0)	ND(50)	ND(50)	ND(50)	17(12.5)	ESA II 1989
9/18/89		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/89
9/19/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/89
MCL		100	100		5	30			100		100				75		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL DW-1A															
		PARAMETERS															
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
8/86	601	2.1(0.5)	0.8(0.5)	22(0.5)	7.5(0.5)	ND(0.5)	ND(0.5)	NR	6.1(0.5)	ND(0.5)	31(0.5)	ND(0.5)	ND(0.5)	108(0.5)	ND(0.5)	ND(0.5)	BSK 1987
1/89	601	NS	NS	NS	NS	NS	NS	NR	NS	NS	NS	NS	NS	NS	NS	NS	ESA II 1989
5/15/89	5030/8010	ND(12.5)	ND(12.5)	1400(25)	18(12.5)	ND(125)	ND(125)	NR	ND(50.0)	ND(12.5)	ND(12.5)	ND(12.5)	ND(12.5)	78(12.5)	ND(25)	100(50)	ESA II 1989
9/15/89		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/89
9/19/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/90
MCL		5	6			0.5*		680		1	2	200	32	5		0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPRANE, DCPE = DICHLOROPROPRENE, EB = ETHYL BENZENE,
MC = METHYLENE CHLORIDE, TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER

WELL DW-1B (INTERMEDIATE)

PARAMETERS

DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	BSK 1987
12/88	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	66(NR)	ND(NR)	ND(NR)	ND(NR)	3.5(NR)	NR	NR	NR	ESA II 1989
5/15/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(1.0)	ND(0.5)	ND(0.5)	?(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	4.9(0.5)	NR	NR	NR	ESA II 1989
9/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	203(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	7.5(0.5)	NR	NR	NR	APPL10/11/89
9/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	110(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	7.5(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL10/18/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
? = UNDETERMINED

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL DW-1B (INTERMEDIATE) PARAMETERS																		
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	1.6(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	5.3(0.5)	ND(0.5)	26(0.5)	ND(0.5)	ND(0.5)	13.5(0.5	2.2(0.5)	ND(0.5)	NR	NR	BSK 1987
12/88	601	ND(NR)	3.5(NR)	2.0(NR)	NR	ND(0.5)	ND(5.0)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	37(NR)	ND(NR)	ND(NR)	21(NR)	1.2(NR)	2.3(1.0)	NR	NR	ESA II 1989
5/15/89	5030/8010	ND(1.0)	ND(1.0)	49(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	NR	6.3(2.0)	ND(0.5)	48(0.5)	ND(0.5)	ND(0.5)	26(0.5)	2.3(1.0)	33(2.0)	NR	NR	ESA II 1989
9/20/89	601	ND(0.5)	ND(0.5)	6.5(0.5)	60(NR)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	54(0.5)	ND(0.5)	ND(0.5)	36(0.5)	ND(0.5)	3.1(0.5)	NR	NR	APPL10/11/89
9/26/90	601	0.7(0.5)	ND(0.5)	6.2(0.5)	58(0.5)	1.5(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	69(0.5)	ND(0.5)	ND(0.5)	38(0.5)	10(1.0)	14(0.5)	ND(0.5)	ND(0.5)	APPL 10/2/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC = METHYLENE CHLORIDE
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER	WELL DW-1C (DEEP)																			
	PARAMETERS																			
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	BSK 1987
12/86	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	5.5(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
5/15/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	0.83(.5)	ND(0.5)	?(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	NR	NR	NR	ESA II 1989
9/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	72(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL10/11/89
9/19/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	33(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 10/2/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
? = UNDETERMINED

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER	WELL DW-1C (DEEP)																			
	PARAMETERS																			
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	3.0(0.5)	ND(0.5)	2.6(0.5)	ND(0.5)	ND(0.5)	1.0(0.5)	ND(0.5)	ND(0.5)	NR	NR	BSK 1987
12/86	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	4.5(NR)	ND(NR)	ND(NR)	0.9(NR)	ND(NR)	ND(NR)	NR	NR	ESA II 1989
5/15/89	5030/8010	ND(0.5)	ND(0.5)	1.9(1.0)	NR	ND(0.5)	ND(0.5)	ND(5.0)	ND(5.0)	ND(0.5)	ND(0.5)	22(0.5)	ND(0.5)	ND(0.5)	1.4(0.5)	2.0(1.0)	12(2.0)	NR	NR	ESA II 1989
9/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	6.6(0.5)	ND(0.5)	ND(0.5)	1.4(0.5)	ND(0.5)	0.6(0.5)	NR	NR	APPL10/11/89
9/19/90	601	ND(0.5)	ND(0.5)	ND(0.5)	1.0(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	7.9(0.5)	ND(0.5)	ND(0.5)	1.6(0.5)	2.4(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 10/2/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE DCPE = DICHLOROPROPENE, EB =ETHYL BENZENE, MC = METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER		WELL MW-3 (SHALLOW) PARAMETERS														
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO - METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	REFERENCE
12/88	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	5.8(NR)	ESA II 1989
5/15/89	5030/8010	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(2.5)	ND(2.5)	ND(2.5)	ND(10)	ND(10)	ND(10)	ND(10)	ND(2.5)	ESA II 1989
9/14/89	601	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	APPL 10/2/89
9/25/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/90
MCL		100	100		5	30			100		100				75		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL MW-3 (SHALLOW) PARAMETERS																
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
12/88	601	ND(NR)	ND(NR)	12(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	84(NR)	ND(NR)	ND(NR)	74(NR)	ND(NR)	33(NR)	ESA II 1989
5/15/89	5030/8010	ND(2.5)	ND(5.0)	ND(5.0)	NR	14(2.5)	ND(25)	ND(25)	NR	6.8(10)	ND(2.5)	6.5(2.5)	ND(2.5)	ND(2.5)	6.3(2.5)	ND(5.0)	ND(10)	ESA II 1989
9/14/89	601	ND(5.0)	ND(5.0)	9.3(5.0)	100(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	NR	14(5.0)	ND(5.0)	68(5.0)	ND(5.0)	ND(5.0)	85(5.0)	ND(5.0)	120(5.0)	APPL 10/2/89
9/25/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = [illegible] 1,3 [illegible]OPROP[illegible]

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER — WELL W-5 (SHALLOW)

DATE SAMPLED	METHOD	PARAMETERS																		REFERENCE
		BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-CHLORO-METHANE	CHLORO-TOLUENE	
7/84	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(NR)	NR	ND(1.0)	ND(1.0)	NR	ND(1.0)	NR	NR	NR	BSK 1987
3/86	601	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	NR	NR	ND(0.5)	NR	ND(NR)	ND(1.0)	NR	NR	ND(1.0)	ND(0.5)	NR	NR	NR	BSK 1987
12/88	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	69(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	BSA II 1989
5/15/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	21(0.5)	ND(1.0)	ND(NR)	ND(2.0)	ND(2.0)	2.5(2.0)	0.55(.5)	NR	NR	NR	BSA II 1989
9/12/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	3.9(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	0.7(0.5)	NR	NR	NR	APPL 9/28/89
9/18/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NR	DRY	DRY	COP 11/13/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-5 (SHALLOW)																	
		PARAMETERS																	
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	REFERENCE
7/84	601	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(1.0)	NR	NR	BSK 1987
3/86	601	ND(0.5)	ND(1.0)	3.5(0.5)	NR	ND(0.5)	ND(0.5)	3.5(0.5)	NR	NR	NR	ND(0.5)	ND(0.5)	ND(1.0)	ND(1.0)	NR	ND(0.1)	ND(0.5)	BSK 1987
12/88	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(0.5)	ND(0.5)	ND(0.5)	ND(NR)	16(NR)	ND(NR)	BSA II 1989
5/15/89	5030/8010	ND(0.5)	ND(1.0)	18(1.0)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	20(1.0)	NR	BSA II 1989
9/12/89	601	ND(0.5)	ND(0.5)	0.8(0.5)	12(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	49(0.5)	NR	APPL 9/28/89
9/18/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	CCF 11/13/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5		

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC = METHYLENE CHLORIDE

TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE

ND = NOT DETECTED AT INDICATED DETECTION LIMIT

NR = NOT REPORTED

( ) = METHOD DETECTION LIMIT

MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER	WELL 19-H1 (DEEP)																
	PARAMETERS																
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO -METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	REFERENCE
5/12/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	ESA II 1989
MCL		100	100		5	30			100		100				75		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER	WELL 19-HI (DEEP)																
	PARAMETERS																
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
5/12/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	ESA II 1989
MCL		5				0.5*		680		1	2	200	32	5		0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER	WELL EW-1 (SHALLOW) PARAMETERS																				
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
7/87(1)	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	2.9(0.5)	NR	NR	NR	KSA 1987
7/87(2)	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	3.6(0.5)	NR	NR	NR	KSA 1987
7/87(3)	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	6.4(0.5)	NR	NR	NR	KSA 1987
7/87(4)	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	KSA 1987
7/6/87	624	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(20)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	5.2(1.0)	NR	NR	NR	KSA 1987
5/19/89	5030/3010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	1.7(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	2.2(2.0)	ND(2.0)	ND(2.0)	15(0.5)	NR	NR	NR	KSA 1987
9/22/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	283(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	18(0.5)	NR	NR	NR	APPL 10/17/8
9/26/90		PUMP BROKEN																		FRESNO 11/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE,
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
(1) 7/1/87 5:00 PM
(2) 7/1/87 3:00 PM
(3) 7/2/87 7:00 PM
(4) 7/2/87 10:00 PM
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER	WELL EW-1 (SHALLOW)																			
	PARAMETERS																			
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
7/87(1)	601	ND(0.5)	ND(0.5)	2.7(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	50(0.5)	ND(0.5)	ND(0.5)	5.8(0.5)	ND(?)	57(0.5)	NR	NR	KSA 1987
7/87(2)	601	ND(0.5)	ND(0.5)	4.3(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	43.9(0.5)	ND(0.5)	ND(0.5)	5.0(0.5)	ND(0.5)	37(0.5)	NR	NR	KSA 1987
7/87(3)	601	ND(0.5)	ND(0.5)	6.9(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	45(0.5)	ND(0.5)	ND(0.5)	4.5(0.5)	ND(0.5)	35.6(0.5)	NR	NR	KSA 1987
7/87(4)	601	ND(0.5)	4.5(0.5)	3.2(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	50.5(0.5)	ND(0.5)	ND(0.5)	6.5(0.5)	ND(0.5)	102.3(.5)	NR	NR	KSA 1987
7/6/87	624	ND(0.5)	ND(1.0)	4.5(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(25)	39(25)	ND(1.0)	79(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	8.0(1.0)	NR	NR	KSA 1987
5/19/89	5030/8010	2.9(0.5)	1.6(1.0)	26(1.0)	NR	1.3(0.5)	ND(5.0)	ND(5.0)	NR	13(2.0)	ND(0.5)	96(0.5)	ND(0.5)	ND(0.5)	40(0.5)	121(1.0)	62(2.0)	NR	NR	KSA 1987
9/22/89	601	ND(0.5)	ND(0.5)	6.0(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	64(0.5)	ND(0.5)	ND(0.5)	44(0.5)	ND(0.5)	50(0.5)	NR	NR	APPL10/17/89
9/26/90		PUMP BROKEN																		FRESNO 11/90
MCL		0.5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BEENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
(1) 7/1/87 6:00 PM
(2) 7/1/87 9:00 PM
(3) 7/2/87 7:00 AM
(4) 7/2/87 10:00 AM
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
? = CONCENTRATION UNDETERMINED
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL MW-2 (SHALLOW) — PARAMETERS

DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	REFERENCE
12/88	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	33(NR)	ND(NR)	ND(NR)	ND(NR)	23(NR)	ESA II 1989
5/15/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	?(2.0)	ND(0.5)	ND(2.0)	8.1(2.0)	40(0.5)	ESA II 1989
9/11/89	601	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	34(5.0)	APPL 9/25/89
9/25/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/90
MCL		100	100		5	30			100		100				75		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL MW-4 (SHALLOW) — PARAMETERS

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS 1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
12/88	601	ND(NR)	ND(NR)	4.4(NR)	NR	5.0(NR)	ND(NR)	ND(NR)	ND(NR)	260(NR)	ND(NR)	220(NR)	ND(NR)	ND(NR)	110(NR)	ND(NR)	110(NR)	ESA II 1989
5/15/89	5030/8010	0.5(0.5)	4.1(1.0)	130(1.0)	NR	6.1(0.5)	ND(5.0)	ND(5.0)	NR	300(2.0)	ND(0.5)	230(0.5)	ND(0.5)	ND(0.5)	95(0.5)	ND(1.0)	120(2.0)	ESA II 1989
9/11/89	601	ND(5.0)	ND(5.0)	16(5.0)	137(5.0)	ND(5.0)	ND(5.0)	ND(5.3)	NR	60(50)	ND(5.0)	140(5.0)	ND(5.0)	ND(5.0)	160(5.0)	ND(5.0)	64(5.0)	APPL 9/25/89
9/25/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/90
MCL		5	6				0.5*		680		1	2	200	32			0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER		WELL DW-2A (SHALLOW)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
6/5/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.0(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	?(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	1.2(0.5)	NR	NR	NR	ESA II 1989
9/15/89	601	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 12/89
9/26/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	1.4(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	29(2.0)	ND(0.5)	ND(0.5)	0.7(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL10/18/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
? = UNDETERMINED

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL DW-2A (SHALLOW) — PARAMETERS

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	13(0.5)	ND(0.5)	30.5(.5)	ND(0.5)	ND(0.5)	3.2(0.5)	ND(0.5)	ND(0.5)	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	1.2(NR)	NR	0.8(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	25(NR)	ND(NR)	ND(NR)	11(NR)	ND(NR)	ND(NR)	NR	NR	ESA II 1989
6/5/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	NR	1.7(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	31(0.5)	ND(0.5)	ND(0.5)	19(0.5)	ND(1.0)	5.3(2.0)	NR	NR	ESA II 1989
9/15/89	601	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COP 12/89
9/25/90	601	ND(0.5)	ND(0.5)	2.4(0.5)	55(0.5)	1.1(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	32(0.5)	ND(0.5)	ND(0.5)	17(0.5)	ND(1.0)	3.4(0.5)	ND(0.5)	ND(0.5)	APP 10/18/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC = METHYLENE CHLORIDE
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER	WELL DW-2B (INTERMEDIATE)																			
	PARAMETERS																			
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	0.5(0.5)	NR	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	28(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
5/17/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	27(2.0)	ND(0.5)	ND(2.0)	ND(2.0)	ND(0.5)	NR	NR	NR	ESA II 1989
9/15/89	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	220(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	NR	APPL 10/2/89
9/25/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	37(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL10/18/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER	WELL DW-2B (INTERMEDIATE) PARAMETERS																			
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,2,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	0.6(0.5)	NR	1.6(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	6.7(0.5)	ND(0.5)	ND(0.5)	10.2(.5)	ND(0.5)	ND(0.5	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	18(NR)	ND(NR)	ND(NR	4.3(NR)	ND(NR)	ND(NR	NR	NR	ESA II 1989
5/18/89	5030/8010	ND(0.5)	ND(1.0)	6.9(1.0)	NR	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(2.0)	ND(0.5)	19(0.5)	ND(0.5)	ND(0.5)	4.6(0.5	2.3(1.0)	ND(2.	NR	NR	ESA II 1989
9/15/89	601	ND(1.0)	ND(1.0)	ND(1.0)	7.1(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	17(1.0)	ND(1.0)	ND(1.0)	2.5(1.0	ND(1.0)	ND(1.	NR	NR	APPL 10/2/89
9/25/90	601	ND(0.5)	ND(0.5)	ND(0.5)	7.9(0.5	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	20(0.5)	ND(0.5)	ND(0.5)	4.4(0.5	2.7(1.0)	ND(0.5	ND(0.5)	ND(0.5)	APPL10/18/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC = METHYLENE CHLORIDE
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER		WELL DW-2C (DEEP)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
5/18/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	NR	NR	NR	ESA II 1989
9/18/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	APPL10/17/89
9/24/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 10/9/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER	WELL DW-2C (DEEP)																			
	PARAMETERS																			
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS 1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
8/86	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	1.4(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	ESA II 1989
5/18/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	1.2(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	NR	NR	ESA II 1989
9/18/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	2.5(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	APPL10/17/89
9/24/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	1.7(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 10/9/90
MCL		5	6		0.5*				680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE DCPE = DICHLOROPROPENE, EB =ETHYL BENZENE, MC = METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER		WELL MW-1 (SHALLOW)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	5(NR)	ND(NR)	ND(NR)	ND(NR)	6.1(NR)	NR	NR	NR	ESA II 1989
5/15/89	5030/8010	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(2.5)	ND(2.5)	ND(2.5)	7(2.5)	ND(10)	ND(10)	ND(10)	9.4(2.5)	NR	NR	NR	ESA II 1989
9/12/89	601	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	170(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	6.1(5.0)	NR	NR	NR	APPL 9/29/89
9/24/90	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.6(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	85(4.0)	ND(1.0)	ND(1.0)	3.7(1.0)	18(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	APPL 10/9/90
MCL		100	100		5	30			100		100				75					

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL MW-1 (SHALLOW)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2-TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
1/89	601	3.3(NR)	ND(NR)	15(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	86(NR)	ND(NR)	ND(NR)	66(NR)	ND(NR)	55(NR)	NR	NR	ESA II 1989
5/16/89	5030/8010	ND(2.5)	ND(5.0)	220(5.0)	NR	ND(2.5)	ND(25)	ND(25)	ND(NR)	6.4(10)	ND(2.5)	100(2.5)	ND(2.5)	ND(2.5)	56(2.5)	12(5.0)	67(10)	NR	NR	ESA II 1989
9/12/89	601	ND(5.0)	ND(5.0)	15(5.0)	NR	ND(5.0)	ND(5.0)	ND(5.0)	NR	14(5.0)	ND(5.0)	81(5.0)	ND(5.0)	ND(5.0)	47(5.0)	ND(5.0)	290(5.0)	NR	NR	APPL 9/28/89
9/24/90	601	4.2(1.0)	ND(1.0)	29(1.0)	440(1.0)	6.4(1.0)	ND(1.0)	ND(1.0)	NR	ND(10.0)	ND(1.0)	140(1.0)	ND(1.0)	ND(1.0)	85(1.0)	85(2.0)	28(1.0)	ND(1.0)	ND(1.0)	APPL 10/9/90
MCL		5	6				0.5*		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC = METHYLENE CHLORIDE
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-1R (SHALLOW)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO - METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
6/84	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
7/84**	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	46.7(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	ND(1.0)	ND(1.0)	ND(1.0)	0.8(1.0)	NR	NR	NR	BSK 1987
7/84	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	BSK 1987
3/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESA II 1989
5/16/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	6.1(NR)	ND(2.0)	ND(2.0)	ND(2.0)	0.69(0.5)	NR	NR	NR	ESA II 1989
9/89	REPORT MISSING																			
9/24/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	43(2.0)	ND(0.5)	ND(0.5)	0.6(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 10/9/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCA = DICHLOROETHANE, DCB = DICHLOROBENZENE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
** = SAMPLED BY RWQCB
MCL = MAXIMUM CONTAMINANT LEVEL

TABLE 2-30 (CONT.)
GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-1R (SHALLOW)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
6/84	601	ND(NR)	ND(NR)	19(NR)	NR	1.1(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	49(NR)	ND(NR)	NR	24(NR)	ND(NR)	ND(NR)	ND(NR)	NR	ESA II 1989
7/84**	601	0.8(1.0)	ND(1.0)	22.9(1.0)	NR	1.4(1.0)	ND(1.0)	ND(1.0)	NR	18.3(1.0)	62.3(1.0)	NR	ND(1.0)	ND(1.0)	22.6(1.0)	2.6(1.0)	NR	NR	NR	BSK 1987
7/84	601	ND(0.5)	ND(0.5)	18(0.5)	NR	1.1(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	49(0.5)	ND(0.5)	ND(0.5)	24(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	BSK 1987
3/86	601	ND(1.0)	2.0(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	33(1.0)	ND(1.0)	ND(1.0)	15(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	32(NR)	ND(NR)	ND(NR)	18(NR)	ND(NR)	5.0(NR)	5.0(NR)	NR	ESA II 1989
5/16/89	5030/8010	ND(0.5)	ND(1.0)	30(1.0)	NR	1.2(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	37(0.5)	ND(0.5)	NR	15(0.5)	ND(1.0)	ND(2.0)	ND(2.0)	NR	ESA II 1989
9/12/89	601	ND(0.5)	ND(0.5)	1.7(0.5)	29(0.5)	1.0(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	26(0.5)	ND(0.5)	ND(0.5)	13(0.5)	ND(0.5)	11(0.5)	NR	NR	APPL 9/28/89
9/24/90	601	ND(0.5)	ND(0.5)	1.6(0.5)	30(0.5)	1.2(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	32(0.5)	ND(0.5)	ND(0.5)	13(0.5)	2.3(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 10/9/90
MCL		5	6				0.5		680		1	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE,
MC = METHYLENE CHLORIDE, TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
** = SAMPLED BY RWQCB
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1912 JENSEN (INTERMEDIATE)															
		PARAMETERS															
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3 DCB	1,4-DCB	1,1-DCA	REFERENCE
5/15/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	ESA II 1989
MCL		100	100		5	30			100		100				75		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1912 JENSEN (INTERMEDIATE)															
		PARAMETERS															
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
5/15/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	ESA II 1989
MCL		5	6			0.5*		680		1	2	200	32	5		0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER — WELL 1635 JENSEN (DEEP)

DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3 DCB	1,4-DCB	1,1-DCA	DI-CHLORO-BROMO-METHANE	REFERENCE
		PARAMETERS																
7/84	601	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	NR	NR	ND(0.5)	NR	NR	ND(0.5)	NR	NR	NR	ND(0.5)	ND(0.5)	BSK 1987
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	BSK 1987
5/18/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	3.3(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	NR	ESA II 1989
MCL		100	100		5	30			100		100				75			

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL 1635 JENSEN (DEEP)

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,2-TRICHLORO 2,2,1-TRIFLUORO ETHANE	REFERENCE
		PARAMETERS																
7/84	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	ND(0.5)	BSK 1987
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	BSK 1987
5/18/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	1.4(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	NR	ESA II 1989
MCL		5	6			0.5*		680		1	2	200	32	5		0.5		

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER — WELL 1642 JENSEN (INTERMEDIATE) — PARAMETERS

DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	REFERENCE
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	BSK 1987
5/11/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	ESA II 1989
MCL		100	100		5	30			100		100				75		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL 1642 JENSEN (INTERMEDIATE) — PARAMETERS

DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	BSK 1987
5/11/89	601	ND(0.5)	ND(1.0)	ND(1.0)	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	ESA II 1989
MCL		5	6			0.5*		680		1	2	200	32	5		0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER		WELL 1346 JENSEN (INTERMEDIATE)															
		PARAMETERS															
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO - METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	REFERENCE
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	BSK 1987
5/11/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	ESA II 1989
MCL		100	100		5	30			100		100				75		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1346 JENSEN (INTERMEDIATE)															
		PARAMETERS															
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	1,2-DCPA	CIS-1,3-DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	BSK 1987
5/11/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	ESA II 1989
MCL		5	6			0.5*		680		1	2	200	32	5		0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER		WELL 1304 JENSEN (DEEP)															
		PARAMETERS															
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO - METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3-DCB	1,4-DCB	1,1-DCA	REFERENCE
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	BSK 1987
5/10/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	3.7(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	ESA II 1989
MCL		100	100		5	30			100		100				75		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1304 JENSEN (DEEP)														
		PARAMETERS														
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	BSK 1987
5/10/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	ESA II 1989
MCL		5	6			0.5*		680		1	2	200	32	5		0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2429 NORTH (UNKNOWN DEPTH)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	CIS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	1,1,1,2-TETRA-CHLORO-ETHANE	DI-CHLORO-METHANE	REFERENCE
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	NR	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	BSK 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	NR	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	2.5(NR)	3.8(NR)	ND(NR)	NR	NR	ESA II 1989
4/14/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	ND(NR)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	APPL 5/2/89
5/11/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	NR	ND(0.5)	ND(5.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	6.8(1.0)	ND(2.0)	NR	NR	ESA II 1989
9/6/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	1.8(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	3.0(0.5)	ND(0.5)	NR	NR	APPL 10/2/89
12/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	3.2(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	9.4(0.5)	ND(0.5)	NR	NR	APPL 1/15/90
3/5/90	601	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	4.8(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	9.6(1.0)	ND(0.5)	NR	NR	APPL 3/13/90
6/28/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	3.6(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	3.9(0.5)	ND(0.5)	NR	NR	TWIN 7/18/90
9/17/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(5.0)	ND(0.5)	2.7(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	2.6(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	APPL 9/26/90
MCL		5	6				0.5*		680		[illegible]	2	200	32	5		0.5			

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE,
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER		WELL 2423 NORTH (UNKNOWN DEPTH)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3 DCB	1,4-DCB	1,1-DCA	BROMO-BENZENE	DI-BROMO-METHANE	CHLORO-TOLUENE	REFERENCE
4/86	601	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(NR)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	NR	NR	NR	ESE 1987
1/89	601	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	23(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	NR	NR	NR	ESE II 1989
4/14/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	AFFL 5/1/89
5/11/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	17(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	NR	NR	NR	ESE II 1989
9/6/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	30(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	AFFL 10/2/89
12/20/89	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	24(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	AFFL 1/15/90
3/5/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	15(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	NR	NR	AFFL 3/13/90
6/29/90	601	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	NR	ND(1.0)	NR	ND(0.5)	ND(1.0)	ND(0.5)	27(1.0)	NR	NR	NR	ND(0.5)	NR	NR	NR	TWIN 7/19/90
9/17/90	601	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NR	ND(0.5)	ND(0.5)	ND(0.5)	3.5(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	AFFL 9/25/90
MCL		100	100		5	30			100		100				75					

FOOTNOTES: CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug//L)

MATRIX: GROUNDWATER		WELL 1650 JENSEN (UNKNOWN DEPTH)															
		PARAMETERS															
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3 DCB	1,4-DCB	1,1-DCA	REFERENCE
5/11/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	ESA II 1989
MCL		100	100		5	30			100		100				75		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1650 JENSEN (UNKNOWN DEPTH)															
		PARAMETERS															
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
5/11/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(2.0)	ESA II 1989
MCL		5	6			0.5*		680		1	2	200	32	5		0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE, DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE.
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2045 NORTH (UNKNOWN DEPTH)															
		PARAMETERS															
DATE SAMPLED	METHOD	BROMO-DI-CHLORO-METHANE	BROMO-FORM	BROMO-METHANE	CCL4	CHLORO-BENZENE	CHLORO-ETHANE	2-CHLORO-ETHYL-VINYL-ETHER	CHLORO-FORM	CHLORO-METHANE	DI-BROMO-CHLORO-METHANE	DI-CHLORO-DI-FLUORO-METHANE	1,2-DCB	1,3 DCB	1,4-DCB	1,1-DCA	REFERENCE
5/15/89	5030/8010	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	EPA II 1989
MCL		100	100		5	30			100		100				75		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2045 NORTH (UNKNOWN DEPTH)															
		PARAMETERS															
DATE SAMPLED	METHOD	1,2-DCA	1,1-DCE	TRANS-1,2-DCE	1,2-DCPA	CIS-1,3 DCPE	TRANS-1,3-DCPE	EB	MC	1,1,2,2 TETRA-CHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1,1 TCA	1,1,2 TCA	TCE	TRI-CHLORO-FLUORO-METHANE	VC	REFERENCE
5/15/89	5030/8010	ND(0.5)	ND(1.0)	ND(1.0)	ND(0.5)	ND(5.0)	ND(5.0)	NR	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(1.0)	EPA II 1989
MCL		5	6			0.5*		680		1	5	200	32	5		0.5	

FOOTNOTES: DCA = DICHLOROETHANE, DCE = DICHLOROETHENE, DCPA = DICHLOROPROPANE; DCPE = DICHLOROPROPENE, EB = ETHYL BENZENE, MC=METHYLENE CHLORIDE.
TCA = TRICHLOROETHANE, TCE = TRICHLOROETHENE, VC = VINYL CHLORIDE
CCL4 = CARBON TETRACHLORIDE, DCB = DICHLOROBENZENE, DCA = DICHLOROETHANE
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR 1,3 DICHLOROPROPENE

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL UW-1A								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO BENZENE	1,4 - DICHLORO BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/15/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 10/2/89
9/26/90	602	ND	ND	ND	ND	ND	ND	ND	ND(0.5)	APPL 10/18/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	----	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL UW-1B								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO BENZENE	1,4 - DICHLORO BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/15/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 10/2/89
9/26/90	602	ND	ND	ND	ND	ND	ND	ND	ND(0.5)	APPL 10/18/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	----	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL UW-10								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO BENZENE	1,4 - DICHLORO BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/15/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 10/2/89
3/26/90	602	ND	ND	ND	ND	ND	ND	ND	ND(0.5)	APPL 10 15/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	----	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-2								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/11/89	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 9/25/89
MDL		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
3/13/90	602	ND	0.9	0.6	ND	0.7	ND	ND	ND	APPL 10/2/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL UW-2A								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO BENZENE	1,4 - DICHLORO BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/15/89		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	FRESNO 11/89
9/25/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	FRESNO 11/90

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LEVEL
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL UW-2B								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO BENZENE	1,4 - DICHLORO BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/15/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 10/2/89
9/26/90	602	ND	ND	ND	ND	ND	ND	ND	ND(0.5)	APPL 10/18/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	----	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL UW-2C								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO BENZENE	1,4 - DICHLORO BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/15/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 10/2/89
9/26/90	602	ND	ND	ND	ND	ND	ND	ND	ND(0.5)	APPL 10/13/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	----	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-3								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/11/89	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 9/25/89
MDL		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
9/18/90	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 10/2/90
MDL		2.5	2.5	2.5	2.5	2.5	2.5	2.5	5.0	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-6								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/11/89	602	ND	ND	ND	ND	ND	ND	ND	ND(0.5)	APPL 9/25/89
9/13/90	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 10/2/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	----	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL MW-4								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/11/89	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 9/25/89
9/19/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/13/90
MDL		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS

(ug/L)

MATRIX: GROUNDWATER		WELL 2100 NORTH								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO BENZENE	1,4 - DICHLORO BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
5/88	8010	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ESA II 1989
1/89	8020	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ESA II 1989
4/14/89	602	ND([illegible])	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	APPL 5/2/89
9/6/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 10/2/89
12/20/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 1/15/90
3/5/90	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 3/13/90
6/28/90	602	ND	ND	ND	ND	ND	ND	ND	ND(0.5)	TWIN 7/18/90
8/17/90	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 9/26/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	----	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT

NR = NOT REPORTED

( ) = METHOD DETECTION LIMIT

MDL = METHOD DETECTION LIMIT

MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2142 NORTH								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO BENZENE	1,4 - DICHLORO BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
1/89	8020	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ESA II 1989
4/14/89	602	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	APPL 5/2/89
9/6/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 10/2/89
12/20/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 1/15/90
3/5/90	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 3/13/90
6/28/90	602	ND	ND	ND	ND	ND	ND	ND	ND(0.5)	TWIN 7/18/90
9/17/90	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 9/26/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	----	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LEVEL
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2168								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO BENZENE	1,4 - DICHLORO BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
1/89	5020	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ESA II 1989
4/14/89	602	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	APPL 5/2/89
9/6/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 10/2/89
12/20/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 1/15/90
3/5/90	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 3/13/90
6/28/90	602	ND	ND	ND	ND	ND	ND	ND	ND(0.5)	TWIN 7/18/90
9/17/90	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 9/26/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	----	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2188								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO BENZENE	1,4 - DICHLORO BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
1/89	8020	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ESA II 1989
4/14/89	602	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	APPL 5/2/89
9-6/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 10/2/89
12/20/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 1/15/90
3/5/90	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 3/13/90
6/28/90	602	ND	ND	ND	ND	ND	ND	ND	ND(0.5)	TWIN 7/18/90
9/17/90	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 9/26/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	----	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL OW-1								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
1/89	8020	3.5(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ESA II 1989
5/89	5030/8020	ND(2.5)	ND(5.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(2.5)	ND(2.5)	ND(2.5)	ESA II 1989
9/20/89	602	2.6	ND	ND	ND	ND	ND	ND	ND	APPL 10/11/89
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	
9/24/90	602	5.1	ND	ND	ND	ND	ND	ND	ND	APPL 10/9/90
MDL		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL EW-1								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
5/89	8020	2.0(0.5)	ND(1.0)	2.2(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ESA II 1989
9/12/89	601	ND	ND	ND	ND	ND	ND	ND	ND	APPL 10/17/89
9/26/90	PUMP NOT WORKING									COF 11/13/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATEER		WELL DW-1A								
		PARAMETERRS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
5/89	5030/8020	ND(12.5)	ND(25.0)	ND(50.0)	ND(50.0)	ND(50.0)	ND(12.5)	ND(12.5)	ND(12.5)	ESA II 1989
9/15/89		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/89
9/19/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/13/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL DW-1B								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
10/88	8020	0.5(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ESA II 1989
5/89	5030/8020	ND(0.5)	ND(1.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(1.5)	ESA II 1989
9/20/89	602	0.9	ND	ND	ND	ND	ND	ND	ND	APPL 10/11/89
9/19/90	602	0.5	ND	ND	ND	0.9	ND	ND	ND	APPL 10/2/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL DW-1C								
		PARAMETERRS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/20/89	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 10/11/89
9/13/90	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 10/3/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	-
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-4								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/18/89	602	ND	ND	2	ND	13	ND	ND	ND	APPL 10/17/89
9/19/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/13/90
MDL		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL MW-3								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/14/89	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 10/2/89
9/24/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COP 11/13/90
MDL		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-5								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/12/89	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 9/28/89
9/24/90		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COP 11/13/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL MW-2								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
1/89	8020	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ESA II 1989
5/89	5030/8020	ND(0.5)	ND(1.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ESA II 1989
9/12/89	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 9/28/89
3/25/90	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 10/18/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL DW-2A								
		PARAMETERRS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/15/89		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	COF 11/89
9/25/90	602	ND	1.4	ND	ND	0.7	ND	ND	ND	APPL 10/18/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL DW-2B								
		PARAMETERRS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/15/89	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 10/2/89
MDL		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
9/25/90	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 10/18/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATEER		WELL DW-2C								
		PARAMETERRS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/18/89	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 10/17/89
9/24/90	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 10/9/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATEER		WELL W-1R								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/11/89	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 9/28/89
9/24/90	602	ND	ND	ND	ND	0.6	ND	ND	ND	APPL 10/9/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATEER		WELL MW-1								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO-BENZENE	1,4 - DICHLORO-BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
9/12/89	602	ND	ND	ND	ND	ND	ND	ND	ND	APPL 9-28/89
9/24/90	MISSING REPORT									
MDL		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

MATRIX: GROUNDWATER		WELL 2429								
		PARAMETERS								
DATE SAMPLED	METHOD	BENZENE	CHLORO-BENZENE	1,2 - DICHLORO-BENZENE	1,3 - DICHLORO BENZENE	1,4 - DICHLORO BENZENE	ETHYL BENZENE	TOLUENE	XYLENE	REFERENCE
1/89	8020	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ND(NR)	ESA II 1989
4/14/89	602	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	APPL 5/2/89
9/6/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 10/2/89
12/20/89	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 1/15/90
2/5/90	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 3/13/90
6/28/90	602	ND	ND	ND	ND	ND	ND	ND	ND(0.5)	TWIN 7/13/90
9/17/90	602	ND	ND	ND	ND	ND	ND	ND	ND(1.0)	APPL 9/26/90
MDL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	----	
MCL		1	30			75	680		1750	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MDL = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

APPENDIX A-2

GROUNDWATER - PESTICIDES

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-3						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-6						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2100 NORTH						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2142 NORTH						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	--

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2168 NORTH						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2188 NORTH						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL DW-1A						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
8/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-4						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LEVEL
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-5						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-1R						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1635 JENSEN						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(3.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1642 JENSEN						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(3.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1346 JENSEN						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	BSK 1987

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1304 JENSEN						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2429 NORTH						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(1.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2121 JENSEN						
		PARAMETERS						
DATE SAMPLED	METHOD	ENDRIN	LINDANE	METHOXY-CHLOR	TOXAPHENE	2-4-D	2,4,5-TP (SILVEX)	REFERENCE
4/86	TITLE 22	ND(0.1)	ND(0.05)	ND(0.3)	ND(3.0)	ND(5.0)	ND(1.0)	BSK 1987
MCL		0.2		100	5		10	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL

APPENDIX A-3

GROUNDWATER - METALS

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2100 W. NORTH														
		PARAMETERS														
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	POTASSIUM	SELENIUM	SILVER	ZINC	REFERENCE
7/84	GM/M	NR	ND(5)	ND(10)	ND(1)	ND(5)	100(1000)	ND(10)	ND(1)	ND(10)	NR	9000(NR)	ND(5)	ND(1)	NR	BSK 1987
3/86	GM/M	NR	1(NR)	90(NR)	ND(1)	ND(10)	110(NR)	ND(10)	ND(2100)	NR	19000(NR)	NR	ND(1)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50			45000	10	50	5000**		

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2142 W. NORTH														
		PARAMETERS														
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	POTASSIUM	SELENIUM	SILVER	ZINC	REFERENCE
7/84	GM/M	NR	ND(5)	ND(10)	ND(1)	ND(5)	ND(90)	ND(10)	ND(1)	ND(10)	NR	9000(NR)	ND(5)	ND(1)	NR	BSK 1987
3/86	GM/M	NR	3(NR)	[illegible]	ND(1010)	ND(10)	140(NR)	ND(10)	ND(2100)	NR	4000(NR)	NR	ND(1)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**		

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
GM/M = GENERAL MINERALS/METALS
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR CHROMIUM 6+
** = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1635 JENSEN													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
3/86	GM/M	NR	1.0(NR)	210(NR)	ND(10)	ND(10)	ND(100)	30(NR)	ND(10)	NR	61500(NR)	1(1)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45,000	10	50	5000**	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2121 JENSEN													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
3/86	GM/M	NR	1(NR)	180(NR)	ND(10)	ND(10)	ND(100)	20(100)	ND(100)	NR	75400(NR)	ND(1)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
GM/M = GENERAL MINERALS/METALS
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR CHROMIUM 6+
** = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1346 JENSEN													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
3/86	GM/M	NR	1(NR)	110(NR)	ND(10)	ND(10)	ND(100)	30(NR)	ND(100)	NR	45300(NR)	ND(1)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1642 JENSEN													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
3/86	GM/M	NR	1(NR)	150(NR)	ND(10)	ND(10)	ND(100)	10(NR)	ND(100)	NR	39900(NR)	ND(1)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
GM/M = GENERAL MINERALS/METALS
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR CHROMIUM 6+
** = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2429 NORTH													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
3/86	GM/M	NR	1	170(NR)	ND(10)	ND(10)	110(NR)	[illegible]	ND(2100)	NR	41200(NR)	2(1)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 1304 JENSEN													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
3/86	GM/M	NR	2(NR)	190(NR)	ND(10)	ND(10)	ND(100)	10(NR)	[illegible]	NR	48300(NR)	ND(1)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
GM/M = GENERAL MINERALS/METALS
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR CHROMIUM 6+
** = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2168 W. NORTH														
		PARAMETERS														
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	POTASSIUM	SELENIUM	SILVER	ZINC	REFERENCE
7/84	GM/M	NR	ND(5)	ND(10)	ND(1)	ND(5)	110(NR)	ND(10)	ND(1)	ND(10)	NR	5000(NR)	ND(5)	ND(1)	NR	BSK 1987
3/86	GM/M	NR	3.0(NR)	40(NR)	ND(10)	ND(10)	130(NR)	ND(10)	ND(2100)	NR	4000(NR)	NR	ND(1)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	[illegible]	[illegible]	4000	50	2		45000		10	50	5000**	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL 2188 W. NORTH														
		PARAMETERS														
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	POTASSIUM	SELENIUM	SILVER	ZINC	REFERENCE
7/84	GM/M	NR	ND(5)	ND(10)	ND(1)	ND(5)	100(NR)	ND(10)	ND(1)	ND(10)	NR	7000(NR)	ND(5)	ND(1)	NR	BSK 1987
3/86	GM/M	NR	3.0(NR)	80(NR)	ND(10)	ND(10)	110(NR)	ND(10)	ND(2100)	NR	6200(NR)	NR	ND(1)	ND(10)	NR	BSK 1987
MCL		1000	50	[illegible]	10	50*	4000	50	2		45000		10	50	5000**	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED AT INDICATED DETECTION LIMIT
( ) = METHOD DETECTION LIMIT
GM/M = METHOD DETECTION LIMIT
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR CHROMIUM 6+
** = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-5													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
3/86	GM/M	NR	13(NR)	680(NR)	ND(10)	ND(10)	ND(10)	ND(10)	ND(100)	NR	100(NR)	4(NR)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-6													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
3/86	GM/M	NR	6(NR)	60(NR)	ND(10)	ND(10)	ND(10)	ND(10)	ND(100)	NR	100(NR)	4(NR)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
GM/M = GENERAL METALS/MINERALS
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR CHROMIUM 6+
** = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-3 PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
3/86	GM/M	NR	1(NR)	360(NR)	ND(10)	20(10)	ND(10)	20(10)	ND(100)	NR	400(NR)	1(10)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

MATRIX: GROUNDWATER		WELL W-4 PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
3/86	GM/M	NR	6.0(NR)	950(NR)	10(10)	50(NR)	ND(10)	ND(10)	ND(100)	NR	2000(NR)	1.0(NR)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
GM/M = GENERAL METALS/MINERALS
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR CHROMIUM 6+
** = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL W-1R													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
3/86	GM/M	NR	1(NR)	380(NR)	ND(10)	ND(10)	ND(10)	ND(10)	ND(1)	NR	24000(NR)	1(NR)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

MATRIX: GROUNDWATER		WELL W-2													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
3/86	GM/M	NR	2(NR)	170(NR)	ND(10)	ND(10)	ND(10)	ND(10)	ND(100)	NR	74000(NR)	4(NR)	ND(10)	NR	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
GM/M = GENERAL METALS/MINERALS
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR CHROMIUM 6+
** = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL DW-1C														
		PARAMETERS														
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	COPPER	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
8/86	GM/M	NR	2(5)	90(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(5)	ND(100)	NR	13000(4400)	ND(5)	ND(10)	10(10)	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2			45,000	10	50	5000**	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER		WELL DW-2A													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	COPPER	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
8/86	GM/M	NR	2(5)	NR	NR	NR	ND(10)	ND(5)	NR	NR	NR	ND(5)	NR	ND(10)	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
GM/M = GENERAL MINERALS/METALS
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR CHROMIUM 6+
** = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATEER — WELL DW-1A

PARAMETERS

DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	COPPER	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
8/86	GM/M	NR	8(5)	0.00(10)	ND(10)	60(10)	ND(10)	ND(10)	6(5)	ND(100)	NR	5000(4400)	1(5)	ND(10)	20(10)	BSK 1987
MCL		1000	50	1000	10	50*	1000**	4000	50	2		45,000	10	50	5000**	

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATEER — WELL DW-1B

PARAMETERS

DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	COPPER	FLUORIDE	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
8/86	GM/M	NR	2(5)	130(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(5)	ND(100)	NR	15000(4400)	ND(5)	ND(10)	10(10)	BSK 1987
MCL		1000	50	1000	10	50*	1000**	4000	50	2		45,000	10	50	5000**	

FOOTNOTES:
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
GM/M = GENERAL MINERALS/METALS
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR CHROMIUM 6+
** = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATEER		WELL DW-2C PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	COPPER	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
8/86	GM/M	NR	2(5)	120(10)	ND(10)	ND(10)	ND(10)	ND(5)	ND(100)	NR	20000(4400)	ND(5)	ND(10)	20(10)	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
GM/M = GENERAL MINERALS/METALS
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR CHROMIUM 6+
** = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATEER		WELL DW-2A													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	COPPER	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
8/86	GM/M	NR	2(5)	NR	NR	NR	ND(10)	ND(5)	NR	NR	NR	ND(5)	NR	ND(10)	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

MATRIX: GROUNDWATEER		WELL DW-2B													
		PARAMETERS													
DATE SAMPLED	METHOD	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	COPPER	LEAD	MERCURY	NICKEL	NITRATE	SELENIUM	SILVER	ZINC	REFERENCE
8/86	GM/M	NR	1(5)	200(10)	ND(10)	ND(10)	ND(10)	ND(10)	200(100)	NR	600(4400)	ND(50)	ND(10)	ND(10)	BSK 1987
MCL		1000	50	1000	10	50*	4000	50	2		45000	10	50	5000**	

FOOTNOTES: ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LIMIT
GM/M = GENERAL MINERALS/METALS
MCL = MAXIMUM CONTAMINANT LEVEL
* = MCL FOR CHROMIUM 6+

APPENDIX A-4

GROUNDWATER - WATER QUALITY PARAMETERS

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER

WELL MW-1 (SHALLOW)

PARAMETERS

DATE SAMPLED	METHOD	pH (FIELD)	TOTAL DISSOLVED SOLIDS	ALKALINITY (BI-CARBONATE)	SPECIFIC COND. (micromhos /cm)	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	TOTAL HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
1/3/89	WQ	6.92	936	728	1270	72	2.32	NR	NR	<5	22.9	***	860	6.7	99.4	22	173	100	57.5	COF 3/89
6/6/89	WQ	6.5	1080	864	1670	51	6.7	ND	ND	ND	18	0.16	780	6.4	96	9.4	70	82	ND	COF 7/21/89
9/12/89	WQ	5.9	1100	960	1730	66	2	ND	ND	ND	24	ND	845	14	100	9.8	180	89	ND	COF 11/6/89
12/22/89	WQ	6.8	1040	896	1584	54	4.8	+	+	ND	27	ND	810	9.4	95	9.2	85	84	ND	COF 3/15/90
3/7/90	WQ	7.1	1260	881	1680	46	6.4	+	+	ND	24.6	ND	850	ND	92	10	170	83	ND	COF 4/9/90
6/13/90	WQ	7.15	1060	897	NR	49	5.8	+	+	<1	26	<0.5	790	5	100	9.3	170	86	0.05	COF 7/21/90
10/31/90	WQ	6.9	1100	932	NR	120	5.3	**	**	<1	28	<0.1	655	30	97	9.1	190	45	<0.05	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

FOOTNOTES: NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORY)
*** = SAMPLE NOT PRESERVED

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL MW-2																		
		PARAMETERS																		
DATE SAMPLED	METHOD	pH (FIELD)	TOTAL DISSOLVED SOLIDS	ALKALINITY (BI-CARBONATE)	SPECIFIC COND. (micromhos/cm)	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	TOTAL HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
1/3/89	WQ	6.88	714	481	1510	106	0.41	NR	NR	<5	18.7	***	675	<5	107.1	36.9	123	98.1	131	COF 3/89
6/6/89	WQ	6.6	904	684	1530	120	0.64	ND	ND	ND	15	0.23	620	7.8	110	9.6	120	69	0.08	COF 7/21/89
9/12/89	WQ	6.2	978	732	1600	130	0.55	ND	ND	ND	19	0.21	695	8	120	10	140	75	ND	COF 11/6/89
4th QTR NOT REPORTED																				
3/9/90	WQ	7.3	826	622	1420	92	1.2	+	+	ND	17.7	ND	630	ND	96	10	130	72	ND	COF 4/9/90
6/14/90	WQ	7.5	850	657	NR	89	1.1	+	+	<1	19.1	<0.5	590	5	98	9.3	120	68	0.12	COF 6/14/90
9/25/90	WQ	7.25	860	651	1190	70	1.3	**	**	<1	18	<0.1	589	16	88	9.1	124	68	0.08	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

FOOTNOTES:

NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORY)
*** = SAMPLE NOT PRESERVED

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL MW-3 (SHALLOW) PARAMETERS																		
DATE SAMPLED	METHOD	pH (FIELD)	TOTAL DISSOLVED SOLIDS	ALKALINITY (BI-CARBONATE)	SPECIFIC COND. (micromhos/cm)	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	TOTAL HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
12/28/88	WQ	6.95	1198	1090	2170	29	0.59	NR	NR	<5	123.5	<0.1	1075	6.8	82.9	15.3	210	114	12.7	COF 3/89
6/7/89	WQ	6.4	1340	1070	2020	33	0.52	ND	ND	ND	84	0.36	1100	6.9	84	11	230	110	0.04	COF 7/21/89
9/14/89	WQ	6.2	1270	950	1920	29	0.48	ND	ND	ND	111	ND	1100	ND	84	11	220	120	0.1	COF 11/6/89
12/26/89	WQ	6.9	1260	1090	1820	27	0.52	+	+	ND	220	ND	1100	ND	84	10	110	110	ND	COF 3/15/90
3/6/90	WQ	6.6	1230	967	NR	28	0.37	NR	NR	ND	95.8	ND	1100	8.2	84	11	220	120	0.05	COF 4/9/90
6/14/90	DRY																			COF 7/21/90
9/24/90	DRY																			COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

FOOTNOTES:
NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL MW-4 (SHALLOW)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	pH (FIELD)	TOTAL DISSOLVED SOLIDS	ALKALINITY (BI-CARBONATE)	SPECIFIC COND. (micromhos/cm)	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	TOTAL HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
12/29/88	WQ	6.9	1136	1132	1740	10	1.6	NR	NR	<5	10.6	0.14	965	<5	89.9	19.2	173	110	26.4	COF 3/89
6/9/89	WQ	6.4	1120	1140	1860	8.5	0.36	ND	ND	ND	7.7	0.3	900	ND	91	9.6	190	110	0.19	COF 7/21/89
9/11/89	WQ	6.2	1080	1050	1350	3.1	ND	ND	ND	ND	7.8	0.21	900	ND	75	8.8	170	100	ND	COF 11/6/89
12/22/89	WQ	6.7	1040	1040	1552	9.3	0.19	+	+	ND	7.8	ND	910	ND	80	8.7	93	100	0.07	COF 3/15/90
3/6/90	WQ	6.3	1060	1060	1650	6	0.24	NR	NR	ND	7.3	ND	910	7.8	72	8	180	110	0.09	COF 4/9/90
6/11/90	WQ	7.15	1080	1010	NR	<2	<0.1	<1	<1	<1	6.1	<0.5	910	<5	62	8.4	187	108	8	COF 6/11/90
9/19/90	DRY																			COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

FOOTNOTES:
NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER

WELL OW-1 (INTERMEDIATE)

PARAMETERS

DATE SAMPLED	METHOD	pH (FIELD)	TOTAL DISSOLVED SOLIDS	ALKALINITY (BI-CARBONATE)	SPECIFIC COND. (micromhos/cm)	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	TOTAL HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
1/17/89	WQ	7.2	724	672	1180	8	0.63	NR	NR	<5	9.2	0.11	575	7	80	13.6	69.4	58.6	0.44	COF 3/89
6/9/89	WQ	6.4	732	701	1230	10	0.35	ND	ND	ND	8	0.23	520	ND	86	11	110	58	1.1	COF 7/21/89
9/20/89	WQ	6.9	716	672	1150	6.1	0.29	ND	ND	ND	9.8	0.11	512	ND	85	9.4	110	56	2.4	COF 11/6/89
12/28/89	WQ	7.2	676	577	949	18	0.33	+	+	ND	11	ND	500	ND	75	9.2	47	48	0.08	COF 3/15/90
3/6/90	WQ	6.8	654	608	1090	6	0.28	+	+	ND	7.9	ND	480	ND	75	9.3	100	54	ND	COF 4/9/90
6/14/90	WQ	7.65	586	557	NR	11	0.3	+	+	<1	8.1	<0.5	420	<5	73	8	91	46	0.13	COF 7/21/90
9/24/90	WQ	7.05	636	598	730	14	0.5	**	**	<1	7.5	<0.1	465	14	70	8	100	51	0.06	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

FOOTNOTES:
NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORY)

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL W-3 (SHALLOW) PARAMETERS																		
DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
7/84	WQ	6.6(NR)	724(NR)	680(NR)	1129(NR)	21(NR)	ND(4.4)	ND(0.1)	ND(0.1)	NR	7(NR)	ND(0.05)	649(NR)	ND(2.0)	24(NR)	NR	175(NR)	52(NR)	0.06(NR)	BSK 1987
3/86	WQ	6.6(NR)	758(NR)	695(NR)	11560(NR)	1(NR)	NA	NA	NA	NR	15.8(NR)	NA	686(NR)	NA	NR	NR	197(NR)	47(NR)	0.41(NR)	BSK 1987
12/27/88		6.89	884	858	1270	4	<0.1	NR	NR	<5	6.4	<0.1	600	<5	8.3	12.8	218	72.5	37.5	
6/5/89	WQ	6.4	868	860	1430	32	ND	ND	ND	ND	5.2	ND	870	ND	5	4.3	240	60	0.46	
9/11/89	WQ	6.1	1010	960	1350	3.1	ND	ND	ND	ND	7.8	0.21	950	6.9	5.7	4.4	250	77	0.23	
12/21/90	WQ	6.6	742	909	1520	25	ND	+	+	ND	7.1	ND	910	ND	5.4	4.1	120	76	0.58	
3/16/90	WQ	6.6	884	815	NR	3	ND	NR	NR	ND	5.5	ND	920	ND	5.2	3.3	130	83	1.2	COF 4/9/90
6/11/90	WQ	6.85	1040	975	NR	<2	<0.1	+	+	<1	6.4	<0.5	960	9	5.4	4	250	82	0.93	COF 7/21/90
9/18/90	WQ	6.45	964	929	807	3.1	<0.1	**	**	<1	7.7	<0.1	946	9	5.1	4.1	260	73	0.08	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.06	
MCL							45												0.3*	

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL W-3 (SHALLOW) PARAMETERS								
DATE	METHOD	BICARB-ONATE	TOTAL SOLIDS	CARBONATE	HYDROXIDE	MANGANESE	ODOR	COPPER	SURFACANTS	ZINC	REFERENCE
7/84	WQ	830(NR)	NA	NA	NA	NA	NA	NA	NA	NA	BSK 1987
3/86	WQ	848(NR)	NA	ND(0.1)	NA	0.103(NR)	NA	ND(0.01)	ND(0.5)	0.07(NR)	BSK 1987

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ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
** = < 1mg/l TKN (TWINING LABORATORY)

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL 1304 JENSEN (DEEP) — PARAMETERS

DATE SAMPLED	METHOD	CARBONATE	BICARBONATE	ALKALINITY	CALCIUM	CHLORIDE	CONDUCTIVITY (micromhos /cm)	COPPER	IRON	MAGNESIUM	MANGANESE	pH	SODIUM	SULFATE	SURFACTANTS (MBAS)	TOTAL DISSOLVED SOLIDS	HARDNESS	ZINC	REFERENCE
3/86		ND(0.1)	315(NR)	259(NR)	64(NR)	45.1(NR)	700(NR)	ND(0.01)	ND(0.01)	31.6(NR)	ND(0.001)	7.5	39.9(NR)	26(NR)	ND(0.5)	485(NR)	289(NR)	0.01(NR)	BSK 1987

FOOTNOTE ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER — WELL 1346 JENSEN (INTERMEDIATE) — PARAMETERS

DATE SAMPLED	METHOD	CARBONATE	BICARBONATE	ALKALINITY	CALCIUM	CHLORIDE	CONDUCTIVITY (micromhos /cm)	COPPER	IRON	MAGNESIUM	MANGANESE	pH	SODIUM	SULFATE	SURFACTANTS (MBAS)	TOTAL DISSOLVED SOLIDS	HARDNESS	ZINC	REFERENCE
3/86		ND(0.1)	278(NR)	228(NR)	64.9(NR)	57.1(NR)	665(NR)	ND(0.01)	0.03(0.01)	32.7(NR)	ND(0.001)	7.8	27.7(NR)	9(NR)	ND(0.5)	466(NR)	296(NR)	0.05(5)	BSK 1987

FOOTNOTE ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER	WELL 1635 JENSEN (DEEP)																	
	PARAMETERS																	
DATE SAMPLED	METHOD	CARBONATE	BICARBONATE	ALKALINITY	CALCIUM	CHLORIDE	CONDUCTIVITY (micromhos /cm)	COPPER	IRON	MAGNESIUM	MANGANESE	pH	SODIUM	SULFATE	SURFACTANTS (MBAS)	TOTAL DISSOLVED SOLIDS	HARDNESS	ZINC	REFERENCE
3/86		ND(0.1)	505(NR)	414(NR)	85.2(NR)	47.3(NR)	981(NR)	ND(0.01)	0.06(0.01)	39.8(NR)	0.008(0.001)	7.5	74.5(NR)	15(NR)	ND(0.5)	675(NR)	376(NR)	1.27(5)	BSK 1987

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER	WELL 1642 JENSEN (INTERMEDIATE)																		
	PARAMETERS																		
DATE SAMPLED	METHOD	CARBONATE	BICARBONATE	ALKALINITY	CALCIUM	CHLORIDE	CONDUCTIVITY (micromhos /cm)	COPPER	IRON	MAGNESIUM	MANGANESE	pH	SODIUM	SULFATE	SURFACTANTS (MBAS)	TOTAL DISSOLVED SOLIDS	HARDNESS	ZINC	REFERENCE
3/86		ND(0.1)	335(NR)	275(NR)	53.1(NR)	55.3(NR)	742(NR)	ND(0.01)	0.01(0.01)	25.9(NR)	ND(0.001)	8.3	71.6(NR)	14(NR)	ND(0.5)	514(NR)	239(NR)	0.08(5)	BSK 1987

GROUNDWATER ANALYTICAL RESULTS
(ug/L)

MATRIX: GROUNDWATER	WELL 2121 JENSEN																		
	PARAMETERS																		
DATE SAMPLED	METHOD	CARBONATE	BICARBONATE	ALKALINITY	CALCIUM	CHLORIDE	CONDUCTIVITY (micromhos /cm)	COPPER	IRON	MAGNESIUM	MANGANESE	pH	SODIUM	SULFATE	SURFACTANTS (MBAS)	TOTAL DISSOLVED SOLIDS	HARDNESS	ZINC	REFERENCE
3/86		ND(0.1)	281(NR)	231(NR)	55.7(NR)	25.5(NR)	640(NR)	ND(0.01)	ND(0.01)	28.7(NR)	ND(0.001)	7.5(NR)	37.5(NR)	2.2(NR)	ND(0.5)	479(NR)	257(NR)	0.05(NR)	BSK 1987

FOOT[redacted] ND [redacted]

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL 2429 NORTH — PARAMETERS

DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
3/86	WQ	7.7(NR)	675(NR)	437(NR)	970(NR)	39.5(NR)	NR	NR	NR	NR	38(NR)	NR	477(NR)	NR	45.9(NR)	NR	106.2(NR)	51.8(NR)	0.04(0.01)	BSK 1987
1/13/89	WQ	7.44	650	478	1070	38	8.5	NR	NR	<5	49.3	0.2	500	<5	48.4	8.9	79.3	50.5	0.07	COF 3/89
3/90	DID NOT SAMPLE																			COF 4/9/90
6/28/90	WQ	7.5	644	241	NR	37	8.7	+	+	<1	58	<0.5	460	<5	51	8.8	100	52	<0.05	COF 7/21/90
9/17/90	WQ	7.85	647	442	763	40	8.9	**	**	<1	56	<0.1	437	<5	48	7.9	91	51	<0.05	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL 2429 NORTH — PARAMETERS

DATE	METHOD	CARBONATE	BICARB-ONATE	COPPER	MANGANESE	SURFACTANTS (MBAS)	ZINC	REFERENCE
3/86	WQ	ND(0.1)	533(NR)	ND(0.01)	0.003(0.001)	ND(0.5)	0.07(NR)	BSK 1987

FOOTNOTES:
NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORY)

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL W-1R (SHALLOW) — PARAMETERS

DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
7/84	WQ	7.3(NR)	739(NR)	572(NR)	1134(NR)	37(NR)	75(4.4)	ND(0.1)	ND(0.1)	NR	25(NR)	ND(0.05)	478(NR)	3.6(2.0)	79(NR)	NR	120(NR)	44(NR)	0.08(NR)	BSK 1987
3/86	WQ	7.7(NR)	739(NR)	623(NR)	1155(NR)	16(NR)	NA	NA	NA	NR	49.3(NR)	NA	640(NR)	NA	18(NR)	NR	153(NR)	63(NR)	0.40(NR)	BSK 1987
12/30/88	WQ	6.92	684	674	1230	26	0.95	NA	NA	<5	21.8	<0.1	590	<5	64	12.8	110	57.3	4.3	COF 3/89
6/7/89	WQ	6.5	884	752	1410	36	1	ND	ND	ND	18	0.16	680	ND	74	11	140	69	0.04	COF 7/21/89
9/12/89	WQ	6.2	836	725	1330	25	1.6	ND	ND	ND	24	0.21	655	ND	72	10	140	67	ND	COF 11/6/89
12/22/89	WQ	7.1	788	682	1270	30	2	+	+	ND	25	ND	610	ND	64	9.9	60	59	ND	COF 3/15/90
3/7/90	WQ	7.1	428	636	NR	23	2.5	+	+	ND	23.5	ND	590	ND	63	11	100	51	ND	COF 4/9/90
6/14/90	WQ	7.15	784	700	NR	24	2	+	+	<1	26	<0.5	620	6	66	9.7	140	65	<0.02	COF 7/21/90
9/24/90	WQ	7.05	792	653	950	48	1.7	**	**	<1	24	<0.1	597	<5	63	9.5	140	62	0.06	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

TABLE 2-132 (CONT)
GROUNDWATER ANALYTICAL RESULTS
(mg/L)

ATRIX: ROUNDWATER — WELL W-1R (SHALLOW) — PARAMETERS

DATE	METHOD	BICARBONATE	TOTAL SOLIDS	CARBONATE	HYDROXIDE	MANGANESE	ODOR	COPPER	SURFACANT	ZINC	REFERENCE
7/84	WQ	637(NR)	NA	NA	NA	NA	NA	NA	NA	NA	BSK 1987
3/86	WQ	762(NR)	NA	ND(0.1)	NA	0.013(0.001)	NA	ND(0.01)	ND(0.5)	0.04(NR)	BSK 1987

[redacted]

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MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
[redacted] mg/l [redacted]

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER	WELL DW-2C (DEEP)																				
	PARAMETERS																				
DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	BICARBONATE	REFERENCE
8/86	WQ	7.7(NR)	476(NR)	341(NR)	837(NR)	20(NR)	NR	NR	NR	NR	6(NR)	NR	264(NR)	NR	68(NR)	NR	60(NR)	27.9(NR)	0.54(0.01)	416(NR)	BSK 1987
1/11/89	WQ	7.29	488	346	713	18	4.2	NR	NR	<5	12.4	0.13	316	<5	29.3	10	59.6	32.6	0.11	NR	COF 3/89
6/6/89	WQ	7.2	514	346	732	22	4.2	ND	ND	ND	10	0.57	320	ND	32	9.9	58	36	1.1	NR	COF 7/21/89
9/18/89	WQ	7.1	438	350	673	18	4.3	ND	ND	ND	40	ND	320	ND	32	9.2	69	36	ND	NR	COF 11/6/89
12/26/89	WQ	7.4	431	317	854	19	4	+	+	ND	15	ND	340	ND	31	9.2	19	28	ND	NR	COF 3/15/90
3/7/90	WQ	7.9	780	332	719	24	3.7	+	+	ND	12.7	ND	310	6.7	31	10	68	35	ND	NR	COF 4/9/90
6/13/90	WQ	7.75	458	339	NR	16	2.9	+	+	<1	14	<0.5	310	<5	33	9.3	67	35	0.07	NR	COF 7/21/90
9/24/90	WQ	7.5	450	362	648	35	4.4	**	**	<1	13	<0.1	311	<5	32	9.2	68	34	0.13	NR	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05		
MCL							45												0.3*		

FOOTNOTES:
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ND = NOT DETECTED AT INDICATED DETECTION LIMIT
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MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORY)

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER	WELL DW-2B (INTERMEDIATE)																				
		PARAMETERS																			
DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	BICARBONATE	REFERENCE
8/86	WQ	7.6(NR)	648(NR)	488(NR)	118(NR)	30(NR)	NR	NR	NR	NR	18(NR)	NR	430(NR)	NR	51(NR)	NR	96(NR)	46.4(NR)	0.03(0.01)	595(NR)	BSK 1987
1/12/89	WQ	7.23	642	528	1040	26	6.6	NR	NR	<5	16.7	0.2	530	<5	52.6	9.8	85.9	45.6	0.07	NR	COF [illegible]/89
6/6/89	WQ	6.9	684	564	1140	24	8.2	ND	ND	ND	16	0.16	510	ND	64	11	100	55	0.08	NR	COF 7/21/89
9/15/89	WQ	6.8	688	575	1160	23	8.5	ND	ND	ND	24	ND	515	ND	67	11	110	56	ND	NR	COF 11/6/89
12/22/89	WQ	7.3	666	512	1044	27	6.2	+	+	ND	20	ND	480	ND	55	10	42	45	ND	NR	COF 3/15/90
3/7/90	WQ	7.6	1050	507	NR	27	5.9	+	+	ND	17.6	ND	470	ND	50	11	100	53	ND	NR	COF 4/9/90
6/13/90	WQ	7.65	706	554	NR	22	10	+	+	<1	22	<0.5	520	<5	64	11	110	57	0.06	NR	COF 7/21/90
9/24/90	WQ	7.45	712	557	875	45	8.6	**	**	<1	23	<0.1	514	10	59	10	110	57	0.06	NR	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	0.05	
MCL							45												0.3*	0.3*	

FOOTNOTES:
NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORY)

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL W-5 (SHALLOW)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY (BI-CARBONATE)	CONDUCTANCE (micromhos /cm)	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
7/84	WQ	6.8(NR)	686(NR)	525(NR)	1079(NR)	51(NR)	ND(4.4)	ND(0.1)	ND(0.1)	NR	45(NR)	ND(0.05)	487(NR)	8.9(2.0)	45(NR)	NR	125(NR)	43(NR)	0.08(NR)	BSK 1987
3/86	WQ	7.0(NR)	761(NR)	625(NR)	1145(NR)	29(NR)	NA	NA	NA	NR	15.9(NR)	NA	528(NR)	NA	71(NR)	NR	122(NR)	55(NR)	0.09(NR)	BSK 1987
12/28/88	WQ	6.99	688	724	1350	34	<0.1	NR	NR	<5	10	<0.1	790	<5	**	9.2	136	73.3	8.4	COF 3/89
6/7/89	WQ	6.4	872	776	1360	32	ND	ND	ND	ND	8.5	0.3	780	8.2	29	6.1	150	80	1.1	COF 7/21/89
9/12/89	WQ	6.4	840	796	1400	30	ND	ND	ND	ND	14	ND	785	ND	32	6.1	160	82	1	COF 11/6/89
12/26/89	WQ	6.8	770	724	1242	33	ND	+	+	ND	15	ND	730	ND	37	5.7	67	72	1.3	COF 3/15/90
3/7/90	WQ	7.2	794	706	1320	35	ND	NR	NR	ND	14.2	ND	690	9.7	45	6.6	140	85	1.1	COF 4/9/90
6/14/90	WQ	6.85	795	729	NR	33	<0.1	<1	<1	<1	28.6	<0.5	690	6	48	5.8	150	79	0.98	COF 7/21/90
9/24/90	DRY																			COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL W-5 (SHALLOW)									
		PARAMETERS									
DATE	METHOD	BICARB-ONATE	TOTAL SOLIDS	CARBONATE	HYDROXIDE	MANGANESE	ODOR	COPPER	SURFACANTS	ZINC	REFERENCE
7/84	WQ	637(NR)	NA	NA	NA	NA	NA	NA	NA	NA	BSK 1987
3/86	WQ	762(NR)	NA	ND(0.1)	NA	0.013(0.001)	NA	ND(0.01)	ND(0.5)	0.04(NR)	BSK 1987

FOOTNOTES:

NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
** = EMISSION/CONC. EXCEEDED THE HIGHEST STANDARD

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL DW-2A (SHALLOW) — PARAMETERS

DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	BICARBONATE	REFERENCE
8/86	WQ	7.3(NR)	744(NR)	612(NR)	1303(NR)	54(NR)	NR	NR	NR	NR	48(NR)	NR	NR	NR	NR	NR	NR	ND(NR)	0.49(0.01)	747(NR)	BSK 1987
1/12/89	WQ	6.8	746	638	1270	32	7	NR	NR	<5	23.3	0.2	590	<5	57.7	11.3	105	54.8	0.11	NR	COF 3/89
6/5/89	WQ	7	788	695	1320	33	4.3	ND	ND	ND	18	ND	625	ND	69	11	140	70	11	NR	COF 7/21/89
3rd Qtr	MISSING REPORT																				COF 11/6/89
12/89	PUMP MELTED																				COF 3/15/90
3/7/90	PUMP BROKEN																				COF 4/9/90
6/14/90	WQ	7	840	720	NR	29	4.7	<1	<1	<1	28.1	<0.5	660	5	65	9.4	150	69	0.12	NR	COF 7/21/90
9/25/90	WQ	7.25	830	691	1030	54	2.2	+	+	<1	25	<0.1	639	13	61	9.9	140	69	0.24	NR	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05		
MCL							45												0.3*		

FOOTNOTES:
NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL W-4 (SHALLOW)																		
		PARAMETERS																		
DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
7/84	WQ	7.8(NR)	1258(NR)	1000(NR)	1974(NR)	73(NR)	ND(4.4)	ND(0.1)	ND(0.1)	NR	135(NR)	ND(0.05)	914(NR)	16(2.0)	135(NR)	NR	210(NR)	95(NR)	0.06(NR)	BSK 1987
3/86	WQ	6.8(NR)	1249(NR)	997(NR)	1780(NR)	24(NR)	NR	NR	NA	NR	59.8(NR)	NA	882(NR)	NA	98(NR)	NR	206(NR)	90(NR)	1.72(NR)	BSK 1987
12/28/88	WQ	6.92	1154	1110	1980	6	<0.1	NS	NS	<5	96.7	0.14	1010	12.2	110	18.3	19.3	107	20.4	COF 3/89
6/7/89	WQ	6.4	1300	1090	1980	23	ND	ND	ND	ND	74	0.36	980	ND	120	11	200	110	0.88	COF 7/21/89
9/18/89	WQ	6.6	1290	1080	1780	19	ND	ND	ND	ND	108	ND	980	5.4	130	10	200	110	1.4	COF 11/6/89
12/26/89	WQ	6.8	1250	1130	1870	33	ND	+	+	ND	210	ND	1100	ND	120	10	110	110	1.2	COF 3/15/90
3/7/90	WQ	7	640	1120	2000	21	ND	NR	NR	ND	98.1	ND	1000	5.8	110	11	210	110	1.2	COF 4/9/90
6/14/90	DRY																			COF 7/21/90
9/19/90	DRY																			COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL W-4 (SHALLOW)								
		PARAMETERS								
DATE	METHOD	BICARB-ONATE	TOTAL SOLIDS	CARBONATE	HYDROXIDE	MANGANESE	ODOR	COPPER	SURFACANTS	ZINC	REFERENCE
7/84	WQ	1220(NR)	NA	NA	NA	NA	NA	NA	NA	NA	BSK 1987
3/86	WQ	1216(NR)	NA	ND(0.1)	NA	0.381(0.001)	NA	ND(0.01)	ND(0.5)	0.06(NR)	BSK 1987

FOOTNOTES:
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL DW-1C (DEEP)

PARAMETERS

DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	BICARBONATE	REFERENCE
8/86	WQ	7.9(NR)	330(NR)	215(NR)	511(NR)	23(NR)	NR	NR	NR	NR	8(NR)	NR	155(NR)	NR	43(NR)	NR	33(NR)	17.6(NR)	0.86(0.01	262(NR)	BSK 1987
12/29/88	WQ	7.39	366	220	486	20	2.5	NR	NR	<5	8.6	<0.1	208	<5	25.4	7.9	36.3	20.6	0.05	NR	COF 3/89
6/8/89	WQ	7.1	314	228	523	22	4.9	ND	ND	ND	7.4	0.57	200	ND	28	7.9	42	23	1.5	NR	COF 7/21/89
9/20/89	WQ	7.3	346	245	525	21	2.5	ND	ND	ND	11	0.48	215	6.7	30	8	44	24	0.19	NR	COF 11/6/89
12/27/89	MISSING REPORT																				COF 3/15/90
3/7/90	WQ	7.8	309	378	NR	22	2.4	+	+	ND	128	ND	180	ND	24	7.5	39	20	0.13	NR	COF 4/9/90
6/14/90	WQ	7.7	304	214	NR	22	2.4	+	+	<1	10	<0.5	190	<5	29	7.1	41	22	0.09	NR	COF 7/21/90
9/19/90	WQ	6.85	322	228	477	22	2.5	**	**	<1	10	<0.1	214	13	29	7.6	45	25	0.56	NR	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05		
MCL							45												0.3*		

FOOTNOTES:
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MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
** = <1 mg/l TKN (TWINING LABORATORIES)

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER	WELL DW-1B (INTERMEDIATE)																				
	PARAMETERS																				
DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	BICARBONATE	REFERENCE
8/86	WQ	7.7(NR)	550(NR)	439(NR)	933(NR)	31(NR)	NR	NR	NR	NR	10(NR)	NR	362(NR)	NR	57(NR)	NR	86(NR)	16(NR)	ND(0.01)	535(NR)	BSK 1987
12/28/88	WQ	7.44	544	526	1240	29	2.9	NR	NR	<5	12.6	<0.1	480	<5	59	12.2	80.4	49.1	<0.05	NR	COF 3/89
6/8/89	WQ	6.9	802	730	1360	31	0.21	ND	ND	ND	9.8	0.43	620	ND	72	12	130	73	0.04	NR	COF 7/21/89
9/20/89	WQ	7.2	819	740	1310	25	1.9	ND	ND	ND	15	ND	625	ND	72	12	130	73	0.05	NR	COF 11/6/89
12/27/89	WQ	7.5	532	398	977	42	3	+	+	ND	13	ND	380	ND	50	8.9	29	36	ND	NR	COF 3/15/90
3/7/90	WQ	7.6	570	398	NR	28	2.8	+	+	ND	11	ND	380	ND	51	10	80	46	ND	NR	COF 4/9/90
6/14/90	WQ	7.65	740	694	NR	17	1.8	+	+	<1	11	<0.5	580	5	69	11	120	67	<0.02	NR	COF 7/21/90
9/19/90	WQ	7	762	668	849	22	1.8	**	**	<1	12	<0.1	603	11	65	11	125	71	<0.05	NR	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05		
MCL							45												0.3*		

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* = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL DW-1A (SHALLOW)																			
		PARAMETERS																			
DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	BICARBONATE	REFERENCE
8/86	WQ	7.5(NR)	1144(NR)	635(NR)	1879(NR)	74(NR)	NR	NR	NR	NR	240(NR)	NR	592(NR)	NR	167(NR)	NR	146(NR)	55.6(NR)	1.15(0.01)	775(NR)	BSK 1987
6/8/89	DRY																				COF 2nd Qtr/89
9/14/89	DRY																				COF 3rd Qtr/89
12/26/89	DRY																				COF 4th Qtr/89
3/7/90	DRY																				COF 5/17/90
6/14/90	DRY																				COF 7/31/90
9/19/90	DRY																				COF 11/13/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05		
MCL							45												0.3*		

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MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL EW-1 (INTERMEDIATE) — PARAMETERS

DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
7/2/87	WQ	NR	NR	NA	1090	4.2	2.7	NR	NR	NR	7.0	NR	NR	NR	54.0	9.1	117	63.0	<0.05	KSA 1987
1st Qtr/89	MISSING DATA																			COF 3/89
6/13/89	DRY																			COF 7/21/89
9/22/89	WQ	6.5	836	756	1290	10	1	ND	ND	ND	10	ND	670	ND	54	8.7	140	73	ND	COF 11/6/89
4th Qtr/89	MISSING DATA																			COF 3/15/90
3/90	PUMP BROKEN																			COF 4/9/90
6/90	PUMP BROKEN																			COF 7/21/90
9/90	PUMP BROKEN																			COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL EW-1 (INTERMEDIATE) — PARAMETERS

DATE SAMPLED	METHOD	CARBONATE	BICARB-ONATE	COPPER	MANGANESE	FLUORIIDE	CADMIUM	CHROMIUM	LEAD	MERCURY	BORON	ARSENIC	BARIUM	SELENIUM	SILVER	REFERENCE
7/2/87	WQ	0.0	817	NA	<0.01	0.05	<0.005	<0.01	<0.01	<0.0002	0.10	<0.01	0.18	<0.005	<0.01	KSA 1987

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GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER

WELL 2188 NORTH (INTERMEDIATE)

PARAMETERS

DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE (micromhos /cm)	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
7/84	WQ	7.6(NR)	NA	294(NR)	NA	10(NR)	6(NR)	NA	NA	NR	7(NR)	NA	227(NR)	NA	38(NR)	NR	43(NR)	29(NR)	ND(0.05)	BSK 1987
3/86	WQ	7.7(NR)	345(NR)	243(NR)	470(NR)	8.4(NR)	NA	NA	NA	NR	25(NR)	NA	289(NR)	NA	33.2(NR)	NR	44.9(NR)	22.3(NR)	ND(0.01)	BSK 1987
1/13/89	WQ	7.59	330	250	484	4	2	NR	NR	<5	7.1	0.2	210	<5	***	6.3	18.5	20.8	0.07	COF 3/89
3/90	DID NOT SAMPLE																			COF 4/9/90
6/28/90	WQ	7.6	292	246	NR	6.7	2	+	+	<1	9.3	<0.5	190	6	33	6	41	22	<0.05	COF 7/21/90
9/17/90	WQ	8	350	268	499	10	2.4	**	**	<1	9.3	<0.1	211	7	35	5.8	44	24	<0.05	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER

WELL 2188 NORTH (INTERMEDIATE)

PARAMETERS

DATE	METHOD	BICARB-ONATE	TOTAL SOLIDS	CARBONATE	HYDROXIDE	MANGANESE	ODOR	COPPER	SURFACANTS	ZINC	ALUMINUM	REFERENCE
7/84	WQ	294(NR)	372(NR)	0(NR)	0(NR)	ND(0.02)	ND(NR)	ND(0.02)	NA	0.10(0.02)	ND(0.05)	BSK 1987
3/86	WQ	297(NR)	NA	ND(0.1)	NA	ND(0.001)	NA	ND(0.01)	ND(0.5)	0.01(NR)	NA	BSK 1987

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* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORY)
*** = EMISSION/CONCENTRATION EXCEEDED THE HIGHEST VALUE

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL 2168 NORTH (DEEP) — PARAMETERS

DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
7/84	WQ	7.7(NR)	NA	144(NR)	NA(NR)	10(NR)	4(NR)	NA	NA	NR	2(NR)	NA	113(NR)	NA	23(NR)	NR	20(NR)	20(NR)	ND(0.05)	BSK 1987
3/86	WQ	7.7(NR)	202(NR)	95(NR)	255(NR)	10(NR)	NA	NA	NA	NR	16(NR)	NA	94(NR)	NA	19.1(NR)	NR	20.6(NR)	10.4(NR)	ND(0.01)	BSK 1987
1/13/89	WQ	7.63	212	136	296	10	1.1	NR	NR	<5	6.5	0.2	112	<5	17.8	5	13.2	11.7	0.05	COF 3/89
3/90	DID NOT SAMPLE																			COF 4/9/90
6/28/90	WQ	7.5	218	158	NR	8.7	0.9	+	+	<1	8.1	0.5	130	<5	21	5	27	14	0.05	COF 7/21/90
9/17/90	WQ	8.05	250	178	324	8.2	0.8	**	**	<1	7.2	<0.1	135	10	22	4.6	28	16	<0.05	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL 2168 NORTH (DEEP) — PARAMETERS

DATE	METHOD	BICARB-ONATE	TOTAL SOLIDS	CARBONATE	HYDROXIDE	MANGANESE	ODOR	COPPER	SURFACANTS	ZINC	ALUMINUM	REFERENCE
7/84	WQ	144(NR)	222(NR)	0(NR)	0(NR)	ND(0.02)	NONE	ND(0.02)	NA	0.04(0.02)	ND(0.05)	BSK 1987
3/86	WQ	116(NR)	NA	ND(0.1)	NA	ND(0.001)	NA	ND(0.01)	ND(0.5)	0.04(NR)	NA	BSK 1987

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MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THEREFORE NOT ANALYZED
* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORY)

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL 2142 NORTH (DEEP) — PARAMETERS

DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY (BI-CARBONATE)	CONDUCTANCE (micromhos /cm)	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
7/84	WQ	7.3(NR)	NA	464(NR)	NA	23(NR)	22(NR)	NA	NA	NR	13(NR)	NA	380(NR)	NA	53(NR)	NR	83(NR)	42(NR)	0.05(0.05)	BSK 1987
3/86	WQ	7.7(NR)	174(NR)	77(NR)	196(NR)	8.4(NR)	NA	NA	NA	NR	8(NR)	NA	65(NR)	NA	13.1(NR)	NR	14.2(NR)	7.2(NR)	0.01(0.01)	BSK 1987
1/13/89	WQ	7.48	208	118	291	16	1.4	NR	NR	<5	7.4	0.2	120	<5	15.5	5.1	10.2	10.3	0.09	COF 3/89
3/90	DID NOT SAMPLE																			COF 4/9/90
6/28/90	WQ	7.8	190	105	NR	14	1.2	+	+	<1	8.6	<0.5	91	<5	16	4.5	20	10	<0.05	COF 7/21/90
9/17/90	WQ	7.55	236	131	297	19	1.5	**	**	<1	8.6	<0.1	117	<5	18	4.7	24	14	0.05	COF 10/31/90
MDL		.	100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL 2142 NORTH (DEEP) — PARAMETERS

DATE	METHOD	BICARB-ONATE	TOTAL SOLIDS	CARBONATE	HYDROXIDE	MANGANESE	ODOR	COPPER	SURFACANTS	ZINC	ALUMINUM	REFERENCE
7/84	WQ	464(NR)	564(NR)	0(NR)	0(NR)	ND(0.02)	SEPTIC	ND(0.02)	NA	ND(0.02)	ND(0.05)	BSK 1987
3/86	WQ	94(NR)	NA	ND(0.1)	NA	0.007(0.001)	NA	0.01(0.01)	ND(0.5)	0.07(NR)	NA	BSK 1987

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MCL = MAXIMUM CONTAMINANT LEVEL
* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORIES)

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL 2100 NORTH (DEEP) PARAMETERS																		
DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE (micromhos /cm)	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
7/84	WQ	7.4(NR)	NA	174(NR)	NA	46(NR)	12(4.4)	NA	NA	NR	13(NR)	NA	213(NR)	NA	25(NR)	NR	41(NR)	26(NR)	ND(0.05)	BSK 1987
3/86	WQ	7.7(NR)	370(NR)	171(NR)	525(NR)	48.7(NR)	NA	NA	NA	NR	12(NR)	NA	224(NR)	NA	22.4(NR)	NR	49.1(NR)	24.7(NR)	0.10(0.01)	BSK 1987
1/13/89	WQ	7.26	398	230	626	46	4.5	NR	NR	<5	17	0.2	280	<5	23.5	3.4	40.8	26.1	0.18	COF 3/89
3/90	DID NOT SAMPLE																			COF 4/9/90
6/28/90	WQ	6.9	360	212	NR	43	4.3	+	+	<1	19	<0.5	250	<5	26	8.4	52	28	<0.05	COF 7/21/90
9/17/90	WQ	7.4	394	215	559	50	4.1	+	+	<1	18	<0.1	231	<5	25	7.6	48	27	<0.05	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL 2100 NORTH (DEEP) PARAMETERS									
DATE	METHOD	BICARB-ONATE	TOTAL SOLIDS	CARBONATE	HYDROXIDE	MANGANESE	ODOR	COPPER	SURFACANTS	ZINC	ALUMINUM	REFERENCE
7/84	WQ	174(NR)	392(NR)	0(NR)	0(NR)	ND(0.02)	NONE	ND(0.02)	NA	0.06(0.02	ND(0.5)	BSK 1987
3/86	WQ	209(NR)	NA	ND(0.1)	NA	0.005(0.001)	NA	ND(0.01)	ND(0.5)	0.53(NR)	NA	BSK 1987

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- MCL = MAXIMUM CONTAMINANT LEVEL
- WQ = WATER QUALITY
- + TKN = NONE DETECTED THERFORE NOT ANALYZED
- * = SECONDARY MCL

0

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER

WELL W-6 (SHALLOW)

PARAMETERS

DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
7/84	WQ	7.8(NR)	164(NR)	90(NR)	212(NR)	6(NR)	12(4.4)	ND(0.1)	ND(0.1)	NR	5(NR)	ND(0.05)	93(NR)	ND(2.0)	8(NR)	NR	22(NR)	10(NR)	0.18(NR)	BSK 1987
3/86	WQ	7.9(NR)	132(NR)	71(NR)	197(NR)	2(NR)	NA	NA	NA	NR	18.4(NR)	NA	80(NR)	NA	3.2(NR)	NR	18(NR)	9(NR)	0.35(NR)	BSK 1987
12/27/88	WQ	7.56	182	119	225	4	0.51	NR	NR	<5	6.5	<0.1	232	<5	4.6	4.3	14	12.9	7.8	COF 3/89
6/5/89	WQ	7.2	142	114	230	2.1	0.42	ND	ND	ND	5.3	ND	116	ND	3	2	24	12	0.14	COF 7/21/89
9/11/89	WQ	7	198	108	200	3.1	0.55	ND	ND	ND	8.3	0.34	110	ND	3	1.9	23	12	0.09	COF 11/6/89
12/22/89	WQ	7.7	159	92	243	8.3	0.39	+	+	ND	7.5	ND	89	ND	2.7	1.6	4.6	8.1	ND	COF 3/15/90
3/6/90	WQ	7.8	114	87.8	190	2	0.55	+	+	ND	6.6	ND	84	8.6	2.6	1.1	19	9.9	0.74	COF 4/9/90
6/11/90	WQ	8.1	182	91	NR	3	1.2	+	+	<1	8.3	<0.5	96	<5	2.7	1.5	22	10	0.26	COF 7/21/90
9/18/90	WQ	7.55	174	142	250	2.6	0.4	**	**	<1	7.5	<0.1	135	<5	3.5	1.8	30	15	0.14	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER

WELL W-6 (SHALLOW)

PARAMETERS

DATE	METHOD	BICARB-ONATE	TOTAL SOLIDS	CARBONATE	HYDROXIDE	MANGANESE	[illegible]	COPPER	SURFACANTS	ZINC	REFERENCE
7/84	WQ	110(NR)	NR	NA	NA	NA	NA	NA	NA	NA	BSK 1987
3/86	WQ	84(NR)	NA	ND(0.1)	NA	0.029(0.001)	NA	ND(0.01)	ND(0.5)	0.02(NR)	BSK 1987

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ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL UW-2C (DEEP) — PARAMETERS

DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	BICARBONATE	REFERENCE
8/86	WQ	8.2(NR)	216(NR)	127(NR)	325(NR)	9(NR)	NR	NR	NR	NR	14(NR)	NR	NR	NR	9(NR)	NR	43(NR)	7(0.1)	0.33(NR)	155(NR)	BSK 1987
1/10/89	WQ	7.78	182	120	260	2	0.33	NR	NR	<5	5.1	0.26	90	<5	12.2	4.5	13.2	9.7	0.15	NR	COF 3/89
6/8/89	WQ	6.8	172	127	246	2.1	0.37	ND	ND	ND	5.4	0.4	110	ND	12	4.1	20	11	0.46	NR	COF 7/21/89
9/15/89	WQ	6.8	246	230	412	2	0.21	ND	ND	ND	10	ND	185	ND	11	4.3	43	21	ND	NR	COF 11/6/89
12/28/89	WQ	7.5	258	213	165	13	0.25	+	+	ND	8.7	ND	190	ND	11	3.8	8.4	16	ND	NR	COF 3/15/90
3/8/90	WQ	7.6	198	89.7	NR	5	0.26	+	+	ND	5.2	ND	160	ND	11	4.3	35	17	ND	NR	COF 4/19/90
	FIELD FLOODED																				COF 7/31/90
9/26/90	WQ	7.45	185	119	222	11	0.3	**	**	<1	6.2	<0.1	94	<5	11	3.4	20	10	0.09	NR	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	0.05	
MCL							45												0.3*	0.3*	

FOOTNOTES:
NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORY)

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER — WELL OW-2B (INTERMEDIATE) — PARAMETERS

DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	BICARBONATE	REFERENCE
8/86	WQ	8.4(NR)	142(NR)	91(NR)	229(NR)	7(NR)	NR	NR	NR	NR	8(NR)	NR	NR	NR	21(NR)	NR	20(NR)	3.3(0.1)	0.75(NR)	62(NR)	BSK 1987
1/9/89	WQ	6.87	610	586	984	2	<0.1	NR	NR	<5	36.9	0.2	560	<5	6.8	5	108	58	0.17	NR	COF 3/89
6/8/89	WQ	6.3	418	479	867	4.2	0.17	ND	ND	ND	5.2	0.36	470	ND	6.1	4.5	82	48	0.11	NR	COF 7/21/89
9/15/89	WQ	6.8	570	605	1010	3.1	ND	ND	ND	ND	8.2	ND	600	ND	6.5	4.8	130	64	ND	NR	COF 11/6/89
12/28/89	WQ	7	681	537	1493	8.3	ND	+	+	ND	9.7	ND	680	ND	7.1	4.8	71	71	0.12	NR	COF 3/15/90
3/8/90	WQ	7.4	598	620	NR	6	ND	+	+	ND	8.3	ND	660	ND	7.2	5.2	140	75	ND	NR	COF 4/9/90
	FIELD FLOODED																				COF 7/31/90
9/26/90	WQ	6.95	608	577	755	16	0.2	**	**	<1	8.9	<0.1	589	7	7.2	4.7	130	65	0.3	NR	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05		
MCL							45												0.3*		

FOOTNOTES:
NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORY)

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL UW-2A (SHALLOW) PARAMETERS																			
DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	BICARBONATE	REFERENCE
8/86	WQ	12.5(NR)	3340(NR)	2523(NR)	13,370(NR)	1(NR)	NR	NR	NR	NR	54(NR)	NR	NR	NR	459(NR)	NR	611(NR)	ND(0.1)	ND(0.06)	ND(NR)	BSK 1987
6/8/89	DRY																				COF 2nd Qtr/89
9/15/89	DRY																				COF 3rd Qtr/89
12/28/89	DRY																				COF 4th Qtr/89
3/8/89	DRY																				COF 5/17/90
	FIELD FLOODED																				COF 7/31/90
9/25/90	DRY																				COF 11/13/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	0.05	
MCL							45												0.3*	0.3*	

FOOTNOTES:
NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL W-2 PARAMETERS																			
DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	REFERENCE
7/84	WQ	7.2(NR)	841(NR)	660(NR)	1276(NR)	55(NR)	21(4.4)	ND(0.1)	ND(0.1)	NR	28(NR)	ND(0.05)	549(NR)	7.1(2.0)	94(NR)	NR	130(NR)	55(NR)	0.06(NR)	BSK 1987
3/86	WQ	7.3(NR)	768(NR)	543(NR)	1110(NR)	28(NR)	NA	NA	NA	NR	26.4(NR)	NA	503(NR)	NA	NR	NR	116(NR)	52(NR)	0.03(NR)	BSK 1987
6/5/89	WQ	6.6	824	642	1320	30	12	ND	ND	ND	29	ND	600	ND	78	7.4	130	60	ND	
9/11//89	WQ	6.2	943	756	1300	23	6.8	ND	ND	ND	36	0.21	675	ND	79	7.7	150	69	ND	
12/21/89	WQ	7.1	694	641	1340	40	12	+	+	ND	39	ND	590	ND	78	7.2	60	56	ND	
3/6/90	WQ	7.1	828	589	1280	33	13	+	+	ND	41.6	1.1	580	5.4	77	7	130	61	ND	COF 4/9/90
6/11/90	WQ	7.05	958	753	1570	26	8	+	+	<1	39	<0.5	730	6	79	7.6	169	74	0.07	COF 7/21/90
9/18/90	MISSING DATA																			COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05	
MCL							45												0.3*	

TABLE 2-113 (CONT.)
GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL W-2 (SHALLOW) PARAMETERS									
DATE	METHOD	BICARBONATE	TOTAL SOLIDS	CARBONATE	HYDROXIDE	MANGANESE	ODOR	COPPER	SURFACANTS	ZINC	REFERENCE
7/84	WQ	790(NR)	NA	NA	NA	NA	NA	NA	NA	NA	BSK 1987
3/86	WQ	663(NR)	NA	ND(0.1)	NA	ND(0.001)	NA	ND(0.01)	ND(0.5)	0.01(NR)	BSK 1987

FOOTNOTES:
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( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL UW-1C (DEEP)																			
		PARAMETERS																			
DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	BICARBONATE	REFERENCE
8/86	WQ	7.3(NR)	692(NR)	387(NR)	1124(NR)	62(NR)	NR	NR	NR	NR	30(NR)	NR	419(NR)	NR	55(NR)	NR	91(NR)	47(0.1)	0.09(NR)	472(NR)	BSK 1987
1/18/89	WQ	7.29	640	451	1150	52	16.5	NR	NR	<5	35.7	0.11	525	<5	54.9	12	83	50.5	0.34	NR	COF 3/89
6/9/89	WQ	6.9	695	452	1030	57	17	ND	ND	ND	27	0.56	480	ND	61	11	97	51	5.2	NR	COF 7/21/89
9/15/89	WQ	6.8	692	462	1140	55	15	ND	ND	ND	42	0.28	490	ND	65	11	100	53	0.4	NR	COF 11/6/89
12/27/90	WQ	7.4	716	400	1024	56	15	+	+	ND	41	ND	500	12	60	10	42	48	ND	NR	COF 3/15/90
3/8/90	WQ	7.8	684	448	NR	54	15	+	+	ND	38.6	ND	480	ND	62	11	100	54	ND	NR	COF 4/19/90
6/21/90	WQ	7.35	720	444	NR	56	14	+	+	<1	38	<0.5	480	8	62	10	100	53	0.06	NR	COF 7/21/90
9/26/90	WQ	7.45	740	456	923	110	18	**	**	<1	42	<0.1	496	12	60	10	107	56	<0.05	NR	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05		
MCL							45												0.3*		

FOOTNOTES:
NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
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MCL = MAXIMUM CONTAMINANT LEVEL
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* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORY)

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER

WELL UW-1B (INTERMEDIATE)

PARAMETERS

DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	BICARBONATE	REFERENCE
8/86	WQ	6.9(NR)	698(NR)	354(NR)	1164(NR)	69(NR)	NR	NR	NR	NR	30(NR)	NR	343(NR)	NR	94(NR)	NR	82(NR)	34(0.1)	0.12(NR)	432(NR)	BSK 1987
12/29/88	WQ	7.33	1090	480	1540	120	42	NR	NR	<5	57.8	<0.1	680	6.3	81.5	11.8	133	68.7	0.17	NR	COF 3/89
6/9/89	WQ	7.2	1090	468	1570	138	45	ND	ND	ND	48	ND	690	ND	86	10	150	76	0.05	NR	COF 7/21/89
9/15/89	WQ	6.9	912	445	1510	100	41	ND	ND	ND	69	0.35	665	ND	80	9.6	140	70	0.14	NR	COF 11/6/89
12/27/89	WQ	7.4	926	386	1278	92	37	+	+	ND	70	ND	620	ND	73	8.7	60	61	ND	NR	COF 3/15/90
3/8/90	WQ	7.8	864	903	NR	85	36	+	+	ND	66.4	ND	610	ND	74	9.8	130	66	ND	NR	COF 4/9/90
6/21/90	WQ	7.45	920	438	NR	96	38	+	+	<1	63	<0.5	600	<5	81	8.8	130	65	0.11	NR	COF 7/21/90
9/26/90	WQ	7.45	826	398	1020	140	32	**	**	<1	58	<0.1	522	25	68	8	115	57	0.48	NR	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05		
MCL							45												0.3*		

FOOTNOTES:
- NA = NOT ANALYZED
- ND = NOT DETECTED AT INDICATED DETECTION LIMIT
- NR = NOT REPORTED
- ( ) = METHOD DETECTION LEVEL
- MDL = METHOD DETECTION LEVEL
- MCL = MAXIMUM CONTAMINANT LEVEL
- WQ = WATER QUALITY
- \+ TKN = NONE DETECTED THERFORE NOT ANALYZED
- * = SECONDARY MCL
- ** = < 1 mg/l TKN (TWINING LABORATORY)

GROUNDWATER ANALYTICAL RESULTS
(mg/L)

MATRIX: GROUNDWATER		WELL UW-1A (SHALLOW)																			
		PARAMETERS																			
DATE SAMPLED	METHOD	pH	TOTAL DISSOLVED SOLIDS	ALKALINITY	CONDUCTANCE	CHLORIDE	NITRATE-N	AMMONIA-N	ORGANIC-N	TKN	SULFATE	SULFIDE	TOTAL HARDNESS	COD	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	IRON	BICARBONATE	REFERENCE
8/86	WQ	7.5(NR)	696(NR)	304(NR)	1153(NR)	62(NR)	NR	NR	NR	NR	33(NR)	NR	NR	NR	NR	NR	NR	NR	0.18(NR)	490(NR)	BSK 1987
1/6/89	WQ	7.12	732	414	1140	59	30.62	NR	NR	<5	5.2	***	506	<5	55.4	8	91.5	49.1	0.07	NR	COF 3/89
6/9/89	WQ	6.9	680	364	1060	46	24	ND	ND	ND	2525	0.43	390	ND	72	7.8	88	42	3.1	NR	COF 7/21/89
9/15/89	WQ	6.8	616	360	974	26	24	ND	ND	ND	30	0.35	408	5.8	64	7.6	91	44	8.8	NR	COF 11/6/89
12/27/89	WQ	7.4	626	348	866	26	26	+	+	ND	32	ND	400	ND	59	6.8	31	36	0.73	NR	COF 3/15/90
3/8/90	WQ	7.9	572	345	1000	22	24	+	+	ND	29.6	ND	380	ND	61	7.9	84	39	0.08	NR	COF 4/9/90
6/21/90	WQ	7.2	606	356	NR	21	21	+	+	<1	29	6.5	350	<5	62	6.9	79	37	3.4	NR	COF 7/21/90
9/26/90	WQ	7.6	556	326	723	32	23	**	**	<1	26	<0.1	333	6	56	7	73	37	3.9	NR	COF 10/31/90
MDL			100	5		2	0.1	1	1	1	1	0.1	10	5	0.05	0.05	0.2	0.06	0.05		
MCL							45												0.3*		

FOOTNOTES:
NA = NOT ANALYZED
ND = NOT DETECTED AT INDICATED DETECTION LIMIT
NR = NOT REPORTED
( ) = METHOD DETECTION LEVEL
MDL = METHOD DETECTION LEVEL
MCL = MAXIMUM CONTAMINANT LEVEL
WQ = WATER QUALITY
+ TKN = NONE DETECTED THERFORE NOT ANALYZED
* = SECONDARY MCL
** = < 1 mg/l TKN (TWINING LABORATORIES)
*** = SAMPLE NOT PRESERVED

APPENDIX A-5

SOIL GAS

AIR QUALITY SOLID WASTE
ASSESSMENT TEST REPORT
CITY OF FRESNO SANITARY LANDFILL
FRESNO COUNTY CALIFORNIA

Prepared for

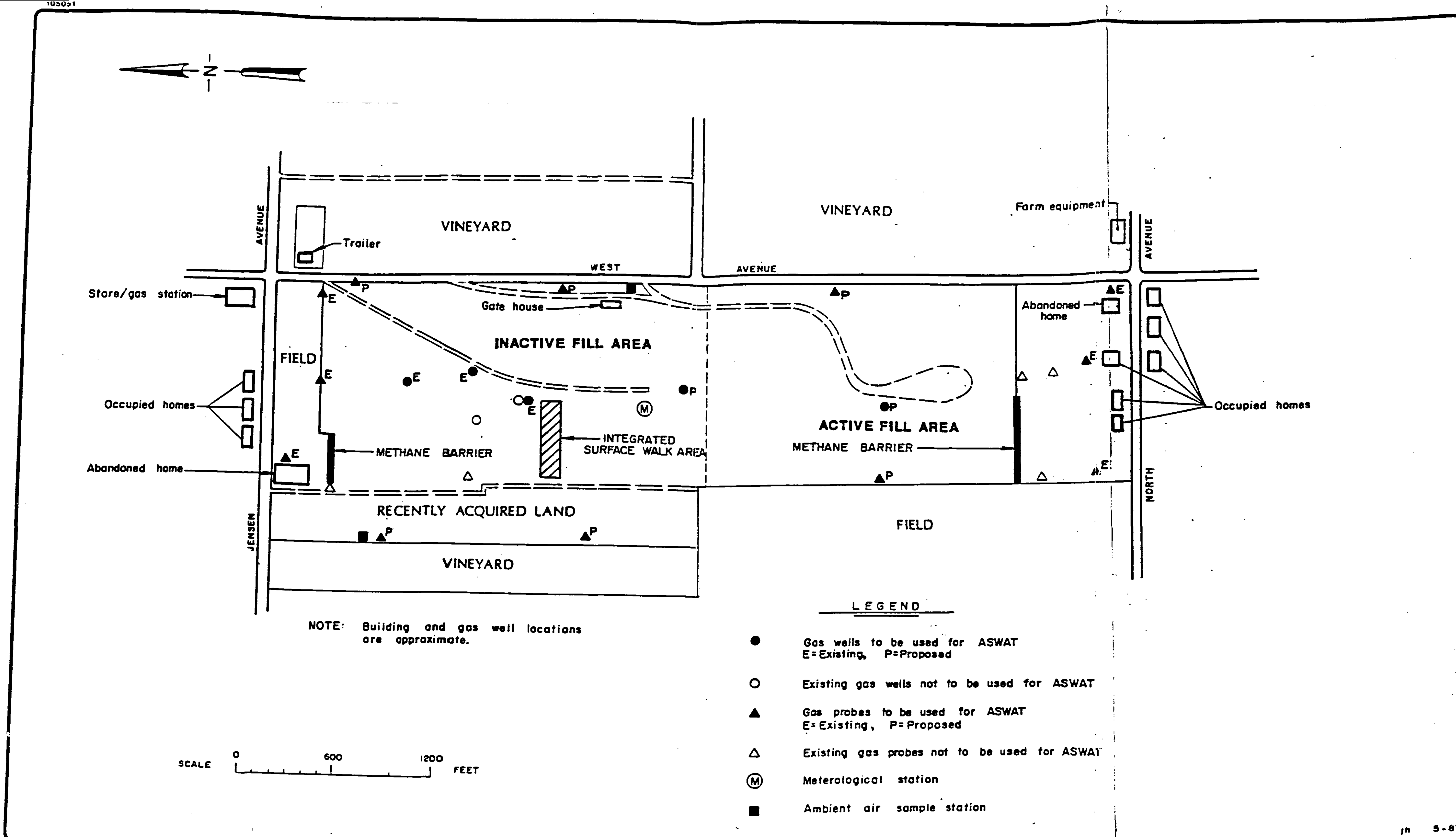
CITY OF FRESNO

October 1988

Prepared by

EMCON Associates
1921 Ringwood Avenue
San Jose, California 95131

Project 971-01.01



EMCON Associates

CITY OF FRESNO
CITY OF FRESNO SANITARY LANDFILL
FRESNO COUNTY, CALIFORNIA

MONITORING DEVICES LOCATION MAP

FIGURE 2

PROJECT NO. 971-01.01

Table 3

WELL VOLATILE ORGANIC COMPOUND
DATA CONCENTRATIONS
(ppb)

Sample Number	Volatile Organic Compound Centration									
	VC	BENZ	EDB	DCA	MECL	PCE	CCL4	TCA	TCE	CHCL3
W-1	1,400	TR	ND	ND	9,900	95	ND	ND	570	ND
W-2	TR	TR	ND	ND	3,700	130	ND	17	310	ND
W-3	2,900	2,000	ND	580	25,000	280	ND	TR	730	ND
W-4	1,400	870	ND	ND	20,000	5,900	ND	10	4,800	ND
W-5	2,100	1,000	ND	ND	34,000	3,600	ND	5,800	2,000	ND
Regulatory Detection Limits	500	500	1	20	60	10	5	10	10	2
Laboratory Detection Limits	500	500	1	200[1]	1,000[2]	10	5	10	10	2

Abbreviations:
VC = vinyl chloride
BENZ = benzene
EDB = ethylene dibromide
DCA = 1,2-dichloroethane
MECL = methylene chloride
PCE = tetrachloroethylene
CCL4 = carbon tetrachloride
TCA = 1,1,1-trichoroethane
TCE = trichloroethylene
CHCL3 = chloroform
ppb = parts per billion
TR = trace (detected below laboratory detection limit)
ND = not detected

1. Elevated detection limit for 1,2-dichloroethane is due to interference from Freon TF, a laboratory air contaminant.

2. Elevated detection limit for methylene chloride is due to laboratory background as a result of using methylene chloride in the extractions of soil and water samples.

September 29, 1987

WCAS
WEST COAST
ANALYTICAL
SERVICE, INC.

EMCON ASSOCIATES
1921 Ringwood Avenue
San Jose, CA 95131

Attn: John Johnson

JOB NO. 7241

LABORATORY REPORT

Samples Received: Ten (10) gas bags
Date Received: 9-25-87
Purchase Order No: 15884/Proj: 971-01.01

The samples were analyzed as follows:

Samples Analyzed	Analysis	Results
Ten gas bags	Gas Chromatography - Calderon	Data Sheets
Five gas bags	Gas Chromatography - TCD	Table I

TABLE I

Volume Percent

Compound	W-1	W-2	W-3	W-4	W-5	Detection Limit
Oxygen and/or Argon	ND	ND	0.22	10.7	11.8	0.01
Nitrogen	0.14	0.32	1.31	34.6	38.5	0.01
Carbon Monoxide	ND	ND	ND	ND	ND	0.01
Methane	57.02	56.1	54.8	30.1	27.2	0.01
Carbon Dioxide	42.8	43.6	43.7	24.7	22.4	0.01

ND - Not Detected
Date Analyzed: 9-25-87

James Bonde
Senior Chemist

D.J. Northington, Ph.D.
Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

CLIENT: EMCON
JOB NO: 7241
DATE ANALYZED: SEPT 26 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: W-1
MATRIX: LANDFILL GAS
SAMPLE VOLUME 2 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	1400	500
Methylene Chloride	9900 **	1000
Carbon Tetrachloride	ND	5
Chloroform	ND	2
1,1,1- Trichloroethane	ND	10
1,2- Dichloroethane	ND	200 *
Trichloroethylene	570	10
Benzene	TR<500	500
Tetrachloroethylene	95	10
1,2- Dibromoethane	ND	1

ND-NOT DETECTED, The limit of detection is reported above

* High Detection Limit due to interference of Freon TF

** Possible Interference of Freon 12 giving a high Methylene Chloride value

CLIENT: EMCON
JOB NO: 7241
DATE ANALYZED: SEPT 26 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: W-2
MATRIX: LANDFILL GAS
SAMPLE VOLUME 2 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	TR<500	500
Methylene Chloride	3700 **	1000
Carbon Tetrachloride	ND	5
Chloroform	ND	2
1,1,1- Trichloroethane	17	10
1,2- Dichloroethane	ND	200 *
Trichloroethylene	310	10
Benzene	TR<500	500
Tetrachloroethylene	130	10
1,2- Dibromoethane	ND	1

ND-NOT DETECTED, The limit of detection is reported above

* High Detection Limit due to interference of Freon TF

** Possible Interference of Freon 12 giving a high Methylene Chloride value

CLIENT: EMCON
JOB NO: 7241
DATE ANALYZED: SEPT 26 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: W-3
MATRIX: LANDFILL GAS
SAMPLE VOLUME 2 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	2900	500
Methylene Chloride	25000 **	1000
Carbon Tetrachloride	ND	5
Chloroform	ND	2
1,1,1- Trichloroethane	TR<10	10
1,2- Dichloroethane	580	200 *
Trichloroethylene	730	10
Benzene	2000	500
Tetrachloroethylene	280	10
1,2- Dibromoethane	ND	1

ND-NOT DETECTED, The limit of detection is reported above

* High Detection Limit due to interference of Freon TF

** Possible Interference of Freon 12 giving a high Methylene Chloride value

CLIENT: EMCON
JOB NO: 7241
DATE ANALYZED: SEPT 26 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: W-4
MATRIX: LANDFILL GAS
SAMPLE VOLUME 2 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	1400	500
Methylene Chloride	20000 **	1000
Carbon Tetrachloride	ND	5
Chloroform	ND	2
1,1,1- Trichloroethane	10	10
1,2- Dichloroethane	ND	200 *
Trichloroethylene	4800	10
Benzene	870	500
Tetrachloroethylene	5900	10
1,2- Dibromoethane	ND	1

ND-NOT DETECTED, The limit of detection is reported above

* High Detection Limit due to interference of Freon TF

** Possible Interference of Freon 12 giving a high Methylene Chloride value

CLIENT: EMCON
JOB NO: 7241
DATE ANALYZED: SEPT 26 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: W-5
MATRIX: LANDFILL GAS
SAMPLE VOLUME 2 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	2100	500
Methylene Chloride	34000 **	1000
Carbon Tetrachloride	ND	5
Chloroform	ND	2
1,1,1- Trichloroethane	5800	10
1,2- Dichloroethane	ND	200 *
Trichloroethylene	2000	10
Benzene	1000	500
Tetrachloroethylene	3600	10
1,2- Dibromoethane	ND	1

ND-NOT DETECTED, The limit of detection is reported above

* High Detection Limit due to interference of Freon TF

** Possible Interference of Freon 12 giving a high Methylene Chloride value

SOIL-GAS SURVEY REPORT FOR THE FRESNO MUNICIPAL LANDFILL NPL SITE, FRESNO, CALIFORNIA

by

Lockheed Engineering & Sciences Company
1050 East Flamingo Road
Las Vegas, Nevada 89119

for

United States Environmental Protection Agency
Region 9

through

Superfund Technology Support Center for Monitoring and Site Characterization
United States Environmental Protection Agency
P.O. Box 93478
Las Vegas, Nevada 89193-3478

Submitted September 1990

Contract No. 68-03-3245

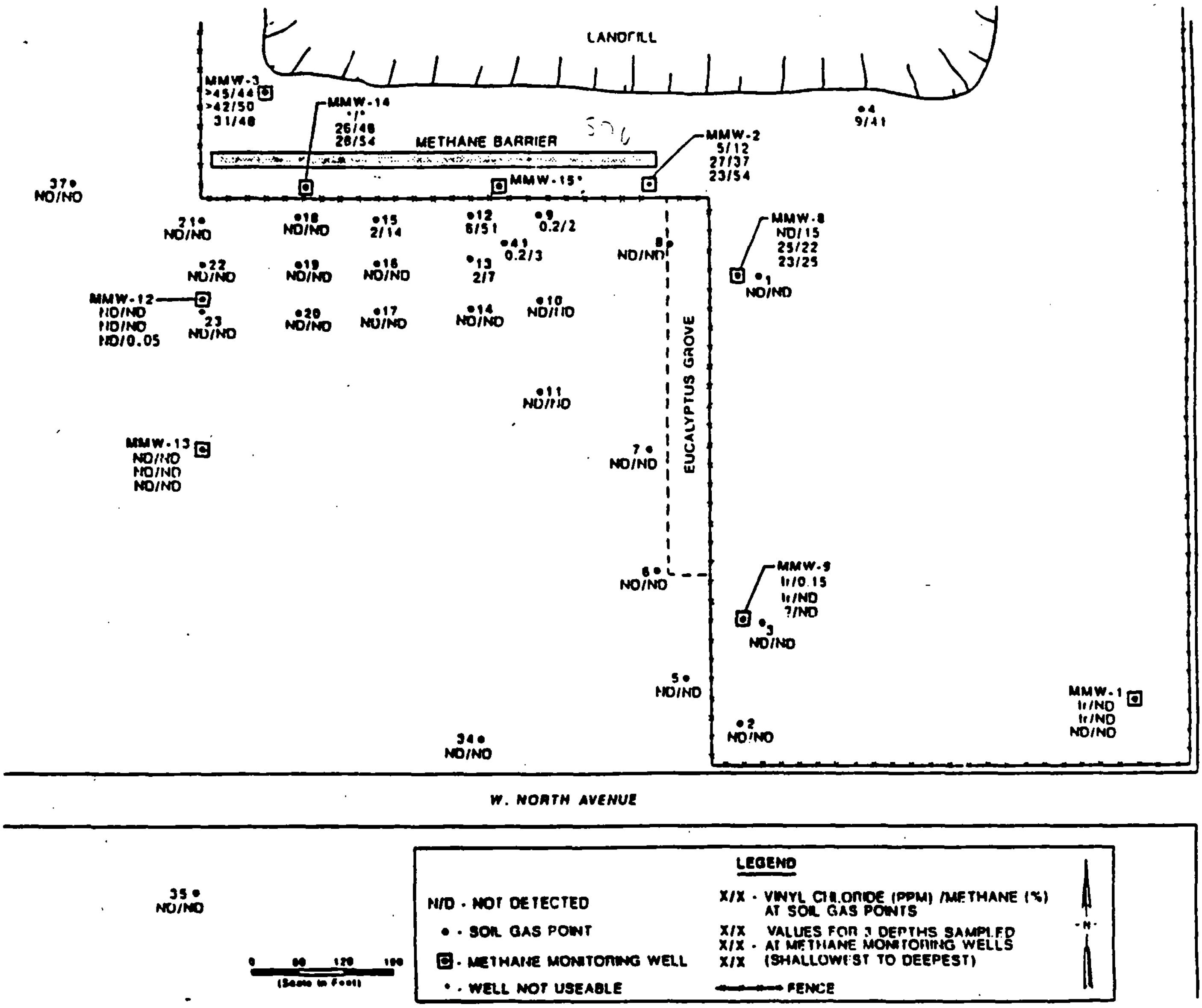


Figure 4. Soil-Gas Results for the South Side of the Fresno Landfill.

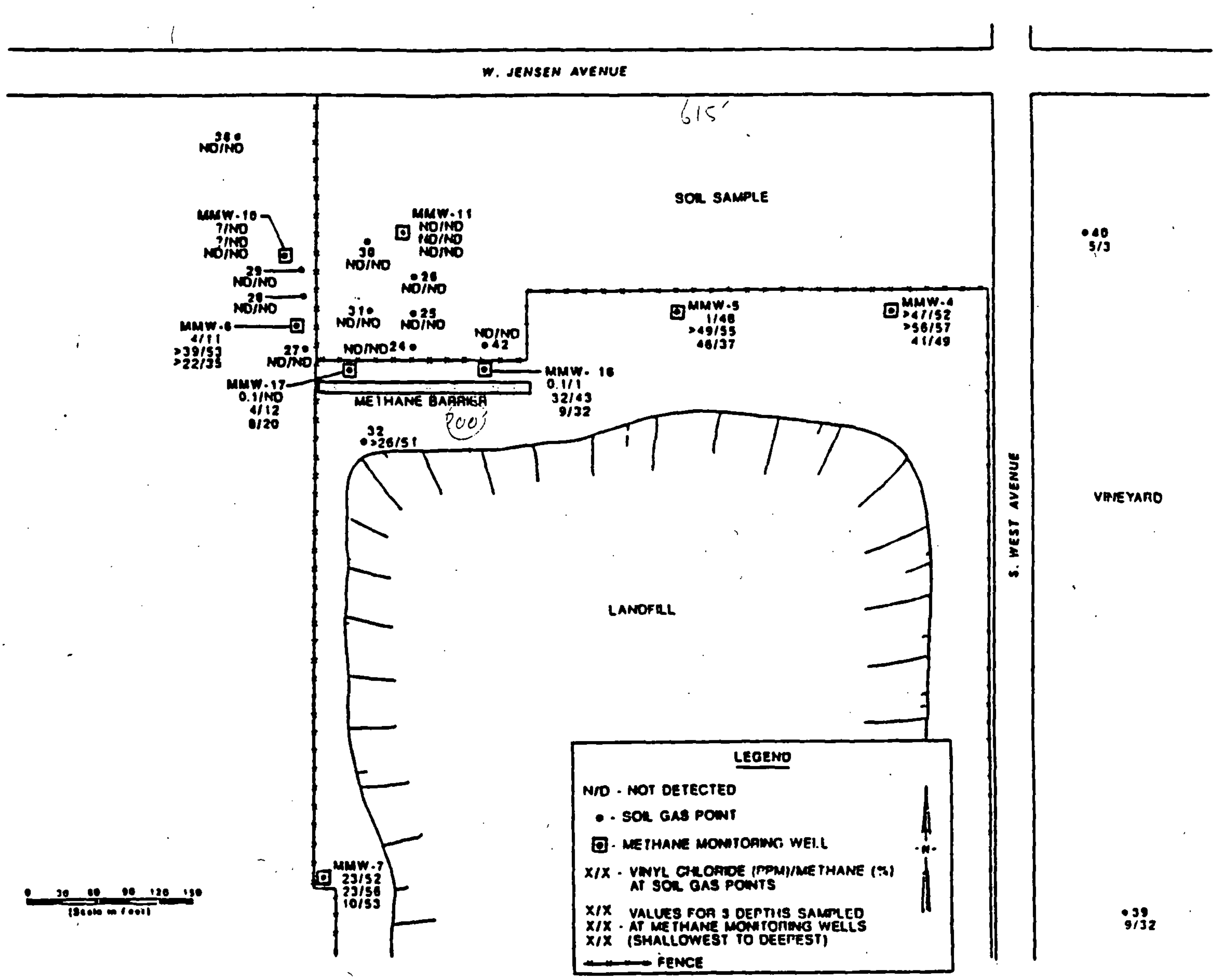


Figure 3. Soil-Gas Results for the North Side of the Fresno Landfill.

TABLE 1. FRESNO LANDFILL SOIL-GAS DATA

LOCATION (NO. @ DEPTH)	DATE	VINYL CHL (PPM)	METHANE (%)	CO_2 (%)	OXYGEN (%)
1@5	7/31	ND	ND	15.6	9.8
1@7	7/27	ND	ND	25.7	3.30
2@7	7/28	ND	ND	2.49	19.8
3@7	7/28	ND	ND	4.19	17.7
4@7	7/25	9.18	41.3	36.8	0.855
5@7	7/31	ND	ND	8.10	12.7
6@6	7/29	ND	ND	13.3	8.78 [a]
	7/29	—	ND	13.7	8.28
	7/30	ND	0.060	13.3	9.13[b]
7@7	7/31	ND	ND	9.45	10.28 [a]
	7/31	—	ND	8.66	10.62
8@1.5	8/9	ND	ND	3.46	16.3
9@5	8/9	0.178	1.53	9.29	11.0
10@5	8/9	ND	ND	2.57	17.8
11@5	7/28	ND	ND	2.39	22.9
12@5	8/1	5.55[c]	50.6	29.2	1.25
13@5	7/30	2.47	6.60	22.5	6.60 [a]
	7/30	2.48	7.12	21.2	7.00
	7/31	2.26	8.12	21.3	6.35
14@5	7/30	ND	ND	4.23	16.7 [a]
	7/30	—	ND	4.16	17.3
	7/30	ND	ND	3.29	16.5[b]
	7/30	ND	ND	3.79	17.4[b]
15@5	7/31	2.48	14.53	15.2	2.24 [a]
	7/31	—	14.35	15.3	2.45
16@5	7/31	ND	ND	2.92	16.3
17@5	7/31	ND	ND	0.361	18.5
18@5	8/1	ND	ND	8.00	14.2[b]
	8/1	ND	ND	7.51	14.1[b]

(continued)

TABLE 1. Continued.

LOCATION (NO. @ DEPTH)	DATE	VINYL CHL (PPM)	METHANE (%)	CO_2 (%)	OXYGEN (%)
19@5	8/1	ND	ND	0.602	19.3
20@5	8/1	ND	ND	0.893	20.4
21@5	8/1	ND	ND	0.735	14.7
22@5	8/1	ND	ND	0.684	19.7
23@5	8/1	ND	ND	1.69	17.3
24@7	8/1	ND	ND	1.38	19.4
25@7	8/2	ND	ND	1.09	18.8
26@7	8/2	ND	ND	1.07	18.3
27@7	8/2	ND	ND	2.62	17.3
28@7	8/2	ND	ND	1.23	17.9
29@7	8/2	ND	ND	1.20	18.6
30@7	8/2	ND	ND	1.63	19.6
31@7	8/2	ND	ND	0.932	18.1
32@7	8/2	>25.5	51.0	47.5	1.70
34@5	8/3	ND	ND	4.22	19.0
35@5	8/3	ND	ND	3.65	18.6
36@5[d]	8/3	ND	ND	0.688	19.8
37@5	8/3	ND	ND	3.23	19.4
38@7	8/3	ND	ND	2.81	17.7
39@7	8/8	8.77	32.2	31.2	5.19
40@7	8/8	4.72	3.27	26.9	1.60
41@5	8/9	0.190	3.04	13.2	9.52
42@5	8/9	ND	ND	1.01	19.4

ND = Not detected.
— = Not analyzed.
> = Chromatographic peak over-range.
[a]Duplicate analysis from the same canister.
[b]Duplicate sample from different canisters.
[c]Chromatographic peak may contain other components, in addition to vinyl chloride.
[d]Sample point was 3' from 20@5

Note: Detection limit for vinyl chloride = 50 ppb (0.050 ppm); detection limit for methane = 0.050%; detection limit for CO_2 = 0.1%; detection limit for oxygen = 0.5%

TABLE 2. FRESNO LANDFILL GAS MONITORING WELL DATA

WELL NO.	DEPTH (Ft.)	DATE	VINYL CHL (PPM)	METHANE (%)	CO_2 (%)	OXYGEN (%)
1	5.4	8/4	tr	ND	9.84	11.7
	28	8/4	tr	ND	1.10	17.5
	45	8/4	ND	ND	2.55	15.7
2	7	8/6	5.39	11.6	27.6	1.86
	24.5*	8/6	26.8	36.6	50.0	1.02
	44.8	8/6	23.2	53.7	43.4	2.47
3	8.2	8/7	>45.7	44.2	56.4	1.64 [a]
	8.2	8/7	>44.8	—	—	—
	24	8/7	>39.9	49.8	51.1	1.21 [a]
	24	8/7	>43.5	—	—	—
	44.5	8/7	31.2	46.2	51.0	1.33 [a]
	44.5	8/7	—	49.4	47.1	1.17
4	7	8/8	>47.2	51.5	47.9	1.80
	25.5	8/8	>55.8	57.1	45.8	2.88
	44.5	8/8	40.6	48.7	45.1	2.62
5	4.2	8/8	0.958	48.1	44.4	2.38
	25.8	8/8	48.9	55.1	52.1	1.38
	44.*	8/8	45.9	37.4	57.8	0.899
6	5	8/6	4.0	10.7	30.4	1.57
	26	8/6	>39.3	53.3	47.6	1.64
	44	8/6	>21.9	34.9	47.0	1.33
7	7	8/7	23.2	52.1	50.7	1.49
	19.8	8/7	22.7	56.0	53.2	1.21
	38.8	8/7	9.62	52.8	51.8	1.05
8	4.8	8/4	ND	0.154	17.6	8.05
	19.2	8/4	25.4	22.4	39.9	1.19
	45	8/4	22.9	25.2	36.7	1.36
9	7.5	8/5	tr	0.149	6.42	14.8
	25.5	8/5	tr	ND	6.10	13.4
	43.5	8/5	b	ND	8.50	12.9
10	6*	8/5	b	ND	2.14	27.7
	22.4	8/5	b	ND	15.4	4.45
	37.7	8/5	ND	ND	27.1	1.77
11	5	8/6	ND	ND	0.983	19.3
	24.2	8/6	ND	ND	9.70	14.0
	45.5	8/6	ND	ND	14.5	11.7
12	10	8/5	ND	ND	4.56	16.2
	22.4	8/5	ND	ND	7.62	10.0
	37.7	8/5	ND	0.050	12.5	11.8
13	15.5	8/5	ND	ND	5.82	15.7
	28	8/5	ND	ND	6.06	15.0
	41	8/5	ND	ND	8.68	13.8

(continued)

TABLE 2. Contined

WELL NO.	DEPTH (Ft.)	DATE	VINYL CHL (PPM)	METHANE (%)	CO_2 (%)	OXYGEN (%)
14	23.5	8/7	25.8	47.5	47.4	1.19
	37.0	8/7	28.2	54.2	47.0	1.07
16	10.0*	8/8	0.106	1.20	29.9	3.32
	10.0	8/9	–	1.60	32.2	4.24
	24.0	8/8	32.1	43.2	40.1	2.04
	38.0	8/9	8.90	31.6	44.6	1.67
17	9.5	8/9	0.075	ND	13.3	9.6
	16.5	8/9	4.28	11.9	27.8	2.26
	38	8/9	8.07	20.1	33.5	2.87

ND = Not detected.
– = Not analyzed.
> = Chromatographic peak over-range.
tr = Peak detected; concentration <0.050 ppm.
* Values normalized to 100% methane + carbon dioxide + oxygen + nitrogen.
[a]Duplicate analysis from the same canister.
[b]Chromatographic peak identify in question; maximum concentration <100 ppb.

Note: Detection limit for vinyl chloride = 50 ppb (0.050 ppm); detection limit for methane = 0.050%; detection limit for CO_2 = 0.1%; detection limit for oxygen = 0.5%.

By: Robert Andersen

Date: November 4, 1988

METHANE WELL TESTING

Well No.	Red ±5' % by Vol.	Blue ± 20' % by Vol.	Green ±45' % by Vol.
MMW-1	0	0	0
MMW-2	5	10	45
MMW-3	10	0	0
MMW-4	0	0	0.5
MMW-5	2	0	0
MMW-6	5	0	16
MMW-7	0	0	50
MMW-8	0	0.5	10
MMW-9	0	0	0
MMW-10	0	0	0
MMW-11	0	0	0
MMW-12	0	0	0
MMW-13	0	0	5
MMW-14	0	1	0
MMW-15	0	0	0

8487h
11/88

By: Robert Andersen
Date: December 20, 1988

METHANE WELL TESTING

Well No.	Red ± 5' % by Volume	Blue ± 20' % by Volume	Green ± 45' % by Volume
MMW-1	0	0	0
MMW-2	0	2.0	2.2
MMW-3	0	15.0	4.0
MMW-4	0	0	15.0
MMW-5	0	14.0	11.0
MMW-6	3.6	4.2	8.0
MMW-7	4.2	12.0	14.0
MMW-8	0.2	0	0.5
MMW-9	0	0	0
MMW-10	0	0	0
MMW-11	0	0	0
MMW-12	0	0	0
MMW-13	0	0	0
MMW-14	0	0	17.0
MMW-15	15.0	5.0	5.0

RNA/8838h
12/88

By: Robert Andersen

Date: January 26, 1989

METHANE WELL TESTING

Well No.	Red ± 5' % by Volume	Blue ± 20' % by Volume	Green ± 45' % by Volume
MMW 1	0	0	0
MMW 2	4.9	0	0.8
MMW 3	14.0	1.7	1.4
MMW 4	0.5	0	0
MMW 5	6.0	8.0	0
MMW 6	2.2	8.0	0
MMW 7	0	0	0
MMW 8	0	0	3.0
MMW 9	0	0	0
MMW 10	0	0	0
MMW 11	0	0	0
MMW 12	0	0	0
MMW 13	0	0	0
MMW 14	0	0.5	0.3
MMW 15	2.2	0	0.7

RNA/klu/36
1/27/89

METHANE WELL TESTING

By: Robert Andersen
May 23, 1989

Well No.	Red ± 5' % by Volume	Blue ± 20' % by Volume	Green ± 45' % by Volume
MMW-1	0	0	0
MMW-2	0	0	0
MMW-3	8.0	0	0
MMW-4	0	0	0
MMW-5	0.5	0	0
MMW-6	1.5	0	0
MMW-7	0	0	0
MMW-8	0	0	0
MMW-9	0	0	0
MMW-10	0	0	0
MMW-11	0	0	0
MMW-12	0	0	0
MMW-13	0	0	0
MMW-14	0	2.5	0
MMW-15	0	0	0

By: Robert Andersen/John Mitchell
Date: August 1, 1989
0845-0930 hrs.

METHANE WELL TESTING

Well No.	Red ± 5' % by Volume	Blue ± 26' % by Volume	Green ± 45' % by Volume
MMW-3	3.0	3.5	4.5
MMW-4	3.0	0	< 2.0
MMW-5	< 2.0	30.0	< 1.0

RA/pd
ENGR-11

METHANE WELL TESTING

By: Robert N. Andersen
October 12, 1989

Well No.	Red ± 5' Percent by Volume	Blue ± 20' Percent by Volume	Green ± 45' Percent by Volume
MMW-1	0	0	0
MMW-2	4.0	8.0	6.0
MMW-3	10.0	2.9	2.2
MMW-4	0.2	1.8	0
MMW-5	13.0	2.0	0
MMW-6	3.5	2.0	0
MMW-7	0	0	0.5
MMW-8	0	0	0
MMW-9	0	0	0
MMW-10	0	0	0
MMW-11	0	0	0
MMW-12	0	0	0
MMW-13	0	0	0
MMW-14	0	0	2.2
MMW-15	12.0	3.2	0.4

METHANE WELL TESTING

By: Robert N. Andersen
November 20, 1989

Well No.	Red ± 5' Percent by Volume	Blue ± 20' Percent by Volume	Green ± 45' Percent by Volume
MMW-1	0	0	0
MMW-2	7.0	3.0	3.2
MMW-3	5.0	0	0
MMW-4	3.2	0.5	0
MMW-5	10.0	0	0
MMW-6	0	0	0
MMW-7	2.1	3.1	15.0
MMW-8	0	0	0
MMW-9	0	0	0
MMW-10	0	0	0
MMW-11	0	0	0
MMW-12	0	0	0
MMW-13	0	0	0
MMW-14	*	0	3.8
MMW-15	0	0	0

* Needs to be repaired. Unable to test.

CITY OF FRESNO LANDFILL - Methane Test Results

(%Methane)

Date: February 23, 1990
Time: 1300-1600 hrs
Weather: Sunny, slight breeze, 65°
Present: John Mitchell & Phil Hudecek (County Environmental Health)

	5 ft. (Red)	20 Ft. (Blue)	45 Ft (Green)
MMW 1	0	0	0
MMW 2	10.5	45	0
MMW 3	50	35	35
MMW 4	60	55	11
MMW 5	7	60	60
MMW 6	10	45	10
MMW 7	60	60	65
MMW 8	N/A	2	10.5
MMW 9	0	0	0
MMW 10	0	0	0
MMW 11	0	0	0
MMW 12	0	0	0
MMW 13	0	0	0
MMW 14	N/A	40	35
MMW 15	55	50	50

JVM/irc

ENGR:1287:JVM3

CITY OF FRESNO LANDFILL - Methane Test Results

(%Methane)

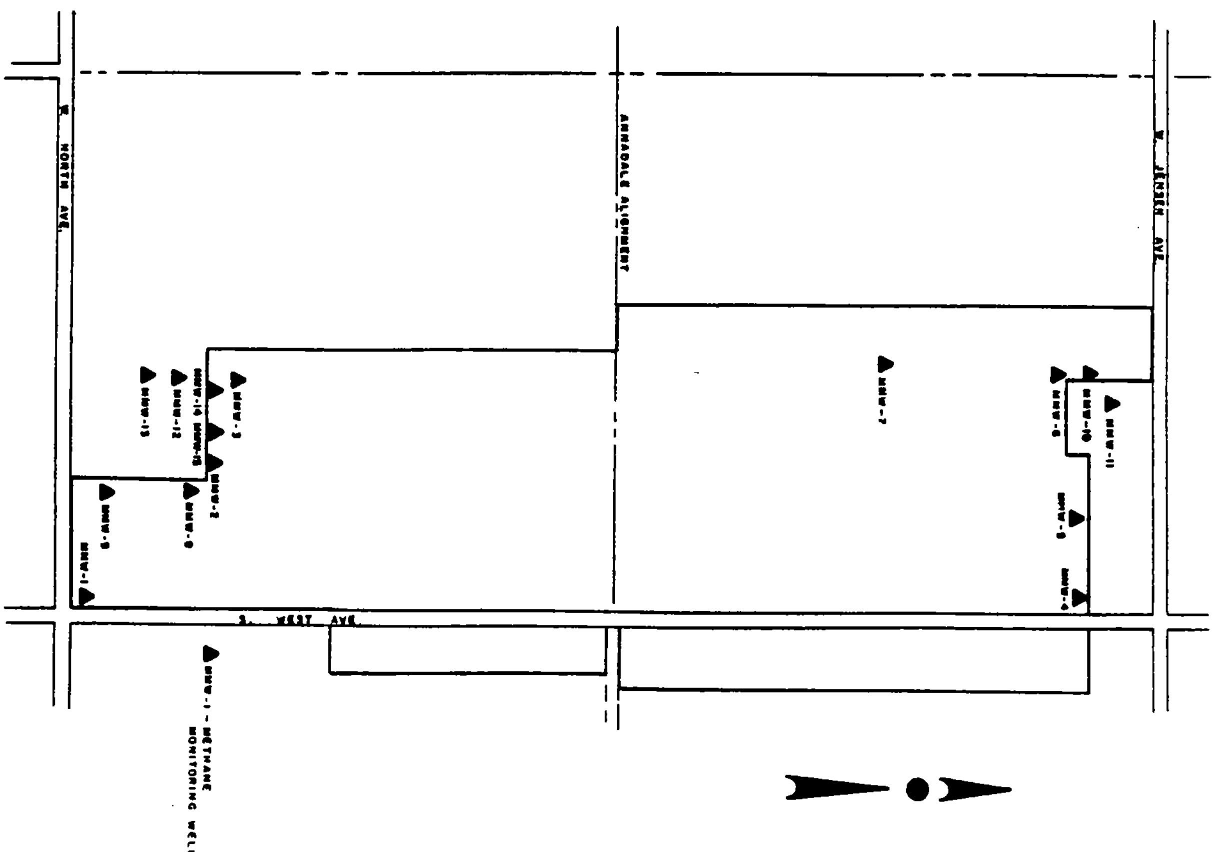
Date: 3-16-90
Time: 1330 hrs
Weather: clear, slight breeze, 70 F
Present: John Mitchell, Phil Hudecek (LEA)

	5 ft. (Red)	20 Ft. (Blue)	45 Ft (Green)
MMW 1	0	0	0
MMW 2	12	48	53
MMW 3	57	53	35
MMW 4	55	54	41
MMW 5	55	55	55
MMW 6	52	39	17
MMW 7	--	--	--
MMW 8	2	3.5	3
MMW 9	0	0	0
MMW 10	--	--	--
MMW 11	--	--	--
MMW 12	--	--	--
MMW 13	--	--	--
MMW 14	--	--	--
MMW 15	--	--	--

Note: Confirmation in select locations of tests taken on 3/23/90.

JVM/irc

ENGR:1287:JVM3



CITY OF FRESNO LANDFILL - Methane Test Results

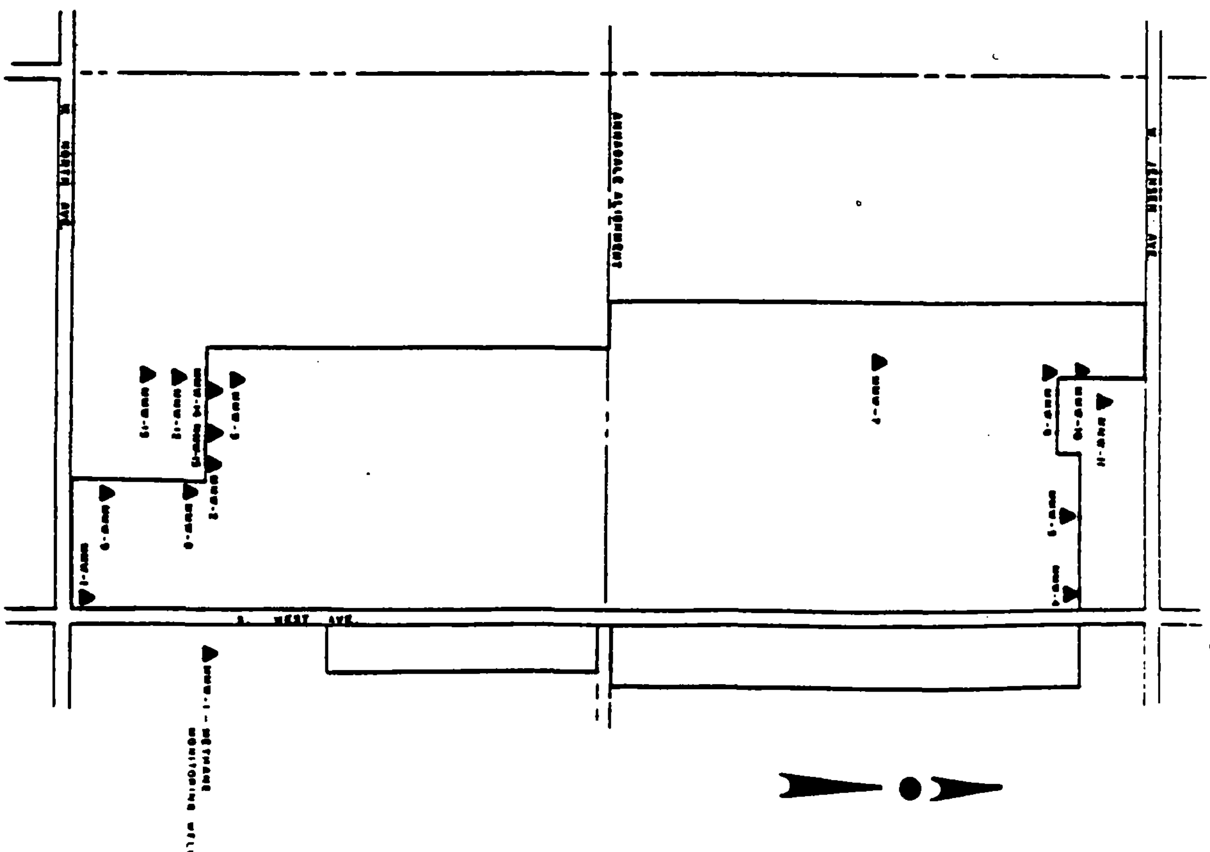
(%Methane)

Date: April 17, 1990
Time: 1330 hours
Weather: Sunny - 72° Slight Breeze
Present: John Mitchell

	5 ft. (Red)	20 Ft. (Blue)	45 Ft (Green)
MMW 1	0	0	0
MMW 2	21	55	59
MMW 3	55	55	50
MMW 4	55	55	47
MMW 5	57	57	57
MMW 6	52	52	3
MMW 7	60	60	60
MMW 8	0	14	11
MMW 9	0	0	0
MMW 10	0	0	0
MMW 11	0	0	0
MMW 12	0	0	0
MMW 13	0	0	0
MMW 14	N/A	40	52
MMW 15	43	52	50

JVM/irc

ENGR-1287:JVM3



APPENDIX A-6

AMBIENT AIR

AIR QUALITY SOLID WASTE ASSESSMENT TEST REPORT CITY OF FRESNO SANITARY LANDFILL FRESNO COUNTY CALIFORNIA

Prepared for

CITY OF FRESNO

October 1988

Prepared by

EMCON Associates
1921 Ringwood Avenue
San Jose, California 95131

Project 971-01.01

Table 4

INTEGRATED SURFACE WALK VOLATILE ORGANIC COMPOUND
AND METHANE DATA

Sample Number	Volatile Organic Compound Concentration (ppb)										OVA Reading (ppm)
	VC	BENZ	EDB	DCA	MECL	PCE	CCL4	TCA	TCE	CHCL3	Methane
SW-1	ND	ND	ND	ND	ND	0.10	0.08	1.10	0.30	ND	1
Regulatory Detection Limits	2	2	0.5	0.2	1	0.2	0.2	0.5	0.6	0.8	NA
Laboratory Detection Limits	1	0.5	0.05	50[1]	20[2]	0.1	0.05	0.1	0.1	0.02	1[3]

Abbreviations:

VC = vinyl chloride
BENZ = benzene
EDB = ethylene dibromide
DCA = 1,2-dichloroethane
MECL = methylene chloride
PCE = tetrachloroethylene
CCL4 = carbon tetrachloride
TCA = 1,1,1-trichoroethane
TCE = trichloroethylene
CHCL3 = chloroform
ppb = parts per billion
ppm = parts per million
ND = not detected

1. Elevated detection limit for 1,2-dichloroethane is due to interference from Freon TF, a laboratory air contaminant.

2. Elevated detection limit for methylene chloride is due to laboratory background as a result of using methylene chloride in the extractions of soil and water samples.

3. OVA detection limit.

CLIENT: EMCON
JOB NO: 7228
DATE ANALYZED: SEPT 25 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: SW-1
MATRIX: AIR
SAMPLE VOLUME: 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.08	.05
Chloroform	ND	.02
1,1,1- Trichloroethane	1.10	.1
1,2- Dichloroethane	ND	50 *
Trichloroethylene	0.30	.1
Benzene	ND	.5
Tetrachloroethylene	0.10	.1
1,2- Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

* High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7228
DATE ANALYZED: SEPT 25 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-1
MATRIX: AIR
SAMPLE VOLUME 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.08	.05
Chloroform	ND	.02
1,1,1-Trichloroethane	0.50	.1
1,2-Dichloroethane	ND	50 *
Trichloroethylene	0.10	.1
Benzene	ND	.5
Tetrachloroethylene	TR<0.1	0.1
1,2-Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

*High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7228
DATE ANALYZED: SEPT 25 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: SW-1
MATRIX: AIR
SAMPLE VOLUME 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.08	.05
Chloroform	ND	.02
1,1,1-Trichloroethane	1.10	.1
1,2-Dichloroethane	ND	50 *
Trichloroethylene	0.30	.1
Benzene	ND	.5
Tetrachloroethylene	0.10	.1
1,2-Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

*High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7228
DATE ANALYZED: SEPT 25 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-3
MATRIX: AIR
SAMPLE VOLUME 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	ND	.05
Chloroform	ND	.02
1,1,1-Trichloroethane	ND	.1
1,2-Dichloroethane	ND	50 *
Trichloroethylene	TR<0.1	0.1
Benzene	ND	.5
Tetrachloroethylene	ND	.1
1,2-Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

*High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7228
DATE ANALYZED: SEPT 25 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-2
MATRIX: AIR
SAMPLE VOLUME 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.08	.05
Chloroform	ND	.02
1,1,1-Trichloroethane	1.10	.1
1,2-Dichloroethane	ND	50 *
Trichloroethylene	0.30	.1
Benzene	ND	.5
Tetrachloroethylene	TR<0.1	0.1
1,2-Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

*High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7228
DATE ANALYZED: SEPT 25 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-4
MATRIX: AIR
SAMPLE VOLUME: 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.07	.05
Chloroform	ND	.02
1,1,1- Trichloroethane	1.70	.1
1,2- Dichloroethane	ND	50 *
Trichloroethylene	0.30	.1
Benzene	ND	.5
Tetrachloroethylene	0.10	.1
1,2- Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

* High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7228
DATE ANALYZED: SEPT 25 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-5
MATRIX: AIR
SAMPLE VOLUME: 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.08	.05
Chloroform	ND	.02
1,1,1- Trichloroethane	0.20	.1
1,2- Dichloroethane	ND	50 *
Trichloroethylene	0.10	.1
Benzene	ND	.5
Tetrachloroethylene	ND	.1
1,2- Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

* High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7241
DATE ANALYZED: SEPT 26 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-6
MATRIX: AIR
SAMPLE VOLUME 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.07	.05
Chloroform	ND	.02
1,1,1-Trichloroethane	0.60	.1
1,2-Dichloroethane	ND	50 *
Trichloroethylene	0.20	.1
Benzene	ND	.5
Tetrachloroethylene	TR<0.1	0.1
1,2-Dibromoethane	ND	.05

ND-NOT DETECTED, The limit of detection is reported above

* High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7241
DATE ANALYZED: SEPT 26 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-7
MATRIX: AIR
SAMPLE VOLUME: 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	1300 **	20
Carbon Tetrachloride	.09	.05
Chloroform	ND	.02
1,1,1- Trichloroethane	2.6	.1
1,2- Dichloroethane	ND	50 *
Trichloroethylene	.2	.1
Benzene	ND	.5
Tetrachloroethylene	1.03	.1
1,2- Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

* High Detection Limit due to interference of Freon TF

** Possible Interference of Freon 12 giving a high Methylene Chloride value

CLIENT: EMCON
JOB NO: 7241
DATE ANALYZED: SEPT 26 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-8
MATRIX: AIR
SAMPLE VOLUME 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	ND	.05
Chloroform	ND	.02
1,1,1-Trichloroethane	0.20	.1
1,2-Dichloroethane	ND	50 *
Trichloroethylene	0.20	.1
Benzene	ND	.5
Tetrachloroethylene	TR<0.1	0.1
1,2-Dibromoethane	ND	.05

ND-NOT DETECTED, The limit of detection is reported above

* High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7241
DATE ANALYZED: SEPT 26 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-9
MATRIX: AIR
SAMPLE VOLUME 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.07	.05
Chloroform	ND	.02
1,1,1-Trichloroethane	0.40	.1
1,2-Dichloroethane	ND	50 *
Trichloroethylene	0.10	.1
Benzene	ND	.5
Tetrachloroethylene	TR<0.1	0.1
1,2-Dibromoethane	ND	.05

ND-NOT DETECTED, The limit of detection is reported above

* High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7241
DATE ANALYZED: SEPT 26 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-10
MATRIX: AIR
SAMPLE VOLUME 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.07	.05
Chloroform	ND	.02
1,1,1-Trichloroethane	0.30	.1
1,2-Dichloroethane	ND	50 *
Trichloroethylene	0.20	.1
Benzene	ND	.5
Tetrachloroethylene	TR<0.1	0.1
1,2-Dibromoethane	ND	.05

ND-NOT DETECTED, The limit of detection is reported above

* High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7255
DATE ANALYZED: SEPT 28 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-11
MATRIX: AIR
SAMPLE VOLUME: 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.10	.05
Chloroform	ND	.02
1,1,1- Trichloroethane	0.80	.1
1,2- Dichloroethane	ND	50 *
Trichloroethylene	0.30	.1
Benzene	2.00	.5
Tetrachloroethylen	ND	.1
1,2- Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

* High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7255
DATE ANALYZED: SEPT 28 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-12
MATRIX: AIR
SAMPLE VOLUME: 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.10	.05
Chloroform	ND	.02
1,1,1- Trichloroethane	0.70	.1
1,2- Dichloroethane	ND	50 *
Trichloroethylene	0.30	.1
Benzene	2.00	.5
Tetrachloroethylene	TR<.1	.1
1,2- Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

* High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7255
DATE ANALYZED: SEPT 28 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-13
MATRIX: AIR
SAMPLE VOLUME: 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	ND	.05
Chloroform	0.30	.02
1,1,1- Trichloroethane	1.00	.1
1,2- Dichloroethane	ND	50 *
Trichloroethylene	0.20	.1
Benzene	2.00	.5
Tetrachloroethylen	0.20	.1
1,2- Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

* High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7255
DATE ANALYZED: SEPT 28 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-13(DUP)
MATRIX: AIR
SAMPLE VOLUME: 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	ND	.05
Chloroform	0.30	.02
1,1,1- Trichloroethane	1.20	.1
1,2- Dichloroethane	ND	50 *
Trichloroethylene	0.20	.1
Benzene	2.00	.5
Tetrachloroethylen	0.30	.1
1,2- Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

* High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7255
DATE ANALYZED: SEPT 28 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-14
MATRIX: AIR
SAMPLE VOLUME: 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.10	.05
Chloroform	ND	.02
1,1,1- Trichloroethane	0.60	.1
1,2- Dichloroethane	ND	50 *
Trichloroethylene	0.10	.1
Benzene	2.00	.5
Tetrachloroethylen	TR<.1	.1
1,2- Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

* High Detection Limit due to interference of Freon TF

CLIENT: EMCON
JOB NO: 7255
DATE ANALYZED: SEPT 28 1987
ANALYSIS: CALDERON POLLUTANTS

SAMPLE: AA-15
MATRIX: AIR
SAMPLE VOLUME: 500 MLS

COMPOUND	CONCENTRATION PPB	DETECTION LIMITS
Vinyl Chloride	ND	1
Methylene Chloride	ND	20
Carbon Tetrachloride	0.10	.05
Chloroform	ND	.02
1,1,1- Trichloroethane	0.30	.1
1,2- Dichloroethane	ND	50 *
Trichloroethylene	0.10	.1
Benzene	ND	.5
Tetrachloroethylen	TR<.1	.1
1,2- Dibromoethane	ND	.05

ND-NOT DETECTED, The Limit of Detection is reported above

* High Detection Limit due to interference of Freon TF

Project Number: 971-01.01

City of Fresno
2326 Fresno St.
Fresno, CA 93721

Location: Jensen Ave, City of Fresno

Sample Type: AIR
Units: nl/l

Sample Designation:	N2 BLANK	BOX1,#1	BOX1,#3	34-23-06
Field Date:	09/15/87	09/15/87	09/15/87	09/15/87
Laboratory Number:	28-082	28-082	28-082	28-082
Vinyl chloride	<2.0	<2.0	<2.0	<2.0
Methylene chloride	<1.0	<1.0	<1.0	<1.0
Chloroform	<0.8	<0.8	<0.8	<0.8
1,1,1-Trichloroethane	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	<0.2	<0.2	<0.2	<0.2
Benzene	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	<0.2	<0.2	<0.2	<0.2
Trichloroethene	<0.6	<0.6	<0.6	<0.6
Tetrachloroethene	<0.2	<0.2	<0.2	<0.2
1,2-Dibromoethane	<0.5	<0.5	<0.5	<0.5

Sample Designation:	34-23-11	N2 BLANK	SS#1	BOX6,#1
Field Date:	09/15/87	09/16/87	09/16/87	09/16/87
Laboratory Number:	28-082	28-082	28-082	28-082
Vinyl chloride	<2.0	<2.0	<2.0	<2.0
Methylene chloride	<1.0	<1.0	<1.0	<1.0
Chloroform	<0.8	<0.8	<0.8	<0.8
1,1,1-Trichloroethane	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	<0.2	<0.2	<0.2	<0.2
Benzene	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	<0.2	<0.2	<0.2	<0.2
Trichloroethene	<0.6	<0.6	<0.6	<0.6
Tetrachloroethene	<0.2	<0.2	<0.2	<0.2
1,2-Dibromoethane	<0.5	<0.5	<0.5	<0.5

Data Reviewed by ______________________ Date April 6 198

Project Number: 971-01.01

City of Fresno
2326 Fresno St.
Fresno, CA 93721

Location: Jensen Ave, City of Fresno

Sample Type: AIR
Units: nl/l

Sample Designation:	BOX6,#3	N2 BLANK	34-24-01	34-24-06
Field Date:	09/16/87	09/17/87	09/17/87	09/17/87
Laboratory Number:	28-082	28-082	28-082	28-082
Vinyl chloride	<2.0	<2.0	<2.0	<2.0
Methylene chloride	<1.0	<1.0	<1.0	<1.0
Chloroform	<0.8	<0.8	<0.8	<0.8
1,1,1-Trichloroethane	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	<0.2	<0.2	<0.2	<0.2
Benzene	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	<0.2	<0.2	<0.2	<0.2
Trichloroethene	<0.6	<0.6	<0.6	<0.6
Tetrachloroethene	<0.2	<0.2	<0.2	<0.2
1,2-Dibromoethane	<0.5	<0.5	<0.5	<0.5

Sample Designation:	34-24-11
Field Date:	09/17/87
Laboratory Number:	28-082
Vinyl chloride	<2.0
Methylene chloride	<1.0
Chloroform	<0.8
1,1,1-Trichloroethane	<0.5
Carbon tetrachloride	<0.2
Benzene	<2.0
1,2-Dichloroethane	<0.2
Trichloroethene	<0.6
Tetrachloroethene	<0.2
1,2-Dibromoethane	<0.5

Data Reviewed by [illegible] **Date** [illegible]

Date: 06 APR 88
Project Number: 971-01.01

City of Fresno
2326 Fresno St.
Fresno, CA 93721

Location: Jensen Ave, City of Fresno

METHODS OF ANALYSIS

Sample Type: AIR

PARAMETER	METHOD
Vinyl chloride Methylene chloride Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Trichloroethene Benzene 1,2-Dibromoethane Tetrachloroethene	The method of analysis is taken from California Air Resources Board (Haagan-Smit Laboratory) methods 102 and 103. The samples are tested by gas chromatography using a trap technique. Detection is by means of photoionization and electron capture detectors.

APPENDIX B

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

TABLE B-1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE
FEDERAL STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard, Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
<u>Chemical-Specific</u>				
Safe Drinking Water Act	42 USC §§ 300 (f)	Establishes regulations to protect human health from contaminants in drinking water.	Yes/Yes	When groundwater is used as a source of drinking water.
National Primary Drinking Water Standards	40 CFR Part 141	Establishes health-based standard for public water systems (Maximum Contaminant Levels).	Yes/Yes	The MCLs for inorganic and organic contaminants are relevant and appropriate for the selection, design, and implementation of CERCLA response activities.
National Secondary Drinking Water Standards	40 CFR Part 143	Establishes welfare-based standards for the aesthetic quality of public water supplies (Secondary Maximum Contaminants Levels).	No/No	The MCLs for inorganic contaminants are not legally enforceable.
Maximum Contaminant Level Goals	Pub. L No. 99-330. 100 Stat. 642 (1986)	Establishes drinking water quality goals set at levels of no known or anticipated adverse health effects with an adequate margin of safety.	No/Yes	NCP states that where MCLGs are greater than 0, the MCLGs are relevant and appropriate for site cleanup.
Clean Water Act	33 USC §§ 1251-1376	Established to restore and maintain the chemical, physical, and biological integrity of the nation's water by controlling discharge of pollutants to navigable waters.	Yes/Yes	Would be applicable for direct or indirect discharge of treated groundwater.

TABLE B-1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE
FEDERAL STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard, Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Water Quality Criteria	40 CFR Part 131	Sets criteria for water quality based on toxicity to aquatic organisms and human health.	No/Yes	NCP states that ambient water quality criteria are relevant and appropriate.
Clean Air Act	42 USC §§ 7401-7642	Regulates air quality, incinerator emissions, and particulate emissions during excavation.	Yes/Yes	The substantive requirements would be met for Air Pollution Control District Rules if air stripping or flaring occurs.
National Primary and Secondary Ambient Air Quality Standards	40 CFR Part 50	Establishes National Ambient Air Quality Standards (NAAQS) for ambient air to protect public health and welfare.	Yes/Yes	Primary standards applicable for any alternative emitting regulated pollutants.
Hazardous Air Pollutants	40 CFR Part 61	Establishes national emission standards for certain particularly hazardous air pollutants (NESHAPs), which are not emitted by a sufficient number of sources to sources to justify National Ambient Standards.	Yes/Yes	NESHAPs are applicable for benzene and vinyl chloride, which has been detected at the site.
Resource Conservation and Recovery Act	Pub. L. No.94-580, 90 Stat. 2795	Defines a hazardous waste and establishes treatability criteria.	No/Yes	The Resource Conservation and Recovery Act (RCRA) is an amendment to the Solid Waste Disposal Act of 1965.

TABLE B-1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE
FEDERAL STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard, Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
<u>Location Specific</u>				
Fish and Wildlife Coordination Act	16 USC §§ 661-666	Requires consultation when Federal department or agency proposes or authorizes any modification of any stream or other water body and adequate provision for protection of fish and wildlife resources.	No/No	Applicable if an alternative developed would involve any modification of nearby stream.
Endangered Species Act	16 USC §§ 1531	Requires action to conserve endangered species within critical habitats upon which endangered species depend, includes consultation with the Department of the Interior.	No/No	Applicable only if endangered species are found at the site.
Executive Order on Flood Plain Management	Exec. Order No. 11988	Requires Federal agencies to evaluation the potential effects of actions they may take in a flood plain to avoid adverse impacts associated with direct and indirect development of a floodplain.	No/No	The site is not within a flood plain.

TABLE B-1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE
FEDERAL STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard, Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
National Historic Preservation Act	16 USC §§ 470, et seq. 36 CFR Part 800	Requires Federal agencies to take into account the effect of any Federally assisted undertaking or licensing on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places.	No/No	TBC for any CERCLA action at or near a building or structure eligible for the National Register.
Resource Conservation and Recovery Act	40 CFR 264	Establishes Siting Criteria for waste storage or disposal.	No/No	For action involving land disposal, underground tanks and surface components.
<u>Action Specific</u>				
Comprehensive Environmental Response, Compensation, and Liability Act	42 U.S.C. 9601	Establishes funding and enforcement authority for a comprehensive response program for past hazardous waste activities which caused or may cause significant negative impacts on human health and/or the environment.	Yes/Yes	Section 121, of the amended CERCLA, is entitled "cleanup standards" and is applicable for identifying and evaluating ARARs; minimum remedial requirements; and the selection of remedial actions.
The National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule (NCP)	40 CFR Part 300	Requires that all response actions shall be in accordance with the NCP "to the greatest extent possible".	Yes/No	Any response action taken at the site will be in accordance with the NCP.

TABLE B-1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE
FEDERAL STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard, Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Super Fund Amendments and Reauthorization Act of 1986	Pub. L 99-499, 100 Stat. 1613	The 1986 amendment to the Comprehensive Environmental Response, Compensation, and Liability Act.	Yes/Yes	These amendments significantly changed the identification and evaluation of legally applicable or relevant and appropriate requirements (ARARs) along with the selection of remedial actions.
National Pollutant Discharge Elimination System Program	40 CFR Parts 122-125	Requires permits for the discharge from any point source into waters of the United States. The Act defines a point source as any discernable, confined, or discrete conveyance...from which pollutants are or may be discharged. Effluent limitations must protect beneficial water.	Yes/No	Remedial actions which discharge a pollutant into surface waters would enter into the NPDES regulatory framework. A permit is not required for onsite CERCLA response actions, but the substantive requirements would apply. However, offsite discharges would require a permit.
Occupational Safety and Health Act	29 USC §§ 651-678	Regulates worker health and safety.	Yes/Yes	Under 40 CFR § 300.38, requirements of the Act apply to all response activities under the NCP.
Hazardous Materials Transportation Act	49 USC §§ 1801-1813	Regulates transportation of hazardous materials.	Yes/Yes	ARAR only if an alternative developed would involve transportation of hazardous materials.

TABLE B-1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE
FEDERAL STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard, Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Resource Conservation and Recovery Act	40 CFR Part 264	Requirements for treatment and disposal of hazardous wastes at: a unit or area of contamination which contains RCRA hazardous waste that was treated or disposed of after the effective date of the pertinent requirements; or the CERCLA activity at the unit or area of contamination constitutes treatment or disposal of RCRA hazardous waste.	Yes/Yes	Applicable if waste are retained on site.
BDAT Standards	RCRA Sections 3004(d)(3), (3)(3)	Effective 11/8/88 disposal of contaminated soil or debris from CERCLA Response Actions or RCRA Corrective Actions is subject to land disposal prohibitions and/or treatment standards established for spent solvent waste, dioxin-containing waste, and California list waste.	Yes/Yes	
Land Disposal Restrictions	40 CFR Part 268	Established a timetable for restriction of buried wastes and other hazardous materials.	Yes/Yes	Applicable if an alternative would involve off- or on-site disposal of contaminated soil.
Underground Storage Tanks	40 CFR Part 280	Establishes regulations related to underground storage tanks.	No/No	May be relevant and appropriate due to previous underground tank removal methods/abandonment.

TABLE B-1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE
FEDERAL STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard, Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Standards for Owners and Operators of Treatment, Storage and Disposal Facilities	40 CFR Part 264	Establishes minimum national standards which define the acceptable management of hazardous waste for owners and operators of facilities which treat, store, or dispose of hazardous wastes.	Yes/No	Applicable for offsite transportation of hazardous material to a RCRA permitted facility.
Standards for Interim Status Facilities	40 CFR Part 265	Closure and postclosure care and groundwater monitoring.	Yes/No	Applicable for closure of onsite landfills.
Standards Applicable to Generators of Hazardous Waste	40 CFR Part 262	Establishes standards for generators.	Yes/No	Applicable if wastes are generated during remedial action.
Standards Applicable to Transporters of Hazardous Waste	40 CFR Part 263	Establishes standards which apply to persons transporting hazardous waste within the U.S.	Yes/No	Applicable for offsite transportation of hazardous material.
Groundwater Protection	Subpart F (40 CFR §§ 264.09-264.178)	Establishes groundwater protection standards and concentration limits, a three-phased groundwater monitoring program, and corrective action for regulated units.	No/No	Relevant and appropriate if hazardous waste is completely treated or removed because no on-site releases would be anticipated. Establishes MCLs as standards.
Closure and PostClosure	Subpart G (40 CFR §§ 264.111-264.120)	Establishes process-specific closure requirements for landfills, surface impoundments, and waste piles.	Yes/No	Applicable requirements for site closure.

TABLE B-1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE
FEDERAL STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard, Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Use and Management of Containers	Subpart I (40 CFR §§ 264.170-264.178)	Establishes storage requirements for hazardous waste in containers.	No/No	Applicable if an alternative developed would involve storage of hazardous materials in containers.
Tanks	Subpart J (40 CFR §§ 264.190-264.200)	Outlines design, management, and closure requirements for tanks containing hazardous waste.	No/No	Closure requirements are applicable if alternative requires removal of a tank prior to cleanup of surrounding soil or groundwater.
Surface Impoundments	Subpart K (40 CFR §§ 264.220-264.249)	Establishes design and operating requirements for surface impoundments.	No/No	Relevant and appropriate if alternative involves closure of a surface impoundment. Closure would be in accordance with 40 CFR Part 264.
Waste Piles	Subpart L (40 CFR §§ 264.250-264.269)	Establishes requirements for waste piles.	No/No	Applicable if alternative developed involved treatment or storage of hazardous material in waste piles for over 90 days.
Clean Air Act	42 USC §§ 7401-7642	Regulates air quality, incinerator emissions, and particulate emissions during excavation.	Yes/Yes	The substantive requirements would be met for Air Pollution Control District Rules if air stripping or flaringoccurs.
National Primary and Secondary Ambient Air Quality Standards	40 CFR Part 50	Establishes National Ambient Air Quality Standards (NAAQS) for ambient air to protect public health and welfare.	Yes/Yes	Primary standards applicable for any alternative emitting regulated pollutants.
Hazardous Air Pollutants	40 CFR	Establishes national emission	Yes/Yes	NESHAPs are applicable for

TABLE B-1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE
FEDERAL STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard, Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
	Part 61	standards for certain particularly hazardous air pollutants (NESHAPs), which are not emitted by a sufficient number of sources to sources to justify National Ambient Standards.		benzene and vinyl chloride, which has been detected at the site.
Clean Air Act	42 USC §§ 7641	Regulates operations of incinerators including emissions control.	Yes/Yes	Applicable to control of emissions.
Nuclear Regulatory Commission Regulations and Transportation of Radioactive Material	10 CFR Part 71	Regulates transportation of radioactive material.	No/No	Relevant and appropriate for an alternative requiring offsite transportation of low-level radioactive material. The volume at the site is anticipated to be very small.
Underground Injection Control Program	40 CFR Parts 144-146	Provides for protection of underground sources of drinking water from subsurface emplacement of fluid.	Yes/Yes	If Class V wells for reinjection of heated groundwater are used, all substantive requirements of the UIC Program will be met.
National Pretreatment Standards	40 CFR Part 403	Sets standards to control pollutants which pass through or interfere with treatment processes in publicly owned treatment works or which may contaminate sewage sludge.	Yes/Yes	Applicable if an alternative involved discharge to a publicly owned treatment works.
Land Treatment	Subpart M (40 CFR §§ 264.270-264.299	Requires land treatment to be effective and establishes monitoring program.	No/No	Applicable to any land treatment alternative.

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POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE
FEDERAL STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard, Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Landfills	Subpart N (40 CFR §§ 264.300-264.339		Yes/Yes	Applicable if an alternative involved construction of a new landfill.
Incinerators	Subpart O (40 CFR §§ 264.340-264.999	Specific design and operating requirements for any incinerator burning hazardous wastes.	No/Yes	Applicable if any alternative, would involve incineration. However, if the wastes burned are hazardous solely by virtue of their ignitibility, corrosivity, or reactivity, or some combination thereof, then only the closure requirement and waste analyses required prior to incineration are applicable.

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POTENTIALLY APPLICABLE OR RELEVANT AND APPROPRIATE
STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Chemical Specific				
Air Resources Act	H&S Code, Div. 26, Sec.3900 et seq.	Regulates both nonvehicular and vehicular sources of air contaminants in California. Defines relationship of the California Air Resource Board (ARB) and local regional air pollution control districts (APCD). Establishes Ambient Air Quality Standards. Establishes permit procedures.	Yes/Yes	The local APCD sets discharge standards. Emission discharge limits will need to be established for discharges associated with specific remedial alternatives.
Mulford-Carrell Air Resources Act	H&S Code, Div. 26, Sec. 39000-44563, CAC Title 17, Part 111	Establishes Ambient Air Quality Standards. Regulates both vehicular and nonvehicular sources of air contaminants in California Section 93000 also identifies benzene and hexavalent chromium as toxic air contaminants However, no threshold values have been determined.	Yes/Yes	This Act is regulated by the Air Resources Board and enforced by local Air Quality Management Districts which set allowable discharge standards. Emission discharge limits will need to be established for discharges associated with specific remedial alternatives.

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POTENTIALLY APPLICABLE OR RELEVANT AND APPROPRIATE
STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
California Safe Drinking Water Act	H&S Code, Div. 5, Part 1, Chapter 7, Sec.4010 et seq.	Regulations governing public water systems. Drinking Water Quality Standards - Maximum Contaminant Levels (SMCLs). Requirements for water quality analysis and laboratories.	Yes/Yes	The act is "applicable" for aquifer and associated distribution and pretreatment system, which is currently defined as a "public water system". If an aquifer, and associative distribution system is only a potential "public water system" then the act is "relevant and appropriate".
Porter Cologne Water Quality Control Act	Water Code, Div. 7, Sec. 13000 et seq.	Establishes authority of the State and Regional Water Boards to protect water quality by regulating solid waste disposal and by requiring cleanup of hazardous conditions.	Yes/Yes	The Regional Water Quality Control Board will need to determine specific cleanup standards and allowable NPDES discharges. The Regional Board will need to identify any other promulgated requirements which apply to the proposed alternatives.

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POTENTIALLY APPLICABLE OR RELEVANT AND APPROPRIATE
STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Central Valley Regional Water Quality Control Board		Allowable treated water emissions are determined based on DHS action levels and best available technology (BAT).	No/Yes	Action levels by themselves are guidance and therefore TBC; however, when applied by the appropriate BATs, the resulting emission standards are enforceable and thus relevant and appropriate. Final emission standards for waste disposal are determined on a site-specific contaminant-specific basis by the RWQCB.
Central Valley Regional Water Quality Control Board	Water Quality Control Plan, Central Valley	The objective of this plan is to show how the quality of surface and groundwater in the Central Valley can be controlled to provide maximum benefit.	Yes/Yes	The Regional Board implements the basin plan by issuing and enforcing waste discharge regulations.
	Water Quality Objectives	Promulgated criteria setting chemical specific concentration levels for a variety of uses of specific bodies of water. Based on the beneficial uses of specific water bodies.	Yes/Yes	Regional Water Quality Objectives are identified in the Water Quality Control Plan Report (Basin Plans) of the nine Regional Water Quality Control Boards. Used to set standards for NPDES discharges.

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POTENTIALLY APPLICABLE OR RELEVANT AND APPROPRIATE
STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Central Valley RWQCB Designated Level of Methodology for Waste Classification and Cleanup Level Determination (October 1986)		This guidance document is in the tentative stage of development for use in the classification and subsequent disposal method of both hazardous and nonhazardous wastes.	No/No	The method is still site-specific, but generic, classifications levels can be approximated. The Designated Levels are not applicable, but the following levels should be considered in cleanup alternatives.
Hazardous Waste Control Act	H&S Code, Div. 20, Chapter 6.5, Sec 25100 et seq.	Regulations governing hazardous waste control; management and control of hazardous waste facilities; classification of extremely hazardous, and non-hazardous waste.	Yes/Yes	This code outlines a procedure to determine concentration limits associated with corrective action program and requirements for closure and postclosure activities and remediation of potential RCRA units may warrant the act as relevant and appropriate. This law also contains restrictions and regulations on the discharges of hazardous wastes to impoundments and land. DHS will need to determine if any other promulgated requirements under these codes apply to the proposed remedial alternatives.

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POTENTIALLY APPLICABLE OR RELEVANT AND APPROPRIATE
STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes	CAC, Title 22, Chapter 30	As administered by the Department Health Services, Section 66300 of Chapter 30 provides no RCRA-type exemption for CERCLA sites.	Yes/Yes	Applicable to CERCLA sites.
Criteria for Identifying Hazardous Waste	Title 22, Article 11, Sec 66693-66746	Tests for identifying hazardous characteristics are described in these Sections. If a chemical is either listed or tested and found hazardous, then it must comply with the hazardous waste requirements under Title 22.	Yes/No	While these standards are not treatment or disposal limits, the resulting classification as hazardous waste results in efforts to meet the standard, thereby making designation methods a form of treatment standards.
Persistent and Bioaccumulative Toxic Substances	Title 22, Sec. 66699	Total Threshold Limit Concentrations (TTLCs) and Soluble Threshold Limit Concentrations (STLCs) have been established for selected toxics to be used in establishing whether waste is hazardous. If a chemical is either listed or tested and found hazardous, then it must comply with the hazardous waste requirements under Title 22.	Yes/No	While these standards are not treatment or disposal limits, the resulting classification as hazardous waste results in efforts to meet the standard, thereby making STLCs/TTLLCs a form of treatment standards.

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STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Safe Drinking Water and Toxic Enforcement Act	H&S Code, Div. 20 Chapter 6.6, Sec. 25249.5 seq.	Prohibition on contaminating drinking water with specific carcinogens and reproductive toxicants. Requires clear and reasonable warnings prior to exposure.	No/No	Not applicable to hazardous waste site cleanup actions.
Fish and Game Regulations on Pollution	Fish and Game Code, Div. 6, Part 1, Chapter 2, Sec 5650 et seq.	Codifies the prohibition of water pollution with any substance or material deleterious to fish, plant or bird life.	Yes/Yes	The Department of Fish and Game will need to determine if and how this law applies to the proposed remedial efforts.
Water Quality Objectives	RWQCB Criteria	Promulgated criteria setting chemical specific concentration levels for a variety of uses of specific bodies of water. Based on the beneficial uses of specific water bodies.	Yes/Yes	Regional Water Quality Objectives are identified in the Water Quality Control Plan Reports (Basin Plans) of the nine Regional Water Quality Control Boards. Used to set standards for NPDES discharges.
State Action Levels	DHS Criteria	Criteria setting chemical specific concentration levels. Numerical limits are designed to protect human health from chemical constituents in drinking water. Recommended acceptable limits.	No/No	DHS Action Levels are used as water quality criteria. Action levels are not enforceable, but will be used as TBCs.

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STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Hazardous Waste Control Act	H&S Code, Sec. 25100-25395, CAC Title 22, Chapter 30	Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes. The HWCA has many elements that are intended to control hazardous wastes from their point of generation through accumulation, transportation, treatment, storage, and ultimate disposal.	Yes/Yes	The HWCA is largely implemented through the CAC, Title 22, Division 4, Chapter 30 and administered by the Department of Health Services. Section 66300 of Chapter 30 provides no RCRA-type exemptions for CERCLA sites; therefore, most regulations will be directly applicable alternatives selected.
Hazardous Substances Act	H&S Code, Div. 22 Chapter 13 Sec.28740 et seq.	Definitions of "hazardous substances and toxic labeling requirements.	No/Yes	Would apply to hazardous substances identified in the codes regulated by the State Waste Management Board.
<u>Action Specific</u>				
CA "Super Fund" Law - Hazardous Substances Account Act/Hazardous Substances Cleanup Bond Act	H&S Code, Div. 20, Chapter 6.8, Sec. 25300 et seq.	Establishes state authority to clean up hazardous substance release and compensate persons injured by exposure to hazardous substances. Creates a $100 million Hazardous Substances Cleanup Fund to supplement the Hazardous Substances Account.	Yes/Yes	Substantive requirements of a Remedial Action Plan (RAP) must be met, including the statutory public involvement mandates.

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STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Toxic Pits Cleanup Act	H&S Code, Sec. 25250 et seq.	Regulates the closure of surface impoundments containing hazardous waste.	No/No	Applicable if an alternative involves closure of surface impoundments at the site.
Occupational Health and Safety Act	Labor Code, Div. 5, Sec. 6300 et seq.	Regulations to assure safe and healthy working conditions by authorizing the enforcement of standards and procedures.	Yes/Yes	The worker safety at the site is regulated by Cal-OSHA. Other worker safety is required by federal OSHA.
Underground Storage of Hazardous Substances Requirements	H&S Code, Div. 20, Chapter 6.7, Sec. 25280 et seq.	Regulations governing the testing, monitoring and replacing underground storage tanks.	No/No	Based on a risk assessment DHS will need to determine a cleanup concentration for soils and groundwater contaminated by leaking underground storage tanks and pipes.
<u>Location-Specific</u>				
Hazardous Waste Control Act	H&S Code §§ 251000-25395, CA Title 22, Chapter 2-30	Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes. Regulations governing surface impoundments, waste piles, landfills, and land treatment facilities.	Yes/Yes	This Section is administered by the Department of Health Services.

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POTENTIALLY APPLICABLE OR RELEVANT AND APPROPRIATE
STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Closure/Post-closure Regulations	Title 14, Calif. Code of Regulations, Division 7, Chapters 3 & 5	CCR Title 14, Division 7, Chapter 3, Article 7.8 defines disposal site standards for the closure and post-closure periods. Chapter 5 addresses the enforcement of solid waste minimum standards and administration of the solid waste facilities program.	Yes/Yes	This Section is administered by the Integrated Waste Management Board.
Porter-Cologne Water Quality Act	Title 23, Calif. Code of Regulations, Chapter 3 Subchapter 15	CCR Title 23, Subchapter 15 regulates the discharges of waste to land. This includes requirements for water quality monitoring and closure and post-closure maintenance.	Yes/Yes	This Section is administered by the Regional Water Quality Control Board.
Requirements for Generators of Hazardous Wastes	Title 22, Sec. 66470-99515	Requires that "an owner or operator who initiates a shipment of hazardous waste from a Transport, Storage, or Disposal (TSD) facility shall comply with the generator standards "established under Article 6, Title 22 of the CAC. These standards include keeping manifests, submission of manifests to DHS within 30 days of shipment, preparation of a biennial report, and maximum 90 day accumulation time.	Yes/No	This regulation is directly applicable to generation, transportation, and disposal offsite of potentially hazardous materials at the site.

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STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
General Operation Requirements for Interim Status and Permitted Facilities	Title 22, §§ 67100-67195	Describes requirements for general facility standards, preparedness and prevention, contingency plan and emergency procures, manifest system, and environmental monitoring.	No/No	Alternatives developed will not require interim status or permitted facility permits.
Closure and Postclosure of Interim Status and Permitted Facilities	Title 22, §§ 67210-67220	Requires that the facility shall be closed in a manner that minimizes the need for further maintenance, and controls, minimizes, or eliminates postclosure escape of hazardous waste decomposition products to the ground or surface waters or the atmosphere. Where hazardous waste will remain after closure, postclosure care must continue for 30 years.	Yes/No	Alternative may require closure activities.
Tanks at Interim Status and Permitted Facilities	Title 22, §§ 67250-67262	Requires tank systems to meet design standards and provide for: containment and detection/monitoring of leaks, monitoring and inspection and proper closure procedures.	No/No	Alternatives developed may require tanks closure prior to remediation.

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STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Land Disposal				
o Surface Impoundments	Title 22, §§ 67280-67318	Requires the owner or operator of a surface impoundment to install 2 liners and a leachate collection system. Monitoring/Inspection, Emergency/Contingency Plans, and Closure/Postclosure care must be provided.	No/No	Applicable if alternative developed requires closure of a surface impoundment.
o Waste Piles	Title 22, §§ 67340-67351	Provides for the same general requirements as surface impoundments. Construction of new or replacement landfill units onsite requires a liner of acceptable material strength and engineering design, a leachate collection system immediately above the liner, monitoring and inspection, and closure/postclosure care.	Yes/Yes	Applicable for landfill closure, or relevant and appropriate if alternative requires disposal to a landfill.
Land Treatment	Title 22, §§ 67360-67382	Hazardous constituents shall be degraded, immobilized, or transferred within the treatment zone, treatment must be demonstrated, design criteria must be met, and unsaturated soil zone must be established.	Yes/Yes	Applicable to alternatives developed for the site.

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STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Incineration	Title 22, §§ 67450-67468	Requires that the waste feed analyzed for constituents listed in the permit is within the limits of the permits. Where a permit is not required, the contents of such a permit should be estimated. Requires performance standards and monitoring of various parameters during operation of the incinerator. At closure, requires the owner or operator to remove all hazardous waste and hazardous waste residues.	Yes/Yes	Applicable for alternatives involving incineration.
Hazardous Waste Hauler Registration	Title 22, §§ 66420-66465, and §§ 66530-66564	Hazardous waste must be transported by a hauler registered by the state. Applicable to redisposal of waste as well as disposal of incineration ash if these materials are hazardous.	Yes/Yes	Applicable for transportation of materials offsite.
South Coast Air Quality Management	Regulation IV	Prohibitory Rules		The Fresno Air Pollution Central District to establish which of these rules are applicable for FSL.
District Rules and Regulations				
	Rule 401	Visible Emission. Limits visible emissions from any point source.	Yes/Yes	Applicable for incineration.

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POTENTIALLY APPLICABLE OR RELEVANT AND APPROPRIATE
STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
South Coast Air Quality Management District Rules and Regulations (cont'd.)	Rule 402	Nuisance. Prohibits the discharge of any material (including odorous compounds) that causes injury, or annoyance to the public, property, or business or endangers human health, comfort, repose or safety.	Yes/Yes	Applicable for incineration.
	Rule 403	Fugitive Dust. Limits onsite activities so that the concentration of fugitive dust at the property line shall not be visible and the downwind particulate concentration shall not be more than 100 micro-grams per cubic meter, averaged over 5 hours, above the upwind particulate concentration.	Yes/Yes	These requirements do not apply if the wind speed is above 15 miles per hour when averaged over 15 minutes. The rule also requires taking every reasonable precaution to minimize fugitive dust and the prevention and cleanup of material accidentally deposited on paved streets.
	Rule 404	Particulate Matter (Concentration). Rule 404 (1) limits particulate emission to a range of 0.010 to 0.196 grain per standard cubic foot averaged over 1 hour for a volumetric gas flow rate of 7000 m^3/hr to 23 m^3/hr, respectively.	Yes/Yes	Applicable for incineration.

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STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
South Coast Air Quality Management Distric Rules and Regulations (cont'd.)	Rule 407	Liquid and Gaseous Air Contaminants Limits carbon monoxide emissions to 2,000 ppm and sulfur dioxide emission to 500 ppm averaged over 15 minutes.	No/Yes	The sulfur dioxide limit does not apply if the incineration source meets the provisions of SCAGMD Rule 431.1 Further design of the incineration alternative is needed to decide whether this rule is ARAR.
	Rule 409	Combustion Contaminants. Limits the emission of particulate matter from a combustion source.	Yes/Yes	Applicable for incineration.
	Rule 473	Disposal of Solid and Liquid Wastes. Incineration design to dispose of combustible refuse at burning rates greater than 50 kilograms per hour shall not release particulate matter in excess of 0.23 grams per cubic meter of gas calculated to 12 percent of carbon dioxide.	Yes/Yes	Applicable for incineration.
	Rule 474	Fuel Burning Equipment Oxides of Nitrogen. Limits the concentration of oxides of nitrogen (as NO_2) to a range of 125 to 300 ppm for gaseous fuels depending on the size.	No/No	Further design information on the alternative will be required to establish if ARAR.

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POTENTIALLY APPLICABLE OR RELEVANT AND APPROPRIATE
STATE OF CALIFORNIA STANDARDS, REQUIREMENTS, CRITERIA, AND LIMITATIONS

Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
Standards of Performance for New Stationary Sources	Regulation IX	Implements the provisions of Part 60, Chapter I, Title 40, of the CFR under the supervision of SCAGMD Executive Officer.	Yes/Yes	Applicable if alternative is considered a new source.
National Emission Standards for Hazardous Waste Air Pollutants	Regulation X	Implements the provisions of Part 61, Chapter I, Title 40 of the CFR under the supervision of SCAGMD Executive Officer, if contaminants are listed.	Yes/Yes	Applicable if contaminants are listed.
Source Specific Standards	Regulation IX	Rule 1150 - "Executive of Landfill Sites" states that no person shall initiate excavation of an active or inactive landfill without an Excavation Management Plan approved by the SCAGMD. The plan shall provide information regarding the quantity and characteristics of the material to be excavated and transported and shall identify mitigation measures including gas collection and disposal, bailing, encapsulation, covering of the material, and chemical neutralizing.	Yes/Yes	Applicable if alternative requires excavation of a landfill. The Fresno APCD to determine which SCAQMD rules apply.

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POTENTIALLY APPLICABLE OR RELEVANT AND APPROPRIATE
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Standard Requirement Criteria, or Limitation	Citation	Description	Potentially Applicable/ Relevant and Appropriate	Comment
New Source Review	Regulation XIII	This regulations sets forth the preconstruction review requirements for new or modified stationary sources, to ensure that the operation of such stationery sources does not interfere with the progress in attainment of the national air quality standards, without unnecessarily restricting the future economic growth within the district.	Yes/Yes	NAAQS guidelines and total emissions limits are on a case-by-case basis.
Air Quality Impact Anaylsis	Proposed Rule 223	This proposed rule specifies the method to determine the impacts of emissions from new stationary sources and modifications to existing stationary sources. The provisions of this rule shall apply to preconstruction review of sources that emit carcinogenic air contaminents such as benzene.	No/No	This rule has not been promulgated, therefore, it has a TBC status.
Hazardous Waste Movement Committee Memorandum of Understanding	An agreement made on November 8, 1983 by the DHs, Caltrans, and the CHP.	An agreement between the Department of Health Services, Transportation (Caltrans), and the California Highway Patrol (CHP) to coordinate with each other for the transportation of large quantities of hazardous wastes excavated from abandoned sites.	No/No	Excavation of large quantities of hazardous waste not anticipated.